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Krajowy Plan w dziedzinie Energii i Klimatu do 2030 r.

z perspektywą do 2040 r.

(aktualizacja Krajowego planu na rzecz energii i klimatu na lata 2021-2030 z 2019 r.)

Ministerstwo Energii

Przyjęty przez Radę Ministrów
w dn. 8 czerwca 2026 r.

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Word of introduction

Ladies and Gentlemen,

we are handing over to you the National Energy and Climate Plan to 2030 with a perspective until 2040 (NECP) – a document that sets the directions for Poland's development in the coming decade and shows how to effectively use the opportunities of the energy transition for the benefit of the whole country. It is not only a strategic action plan in the field of energy – it is an impulse for changes that will shape and develop the Polish economy, society and the environment.

The energy transition is one of the most important processes that Poland undergoes in the 21st century. This is more than a technological change. It is a strategic choice that will determine the energy, economic and food security of our country and the state of the environment, the competitiveness of the economy and the quality of life of citizens in the long term. The NECP creates a generational opportunity to accelerate sustainable development, introduce modern technologies and build a future in which Poland will permanently join the group of economic leaders in Europe.

Our priority is to strengthen energy security and economic development. We are building an energy system that is resilient to geopolitical and price shocks, ensuring a stable energy supply for industry and households. At the same time, we recognise that the low-carbon transition must be just - its costs and benefits should be evenly distributed so that every citizen and every company can actively participate in this change, taking advantage of new opportunities, without fear of overburdening.

Achieving the objectives of the NECP requires a determined implementation of actions and, at the same time, monitoring progress and flexibility in responding to changing geopolitical conditions, including risks of supply constraints, access to critical or strategic raw materials, as well as raw materials of particular importance to the national economy. This approach justifies the need to protect natural resources and preserve at least partial access to fossil energy resources, as well as the development of infrastructure and competences.

The implementation of the activities, policies and objectives of the NECP will be reported on in biennial cycles, with the first report to be prepared in 2027. In order to effectively achieve the transformational goals, in 2028 the National Plan will be reviewed and updated as needed, mapping the current market, geopolitical, technological and social conditions. Periodic updating of the document is necessary to ensure the effectiveness of the state's energy and climate policy.

We treat the NECP as a compass, indicating the objectives and directions of activities for the Polish state. A tool that allows you to turn emerging problems into challenges. And the challenges are successful. I believe that together: government, local governments, entrepreneurs and citizens, we will build a safe, modern and competitive energy system.

We give you a complete document. I am convinced that its implementation will ensure Poland's energy security and independence for the next decades.

Milosz Motyka (footballer)

Minister of Energy

Summary

The National Energy and Climate Plan 2030 with a 2040 perspective (hereinafter NECP/NECP) sets out the directions for the national energy and climate transition, ensuring energy security, strengthening energy resilience and independence, and developing the national economy.

aKPEiK presents national objectives and targets in the area of energy and climate policy until 2030 and presents policies and actions in the five dimensions of the EU Energy Union:

1. *decarbonisation;*
2. *improving energy efficiency,*
3. *energy security;*
4. *intra-EU energy market (and social aspects), 5th research, innovation and competitiveness.*

The objectives and assumptions of the NECPs are based on two **foresight scenarios.**

Scenario of accelerated transformation of the so-called. **The WAM** scenario (with *additional measures*) assumes the dynamisation of the current pace of transformation and allows for the implementation of some of the commitments from the EU *Fit for 55 package.*

1. **The so-called Reference Scenario.** **The WEM** **(with** *existing measures)* **scenario** provides a transition projection based on the current legal and investment framework – Annex II. 2.

In the NECP, all adopted indicators and targets are presented in **the form of ranges of values, based on both WEM and WAM scenarios**. Adopting a range approach will allow for **flexibility in planning and take into account the volatility of macroeconomic and technological conditions** that may affect the pace and scale of the transition.

aKPEiK consists of a main document and 7 annexes:

1. **WAM** scenario – accelerated transition scenario
2. **WEM** Reference Scenario
3. Analytical assumptions and forecasting methodology (for both scenarios)
4. Description of energy efficiency improvement measures and PEF in the electricity grid
5. Financing the climate and energy transition
6. Reference to the European Commission's recommendations to the draft NECP of 29 February 2024
7. Environmental impact forecast

A report on the implementation of the NECP will be drawn up in 2-year cycles. In addition, a catalogue of core indicators has been defined for general monitoring (below: Table 13).

Key results of the NECP

levels achievable by Poland in 2030

Reduction of greenhouse gas emissions (GC)

	WEM	WAM	targets for PL according to EU regulations
in the economy as a whole (vs. 1990)	**-43,3%**	**-52,7%**	contribution to the EU target of at least -55%
in non-ETS sectors (vs. 2005)	-12,0%	-19,4%	for Poland -17.7%
in ETS sectors (vs. 200 51)	-46,1%	-50,9%	contribution to the EU target -62%
absorption by LULUCF	-28.8 million t	-46.5 million t	for Poland – 38,098 million tonnes

Renewable energy sources (RES)

	WEM	WAM	
in gross final energy consumption	**30,0%**	**32,0%**	according to the Impact Assessment to the draft REDIII directive for Poland 31-32%
in electricity	51,6%	53,2%	*Unbound*
in district heating	31,6%	36,5%	increment of 0,8-1,1 pp y/y
in transport	16,5%	16,5%	29% (or 14.5% reduction in GC emissions)

Energy efficiency

	WEM	WAM	
primary energy consumption *reduction vs. PRIMES2020 forecasts*	**-8,9%**	**-13,5%**	for Poland according to the formula from the EED: 79.9 Mtoe –14.4% vs PRIMES 2020
	with Poland aiming at -14.4%		
final energy consumption *reduction vs. PRIMES2020 forecasts*	**-0,6%**	**–4.2%**	for Poland according to the formula from the EED: 58.5 Mtoe –12.8% vs PRIMES 2020
	with Poland aiming at -12.8%		

Implementation of WEM scenarios and WAM are investments in years 2026-2030 in range

PLN 1039 - 1128 billion

Largest investments in the electricity sector – transmission, distribution, generation capacity

390 - 486 billion zlotys

in years

The expenditures to be incurred for the climate and energy transition are investments in the national economy, jobs, modernisation of sectors and improvement of competitiveness.

1 GHG emissions in the ETS in 2005 covered a different range of installations and gases than in 2025. For the purposes of the NECP, a simplified approach with a baseline value for 2005 of 203.15 million tonnes of CO2eq was used when calculating the percentage of emission reductions.

Dimension 1. Decarbonisation

Reducing economy-wide greenhouse gas emissions

Poland contributes to the achievement of the EU-wide 2030 target of reducing GHG emissions by at least 55% compared to 1990. The WEM scenario indicates the possibility **of reaching approx. 43% reduction in GHG emissions** for the entire economy **(up to approx. 253.7 million t eq. CO_2)**. The WAM scenario estimates the possibility of achieving **approx. 53% reduction in national GHG emissions (to approx. 211.7 million t eq. CO_2)**.

For 2040, a **61%** reduction in GHG emissions is projected for the WEM scenario (to approx. 174.8 million t eq. CO_2) and **by 75%** for the WAM scenario (up to approx. 112.9 million t eq. CO_2). Decarbonisation **efforts in all sectors of the economy** will contribute to this objective, while preserving energy security and the rationality of spending resources and burdens on society and economic operators.

Reduction of GC emissions in ETS and non-ETS sectors

EU-wide emissions from the EU ETS sectors should be **62% lower in 2030 than in 2005.** The WEM scenario points **to a 46% reduction in 2030** (up to approx. 113 million tons eq. CO_2) in the ETS sectors compared to 2005. However, the WAM **scenario** forecasts accordingly **the possibility of achieving a reduction of 51%** (to approx. 102.8 million t eq. CO_2) **in 2030**

Actions to minimise the cost of purchasing GC emission allowances, including accelerating the development of RES, will play a key role in the decarbonisation of these sectors. The ETS, as it currently stands, will remain in force until it is complemented by a new CBAM system.

EU-wide emissions from non-EU ETS sectors should be 40% lower in 2030 than in 2005. Poland has a binding target of 17.7% reduction in non-ETS emissions compared to 2005. The WEM scenario points to **a target of 12.0% reduction in GHG emissions in ESR sectors by 2030** (up to approx. 169.4 million t eq. CO_2) compared to 2005. In the WAM scenario, **this reduction could be 19,4**% (up to 155,1 million tonnes eq. CO2) in 2030

From 2028, the so-called **ETS-2 system** for **buildings** (including households) and **road transport** (which also pursue the non-ETS objective) may become operational. It could represent a cost burden for these sectors, which could accelerate the clean energy transition and reduce reliance on fossil fuels. The impact of ETS-2 will be financially felt, with support mechanisms foreseen from the Social Climate Fund.

Reduction of GC emissions in economic sectors and 2

All sectors of the economy must contribute to decarbonisation. The energy sector has the largest share of GC emissions **and3 the sector in which** the largest reduction will take place (in the WEM scenario, this may be a **reduction of approx. 42%** compared to 1990, to approx. 221.7 million t eq. CO2 in 2030, while in the WAM scenario it may be **approx. 48%** to 201.9 million t eq. CO_2). In particular, the electricity and heat production sector will contribute to this. At the same time, projections indicate that reducing GHG emissions in other sectors is more difficult due to several factors. These difficulties arise

2 Methodology adopted by the Intergovernmental Panel on Climate Change (IPCC) Climate Change (IPCC) Intergovernmental Panel on Climate Change) emissions are attributed to sectors: (1) energy; (2) industrial processes and the use of products; (3) agriculture; (5) waste; whereas (4) LULUCF may lead to offsetting of emissions from other sectors. The breakdown differs from that used for the EU ETS and non-ETS.

3 Understood in the IPCC methodology as fuel combustion in the energy industry, manufacturing and construction, transport, other sectors and volatile emissions from fuels.

the capital intensity of investments, the still limited knowledge or the lack of alternative solutions that can be implemented, as is evident, for example, in agriculture. In addition, the problem is the low level of use of innovation and the fact that the achieved emission reductions of individual processes do not translate into a reduction in the total level of emissions, as activity in sectors such as transport or industry is increasing.

Increase in the share of RES in gross final energy consumption

Under the WEM scenario, it will be possible to achieve **a 30% share of RES in gross final energy consumption in 2030 or a 32% share under the** WAM **scenario** – a significant acceleration of RES development compared to the 2019 NECPs (21-23% in 2030) and a significant contribution to the EU-wide RES target set at 42.5% (+2.5%) in 2030.

Figure 1 RES share of gross final energy consumption [%]

Electricity

- Increase in RES share to 51.6% in 2030 and approx. 65.6% in 2040 in the WEM scenario or **up to 53.2% in 2030** and approx. 68.9% in 2040 in the WAM scenario: through the sustainable development of onshore wind energy, photovoltaics, the deployment of offshore wind energy and the use of renewable gases and biomass.
- Development of transmission and distribution infrastructure and increasing system flexibility, including through energy storage, dynamic tariffs, sector coupling.
- Gradual phase-out of coal-fired capacity and temporary increase of gas-fired capacity to ensure system availability and security of energy supply.
- Deployment **of nuclear energy** after 2035

Heating and heating

- It's okay. By 2040, all thermal needs in the economy should be covered by district heating and low- and zero-emission individual sources.
- **Increase in RES share to 31.6%** in 2030 and approx. 43.5% in 2040 in the WEM scenario ; or **36.5%** in 2030 and 56.7% in 2040 in the WAM scenario .
- By 2040, it is planned to phase out coal from households and replace it mainly with low-carbon sources.

- In district heating:
  - striving for the use of heat pumps and electric boilers powered by RES, coupled with heat storage, as well as the use of waste heat and geothermal energy,
  - large systems may still need investments in cogeneration capacity based on natural gas, which will replace biomethane and other decarbonised gases in the future,
  - An important transitional role for biomass.

Transport

- **The share of RES** in transport **in 2030 is forecast at 16.5%** of both in the WEM and WAM scenarios , through the use of first and second generation biofuels, renewable hydrogen and electricity.
- Progress **in electrification of transport**, driven mainly by a decrease in the production costs of electric vehicles, allows to increase the share in 2040 for the WEM scenario to **32.2%** and for the WAM scenario to **44.8%.**
- **Urban transport** – increasing the uptake of public transport will be supported, among others, by incentives for the creation of clean transport zones, obligations for cities above 100 000 inhabitants, better transport accessibility.
- **Rail** – electrification of selected lines will continue, accessibility will be increased and rail will be modernised.
- **Aviation –** it will be important to support waste management and the production and distribution of sustainable aviation fuels (SAF), the financing of activities related to the production of synthetic fuels, the CORSIA mechanism for reducing emissions in civil aviation.

Agriculture

- Reducing GC emissions should not have a negative impact on food security and dependence on external sources of supply.
- The WEM and WAM scenarios indicate that a 35% reduction in GHG emissions in agriculture compared to 1990 could be achieved in 2030.
- CG reduction measures are implemented through *the Common Agricultural Policy instruments,* and these are set out in the CAP Strategic Plan 2023-2027.
- Support for the use of RES in agriculture, in particular biogas plants and biomethane plant.

LULUCF (absorption)

- The WEM scenario indicates that 28.8 million tonnes **of eq. could be absorbed by 2030. CO2** from the LULUCF sector. The WAM scenario points to **46.5 million tonnes of eq. respectively. CO2 in 2030**
- The effects of the measures taken (irrigation of peatlands, afforestation or reconstruction of forests) can be seen in the perspective of several decades.
- The action of biotic and abiotic factors (droughts, fires), destructive or disturbing the LULUCF sector, reduces the absorption of GC.

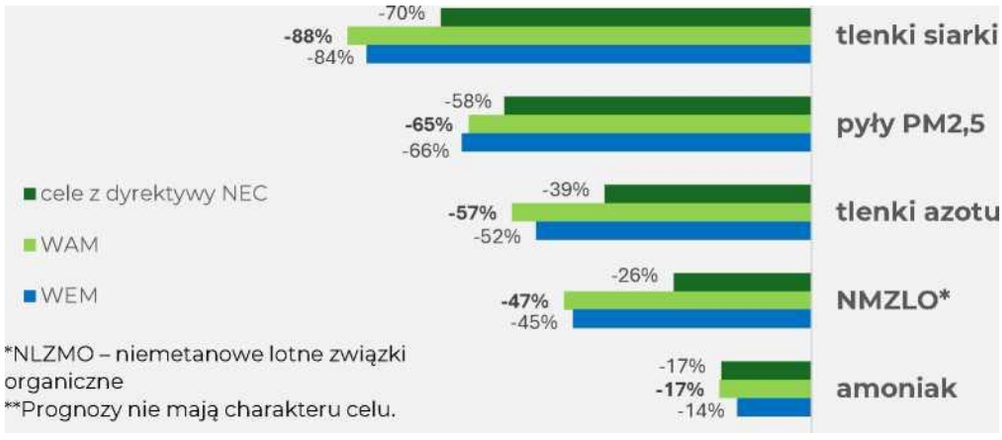
Industry

- Industry processes (and use of products) sector projected by 2030 in the WEM scenario, it can generate emissions of approx. 23.7 million t eq. CO2 and 22 million t eq. CO2 in 2040. In contrast, the WAM scenario projects emissions of 20.3 million tonnes of CO2 in 2030. CO_2 and a decrease to 12.8 million tonnes of eq. in 2040. CO_2.
- A particular role in the decarbonisation of the sector is to **improve the energy efficiency** of the processes carried out and the use of low- and zero-emission energy sources.
- To promote the use of renewable **hydrogen.** By 2030, in the WEM scenario, the projected production of renewable hydrogen will be approx. 20 000 tonnes, while in the WAM scenario 122 000 tonnes. In order to meet the requirements *of the RED III Directive* for the use of renewable hydrogen of non-biological origin in industry by 2030, raw material imports will be necessary.

Improving the quality of the environment

It covers areas such as air quality, water quality, soil quality, biodiversity and sustainable management of natural resources in general.

In the area of air quality, the NECP aims to reduce atmospheric pollution in accordance with the NEC Directive (currently under revision), towards the fulfilment of standards integrated with the recommendations of the World Health Organization (WHO). An important role is played by the phasing out of the use of coal in households, striving for the development of zero-emission transport and education. **The improvement of water and soil status** will in particular be achieved through the implementation of water management plans and actions in the area of wastewater management. It will be necessary to reduce the **environmental impact of waste management** by building a circular economy. The **soil will also be protected.**



Dimension 2. Improving energy efficiency

Improving energy efficiency brings both economic and social benefits. The application of the energy efficiency first principle makes it possible to maximise the use of available energy resources while reducing energy losses. The benefits of reduced energy consumption make the drive to increase energy efficiency a priority.

Reduction of primary energy consumption

The reduction in primary energy consumption is due to a number of changes in the economy, including improvements in process efficiency and changes in the structure of energy production. Increasing the share of renewable energy (RES) in electricity and heat production will play an important role in reducing primary energy consumption. Poland will aim to reduce **its primary energy consumption to 79.9 Mtoe, i.e. by 14.4%** (-13.4 Mtoe) in 2030 compared to the PRIMES2020 projections (as reflected in the formula set out in the EED), but reaching this level will require additional efforts.

The forecasts indicate a possible gap in the achievement of the above-mentioned objective. Projections indicate a primary energy consumption of **85 Mtoe** in the WEM scenario, representing a reduction of 8.9% compared to PRIMES 2020. By contrast, according to the WAM scenario, **primary energy consumption in 2030 will be 80.7 Mtoe,** representing a 13.5% reduction compared to PRIMES 2020.

Reduction of final energy consumption

After a period of increase in final energy consumption until 2021, a downward trend has been observed in recent years. However, due to positive economic development forecasts for Poland, there is a risk that instead of a significant reduction in energy consumption, there will only be a slowdown in its growth, despite improvements in process efficiency and a decrease in the energy intensity of equipment. Despite this sensitivity of forecasts, current trends indicate a decrease in final energy consumption, although not as ambitious as predicted by the European Commission.

Poland will aim to reduce **final energy consumption to 58.5 Mtoe, i.e. by 12.8%** (-8.6 Mtoe) in 2030 compared to the PRIMES2020 projections (based on the formula set out in the EED). However, the implementation of the above-mentioned reductions will entail significant challenges, as shown by the projections in both scenarios of the NECP.

The final energy consumption in the WEM scenario is projected to be **66.8 Mtoe,** representing a reduction of 0.6% compared to PRIMES 2020 (and 21.9% compared to PRIMES 2007). However, according to the WAM scenario, **final energy consumption in 2030 will amount to 64.4 Mtoe**, which means a reduction of 4.2% compared to PRIMES 2020 (and 24.7% compared to PRIMES 2007).

The EED also requires final energy savings calculated according to a specific methodology, according to which Poland should generate savings of **44 465 ktoe** between 2021 and 2030. In order to achieve these savings, the so-called 'alternative policy measures' have also been identified in addition to the *white certificate* system. 4 to the AKPEiK.

In addition, Poland will particularly support **people affected by energy poverty,** including through non-repayable co-financing programmes for thermomodernisation projects.

Key savings tool of the FEC – obligation imposed on a group of operators by:

- ✓ implementation of energy efficiency improvement projects at final customers, confirmed by an energy audit
- ✓ non-repayable project co-financing programme
- ✓ Purchase of white certificates

Alternative measures (additional)

- ★ Thermal Modernization and Renovation Fund – TERMO programme
- ★ Expenditure tax credit incurred for thermomodernization of single-family residential buildings
- ★ Development of public transport Collective in Cities
- ★ Improving energy efficiency residential buildings
- ★ Energy efficient public sector – 1.9% FEC reduction per year

Important elements to improve energy efficiency

on the implementation of the energy efficiency first principle
about eco-design
about energy labelling
to improve the efficiency of processes
Development of energy audits

Low-emission construction

A significant share of energy is consumed in buildings, which also translates into GC emissions. For this reason, efficiency policy pays a lot of attention to this sector, also due to the impact on air quality and reducing the risk of increasing energy poverty. Existing buildings require a separate approach compared to those addressed to new construction.

Existing buildings – the objective is that by 2035, with public support, buildings with an EP of more than 230 kWh/(m2/year) will be upgraded, with the priority of eliminating the use of coal in residential buildings by 2040 at the

latest.

New construction – from 2030, all new buildings built in Poland should be zero-emission and, for buildings occupied by public authorities, from 2028 onwards. Support schemes for energy efficiency of buildings will be gradually increased.

Dimension 3. Energy security

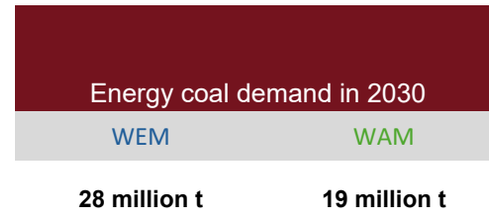
Energy independence

Poland sets the goal of ensuring energy independence on a sustainable basis and striving to strengthen it. In this context, Poland will strive to ensure an energy independence rate above the EU average. In 2024, the energy independence rate for the EU average was ca. 43%, while in Poland it was at the level of approx. 54%.

Coal demand coverage

The policy is related to the reduction of the demand for hard coal . The main source of covering the demand for **hard coal in the** transition period will be domestic mining, and imports should only be complementary, which is why the priority is to ensure the highest possible economy of raw material extraction in the country.

Completion national exploitation carbon stone energy will take place by 2049 at the latest. Projections indicate that national consumption power coal in 2030 will be no more than approx. 28 million tonnes, depending on the pace of the transition, and imports should only be complementary.



Coal mining and coal-based energy is a relatively large segment of the national economy, so the way in which the transition is carried out must also take into account the fairness of the transition of coal regions.

With regard to the use **of lignite , key decisions on the phasing out of lignite-based** generation units will take into account the balancing needs of the system and the social aspect for the mining region. It is expected that the role of this raw material is ok. 2035 will be small. In Poland, the use of lignite in the economy will decrease. The mines still in operation have a definite plan for the decommissioning of the units, with the plant ending earlier than the depletion of the deposits.

Coverage of natural gas demand

Natural gas accounts for a significant part of the country's primary energy demand. Demand for this raw material will not fall earlier than approx. 2030 when demand peaks are expected. **Given its bridging role in the energy transition** process, it is essential to ensure the security of supply of this raw material to customers.

Ensuring **efficient gas infrastructure – transmission, distribution and storage –** for future consumption and adapting the system to transport and storage capacities of decarbonised and renewable gases, e.g. renewable hydrogen and biomethane, is crucial for gas security.

WEM	WAM
23.6 billion m^3	24.7 billion m^3

In the event of a supply disruption, efforts will be made to ensure a comprehensive system of preparedness to cope with emergency constraints and increased demand for this raw material.

Covering the demand for crude oil and transport fuels

Poland sets a target for 2030 to further ensure the stability of oil supplies by sea to domestic and foreign refineries while expanding transmission and transhipment infrastructure.

Petroleum fuels will continue to play a key role in the transport sector after 2030, and their economic importance will remain high, also due to the growing role in the petrochemical sector.

Coverage of biomass demand

Responding to the need to use wood in the most materially and environmentally beneficial way, biomass meeting the sustainability criteria will be used in the professional energy sector. Estimates of the potential of biomass meeting the RMF take into account the required achievement of the LULUCF target by Poland and the implementation of the biomass cascading principle in accordance with the RED III Directive.

In the district heating sector, biomass can be a fuel during a transitional period, due to the conversion of coal units into multi-fuel units or the need to meet the criteria for an efficient district heating system. Especially in smaller heat plants, in regions with high biomass resources, this will be a rational solution. In the longer term, increasing the share of zero-emission energy sources will allow for an increasing degree of electrification of heating.

Prospective coverage of nuclear fuel demand

In connection with the planned implementation of nuclear energy into the national electricity system, activities will be carried out to ensure the supply of fuel for the operation of the first unit of the first nuclear power plant. The process will be conducted with the involvement of the Euratom Supply Agency, which protects against possible problems with the availability of fuel.
In addition, national uranium resources will be identified and the possibility of obtaining and commercialising them will be assessed.

Forward-looking coverage of demand for low-carbon and renewable hydrogen, including non-biological origin and its derivatives

Low-carbon and renewable hydrogen, including non-biological origin, which can be used inter alia in industry, transport, electricity, heating:

will play a key role in the transition, especially in the energy-intensive industry sector. The hydrogen economy aims to expand its own production capacity, including RES capacity for the production of renewable hydrogen, and to promote *sector coupling* to exploit surplus RES. It is currently estimated that national production capacity by 2030 will not fully cover the 2030 target. 42% share of renewable hydrogen of non-biological origin in industry (indicated for EU Member States).

In order to complement the rules for the functioning of the hydrogen market, it is planned to continue activities related to the preparation of comprehensive legislative solutions. It is also necessary to build new infrastructure for transport and storage of raw material, as well as to provide financial support for the development of the RFNBO market. Thanks to its geographical and political position, Poland can play a very important role in the long term, both as a transit country and a trade hub.

Coverage of electricity demand

The national electricity system (NPS) is changing at a very fast pace, recording an increasing share of weather dependents in the power structure and electricity production. RES. This requires assurance security of energy supply and adaptation of the system to a more distributed generation model, including both prosumer installations and large-scale sources.

Ensuring **the power adequacy and flexibility of a carbon-based system remains crucial in the short term i gaseous units manufacturing**.

In the medium and long term, the increasing use of **decarbonised and renewable gases** (biogas, biomethane, hydrogen), the development **of energy storage will** be important. **Flexibility tools** (DSR, popularization of dynamic tariffs) and **integration with the heating and electromobility sectors** (sector coupling). The transition will be supported by the development of **nuclear power,** the first block of which is planned after 2035. and, by 2040, nuclear power generation capacity Large-scale and small-scale should be OK. 5.9 GW.

In the light of the increase in new capacity, especially RES, it is necessary to ensure the smooth functioning, modernization and expansion of electricity networks (transmission and distribution), which will be carried out through consistently implemented infrastructure investments. The network will gradually be transformed into an active two-way network, supported by smart systems and digitalisation (smart *grid*). An important area will also be ensuring the system's preparedness for crisis situations, by creating an appropriate legal framework and procedures enabling taking preventive actions, mitigating or aimed at restoring energy supply and proper operation of the electricity system (e.g. anti-blackout package, development of cybersecurity).

The objective is to achieve a SAIDI of 85min./consignee by 2030.

RES in electricity in 2030

WEM		WAM
30.5 GW	'■9'	32.4 GW
25.8 TWh		29.0 TWh
15.8 GW		16.5 GW
39.3 TWh		41.7 TWh
5.9 GW		5.9 GW
21.5 TWh	r£-Ł	20.8 TWh
0.5 GW		0.5 GW
2.9 TWh		3.1 TWh
0.9 GW	(0)>	0.8 GW
8.3 TWh		6.8 TWh
1.1 GW		1.0 GW
2.9 TWh		2.7 TWh

Dimension 4. Intra-EU energy market and social aspects of the transition

Increasing cross-border transmission capacity and improving electricity system integration

The changes in the energy market related to the dynamic development of capacity in distributed energy sources, in particular RES, and the improvement of energy security, mean huge calls for the expansion and modernisation of the network, also in the area of adequate cross-border interconnection capacity and ensuring better conditions for electricity exchange between systems.

Priorities for the use of cross-border connections:

- modernisation and extension of missing lines and transmission stations in the PPS,

- expanding and increasing the capacity of cross-border connections,
- construction of a new Poland-Lithuania cross-border connection (Harmony Link) aimed at strengthening the security of the Baltic States' electricity systems with continental Europe.

Efficient and sufficient linear gas infrastructure

Until the supply of renewable gas develops at an appropriate level, it is necessary to ensure a more efficient natural gas transmission and storage infrastructure. In the longer term, it should enable the transport of decarbonised gases, i.e. biomethane, hydrogen and its derivatives.

Priorities in the area of gas infrastructure:

- ensuring properly developed and efficient transmission infrastructure within the country,
- further ensuring the possibility of receiving natural gas supplies from abroad by expanding, protecting and maintaining the full functionality of connections with the systems of neighbouring countries,
- ensure that supplies of decarbonised gases can be taken back.

Development of distributed energy

Prosumer energy has developed rapidly in Poland. However, its further development requires the adaptation of the system, including the modernisation of distribution networks and the expansion of energy storage, which will reduce the impact on the operation of the PPS. The support policy will reward **the use of energy storage, self-consumption and DSR.** *Demand Side Response*), to improve local balancing. Energy clusters, energy cooperatives and citizen energy communities enable local balancing of energy production and consumption, improve energy self-sufficiency and provide consumers with lower energy prices. For their development, in addition to the expansion of the network, administrative improvements and support systems will be implemented as well as promotion in local government units.

For all forms of distributed energy, the development of **intelligent solutions** allowing efficient and conscious management in the area of energy consumption and production will be of great importance.

Reducing energy poverty

Inseparable element a just energy and climate transition
Reducing energy poverty. We can talk about energy poverty when a household incurs high energy expenditures, achieves low incomes and lives in a dwelling with low energy efficiency.

The continuation and possible adaptation of publicly funded programmes (including the EU) to the needs of energy poor consumers will play a key role in long-term rather than short-term poverty reduction. Investment activities aimed at improving the technical condition of buildings and changing energy sources (thermomodernization, modernization of heating systems and the use of RES) will also be important. The Social Climate Plan will play an important role in protecting consumers and vulnerable groups from the negative impacts of the energy transition.

Reducing transport poverty

Transport poverty refers to the difficulties faced by individuals and households in accessing private or public transport, including covering its costs. More than 8 million Poles may be affected by this phenomenon. Research to date has shown that transport poverty in Poland is closely linked to the uneven development of transport infrastructure and acceptable transport services.

Actions to reduce transport poverty will focus on making public transport more accessible and attractive, modernising and expanding the rail network, developing local roads, developing infrastructure for bicycles and pedestrians, and e-scooters, car-sharing or on-demand transport. Programmes such as the Fund for the development of bus transport, the National Railway Programme until 2030 (with a perspective until 2032), the Programme for Supplementing Local and Regional Railway Infrastructure - Kolej + until 2032, and the Central Communication Port Investment Programme will be of key importance. Stage II. 2024-2032.

The Social Climate Fund, which Poland will use on the basis of the national Social Climate Plan, will play a special role in increasing transport accessibility, while taking measures to combat transport poverty.

Support for coal regions

The just energy and climate transition process should ensure adequate support for coal and fossil fuel-related

regions. It requires the identification of socio-economic risks resulting from the implemented changes, as well as the development of measures to minimize their effects.

In order to ensure that the transition is just, efforts will be made not only to provide social protection for workers, but also to create new regional specialisations, sustainable jobs, the development of new industries supporting the transformation of the sector, as well as to create opportunities for diversification of industries linked to traditional industries. Changes taking place in the education sector, which will ensure that courses of study are adapted to the needs of the transition, the development of training programmes, up-skilling

courses and career guidance systems supporting employees in the process of change, will also be important.

In managing changes in mining regions, it is important to have transparent, time-bound planning, predictability for employees of the mining sector, but also to minimize the costs of transformation for the entire Polish society.

Creating green jobs

Green jobs are a key element of an economy focused on the climate and energy transition. Traditional sectors of the economy, based on fossil fuels and intensive use of resources, will be gradually replaced by those related to the construction of green-blue infrastructure and the broadly understood transformation. The development of new jobs based on sustainable technologies creates new job opportunities that are both economically beneficial and environmentally friendly.

Ensuring broad cooperation between government, the private sector, workers, NGOs and local communities will be key in creating policies for green jobs.

Dimension 5. Research, innovation and competitiveness

Provision of funding for research and development

Transformation Climate and Energy is inextricably linked to the implementation of modern, innovative, low- and zero-emission technologies and solutions

Research expenditure 2.5% of GDP

systemic. Research activities and development will be directed towards exploiting national technological, human resources and competitive advantages, increasing the investment attractiveness of the economy and its innovation. At the same time, it is essential to mobilise financial resources (both public and private) for national R&D&I.

Efforts will continue to focus, inter alia, on:

- improving Poland's position on the international arena,
- increasing the impact of science and higher education on the economic and social development of the country,
- conducting high-quality scientific research and making optimal use of scientific knowledge.

Development of human resources competences for the climate and energy transition

Carrying out responsible transformation requires adjustments and building human resources in line with priority development directions. The demand for **specialists in the field of energy in the broad sense (e.g. renewable energy technologies, energy storage, balancing technologies, hydrogen technologies – including electrolysers, nuclear energy, energy management, thermomodernisation of buildings, network infrastructure, electromobility, automation and digitalisation and other modern energy solutions) is expected to increase** in the next 2 decades.

Actions will be taken to adapt education profiles, develop skills and competences, which will contribute to the acquisition of qualified staff, the development of industry **and the creation of jobs with high added value for the national economy. It is an investment in the future and one of the most valuable assets of transformation – human know-how.**

Strengthening Poland's competitiveness

The competitiveness of the economy is key to increasing the country's prosperity and resilience to global shocks. Therefore, the aim of the actions is to create incentives and tools to support entrepreneurs in building a strong economy able to compete effectively on the European and global market. Priorities include strengthening national production capacity, developing and upgrading strategic infrastructure, increasing the share of local content, reducing dependency on non-EU suppliers, and deregulation and simplification of procedures. Thanks to this, Poland will gain modern

technological facilities, greater resistance to disruptions in supply chains, and at the same time will create a permanent competitive advantage.

Development in areas conducive to the low-carbon transition

In order to address the challenges of the energy and climate transition, the following areas of development are particularly important:

- the competitiveness of industry;
- energy efficiency and respect for energy in the context of environmental concerns;
- energy storage;
- smart grids and digitalisation;
- technologies for the production of energy from renewable sources, including bioenergy, wind energy, photovoltaics, geothermal energy;
- low- and zero-emission transport;
- hydrogen technologies;
- nuclear energy (new generation III and IV reactor technologies);
- social aspects of the energy transition;
- technologies for the capture, sequestration or use of captured CO2 in the production of low-carbon products (CCS/CCUS).

1. Introduced!E

A) What is the EPC il4 and for what purpose has it been developed] <

Sustainable development of the energy sector and activities related to ensuring a stable energy supply and environmental protection are essential for strengthening the national economy and building its competitiveness. A responsible energy strategy should respect equivalent, interacting and complementary objectives: energy security, economic competitiveness, energy efficiency and reduction of environmental impact. In addition to the development of zero-emission technologies, the energy and climate transition in Poland should provide consumers with a stable energy supply at acceptable prices. Given that transformations will be a long-term, capital-intensive process, covering all sectors of the economy, it is crucial that the changes introduced take into account their fairness. The aim is to provide a stable strategic framework for adapting sectors, retraining industry workers, modernising industry and building modern industries, creating new development opportunities for regions and communities affected by the transition. A transparent and long-term energy strategy creates a stable framework for shaping systemic mechanisms, sector regulations and investment decisions requiring the involvement of private and public capital. Taking into account the above and significant sectoral, economic, regulatory and geopolitical changes occurring after 2020, work has started on updating the national strategy setting the directions of the energy and climate transition and indicating the contribution to the achievement of the EU targets by 2030.

The European Union (EU) is very committed to international climate agreements. In its response to climate change, the EU – including Poland – also sees an opportunity to build competitive advantages and energy security. One of the distinctive features of the Union is the preservation of uniform rules for the functioning of markets, which also include guaranteeing consumers, including households and businesses, a secure, environmentally friendly and affordable energy supply. Responding to these challenges, the EU *Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy was set out in* 2015. The Energy Union is based on **five interlinked and mutually reinforcing dimensions:** energy security, internal energy market, energy efficiency, decarbonisation (with a particular role for renewable energy sources (RES)) and research, innovation and competitiveness.

In 2018, EU *Regulation 2018/1999 on the Governance of the Energy Union* was adopted, obliging Member States to draw up National Energy and Climate Plans (NECPs),4 which are subject to periodic update and reporting. The development of these documents forms the basis of the governance mechanism of the Energy Union, analysing whether, based on contributions from Member States, the EU will meet its climate and energy targets. The unambiguous definition of the scope of the document is intended to ensure the transparency, consistency, comparability and completeness and granularity of the information. The preparation of the national plan is also part of the national legal order. The mandatory scope of the NECP is very broad, but the current document decides to include additional issues in order to best meet the needs of Poland in the most comprehensive way possible. This document **updates *the 2019 National Energy and Climate Plan 2021-2030* (NECP),** which is called

4 In Poland, the abbreviation NECP is used, while in the international nomenclature the abbreviation NECP (NECP) is used. *National Energy and Climate Plan*).

the National Energy and Climate Plan 2030 with a 2040 perspective (NECP). 5 The drafting of the document follows directly from Article 14 of Regulation (EU) 2018/1999, and Article 15ab of the *Energy Law* Act indicates that the Minister for Energy, in cooperation with the Minister for Climate, is responsible for the drafting of the NECP, its updates and reports.

Figure 2. Energy Union of the European Union

EU-wide assessment of the final updated NECPs

In 2025, the European Commission published *Communication COM(2025) 274 final: Assessment of the European Union's final updated National Energy and Climate Plans – Delivering on the EU's 2030 energy and climate targets,* which aims to verify whether the targets and tools declared by the Member States will allow the European Union to achieve its 2030 energy and climate targets. The European Commission points out that with current policies fully implemented, the EU is on track to achieve them, but in many areas there are gaps and challenges, translating into the risk of delays. The Commission's assessment indicates, among others, a projected reduction of GHG emissions by 54% by 2030 (with an EU-wide target of at least 55%), while in the sectors covered by the ERNs by 38% with a 40% target. In the area of renewables, the sum of Member States' contributions corresponds to 41-42.6 % compared to the 42.5-45% target. RES targets in transport (29%) and RFNBO's share in industry (42%) remain largely uncovered by Member States and real implementation plans. In the area of energy efficiency, the European Commission identifies a gap of 31.1 Mtoe in final consumption and 47.3 Mtoe in primary consumption in 2030. With regard to the above-mentioned gaps, the Commission announces a set of actions to support Member States and to provide the basis for further dialogue, in order to fill the gaps and ensure that the European Union delivers on its common objectives in a fair, competitive and efficient manner.

5 The abbreviations 'aKPEiK' and 'KPEiK' are used depending on the context, but both refer to this document. The concept of NECP also refers to the integrated national plan as a generic document.

B) Jat< built them:=>t KPE■iK

The scope of the NECPs is regulated in Annex I of EU Regulation 2018/1999, according to which the NECP should include:

(1) a general outline,

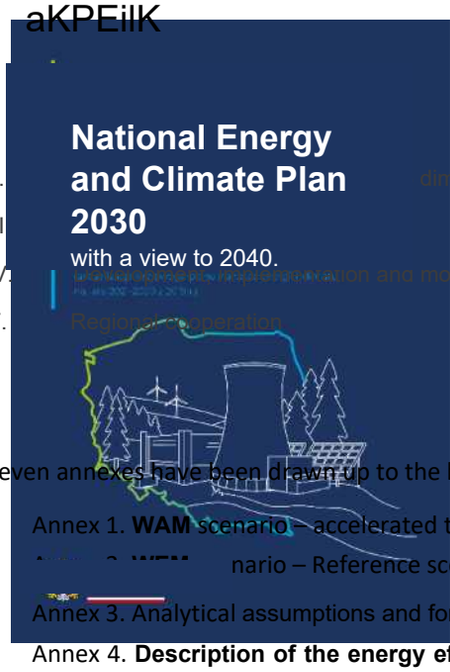
(2) objectives and targets,

(4) analytical basis for policies and actions implemented – WEM scenario (with *existing measure* s),

(5) Analytical basis for assessing the impact of additional policies and actions – WAM (with *additional measure* s) scenario.

To facilitate the reception of the content of the NECP update, it has been drafted in a slightly modified way compared to *the National Energy and Climate Plan 2021-2030* of 2019. The following diagram simplifies the elements and construction of the document. The strategic part (aKPEiK) presents (II) **OBJECTIVES AND OBJECTIVES** in the five dimensions of the Energy Union by **area**, grouping the different **objectives** in thematic terms. **The objectives** (marked in grey) are preceded by a brief contextual description, followed by a concise **policy** for achieving them and a list of **key actions**. The names of the individual actions are in the format of hyperlinks, which allow to move to part (III) of **the ACTION,** where all actions are grouped together with descriptions and a list of entities responsible for implementation. They have been mapped to the leading dimension of the Energy Union, but can also relate to other dimensions. The graphic below shows a simplified representation of the structure described above.

aKPEilK



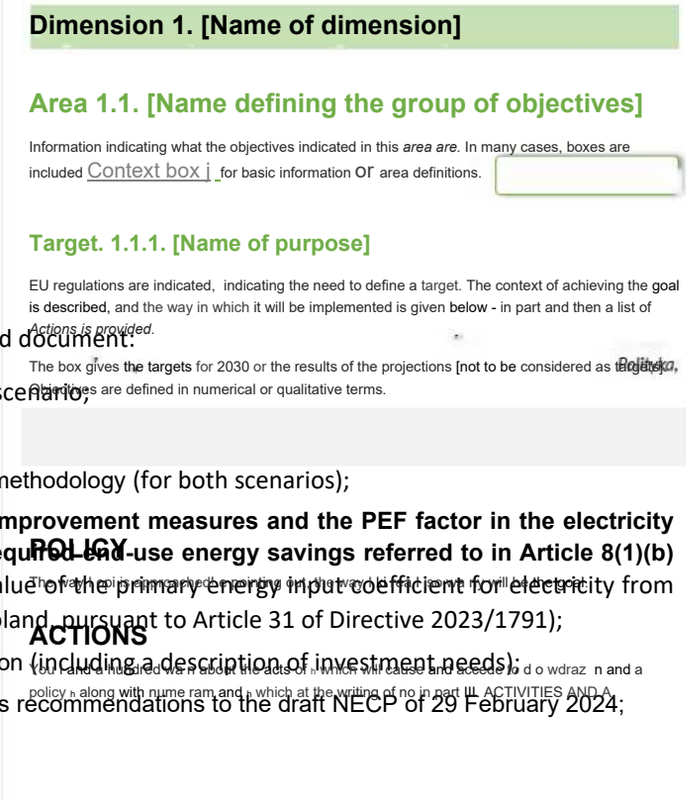
I.

II. dimensions:h

III

IV. nitoring

V. Regional cooperation



Seven annexes have been drawn up to the background document:

- Annex 1. **WAM** scenario – accelerated transition scenario;
- nario – Reference scenario;
- Annex 3. Analytical assumptions and forecasting methodology (for both scenarios);
- Annex 4. **Description of the energy efficiency improvement measures and the PEF factor in the electricity network (describes the measures to achieve the required end-use energy savings referred to in Article 8(1)(b) and (c) and (c))** 1 of Directive 2023/1791 and the value of the primary energy input coefficient for electricity from the electricity grid (PEF) *Primary Energy Factor*) for Poland, pursuant to Article 31 of Directive 2023/1791);
- Annex 5. Financing the climate and energy transition (including a description of investment needs);
- Annex 6. Reference to the European Commission's recommendations to the draft NECP of 29 February 2024;
- Annex 7. Environmental impact forecast.

Annex 1 to the NECP
Accelerated transition scenario (with additional measures, WAM)
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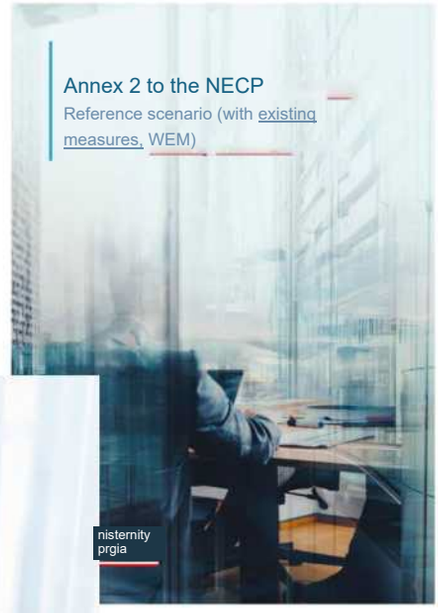
Annex 2 to the NECP
Reference scenario (with existing measures, WEM)
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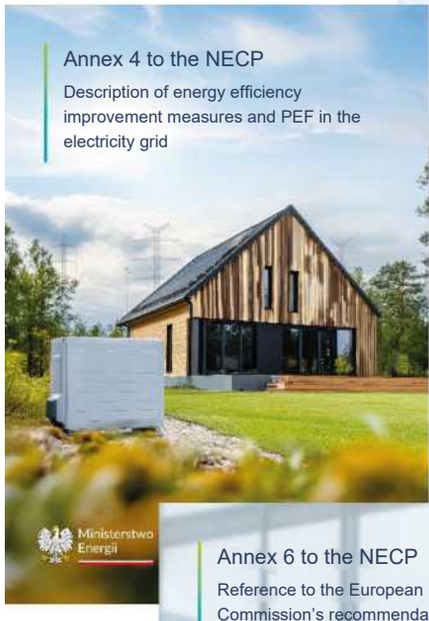
Annex 3 to the NECP
Forecasting assumptions and methodology
Ministry
Energy


Annex 4 to the NECP
Description of energy efficiency improvement measures and PEF in the electricity grid
Ministerstwo
Energii

Annex 5 to the NECP
Financing the climate and energy transition

Annex 6 to the NECP
Reference to the European Commission's recommendations to the draft NECP of 29 February 2024
Ministerstwo
Energii

Annex 7 to the NECP
Environmental impact forecast
Ministerstwo
Energii

C) WEM and WAIV| scenario

The EU Regulation 2018/1999 indicates that the NECP contains two analytical scenarios: WEM scenario – projections with existing policies and actions; and WAM scenario foresight with additional policies and actions.

The numerical targets indicated in this document are based on the analytical basis of both scenarios, i.e. WEM and WAM.

The values presented for 2025 are foresight and serve the objectives analytical. These data may differ from statistical or market data in 2025.

In the NECP, the scenarios are understood as follows:

The WAkM scenario (Annex 1) is understood as an **accelerated transition scenario**, pursuing Fit *for 55* objectives and targets . It provides for the implementation of new climate and energy policy instruments in relation to existing solutions, in order to accelerate the transition while ensuring energy security and the competitiveness of the economy. Despite the fact that the WAM scenario indicates a wider range of investment solutions and activities, the forecasts show that Poland achieves only a part of the indicators and targets included in the Fit for 55 package, including 52.7% reduction in greenhouse gas emissions (compared to the EU target of at least 55%). This is due to the significant backwardness of the transition process and the short time horizon remaining until 2030, which significantly determines the possibilities of implementing new investments and solutions. Nevertheless, in the perspective of 2040, the Polish economy could maintain the pace of transformation and thus gradually improve the main economic and climate indicators and significantly reduce the costs of energy production.

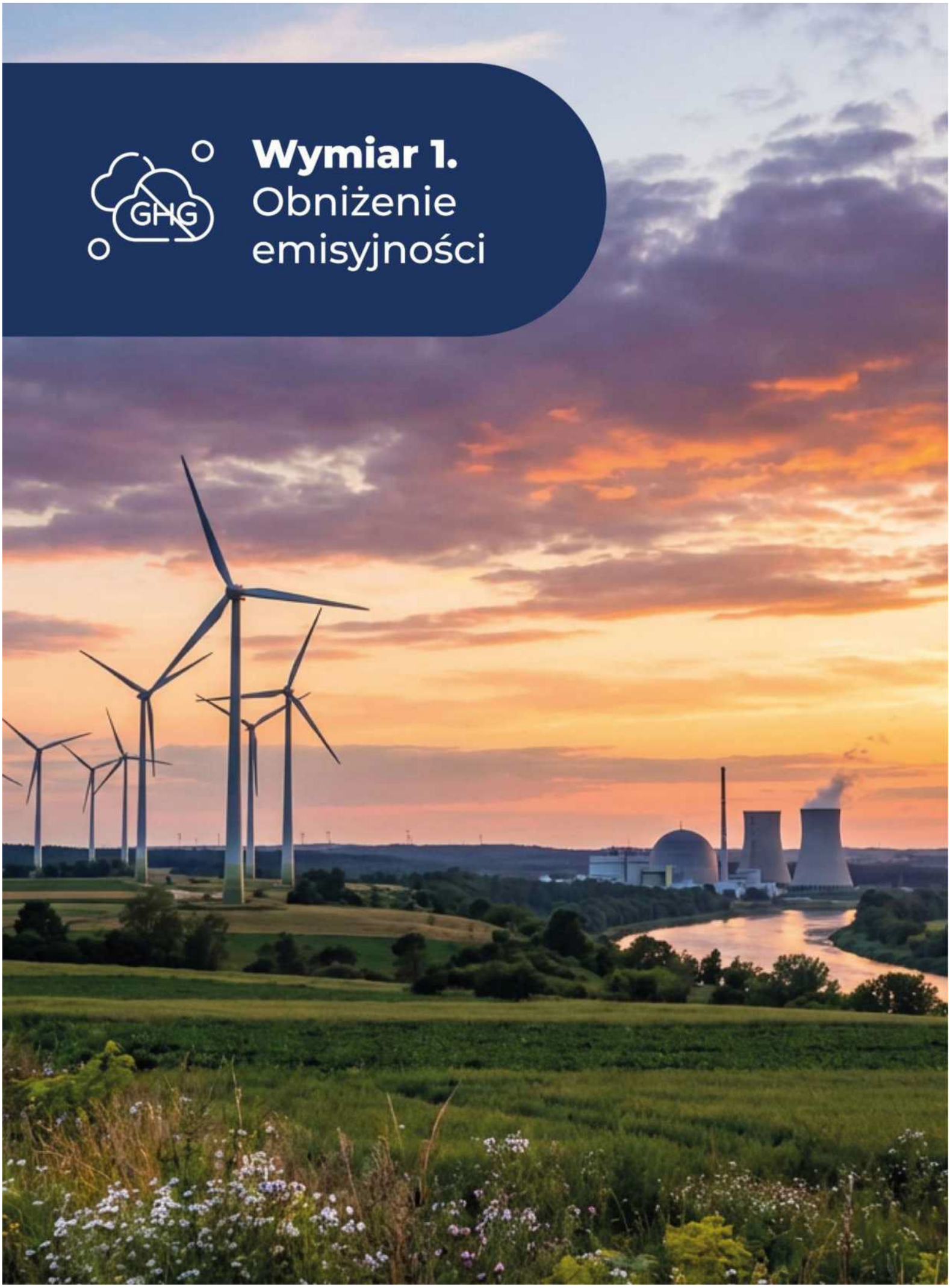
The WEM scenario (Annex 2) is understood as a **reference scenario** – the projections are based on the assumption that current technological, organisational and economic development trends will continue at a similar pace to the current one. Forecasts in this scenario assume the absence of rapid changes or breakthrough innovations, or rather the continuation of existing solutions.

As part of this document, all indicators and targets adopted are presented in **the form of ranges of values, based on the two required WEM and WAM scenarios.** Adopting a range approach will allow for flexibility in planning and take into account the volatility of macroeconomic and technological conditions that may affect the pace and scale of the transition. At the same time, this solution will make it possible to maintain an ambitious course of action while ensuring that the Plan's objectives are realistic and economically feasible. The targets included in the ranges therefore illustrate both the minimum and the desired level of change.

It is worth emphasizing that in both scenarios, in addition to low-carbon trends, other aspects were also taken into account, in particular:

- in the energy sector, the technically possible rate of carbon phase-out, so that the increase in zero- and low-carbon capacity is accompanied by an adequate level of available capacity and the development of technologies and solutions to ensure **the certainty and stability of energy supply** (power sufficiency); take into account ongoing and planned investments, the availability of new technologies that will guarantee the reservation of RES; economic optimization is carried out in forecasting simulations based on sector models,
- in industry, an assessment of the pace and depth of changes that may occur in companies, taking into account inputs, the technical feasibility of changing equipment and processes, and the availability of new technologies,
- impact on the labour market – in addition to supporting workers linked to the carbon economy, it is taken into account that the jobs generated by the transition should be sustainable, with high added value and strengthening the development of competences,
- impact on economic development – it is assumed that the aim of reducing greenhouse gas emissions and reducing energy consumption should not limit Poland's economic development, but on the contrary should foster development and improve competitiveness on the European and global arena.

II. Objectives, objectives and policies in the 5 dimensions of the Energy Union



Wymiar 1. Obniżenie emisyjności

The development of a low-carbon economy brings a number of benefits that strengthen its stability and competitiveness. At the same time, it also entails challenges that need to be addressed in the form of adequate solutions. Sustainable and responsible planning that combines climate objectives with technological, economic and social ones is therefore crucial. This is the only way to achieve long-term benefits, such as the resilience of the economy to climate, geopolitical and economic crises, while ensuring energy security and economic growth.

Decarbonisation is seen by the EU as the main objective of climate and energy action. **From a national perspective, this objective is understood on an equal footing with other dimensions of the energy and climate transition,** with crises triggered by the consequences of Russia's full-scale aggression against Ukraine in 2022 and the war in the Middle East in 2026, as well as other geopolitical disruptions, highlighting **the crucial importance of energy security** for the economy, including strengthening energy independence. Without a properly resilient energy system, the transition to a zero- and low-carbon economy will not be possible.

All sectors have an impact on emissions, albeit to varying degrees. The pace of greenhouse gas (GHG) emissions reduction varies from industry to industry, and it is extremely difficult to avoid some emissions in some areas, according to current knowledge and technology availability. This is why, in the long term, we are aiming for net climate neutrality, which we can ensure, inter alia, by absorbing CO2 emissions.

This part of the NECP defines objectives and targets related to the reduction of greenhouse gas emissions in general, as well as the use of renewable energy sources, which the European Union has recognised as a specific measure to reduce GHG. Specific targets have been set for the decarbonisation of electricity, heating, transport, industry and agriculture. The potential for reducing emissions in the area of land use, land-use *change, and forestry (LULUCF) was also assessed,* i.e. the sector offsetting part of emissions from other sectors.

Due to the increasing occurrence of extreme weather events, the issue of adaptation to climate change, as well as the objectives of improving the quality of the environment, including air, have also been taken into account in a horizontal manner.

Obszair 1.1. Reductions in IBmis ii greenhouse gasesc:h and increase: utilization of renewable sources l energy ii (general cells)

In this area, an economy-wide GHG emission reduction projection and a projection for the non-ET S sectors7 have been identified. Both projections are based on foresight analyses. Emission reductions in sectors covered by the Emissions Trading System (ETS) *The European Union Emissions Trading System*) has been defined as a forecast of the impact of the measures taken.

Historical7 data on GHG emissions and air pollutants are published in the National Inventory Reports prepared by the National Centre for Emission Management and Balancing, link. All emissions data referenced in the NECP are derived from this source. Conversely, projections for the WEM and WAM scenarios in the context of emissions are set out in Annexes 1 and 2 to the NECP.

The document further defines the objectives and actions by economic sector (understood in a similar way to the IPCC classification), making it easier to determine their contribution to the overall national target to reduce greenhouse gas emissions.

The use of RES will play a special role in reducing GHG. Therefore, a target for the **share of renewable energy sources in gross final energy consumption** has also been set. RED III sets out sector-specific objectives (and detailed) in the area heating and cooling and transport. For the electricity generation sector, the Directive does not specify the required levels, so the NECP indicates an indicative share of RES in this sector. The RED III regulations also refer to the definition of targets in the construction and industrial sectors.

Targets and assumptions for the share of RES in individual sectors, which have an impact on the overall target, are discussed in the sections on the decarbonisation of these sectors.

Issues relating to local communities and prosumers are set out in Chapter 4. The intra-EU energy market and the social dimension of the transition.

National GHG emissions consist of emissions from different
economic sectors, which are divided into two

According to the methodology adopted by the Intergovernmental
The Research and Development Team Climate Change (IPCC)
Intergovernmental Panel on Climate Change) emissions are assigned to sectors: (1) energy; (2) Processes industrial and product use;
(3) agriculture; (5) waste; with (4) LULUCF may lead to offsetting of emissions
from other sectors.

The second division is related to the EU system

For the purpose of using RES in final consumption gross energy (general objective) consists of the use ofRES in:
(1) electricity,
(2) heating and cooling, and
(3) transport.

The largest amount of energy is used.
in Poland for heating purposes, therefore the increase in RES
in this sector by up to 1 percentage point means,
In absolute terms, a much larger number of

Cell 1.1.1. Limitation: emission control of \Az greenhouse gases from the economy (general cell)

Poland is in the process of dynamic economic and sectoral changes, in line with the trends towards low-emissions while guaranteeing energy security and taking into account specific national conditions. Simultaneous economic development and reduction of greenhouse gas emissions are, however, major challenges for Poland, especially taking into account the specific starting point compared to Western European countries. Such specific differences between European economies, which are the direct result of a different historical heritage and economic and political system, necessitate a much greater effort in the energy and climate transition. With this in mind, Poland is making an effort to implement European commitments taking into account national realities.

In December 2020, the European Council increased **the EU's existing target to reduce greenhouse gas emissions** from 40% to at least **55% below 1990 levels,** which was then reflected in the provisions of Regulation (EU) 2021/1119 – i.e. European Law on Climaci e8**.** On On 5 November 2025, despite opposition from some Member States (including Poland), the Food and Agriculture Council (FAC) adopted a resolution on the proposal. The environment voted unanimously for a general approach on the revision of the European Climate Law setting a new intermediate target (before reaching climate neutrality in 2050) **of a 90% reduction in greenhouse gas**

8 Article 4 of EU Regulation 2021/1119.

emissions by 204 09. Increasing ambition aims to maintain the EU's position as a leader in the implementation of the so-called Sustainable Development Goals (SDGs). ***The Paris Agreement ,*** the operationalisation of which is expected to halt the increase in global temperature below 2ºC above pre-industrial levels while making an effort to achieve a maximum of 1.5ºC.

As before, EU regulations do not set targets for individual Member States for total GHG emissions. Member States shall contribute to the achievement of the Union target of at least 55% in 2030 compared to 1990. When setting their national contribution, it is most important to take into account national circumstances, the starting point and the real potential for emission reductions over a given time horizon.

The WEM scenario indicates the possibility of achieving GHG emission reductions across the whole economy by 43.3% in 2030 (up to approx. 253.7 million t eq. CO2 (including LULUCF absorption)). For the WAM scenario, this is 52.7%, respectively. in 2030 (up to approx. 211.7 million t eq. CO2 (including LULUCF removals)).

[estimates are not objective]

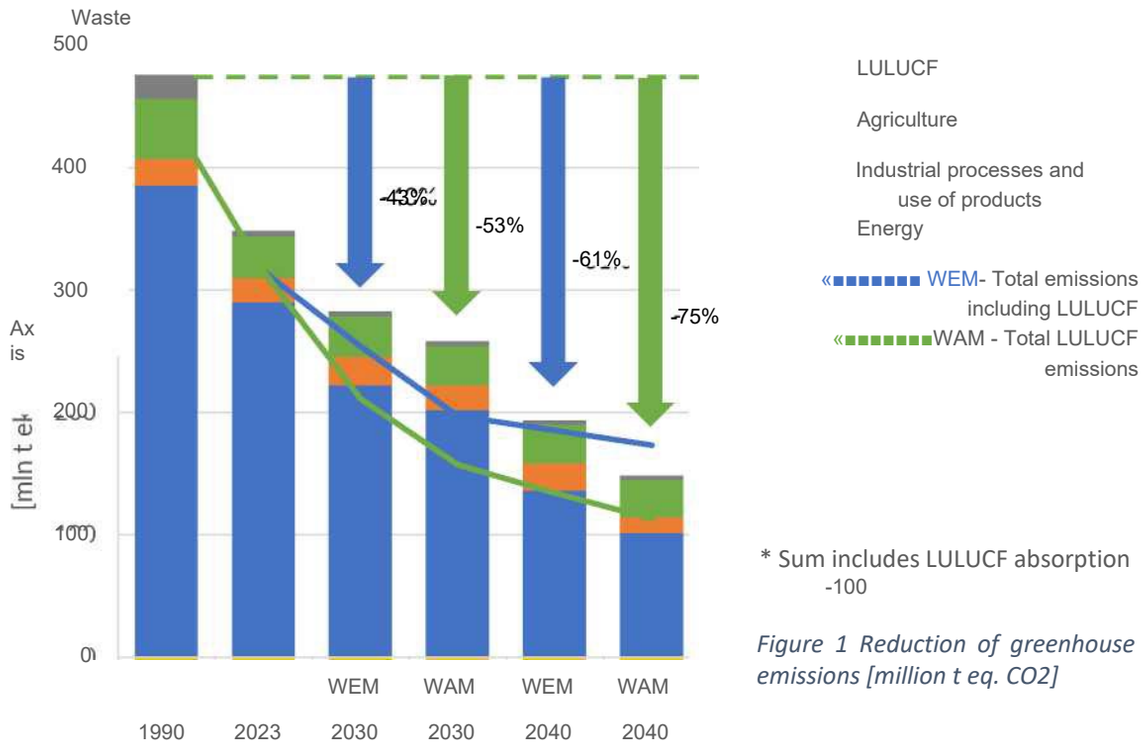


Figure 1 Reduction of greenhouse gas emissions [million t eq. CO2]

According to projections, in 2040 Poland could achieve economy-wide GHG emission reductions (including LULUCF removals) for the WEM scenario by approx. 60,9%. (Up to OK. 174.8 million t eq. CO_2). In the case of the WAM scenario, this is a reduction of 74.8% (to the level of approx. 112.8 million t eq. CO_2)

9 The target was adopted by Regulation (EU) 2026/667 of the European Parliament and of the Council of 11 March 2026 amending Regulation (EU) 2021/1119 as regards establishing the Union's climate intermediate target for 2040, link

It is worth noting that by 2024, the reduction in national GHG emissions compared to 1990 was almost 31%. Therefore, the emission reductions of 52.7% by 2030 indicated as a result of the measures adopted in the WAM scenario are the result of a significant intensification of measures. The energy sector has the largest share in GHG emissions, but at the same time the largest reduction in GHG emissions will be achieved in this sector (by approx. 42.4% - 47.6% in 2030 compared to 1990, to approx. 221.7 - 201.9 million t eq. CO2). Projections for 2040 indicate the possibility of achieving emission reductions in the energy sector by approx. 64.6% - 73.7% (up to approx. 136.3 – 101.2 million tonnes eq. CO2). The main contribution will be made by the electricity and heat production sector. At the same time, projections indicate that reducing GHG emissions in other sectors is more difficult due to several factors. These difficulties are due to still limited knowledge or the lack of alternative solutions that can be implemented, as is evident, for example, in agriculture. In addition, the problem is the low level of use of innovation and the fact that the achieved emission reductions of individual processes do not translate into a reduction in the total level of emissions, as activity in sectors such as transport or industry is increasing.

Table 1. Projections of greenhouse gas emissions in 2030 and 2040 compared to 1990 and 2023 for the WAM and WEM scenarios [million tonnes eq. CO_2]

[million t eq. CO2]	199010	202311	2030		2030/1990		2040/1990	
			WEM	WAM	WEM	WAM	WEM	WAM
Energy	385,1	290,0	221,7	201,9	-42%	-48%	-65%	-74%
power plants and combined heat and power plants	186,9	110,9	72,6	62,2	-61%	-67%	-87%	-96%
heat plants	41,3	8,7	6,0	4,5	-85%	-89%	-94%	-95%
manufacturing industry	42,8	26,4	25,1	22,0	-41%	-49%	-56%	-66%
transportation	20,7	68,3	58,4	58,1	181%	180%	122%	117%
households	38,2	30,9	20,4	17,7	-46%	-54%	-65%	-83%
Fuel combustion in other sectors	26,1	24,2	21,4	19,9	-18%	-24%	-31%	-47%
Volatile emissions of fuels	29,2	20,6	17,8	17,6	-39%	-40%	-55%	-59%
Industrial processes and product use	22,0	19,6	23,7	20,3	8%	-8%	0%	-42%
Agriculture	49,3	34,3	33,1	32	-33%	-35%	-34%	-38%
LULUCF (absorption)	-28,3	-32,7	-28,8	-46,5	2%	64%	-31%	25%
Waste	19,1	4,2	3,6	3,6	-81%	-81%	-83%	-83%
Indirect CO2 emissions	0,3	0,4	0,4	0,4	56%	56%	51%	51%
Total emissions without LULUCF	475,7	348,5	282,5	258,2	-41%	-46%	-59%	-69%
Total emissions including LULUCF	**447,4**	**315,8**	**253,7**	**211,7**	**-43%**	**-53%**	**-61%**	**-75%**

The energy sector refers to the combustion of fuels in the energy, manufacturing, transport and other sectors and the volatile emissions from fuels (according to the IPCC methodology).

The breakdown for the 'energy' sector in the table refers to the following categories: power plants and combined heat and power plants – 1.A.1.a.ii; heat plants: 1.A.1.a.iii; manufacturing industry – 1.A.2; transport – 1.A.3; households – 1.A.4.b; combustion of fuels in other sectors, i.e. refineries, 1.A.1.b; other energy industries – 1.A.1.c; trade, services, institutions – 1.A.4.a, agriculture, forestry, fisheries – 1.A.1.c.

The sector 'industrial processes and product use' includes emissions associated with the production processes of mineral products, in the chemical industry, in the production of metals. Emissions in this category include emissions from processes, but not emissions from the combustion of fuels for energy production.

10 The data comes from the notification of the GHG PL emission inventory from 2024: https://unfccc.int/ghg-inventories-annex-i-parties/2024

11 The data comes from the notification of the GHG PL emission inventory from 2025: https://unfccc.int/ghg-inventories-annex-i-parties/2025

POLICY

Decarbonisation **efforts in all sectors of the economy** will contribute to this objective, while preserving energy and food security and rationally investing resources for society and economic operators. Land use and forestry (LULUCF) removals will also be relevant, and in the more distant future, *direct air capture with capture and storage* (DACCS) solutions may also be relevant. Carbon capture and storage (CCS) and carbon capture, utilization and storage (CCUS) technologies can also play an important role.

The above-mentioned issues are detailed by the policies and actions indicated in the next sectoral objectives.

ACTIONS IB

The actions identified in the next specific objectives for the sectors concerned will contribute to the achievement of the general objective.

Cell 1.1.2. Limitation: \A/greenhouse gas emission control in sectorclh non-ETS (ESR) and estimation of reductions in sectorclh El 'S

EU policies to reduce GHG emissions vary from sector to sector. The energy (electricity and heating), energy-intensive industries, aviation and maritime transport sectors are covered by the European Emissions Trading System (ETS), accounting for around half of Poland's GHG emissions. **Emissions from the EU ETS sectors should be 62% lower in the EU than in 2005 (previously** 43%), including through the implementation *of Directive 2023/959* amending *Directive 2003/87/EC – the ET S Directive12.* It does not define targets for individual EU Member States. Poland does not specify a contribution in this respect, but gives an estimate of the value it can achieve as a contribution to the EU target.

Projections indicate that Poland may achieve emission reductions in sectors covered by EU ETS compared to 2005 levels13 for the WEM scenario up to 113 million tonnes eq. CO2 and up to 58.3 million t. eq. CO2 in 2040, for the WAM scenario
That's 102.8 million tons of eq. CO2 and 33 million t eq. CO2 reductions achieved in 2040.
[estimates are not objective]

Under EU Regulation 2023/857 (amending the ESR), the remaining sectors (buildings, road and maritime transport outside the ETS, agriculture, waste, small industry) covered by the effort sharing - so far called non-ETS - have an EU reduction target of 40% in 2030 compared to 2005 14 (29%).

12 Recital 39 of the ETS Directive – 2023/959.
13 GHG emissions in the ETS in 2005 covered a different range of installations and gases than in 2025. For the purposes of the NECP, a simplified approach with a baseline value for 2005 of 203.15 million tonnes of CO2eq was used when calculating the percentage of emission reductions.
14 Article 1 of the ESR.

Poland has a binding reduction target for non-ETS emissions of 17.7%compared to 2005. 15

According to projections for 2030, Poland can achieve GHG emission reductions in non-ETS sectors at the level of approx. 12.0% in the WEM scenario (up to approx. 169,4 million t eq. CO2) aiming at 19.4% (up to 155.1 million t eq. CO 2) according to the WAM scenario.

A reduction of **29.5% is forecast for 2040 (to approx. 135.6 million t eq. CO 2)** for the **WEM** scenario and by **40.4% (up to approx. 114.7 million t eq. CO 2)** for the **WAM** scenario . The achievement of the target in the non-ETS sectors will depend both on the effectiveness of actions, the availability of low-carbon solutions, as well as on social engagement.

In addition, the new provisions of the EU ETS Directive aim to achieve a new target for the buildings (households) and road transport sectors16 by including them in the new EU ETS-2 / BRT ETS (buildings, *road transport and additional sectors),* which has been postponed to 202 8. 17 This measure aims to reduce GHG emissions in these sectors across the EU by 43% compared to 2005 levels. No separate targets have been set for Member States.18 Thus, emission reductions in these sectors will continue to be integrated into the implementation of the Effort Sharing (ESR) and at the same time affect the achievement of a separate target, set only for these sectors. The use of fossil fuels in these sectors will be at the expense of CO2 allowances. This will provide an incentive to reduce their consumption, while the risks of price increases and poverty (including energy and transport) must be controlled. Technical, economic and social barriers may hamper fuel change.

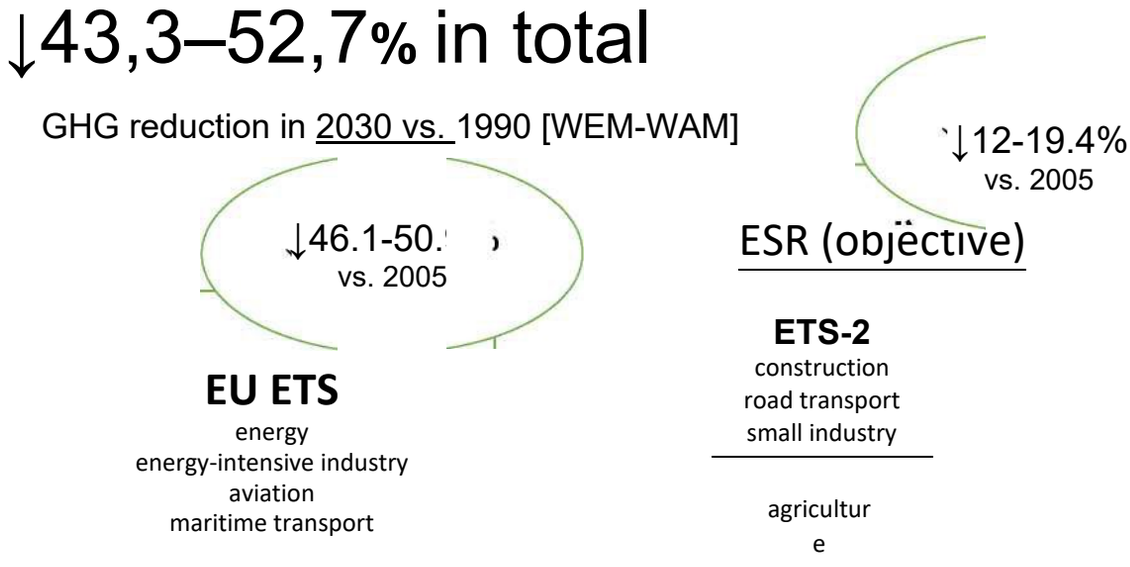


Figure 3. GHG reduction in 2030 vs. 1990 in WEM-WAM scenarios [%]

POLICY)

The reduction target for **non-ETS sectors** will be implemented on the basis of policies and actions in the different effort sharing areas. If necessary, Poland will make use of the flexibilities provided for in the ESR:

- LULUCF flexibility (Article 7);
- use of the adjustment mechanism – raising an additional pool (Art. 2);
- Transferring, Borrowing and Transferring AEAs *Annual Emission Allocation* (Article 5), i.e. national emission limits in non-ETS;
- use of the safety reserve (Article 11).

As regards Poland's contribution to the EU-wide GHG emission reduction targets **for the sectors covered by the EU ETS**, the participation of those sectors in the scheme is a key mechanism. The desire to avoid the costs of

15 Annex 1 of the ESR.

16 The ETS-2 is also intended to cover several additional, specific activities, e.g. heating of industrial facilities.

17 Intensive discussions in the EU on postponing the implementation of the EU ETS-2 took place in 2025.

18 Article 1(29) of the ETS Directive – insertion of Articles 30a to 30k in Directive 2003/87/EC.

purchasing emission allowances is an incentive to implement investments resulting in emission reductions. In addition, additional sector-specific targets will reduce emissions related to the overall reduction contribution of the EU ETS sectors.

The contribution to the EU-wide target **in the road transport and heating of buildings sectors** – **covered by the EU ETS-2** as of 2028 – will be achieved through the development of production of affordable clean technologies and publicly funded programmes supporting technological modernisation in these sectors. The incentive to reduce GHG emissions in these sectors also stems from the need to achieve other climate and energy objectives.

The above-mentioned issues are detailed in the description of the policies and actions identified in the subsequent sectoral objectives.

ACTIONS[IB]

The actions identified in the next specific objectives for the relevant sectors will contribute to the achievement of the general objective.

Cell 1.1.3. Increased share of RES vv final energy consumption ii Total gross (general objective)

Directive 2018/2001 (RED II) provided that the share of RES in gross final energy consumption would be 32% in 203019, and each Member State was to make its national contribution to that target. In the 2019 NECP, Poland declared its contribution to the EU target by reaching a share of 21-23% of RES in 2030.

The EU's ambitions have been revised as part of the *Fit for 55 regulatory package.* The first proposal indicated a target of 40%, and ultimately *Directive 2023/2413 (RED III)* set a **target for the share of RES in gross final energy consumption in the EU of 42.5% in 203020,** with the additional contribution of *the RePowerEU* to increasing the share of RES by an additional 2.5 percentage points. For this reason, **the EU will aim for 45%** of RES in final energy consumption in 2030. Again, no individual targets have been indicated

19 Article 3 of RED II.
20 Article 1(2)(a) RED III.

for Member States, but *the Regulatory Impact Assessment and* 21for the RED III project contain an indicative level for Poland of 31-32% of the share of RES in gross final energy consumption (calculations made at the stage of the EU target proposal – 40%).

WEM scenario points to 2030 target of 30% RES share in final consumption gross energy. In the WAM scenario, this share could increase to 32% in 2030.

Forecasts for the WEM scenario indicate in 2040 a 44% share of RES in gross final energy consumption. However, in the WAM scenario, this value may increase to up to 52% in 2040.

The revision of the national 2030 target compared to the 2019 NECP is possible thanks to the development of RES in recent years (in particular in the electricity sector) and the popularisation of distributed energy production in prosumer installations. At the same time, given that the share of RES in gross final energy consumption was 17.7% in 2024, achieving the new 2030 target – almost doubling the share – will require additional efforts and actions to be implemented in a determined and consistent manner.

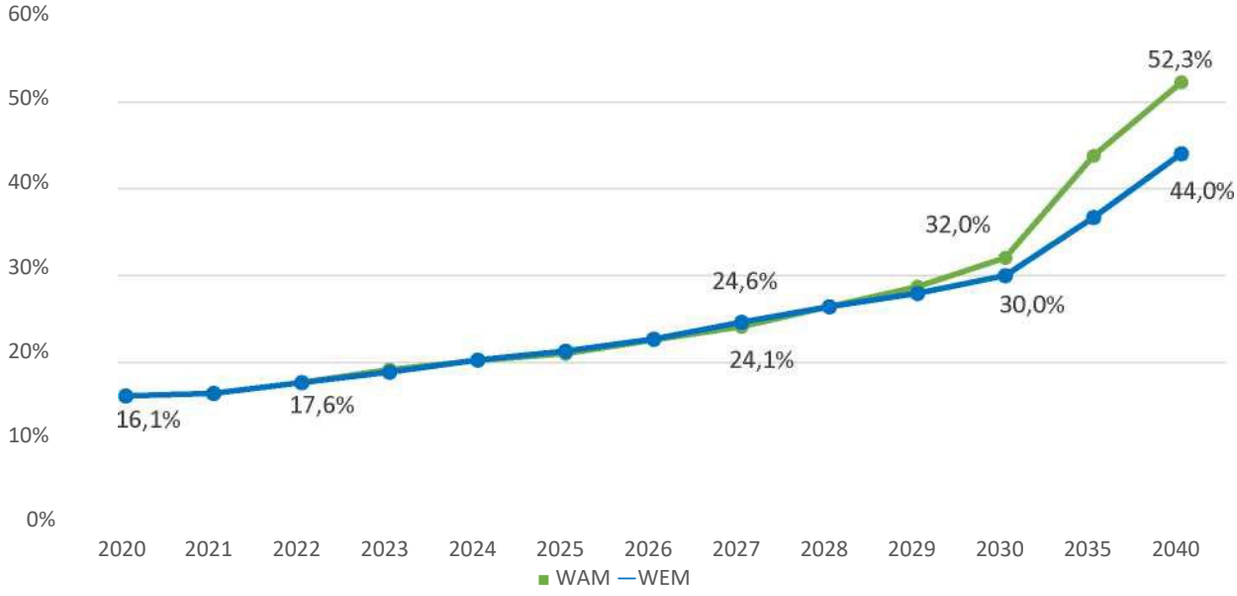


Figure 2. RES share in gross final energy consumption in WEM and WAM scenarios

21 *Impact Assessment Report Accompanying the Proposal for a Directive of the European Parliament and the Council amending Directive (EU) 2018/2001 of the European Parliament and of the Council, Regulation (EU) 2018/1999 of the European Parliament and of the Council and Directive 98/70/EC of the European Parliament and of the Council as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/652*, Table 11, link

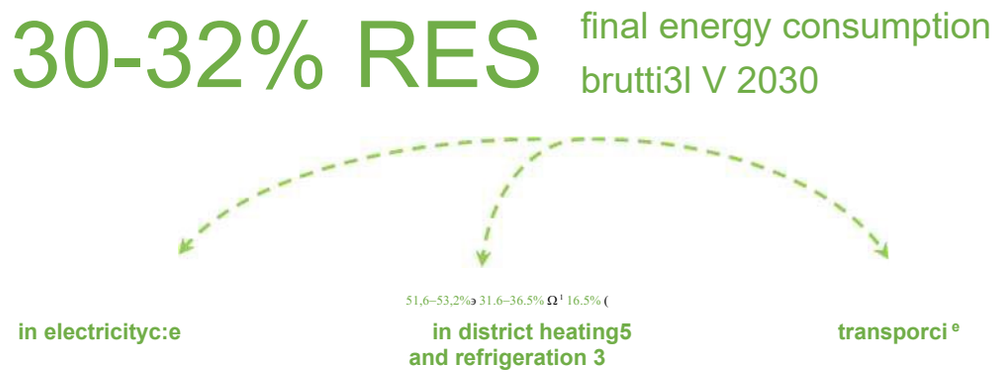


Figure 4. RES consumption in sectors and final energy consumption

The largest amount of energy is used for heating purposes, which is why the share of each percentage point of RES in electricity and transport in absolute terms is a lower contribution to the overall target in the perspective of 2030. This trend will change in the next decade due to the increased importance of electrification of heating and transport.

Forecasts indicate that the fastest changes will take place in the electricity sector, in which the share of RES in 2030 can reach **51.6% (8.4 Mtoe) and 65.6% (13.2 Mtoe) in the WEM scenario in 2040, while in the WAM scenario 53.2% (8.6 Mtoe) and 68.9% (14.9 Mtoe) in 2040 .**

The share of RES in heating and cooling can be **31.6% (10.1 Mtoe) and 43.5% (12.4 Mtoe) in 2040 under the WEM scenario,** while **36.5% (10.9 Mtoe) and 56.7% (14.2 Mtoe) in 2040 under the WAM scenario.**

In transport, the share of RES in the WEM scenario will be 16.5% (2.5 Mtoe) in 2030 and 32.2% (3.5 Mtoe) in 2040, while in the WAM scenario it will be 16.5% (2.5 Mtoe) and 44.8%(4.2 Mtoe) in 2040. 22

In addition, in line with the RED III Directive, Poland will aim for innovative renewable energy technologies to account for at least 5% of newly installed renewable energy capacity by 2030. 23

Taking into account the progress made so far in the development of RES, the commitments for 2030 - both EU and national - should be considered ambitious. Each sector has different characteristics and challenges. A feature common to all areas in terms of increased greening is the dependence on technological progress – both in terms of currently known ways of generating energy and solutions accompanying RES (including e.g. balancing technologies, energy storage, demand elasticity) and in completely new technologies. It is estimated that the transport target will be the most difficult to achieve.

It should be stressed that renewable energy sources are an essential tool for decarbonising and reducing electricity costs.

Detailed projections of RES consumption in gross final consumption of energy and by sector can be found in Annex 1 and Annex 2.

POLICY)X

The development of renewable energy sources is one of the main tools for the decarbonisation of the economy. The priority in this area is not only to directly increase the use of the most popular technologies (in particular wind,

22 Total RES consumption in gross final energy consumption can be approx. 20.7 Mtoe (WEM scenario) or 21.8 Mtoe (WAM scenario) in 2030, and the total final energy consumption based on which the RES share is determined may amount to approx. 66 Mtoe and 64.4 Mtoe for WEM and WAM. As the relevant multipliers are used to calculate the share in the subsectors, the sum of the values in the text exceeds the total RES consumption values given.

23 In accordance with Art. 2 pt. 14b RED III 'innovative renewable energy technology' means a renewable energy technology that improves, at least in one respect, state-of-the-art comparable renewable energy technologies or enables the use of a non-fully commercialised or clearly risky renewable energy technology.

solar, etc.), the use of heat pumps and the development of electromobility (road and rail), but above all to ensure the technical possibilities of RES growth – from the adaptation of energy transmission and distribution infrastructure, the development of stable and controllable reserve sources, the development of generation and demand flexibility, through the development of energy storage to the development of alternative fuels infrastructure.

The above-mentioned issues are detailed through the policies and actions indicated in the sectoral objectives.

HEADINGS)X

The actions identified in the next sectoral objectives will contribute to the achievement of the general objective.

Obszair 1.2. Decarbonization and Development of ■ OZI by Sectoirs

As indicated in the description of the overall emission reduction target, low-carbon efforts in all sectors of the economy must contribute to its achievement. This section sets out a target for GHG emission reductions in non-ETS sectors and projections for emission reductions in non-ETS sectors, while this section outlines how the low-carbon transition of sectors will be pursued:

- electricity, • industry,
- district heating, • Agriculture.
- transport,

Cell 1.2.1. Reduction of GHG emissions in the power utilities sector!m, including the development of E

The Polish power sector has historically been based on coal-fired power plants, due to raw material access and political decisions of the last century. Therefore, our country's starting point for decarbonisation was difficult compared to other EU Member States, also given the limited economic opportunities.

Over the last 10 years, the national electricity system (NPS) has undergone a rapid change in the structure of installed capacity and electricity production. In the years 2020-2025, the installed capacity in the PPS increased by more than half from approx. 47 GW is OK. 75 GW, mainly contributed by: development of RES and gas capacities. Coal-fired power plants have the biggest impact on the level of greenhouse gas emissions and the emission of electricity generation, especially those in the weakest technical condition. In previous years, many investments have been made to reduce the environmental impact of older coal units. Recent implemented coal blocks are characterized by lower emissions, higher efficiency and flexibility of generation than older units. New renewables-based capacities – wind and solar power plants – have so far played a key role in decarbonisation, and due to their high dependence on weather conditions, investments in disposable capacities were also necessary. During this period, the construction of the first gas-fired power plants, which are lower in emissions than coal units, was initiated and completed, so the further development of this segment will be a 'bridge' to the transition to a zero-emission manufacturing sector.

The WEM scenario points to the possibility of achieving 54% emission reductions by 2030 in the electricity sector. In the WAM scenario, the reduction can be achieved respectively 61% in 2030 (compared to 2005)
[estimates are not objective]

Forecasts for the WEM scenario indicate a potential reduction of 84% in the electricity sector in 2040. However, in the WAM scenario in 2040, this value may increase up to 95%.

The development of RES and energy storage will contribute to such a deep decarbonisation of electricity generation in the perspective of 2030, and after 2035 also nuclear energy. In the long run, the popularisation of CCS (carbon capture and storage) and CCU (carbon capture and utilization) technologies can also play a role in decarbonisation. The potential of this technology applies to both fossil fuel power plants, biomass and biomethane units (bio-CCS or BECCS, bioenergy with carbon capture and storage), but the greatest potential for the use of CCS/CCU is perceived in industry, especially minerals.

Energy storage plays a key role in the development of renewable energy sources, as it allows for effective management of the volatility and instability of their production. Solar and wind energy depend on weather conditions, time of day and year, which means that such sources do not always produce energy when it is most needed. Storage systems, such as batteries, thermal storage or hydrogen, allow the accumulation of surplus green energy during periods of high production and its use in moments of increased demand or low generation. These solutions improve the flexibility of the power system and ensure its integration with the heating sector. Energy storage will have a positive impact on ensuring continuity of supply, increasing the reliability of the energy system and integrating more RES, reducing the risk of grid congestion.

RED III and the former RED II **do not indicate obligations for Member States or EU targets to achieve a certain share of RES in electricity consumption**. However, the greening of the sector takes place in a more dynamic way than in other sectors, among others due to the maturity of technology, progressive reduction of technological costs or simpler integration with existing infrastructure. Power increments are occurring faster in this sector than in heating or transport.

The development of RES in electricity is a global trend, also in Poland there was an intensive increase in this capacity - in the years 2015-2025 there was an increase from approx. 7.1 GW to over 37.8 GW24, which represented the majority of the newly installed capacity in the PPS. This is due to the growing popularity of solar

Statistical 24 *information on electricity. Monthly Bulletin – December 2025*, No 12 (384), ARE S.A. on behalf of the Minister for Energy and the President of ERO.

and wind energy, although the increase in the share of these sources in energy production is becoming slower, due to their dependence on weather conditions. Biomass, biogas and, in the future, biomethane power plants also play a complementary role. Units with a total rated thermal input above 2 MW for gaseous biomass fuels and above 20 MW (and then 7,5 MW after RED III implementation) for solid biomass fuels are required to demonstrate that the biomass they use **meets the sustainability criteria**. The role of disposable gas units supplied - with time also complementary - with biomethane introduced into the gas network will increase. Gas capacity will support the electricity system, where the dominant role will be played by RES depending on weather conditions (the issue of flexibility of the electricity system). Poland does not have significant hydrological potential to increase the role of flow-through hydropower plants. However, water energy can be used in pumped storage plants (which are not counted as RES), supporting the need to regulate the system and at the same time constituting energy storage.

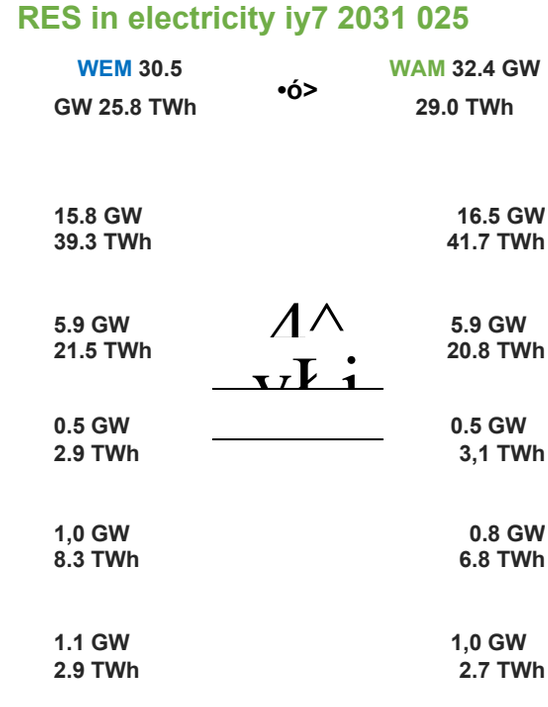
The projections accompanying the 2019 NECP indicated that the share of RES in electricity production could reach approx. 32% in 2030 and close to 40% in 2040. Thanks to the dynamic development of photovoltaics and onshore wind energy, as well as support schemes and investments in linear infrastructure, the previously projected target for 2030 was achieved five years in advance. The current assessment of the potential for RES development allows for increased ambition.

The WEM scenario indicates the possibility of reaching 51.6% RES share in 2030 final energy consumption in electricity. In the WAM scenario, participation may beincrease to 53.2% in 2030, respectively.

[estimates are not objective]

Forecasts for the WEM scenario indicate in 2040 the possibility of reaching 65.6% of the share of RES in final energy consumption in electricity. However, in the WAM scenario in 2040, this value may increase up to 68.9%.

According to the WAM scenario, in the perspective of 2030 and 2040, **solar power plants** will contribute the most to the increase in RES generation capacity (with an installed capacity of approx. **32.4 GW** in 2030 and **43.0 GW** in 2040), followed by **onshore wind power plants (with** an installed capacity of approx. **16.5 GW** in 2030 **and 28.8 GW** in 2040) and offshore wind (approx. **5.9 GW** in 2030 and **17.9 GW** in 2040), which will operate in the PPS from approx. 2026. Under the WEM scenario, **solar capacity will be 30.5 GW** in 2030 and **48.9 GW** in 2040, onshore wind capacity **will be 15.8 GW** in 2030, and **20.4 GW** in 2040, while offshore wind capacity will be **5.93 GW** and **11.8 GW** in 2030 and 2040 respectively. **Biogas sources will play a complementary role in the RES mix in electricity (approx. 0.5 GW** in 2030 and approx. **0,6 GW** in 2040; According to the WEM scenario, okay. **0.5 GW** in 2030



[25] Items describe in turn the values for: solar energy, onshore wind energy, offshore wind energy, biogas (excluding biomethane), biomass and flow hydropower.

and okay. **0.7 GW** in 2040), **biomass (according** to the WAM scenario approx. **0.8 GW** in 2030 and similarly in 2040; According to the WEM scenario, okay. **1.0 GW** in 2030 and approx. **1.2 GW** in 2040) and **hydropower (according to** the WAM scenario approx. **1.0 GW** in 2030 and approx. **1.2 GW** in 2040; According to the WEM scenario, okay. **1.1 GW** in 2030 and approx. **1.2 GW** in 2040).

At the same time, it is pointed out that the development of the onshore wind segment may accelerate compared

to previous forecasts and potentially reach up to **35** GW in 2040. Any increase in the capacity installed in onshore wind farms will depend on the actual pace of market development, technological progress and the effects of implementing public policies. In the event of an increase in the dynamics of wind power development, the changes will be reflected in future strategic documents.

In the future, biomethane and renewable hydrogen will be able to act as a peak fuel, used during periods of highest electricity demand. However, in the initial period, renewable hydrogen, including RFNBO, should be used mainly for industrial purposes.

The growing role of reducing the carbon footprint, popularization of distributed energy production in prosumer installations, energy clusters, cooperatives and energy communities, or near industrial plants will cause that **RES sources will develop largely independently of public aid.**

The graph below shows the trajectory of the increase in the share of RES in electricity. It is worth emphasizing that in the perspective of 2030 and 2040, the level of installed RES capacity takes into account the fact that some RES installations will be exploited and new ones will take their place. *For more details, including the values expressed in ktoe, see Annexes 1 and 2, Chapters 1.2 and 3.7.*

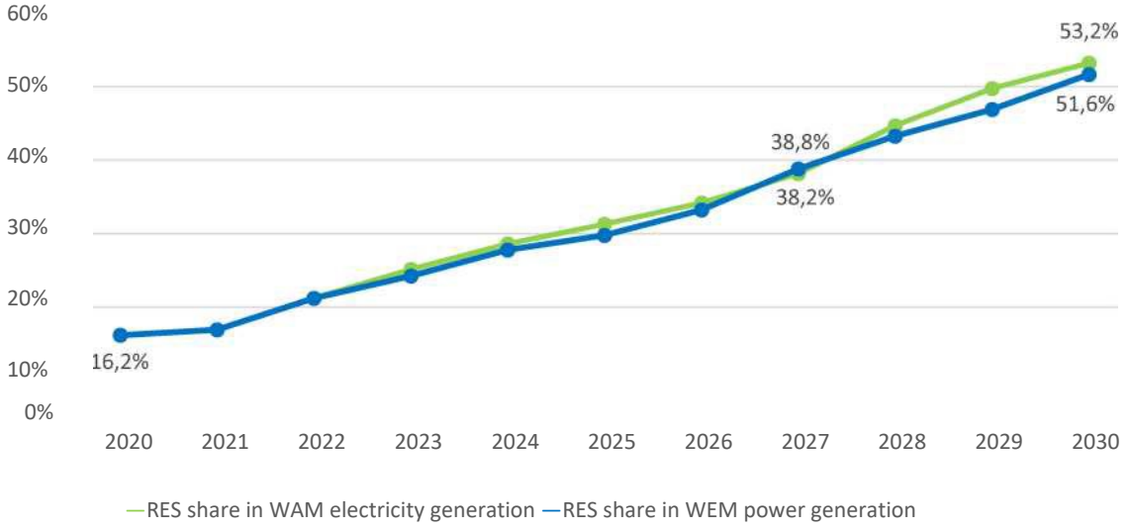


Figure 3. Share of RES in energy consumption in electricity by 2030

Detailed data on the structure of power and production of electricity from RES are presented later in the document.

POLICY)

In the following years, the depleted blocks based on hard coal and lignite will be gradually abandoned. The pace and order of withdrawals will depend both on **the adequacy of power** in the electricity system and on ensuring a stable supply of electricity to final customers. The planning of this process should take into account the usefulness of individual power plants in a given location (in terms of balancing), as well as their technical condition and compliance with emission standards.

Emissions of the electricity sector will also be reduced by partial replacement of coal-fired units by lower-emission **gas units.** From a forward-looking perspective, biomethane and, in some cases, hydrogen (following appropriate technological modernisation) could be used, with hydrogen initially being used in industry and transport and then in electricity. Subsequently, the emissions of the power sector will decrease as a result of the increase in low- and zero-emission capacity, in particular RES. There will be a shift in the architecture of the national electricity system in a distributed direction, while the role of different types of energy communities will increase. In the longer term, **nuclear power (large-scale** and small-scale) – to be **deployed after 2035 – will play an important role in replacing coal-fired units for capacity adequacy.**

In 2030, **renewable energy sources** will account for more than half of electricity production. Onshore wind,

photovoltaics and offshore wind are expected to play a special role among RES, complemented by stable energy sources such as biogas plants. In the long term, RES and nuclear energy will be the main tools for reducing emissions in this subsector, as in 2040 they may account for the total production of 81% (in the WEM scenario) or 85% (in the WAM scenario) of electricity in the country.

In the coming years, the existing systems of direct **support for the development of RES in the electricity sector will be maintained.** At the same time, it is assumed that **there will be a significant increase in the number of installations built outside support schemes,** including those connected directly to the recipient. **Support will be progressively shifted towards solutions that ensure a safe and economically efficient increase in RES**. Solutions ensuring high flexibility and availability will be rewarded.

In order to develop individual RES technologies:

- a package of solutions will be implemented resulting in the further efficient and sustainable development **of offshore wind energy** (adaptation of the legal framework to changing market realities, streamlining of procedures, including personnel training or the national supply chain of materials and services);
- harnessing the potential of onshore wind development will be enhanced by modifying the rules for shore-based **wind turbines;**
- a package of solutions supporting the development of **the use of biomethane** will be implemented (additional system of financial support for installations above 1 MW, improvement of conditions for integration with gas infrastructure);25
- the use of **solid biomass** in direct combustion will take into account sustainability criteria and the cascading principle of its use;
- obligations to use **photovoltaic installations on buildings** will be implemented , successively for individual types of new and existing buildings26. At the same time, the possibility of developing agrophotovoltaics and 27 the use of incentives to locate panels in post-industrial areas is envisaged.

In addition, as in other EU countries, it is assumed that the share of RES installations financed by electricity supply agreements between two parties to the so-called *power purchase agreement* (PPA) will increase.

Activities aimed at further development of RES will also focus on **information support,** which will be served in particular by the already existing National Contact Point for Renewable Energy. RES (RES NCP), and in the future also **the Support Centre for Energy Transition** (CWTE). The RES NCP is an information tool for investors and all those interested in investing in RES, while the CWTE will be of a broader nature. Among the planned system solutions for **the implementation of innovative solutions for accelerating investments in renewable energy,** one should distinguish the mapping of the potential of RES (in accordance with Article 15b of the RED III Directive), as well as **the implementation of areas of accelerated development of energy from renewable sources, the so-called renewable energy** sources. OPR O28. These areas are demarcated on surfaces and areas that raise no environmental concerns, so that the time for issuing permits needed to start the investment is to be significantly reduced (not to exceed 12 months, except for offshore wind farms, for which it is to be 24 months).

The development of RES depends not only on investments in new generation capacity, but increasingly on indirect actions enabling the functioning of RES in the PPS. Support will be more intensively addressed to **technologies ensuring integration and safe growth** of the cheapest and most efficient RES. It will depend on the nature of the energy demand in the geographical and technological area concerned and will aim to increase the efficiency of the funds spent (i.e. for technologies other than those reaching economic maturity). The priority is to support the modernisation and expansion of distribution and transmission networks (including smart solutions), various

25 Due to the need to create an entirely new market and the strategic importance of biomethane production, this topic is detailed in Section 3.4.

26 In accordance with Article 10 *of Directive 2024/1275 on the energy performance of buildings*.

27 Taking into account the protection against the impact of RES installations on the quality of agricultural soils and the safety of agricultural production.

28 As part of the mapping of the potential of RES, in the first stage, potential maps for photovoltaics and onshore wind energy were developed and published. They have been made available in digital form (GIS) and integrated with the National Geoportal and the Geoportal of the Ministry of Climate and Environment. The second stage of development (maps of biogas/biomethane potential, offshore wind energy, geothermal and heat pumps and hydropower) is currently under revision.

energy storage methods, demand-side management mechanisms and ensuring capacity adequacy and system flexibility, including through the development of dispatchable power plants based on decarbonised gases (renewable and low-carbon), i.e. biogas, biomethane, and in the future hydrogen and ammonia. Due to the underdevelopment of these solutions, natural gas-based units and, increasingly, coal-fired power plants will play **an important role in replenishing the electricity balance during the transition period.** At the same time, gas units - in some cases - will also be able to use the above-mentioned other gases.

In order to achieve deep decarbonisation, CO2 capture and storage technology – CCS and CO2 capture and utilisation – CCU can also be deployed. The deployment of these technologies will also target the capture of CO2 from sources other than fossil fuels (bio-CCS)29.

ACTIVITIES BX

- Action 1. Participation in the EU-ETS Emissions Trading System
- Action 2.Financial instrument – the Modernisation Fund
- Action 4.Financial instrument – Obligation to purchase energythe Electricity Manufactured in RES installations (with a specific power threshold)
- Action 5.Financial instrument – system of certificates of origin RES
- Action 6.Financial instrument – auction RES system
- Action 7. Financial instrument – Contracts for difference for electricity generation in offshore wind farms
- Action 8. Offshore wind energy development support package
- Action 9. Accelerating the development of onshore wind energy
- Action 10. Accelerating the development of photovoltaics

Action 11. Financial instrument – system of feed-in tariffs and market price subsidies o Action 12. Biomethane and biogas market development support package

- Action 13. Ensuring the functioning of renewables acceleration areas (OPRO)
- Action 14. Financial instrument – NFOŚiGW Priority Programme – 'My Current'
- Action 17. Development of the electricity and heat storage market
- Action 18. Development of citizen energy communities (OSE)

Action 19. Development and improvement of the functioning of energy cooperatives

- Action 20. Development of energy clusters

Action 21. Implementation of nuclear energy

- Action 22. Financial instrument – NFOŚiGW programme 'Electroenergetyka – Smart' energy infrastructure"
- Action 23. Measures to increase the flexibility of the electricity system in with regard to the generation of energy from RES and adaptation to the expected changes in the PPS
- Action 24. Intelligent energy management

Action 25. Development and modernisation of electricity transmission and distribution networks

- Action 72. Financial instrument - NFOŚiGW Rural Energy Programme

Cell 1.2.2. Reduction of GHG emissions from district heating, including RES

The transformation of heating and reduction of GHG emissions must be carried out at a pace corresponding to the economic, technological and social capabilities of Poland, using realistically available fuels and solutions. The

29 More about CCS in Objective 1.2.4. Reduction of GHG emissions in industry, as CCS/CCUS is likely to be applied more quickly in the industrial sector.

highest priority is to provide citizens with thermal comfort while keeping heating costs at a level acceptable to society.

Heating and cooling currently account for about half of energy consumption in both the EU and Poland. This covers a wide range of end-use applications and technologies in buildings, industry and district heating or cooling systems. Currently, the heating needs of households in Poland are largely covered by district heating (54.8%of all dwellings)30, the rest by individual installations. The main source of primary energy in both cases is hard coal.

In both the WEM and WAM scenarios, the transformation of domestic heating takes into account the need to gradually move away from carbon-intensive fuels towards low- and zero-carbon technologies. Coal, natural gas and biomass will be important elements of the fuel mix in this sector, playing an important role especially during the transition period. The WEM scenario maintains the use of coal in heating until 2040. However, the WAM scenario in the 1930s predicts a systematic decrease in the share of coal, maintaining the use of natural gas and a gradual increase in the importance of heat pumps, electric boilers and renewable gases, e.g. biomethane. In the long term, the importance of waste heat, recovered from industrial processes, municipal installations and the ICT sector, will increase. In the long term, nuclear fuel used in modern district heating systems will also provide a stable contribution to the security of heat supply.

Individual heating

In order to improve air quality and reduce costs in individual heating, it is advisable to gradually replace existing coal installations with modern solutions, such as heat pumps, especially those coupled to heat stores. In the case of multi-family buildings, it is possible to use high-efficiency heat pumps on a large scale, powered by electricity generated from RES, in particular locally in photovoltaic installations integrated with heat storage and possibly electricity storage, as well as using waste heat, e.g. from ventilation systems with heat recovery. Biomass will apply in areas with limited technological alternatives. This is particularly important in rural areas with very limited access to district heat and insufficient quality of gas and electricity infrastructure.

National and EU policies are directing the heating sector towards the use of low-carbon fuels and renewable energy sources. Under the *EPBD,* it is not possible to finance new individual installations based solely on fossil fuels, including natural gas, from 202531 onwards. In 2021, Poland set a target to phase out coal from individual household heating by 2030 in cities and by 2040 in rural areas. **32** Achieving the above objectives will require significant investments in the modernisation of buildings, the development of heating and electricity infrastructure and the provision of financial support to households, especially in areas with lower availability of low-carbon technologies.

With the change of heating source, it is most often necessary to thermomodernize the building in order to reduce the demand for heat and increase the energy efficiency of heating, ventilation and air-conditioning installations. In addition, climatic conditions in Poland are characterized by periods of low temperatures in winter periods, where solutions based solely on electric heating in buildings that are not thermally adapted can be a challenge both in terms of providing thermal comfort and costs incurred. New buildings are characterized by higher energy efficiency, so installing electric heating in them is economically and environmentally beneficial, especially when the building uses low-temperature heating systems (floor heating, wall heating).

District heating systems

However, a key challenge in the district heating sector is the transformation of **district heating systems in both** large and smaller cities and other administrative units, where the availability of funds and the possibility to raise them is often very limited due to ownership structure. Diversifying generation facilities, using low- and zero-emission heat sources and adapting them to local conditions while maintaining acceptable energy prices for final customers will be key in the transformation of this sector. The transition to low-carbon energy sources should include mechanisms to stabilise the costs of heat production and ensure competitive and accessible prices for households and businesses that are heat consumers. In district heating systems, high-efficiency cogeneration technologies, biomass technologies, electric boilers powered by renewable energy sources or heat pumps

30 *Household energy consumption in 2021 u,* GUS 2024, link.
31 The exception is for those investments that were selected before 2025 under *the Recovery and Resilience Facility*. The use of devices after this date will still be possible, but their purchase and installation will not be financially supported by the state.
32 In the NECP, this objective is indicated in the section on air quality.

integrated with a heat storage system will be used in various configurations, for which the lower source may be, for example, water from rivers and lakes, waste heat from industrial plants, data centers or wastewater. When analyzing the development of district heating systems, it is necessary to take into account the forecast dynamics of the increase in the share of heat from RES in comparison with the rate of increase in the share of RES in electricity generation.

The use of geothermal sources, solar collectors, biogas and waste heat33 depends on the local conditions of the system. In addition, efforts should be made to increase the use of waste heat from the cooling of commercial and service facilities, including shopping malls, office buildings and data centres, in district heating systems, thereby reducing the environmental impact of refrigeration and air-conditioning.

Sustainable biomass (SB) will also be an important fuel for the decarbonisation of district heating systems. In the future, district heating may also be supported **by technologies using a mixture of natural gas with biomethane or hydrogen ,** as well as solutions based on the use of pure biomethane or hydrogen as an energy source, with hydrogen in district heating potentially emerging in the longer term and with appropriate technological adaptations. In the case of economic and technological justification, during the transitional period solutions will be used to co-combust fossil and renewable raw materials.

Depending on the geological conditions, deep geothermal can play a role. Thermal waste treatment installations (also with CO2 capture) can also play a complementary role, following the waste hierarchy.

The aim is to ensure that by around 2040 all thermal needs
in the economy were covered by system heat
and low- and zero-emission individual sources.

Under the EU ETS, district heating installations covered by the scheme can apply for free allocation of emission allowances. According to the rules, the system covers fuel combustion installations with a total rated thermal input exceeding 20 MW. Directive 2023/959 introduced the possibility under the EU ETS to allocate an additional 30% of emission allowances for 2026-2030 to district heating installations. The condition for applying for the additional allocation is, inter alia, the establishment of *climate-neutrality plans* and the carrying out of investments (in accordance with that plan) leading to significant emission reductions by 2030 .34 Climate neutrality plans were developed and submitted in 2024 by district heating companies and operators, but modifications to them to adapt to current market, raw materials and infrastructure conditions are not excluded.

RES share in district heating

The RED III Directive has slightly modified the existing targets for the use of RES in heating and cooling. Each Member State is required to increase the share **of RES in this sector by at least 0.8 percentage points on average per year over the period 2021-2025 and 1.1 percentage points on average per year over the period 2026-2030**. EU countries should declare such an additional increase so that, taken together, the EU achieves an average increase of 1.8 percentage points at Union and35.

In 2020, the share of RES in heating and cooling in Poland was 22.1%36. Calculations based on the above-mentioned average annual increments indicate that Poland should reach indicative levels of 26.1% in 2025 and 31.6% in 2030. **Analyses show that, with appropriately dynamic measures, the 2030 target will be achieved in both the WEM and WAM scenarios**. However, in 2040, the share of RES in final energy consumption in heating

33 RED III defines waste heat and cold as: unavoidable heat or cold which is produced as a by-product in industrial or energy generating installations or in the services sector and which, without access to a district heating or cooling system, would remain unused, dissipated in air or water, where a cogeneration process is being or will be used or where cogeneration is not possible.
34 The detailed conditions necessary for compliance are set out in Article 22b para. 3 of the FAR Regulation (Commission Delegated Regulation 2019/331). By contrast, the details of the investment-based allocation adjustment itself are laid down in *Commission Implementing Regulation (EU) 2025/772 amending and correcting Implementing Regulation (EU) 2019/1842 laying down rules for the application of Directive 2003/87/EC of the European Parliament and of the Council as regards further arrangements for the adjustment of free allocation of emission allowances due to activity level changes*.
35 Article 23 of RED III.
36 In 2024, the share of RES in heating and cooling amounted to approx. 21,3%.

and cooling according to the WEM scenario will amount to approx. 43.5%, and in the WAM scenario approx. 56,7%.

The WEM scenario sets a target for 2030 for the share of RES in final energy consumption in heating and cooling at approx. 31,6%. According to the WAM scenario This share will be OK. 36,5%.

The RED III Directive also sets out commitments to **increase the share of RES and waste heat and cold in district heating and cooling by around 2.2 percentage points annually on average over the** period 2021-203 037. Taking into account national circumstances, this target will be very difficult to achieve, as it is expected that the increase in RES may take place at a faster pace in individual heating. The graph below shows the total share of RES in energy consumption in heating and cooling up to 2030.

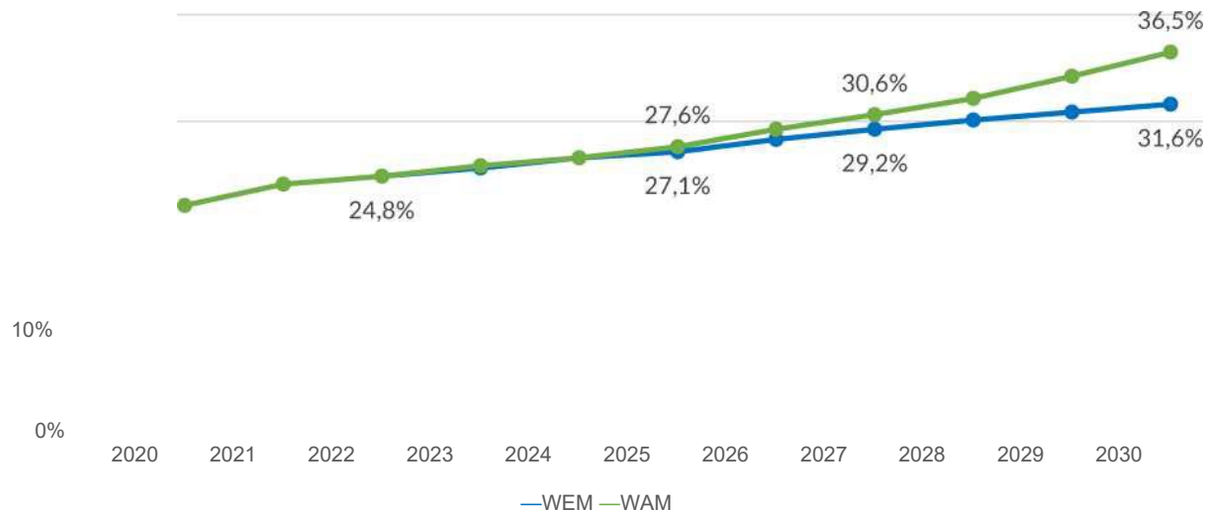


Figure 4. Share of RES in energy consumption in heating and cooling by 2030 [%]

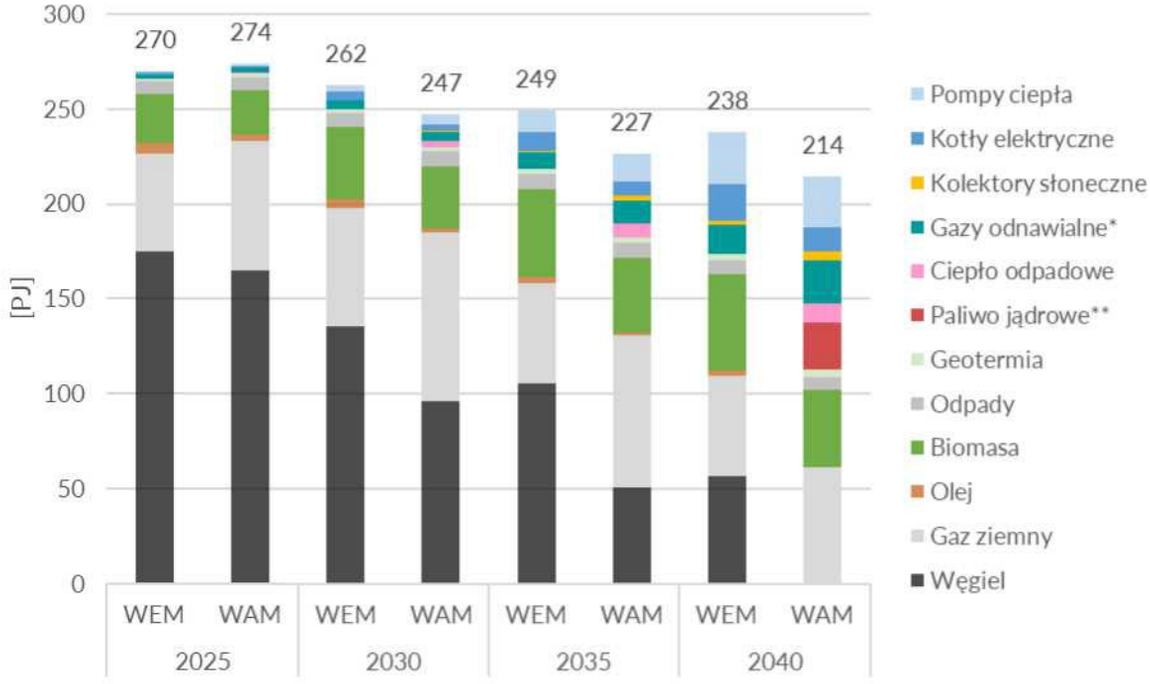
Structures of heat production

The graph below shows the structure of system heat production up to 2040. *More details in ktoe values can be found in Annexes 1 and 2.*

In the WEM scenario in 2040, the fuel structure in heat production will largely take into account the use of coal, natural gas and biomass. In the field of electrification, heat pumps and electric boilers will be used. As a result, the fuel mix will be based on both

37 Article 24 *of Directive (EU) 2023/2413 (RED III), amending Directive (EU) 2018/2001 (RED II), OJ Ooh, ooh, ooh. EU L 328 of 21.12.2018, as amended .*

conventional technologies and developing low-carbon technologies. However, in the WAM scenario, heat in 2040 will be produced from RES sources, such as biomass and heat pumps. Electric boilers powered mainly by surplus green electricity from the PPS will also be used. In the perspective of 2040, waste heat from nuclear fuel will be used, the share of waste heat from industrial processes and decarbonised gases will increase. Natural gas will continue to play a complementary role.



** Biogas, biomethane, renewable hydrogen*
*** Waste heat from nuclear fuel*

Figure 5. Production of system heat by fuel [PJ]

RES share in iu enerc|ii końcov re j consumption in buildings

The RED III also points to the need to set an indicative target for the share of RES in final energy consumption in buildings in 2030, with a value of 49%set at EU level.38

WEM scenario projections indicate that Poland could reach 37.9%
RES share of energy consumption in buildings in 2030. 39 In the scenario
Your participation will be OK. 44,2%.

In 2040, the projected share of RES in energy consumption in buildings will amount to approx. 57.7% in the WEM scenario and approx. 78.2% in the WAM scenario.

Most energy in buildings is used for heating and cooling purposes (in addition to electricity), which is why this subsection indicates the above goal. In the perspective of 2040, there will be a significant diversification of heat generation sources. Solutions supporting cross-sectoral integration will play an increasingly important role, such as electric boilers, heat pumps powered by electricity from the national electricity system (derived from renewable energy sources) and solar collectors. The use of RES in buildings connected to the district heating network will also increase due to the greening of district heating systems. The development of hybrid nodes is also expected,

38 Article 15a of RED III.
39 The EC Communication published on 15 April 2025 on the heating and cooling aspects referred to in Articles 15a, 2a, 23 and 24 of Directive (EU) 2018/2001 on the promotion of the use of energy from renewable sources, as amended by Directive (EU) 2023/2413 (C/2025/2238) (link) partly refers to how the RES target in buildings is calculated. Annex C indicates, among others, the indicative share of energy from renewable sources in the construction sector for Poland at the level of 43.4% in 2030.

equipped with heat storages cooperating both by the district heating system and local sources, such as heat pumps or solar collectors.

POLICY)

Reducing **heat demand will be a key element of the policy on covering heat needs and decarbonisation.** Activities in this area will be implemented through the widespread thermo-modernisation of existing buildings, including the modernisation of heating, ventilation and air-conditioning installations. An important addition will be the setting of high technical requirements for new buildings, which will result in significantly lower rates of utility energy demand in new construction than in previous years. The energy renovation policy will focus not only on residential buildings, but also on public buildings, especially for education.

The National Building Renovation Plan (NRRP) will be a strategic document (replacing the Long-Term Building Renovation Strategy) that will outline actions to ensure the renovation of the national building stock. The NRPB will also identify and develop in detail all possible actions that will allow for a real increase in the share of RES in the construction sector, taking into account the role of energy communities. The NRPB will set out mechanisms to monitor progress towards the RES share of final energy consumption in buildings target (use of the Central Register of Energy Performance of Buildings).

Heat generators) systems re

Actions taken in district heating are aimed at reducing the use of fossil fuels, while developing existing and new district heating networks. The aim is to maximise heat production from low- and zero-emission sources.

The financial support will target the following technologies, with different levels of RES and electricity use depending on the size of the system:

- olarge-scale heat pumps,
- olarge-scale electric boilers,
- olarge-scale heat storage facilities,
- o RES generation capacity for heat generation: wind power plants, PV plants, solar collectors, geothermal installations, biogas plants and biomethane plants,
- o biomass sources,

peak sources for natural gas, biogas and biomethane,

high-efficiency cogeneration using gaseous fuels,

waste heat technologies,

- o modernisation of the district heating network, including digitisation of the network,

connection to the electricity, gas and control systems,

in the longer term, hydrogen production and storage systems and hydrogen turbines, and network management and control systems.

In the sector policy area, it is planned that district heating systems will gradually reduce the temperature parameters in district heating networks, which will facilitate the use of renewable energy sources and the management of waste heat. Raising the temperature of the heating medium, also for the preparation of domestic hot water, can take place directly in the building or in a small distance. The above actions will require the installation of appropriate district heating nodes and modernization in buildings through the use of:

heat pumps,

about electric boilers,

storage of heat, cold and electricity,

about changing heating systems to low-temperature underfloor heating and radiators with fans or coil units, or capillary mats, building automation and power connections.

These measures will make it possible **to gradually increase the number of efficient district heating systems***,*

although the progressive requirements of the EED for the definition of such systems may create a risk of loss of status, in particular for large district heating systems. It is important that the planning of support programmes takes into account technological neutrality.

Support for the development of RES heat use is also provided **in areas of accelerated RES development,** where RES installations and associated infrastructure (network and storage) will eventually be built within shorter administrative deadlines. The wider use of sector *coupling*– in a two-way approach – is also important in achieving the NECP objectives.

In connection with the reform of the EU ETS, Polish district heating will receive an additional 30% of free CO_2 emission allowances, which should be used as funds to accelerate decarbonisation by 2030. In order to account **for the funds obtained, changes will be made to the provisions defining the rules for shaping heat tariffs and the conditions for using the funds generated as a result of free allocation to finance investments** in order to strive for climate neutrality.

An important element of the policy will be changes in regulations to reduce barriers to the use of RES in heating, preferential conditions for the development of district heating systems using RES, as well as emphasis on the construction of both daily and seasonal heat storage in various technologies, in order to fully integrate - weather-dependent - renewable energy sources in district heating systems.

The current state of the heating sector and the delay in its modernisation mean that the energy transformation of heating is a considerable challenge, both organizational and financial. In order to meet the needs of obtaining funds, a **financial plan for the transformation of district heating will be developed,** which is to provide a financing model, coordinated and based on cooperation between various institutions. The aim is to make the catalogue of support programmes as simple as possible and thus facilitate decision-making on the direction of transformation. It is expected that the distribution of aid schemes may depend on the size of district heating systems and allow for a comprehensive transformation using various available solutions (more in the description: Action 27)40.

Heating systems□) individual

Poland prioritises the withdrawal of coal from individual heating of households by no later than 2040 (together with the increasing thermal modernisation of buildings), aimed in particular at improving air quality. Decarbonisation of individual heating will take place to some extent through connection to energy-efficient district heating systems

and popularisation of the use of heat pumps coupled to RES installations and various types of energy storage. The use of heat pumps will be particularly popular in new buildings, and thermal modernization of existing buildings should be carried out in such a way as to ensure thermal comfort. **Biomass and natural gas will continue to be used, although efforts will be made to make other solutions more attractive to consumers**. It is worth emphasizing that the increase in the use of RES in individual district heating systems will also be an incentive to connect new buildings to the network.

ACTIVITIES b

With regard to decarbonisation in district heating:

- Action 1. Participation in the EU-ETS Emissions Trading System
- Action 2. Financial instrument – Modernisation Fund

Action 16. Financial instrument - NFOŚiGW Priority Programme - "Polska Geotermia Plus"

Action 17. Development of the electricity and heat storage market

Action 26. Strengthening the efficiency of the use of funds from free allowances to reduce greenhouse gas emissions in heating

40 During the preparation period of the NECP, the support programmes for district heating are divided according to different criteria and types of projects. There are, for example, programs supporting cogeneration, RES, geothermal (separately) or digitization of the network.

Action 27. Financial instrument - Transformation programme for district heating
Action 28. Development of Power to Heat technology and heat storage in Poland
- Action 29. Development of the market for domestic technologies and solutions supporting the electrification of heating and zero-emission technologies
- Action 30. Accelerating the investment process in district heating

Action 31. Support for high-efficiency cogeneration
Action 32. Financial instrument - Priority Programme of the National Fund for Environmental Protection and Water Management (NFOŚiGW) - "Making thermal waters available in Poland"
Action 33. Financial plan for the transformation of district heating

With regard to decarbonisation in district heating:

- Action 14. Financial instrument – NFOŚiGW Priority Programme – 'My Current'
- Action 15. Financial instrument – NFOŚiGW Priority Programme – Energy Plus
- Action 29. Development of the market for domestic technologies and solutions supporting the electrification of heating and zero-emission technologies
- Action 106. Instrument Financial: NFOŚiGW Priority Programme – 'My heat'
- Action 107. Instrument Financial: Priority Programme of the National Fund for Environmental Protection and Water Management – 'Clean Air'
- Action 108. Instrument Financial: Tax credit for expenditure incurred on thermomodernization of single-family residential buildings (thermomodernization relief)
- Action 109. **Financial** instrument – TERMO programme, support for energy efficiency improvements in multi-apartment buildings

Cell 1.2.3. Reducing GHG emissions from the transpoirt, including the development of RES and electromobility :i

The transport sector currently uses mainly petroleum-derived fuels. So far, the reduction of emissions in transport is carried out primarily with the use of first-generation biocomponents, i.e. esters methyl acids fat and bioethanol produced from food or feed crops. They are typically blended with liquid conventional fuels. However, their wider application is limited by RED III to the limit set by the level of consumption achieved in 2020 (with the possibility to increase by 1 percentage point). Under national conditions, the limit for first-generation biocomponents is up to 6.1% in final energy consumption in the transport sector.

Due to the type of transport distinguishes
car/road, railway, air, water
inland, maritime. The division is also carried out
whether it is of a passenger nature
Or the commodity. Types of vehicles are also defined.

The decarbonisation of the transport sector requires the implementation of other ways to decarbonise it. An important role in achieving the intended goals is attributed to electricity from RES used in transport, as well as advanced biocomponents, the so-called renewable energy sources. Second generation e.g. biomethane in liquefied and compressed form, renewable fuels of non-biological origin and recycled fuels.

Emission reduction opportunities vary depending on the mode of transport. In **road passenger transport**, where electrification or other alternative fuels technology is already available, this process can be implemented most efficiently. On the other hand, road freight transport, where heavy-duty vehicles predominate, faces greater challenges of electrification, including high purchase costs, lack of public charging infrastructure, lack of knowledge and tools for micro-entrepreneurs to reliably simulate costs (total cost of ownership, TCO) in their transport specificities. In both cases, the competitiveness of low- and zero-emission vehicles vis-à-vis combustion vehicles is important. Another specificity is aviation and maritime transport, while rail transport is mostly electrified.

Aviation is covered by the EU ETS, while **maritime transport** was included in the system in 2024. T **ransport road** contributes to the so-called Effort Sharing (ESR – non-ETS). In addition, road transport will be covered by the EU ETS-2 (the implementation of which has been postponed from 2027 to 2028). The decarbonisation of air and maritime transport is particularly difficult because the use of electricity is limited and it is necessary to develop alternative fuels, including synthetic fuels, for the production of which CO2 capture could be used, strengthening the development of the circular economy.

Directive 2023/959 – the EU ETS introduces **an obligation for shipping companies** to acquire emission allowances for each tonne of greenhouse gas emitted by a ship for 100% of emissions from intra-EU voyages, 50% of emissions from voyages from EU ports to third countries and from third countries to EU ports. The obligation to surrender allowances shall be introduced in stages: 40% – for verified emissions in 2024, 70% in 2025 and 100% from 2026 onwards.

Directive 2023/958 amends **air transport**. It provides, inter alia, for the phasing-out of free allocation of emission allowances and the transition from 2026 to an auctioning model for supplying emission allowances to aircraft operators. The amendments also provide for the establishment of a pool of emission allowances for operators using eligible (sustainable) aviation fuels. The aim is to reduce the price difference between these fuels and conventional fuels and to encourage operators to increase the share of eligible aviation fuels in overall fuel consumption. Directive 2023/958 also implements further elements of the so-called **CORSIA** mechanism. *Carbon Offsetting and Reduction Scheme for International Aviation*), which aims to reduce emissions from civil aviation.

The RED II Directive set out a commitment for all EU Member States to achieve 14% RES in transport in 2030. Poland declared in 2019 that it would meet this target, reporting difficulties in achieving it, as did a number of other EU countries. As part of the work on the revision of RED II, it was recognised that stimulating the decarbonisation of the transport sector could be more optimal by setting an emission reduction target for the sector than by setting a specific share of OZ E41.

41 This applies in particular to electromobility, which is taken into account indirectly in RES in transport statistics, as opposed to the GHG emissions account of the sector.

The new targets set out in RED III oblige EU Member States to **achieve,** in one of the alternative ways chosen: **29% share of RES in final energy consumption in the transport sector or 14.5% reduction in greenhouse gas intensity from the transport sector42.** In Poland, it is assumed that the current approach, i.e. ensuring an appropriate share of RES in the transport sector, will be maintained.

Forecasts indicate that in 2030 the transport sector in Poland will emit more than in 1990 and 2005, which is related to much more activity in this sector than it occurred after the economic transformation. The first challenge is to halt the increase in emissions.

According to the forecasts in the WAM and WEM scenarios, the share of RES in energy consumption final transport could reach 16.5% in 2030.

In 2040, the projected share of RES in transport will be approx. 32.2% in the WEM scenario and approx. 44.8% in the WAM scenario.

In the analysed scenarios, the achievement of the RES transport target in Poland, set at 29% in 2030, **is assessed as impossible to achieve**, and taking into account current statistics, this seems extremely difficult also in most U E countries43. Economic activity in transport is constantly increasing, domestic consumption of liquid fuels remains high and increasing, while technical conditions do not allow for a sufficiently rapid increase in the use of alternative fuels. After revealing the shadow economy and taking remedial action, in 2018-2024 the share of RES in transport in Poland fluctuated around 6%.

Electromobility is seen in the EU as an important instrument for the decarbonisation of transport, fundamental to achieving greenhouse gas emission reduction targets. However, the promotion of electromobility remains a challenge due to the economic accessibility of this type of vehicles for the Polish society, the provision of charging infrastructure and access to qualified human resources and the appropriate adaptation of the electricity grids. In addition, the source of origin of the electricity used to charge electric vehicles is extremely important. In practice, even battery or hydrogen electric vehicles cannot be described as zero-emission44 because they emit, for example, particles from friction linings or tyre abrasion and taking into account their supply chain. So far, the share of fully electric vehicles in the total number of vehicles in Poland is one of the lowest in the EU. At the end of 2024, the number of electric cars and vans amounted to more than 72 000, representing 0.36% of the fleet of cars and vans in Poland.45 The share of all-electric cars in the registration of new passenger vehicles was 3% in 2024, while in the EU it was around 3% on average. 15%. However, attention should be paid to the dynamic growth in sales of electric vehicles worldwide, which is a megatrend. The prices of electric and diesel cars will increasingly equalise, as will their TCO (total *cost of ownership), i.e. the total cost of* ownership (including operating costs) even without taking into account public subsidies. This will mainly result in a projected drop in battery cell prices (up to 40%) in the medium term and an increase in the TCO of combustion vehicles, including through increasingly restrictive emission standards. Hydrogen as a fuel for road transport is unlikely to be more attractive to battery-powered vehicles by 2030. However, it may be important at this time in agglomeration transport, as well as in non-road transport (e.g. rail).

Other renewable fuels, such as green methanol and green ammonia (mainly expected use in maritime and inland waterway transport and heavy land transport), as well as synthetic gas and other synthetic fuels, may also play a role in the decarbonisation of transport.

In addition, RED III points to additional requirements (sub-targets) – the combined **share** *of advanced biofuels and biogas***46 and** *renewable fuels of non-biological origin (RFNBOs)* **in energy supplied to the transport sector should be at least 1% in 2025 and 5.5% in 2030, including the share of renewable hydrogen of non-biological** origin (RFNBOs) should be at least 1 percentage point in 2030. It is estimated that Poland would need around 91,700 tonnes of RFNBO hydrogen (understood as both fuel and feedstock for the production of conventional

42Article 25 of RED III. The reduction target shall be set in comparison with the baseline set out in Article 27(2). Article 1(b) of the RED III Directive.

43 In 2024, the EU-27 average was 11.2%. Eurostat summary: link.

44 For the transport sector, the term *"zero-emission"* used in the document refers to vehicles and solutions that do not generate greenhouse gas (GHG) emissions during the use phase.

45 *Polish EV Outlook 2025.* Polish Association of New Mobility.

46 Applicable to biofuels and biogas produced from feedstock listed in Annex IX, Part A of RED II.

fuels) for transport purposes to reach 1% in 2030. Poland considers this goal to be very difficult to achieve due to technological and financial barriers and the very early stage of the development of the hydrogen economy. Restrictive regulations defining the possibility of counting a given production of renewable hydrogen of non-biological origin are also of great importance.

Forecasts indicate that Poland has the opportunity to achieve approx. 7% share advanced biofuels and biogas and RFNBOs in transport in 2030

The deployment of alternative fuels requires the development of infrastructure. For this reason, uniform rules have been laid down at EU level for Member States in this area. *EU Regulation 2023/1804 on the deployment of alternative fuels infrastructure* – the so-called AFIR Regulation – provides for **the construction of publicly accessible recharging pools for electric vehicles along major roads and motorways**. On the basis of the projected number of electric and plug-in hybrid vehicles and the requirements of the AFIR Regulation (which makes the necessary installed charging capacity dependent on the number of vehicles), it appears that in Poland, by 2030, approx. 1.5 GW.

Forecasts indicate that in 2030 there may be about 800,000 registered in Poland. plug-in electric and hybrid vehicles
(including passenger vehicles – over 720,000, trucks and vans – 68,000)

POLICY)X

In 2023, 99% of greenhouse gas emissions in the transport sector came from road transport by47. For this reason, the following part of the NECP is focused on road transport.

Greenhouse gas emissions are reduced by reducing the amount of energy used from transport fuels, decarbonising vehicles and replacing conventional fuels (fossil fuels produced from oil and natural gas) with zero-emission or low-carbon fuels calculated over the life cycle (renewable fuels). Biofuels and biocomponents will be primarily responsible for the decarbonisation of transport in the coming years. Poland will use the limit of 6.1% share of first-generation biocomponents, due to cost-effectiveness, time necessary to implement new standards and adapted market, with further growth should be based on second-generation biocomponents. For these reasons, the *National Indicative Target and the carbon price will be maintained.* Emission requirements for vehicles will also increase.

In the medium to long term, I will aim to **put electromobility at the forefront of transport decarbonisation.** In addition to the production of low-carbon fuels and energy, a properly adapted and expanded distribution network (fuel and electricity charging stations and overhead contact lines) is also important, which is why actions are being created in this area to adapt the network to the needs of this sector.

The amount of energy used depends on the size of transport needs and the efficiency of transporting cargo or passengers. The instruments of reduction in this case are demand management (e.g. by spatial distribution of functions of areas, optimizing transport demand or shaping the appropriate behavior of society and the economy) and carrying out transport with more energy efficient transport solutions. **Collective transport of passengers and cargo** is crucial, including by exploiting the potential of intermodality and logistical tools.

The approach to the different transport categories is described below:

- urban and public transport as an alternative to individual passenger transport;
- road transport (by car),
- rail transport,
- inland waterway transport,

47 In category A3. The transport includes: domestic aviation, road transport, rail transport, inland waterways, other.

- maritime transport, • aviation.

Popularisation and decarbonisation of urban transport(2 go and public :nego

The low-emission transformation of urban transport is one of Poland's priorities, with measures to reduce the transport intensity of the economy as well as measures to improve the organisation of transport services (e.g. the use of logistics and smart technologies, including in particular traffic management technologies, intermodality, collective transport, organisation of last-mile transport).

The primary objective of transport policy developed at city level should be to achieve sustainable mobility by creating the conditions for the smooth, efficient and safe movement of persons and goods, while reducing the harmful impact on the environment and living conditions of residents and improving transport accessibility within the city and functional area. In cities, it is crucial to: an attractive offer of public transport, optimisation of traffic flows, including their speed, parking policy, solutions for active mobility, in particular cycling and walking, or support for urban logistics services. Both the change of the existing urban fabric and the planning of new urban areas require a comprehensive optimisation of the way urban development is planned, by linking spatial planning with mobility planning. The implementation of these solutions results in reduced energy consumption and reduced exhaust emissions.

An additional element supporting the development of zero-emission urban transport is the actions provided for in the National Recovery and Resilience Plan (NRRP), which contribute to the further popularisation of Sustainable Urban Mobility Plans *(SUMPs). Sustainable Urban Mobility Plan* (SUMP), as one of the tools contributing to a comprehensive approach to sustainable mobility planning in cities and their functional areas, or measures to support public transport.

In order to speed up the process of replacing the urban bus fleet with zero-emission vehicles in cities with more than 100 000 inhabitants, an obligation to purchase only zero-emission buses (electric and hydrogen) has been introduced since 2026. In addition, cities were also obliged to conclude transport contracts only with entities using such buses.

Support for local governments in **the development of zero-emission public transport in cities** decarbonising transport is implemented, among others, from the funds of the National Recovery and Resilience Plan (NRRP), in particular in the field of investments related to:

- the replacement of buses with zero- and low-emission buses in peri-urban/rural areas;
- the purchase of zero- and low-emission buses for newly created extra-urban bus lines, as well as the replacement of rolling stock of extra-urban bus lines at risk of decommissioning;
- the purchase of new zero-emission (electric) buses for urban public transport.

Since 2026, **there has been an obligation to create clean transport zones in cities with more than 100 000 inhabitants,** in which the permitted concentration level of the annual average level of pollution by nitrogen dioxide will be exceeded. This solution will contribute to reducing emissions from transport in places where this is particularly important.

An important course of action will also be to raise public awareness and promote environmentally friendly ways of shaping and meeting transport needs, primarily based on transport policy and planning, which promote collective and low- and zero-emission transport, but also walking and cycling.

Therefore, in view of the further dynamics of decarbonisation changes in urban transport, it should be assumed that in the long term, innovative air mobility based on unmanned platforms and electric vessels (eVTOL) and tailor-made logistics installations and automated traffic management systems will become part of the future multimodal and smart urban mobility, and the ground and air infrastructure enabling the provision of transport services will be widely implemented and integrated.

With regard to the broader notion of **public transport** (not within cities), rail transport should play an important role, which is why rail policy is described in detail in the following section. At the opposite pole is air transport, which should not be used for movements on relatively short distances.

Actions related to ensuring coherence and improving the standard of national roads, as well as the expansion of alternative fuels infrastructure on the TEN-T road network, will affect the efficiency of organised road transport. At the same time, it is important not to exclude smaller towns. An important support for public bus transport is the **Fund for the development of public bus transport,** which has been in operation since mid-2019. The Fund is intended to co-finance the implementation of the own tasks of local government units in the field of public bus transport (excluding public transport). The Fund's resources may contribute to eliminating communication exclusion and increasing access to public communication, in particular where such communication has not functioned or is functioning to an extent that does not fully meet the needs of the inhabitants of the area.

Dekarbonizac:ja transporti Ji car]O

In order to stimulate demand for low-emission vehicles, the trend is driven by the existence of an obligation for contracting authorities to meet **the minimum shares of clean (low- and zero-emission) vehicles in the pool** *of road vehicles covered by public procurement contracts* – **introduced by the Act of 2 December 2021 amending the Act on electromobility and alternative fuels and certain other acts,** thereby implementing Directive 2019/1161 – CVD. The obligation includes that procurers ensure minimum targets for the share of low- and zero-emission road vehicles for the carriage of passengers and cargo (categories M and N) in the total number of vehicles covered by public contracts awarded (with a value equal to or above the Union thresholds) for: the supply of vehicles, selected transport services and collective road public transport services, in two periods: from 24 December 2021 to 31 December 2025 and from 1 January 2026 to 31 December 2030. In addition, the Electromobility and Alternative Fuels Act required supreme and central authorities and local government units above 50 000 inhabitants to use electric motor vehicles in their fleet. The share of these vehicles in the fleet is expected to reach 30%.

The **implementation of road transport decarbonisation objectives is also supported by fiscal instruments** introduced into the Polish legal system in relation to the private sector. They are intended to reduce the initially higher acquisition costs of alternatively fuelled vehicles (tax exemptions) and their subsequent use (depreciation costs). Achieving economies of scale may require support for company car fleets, e.g. through bank guarantees for purchase, leasing or long-term rental. The EU taxonomy, which promotes decarbonisation investments, can also influence banks' strategies to provide preferential products for low- and zero-carbon solutions.

The establishment of a dense network of **publicly accessible recharging infrastructure for** electric road vehicles, in line with the AFIR Regulation, which imposes binding targets on each Member State for alternative fuels infrastructure, will also be crucial for the development of electromobility.

In view of the necessary pace of transport decarbonisation and the economic situation in the country, **financial support instruments** play an important role at the initial stage of the development of electromobility. Since 2021, programmes have been in place in Poland to support the acquisition of zero-emission vehicles, including buses, which contributes to an increase in demand for these vehicles. In addition, the construction and expansion of the charging infrastructure together with the necessary connection infrastructure is supported. These initiatives include a full catalogue of necessary investments. Activities will also be carried out in the field of the development of records of alternative fuels infrastructure.

In addition, due to the need to decarbonise heavy-duty transport, new programmes have been launched to support the market for zero-emission heavy-duty vehicles of categories N2 and N3 and to support the development of charging infrastructure dedicated to heavy-duty transport. It should be pointed out that the extension of support programmes to the heavy transport sector will allow for a significant increase in the use of electricity, and thus translate into a significant increase in the share of RES in transport. At the same time, efforts will be made to provide an EU support mechanism for heavy-duty transport in order to limit the risk of a decrease in the competitiveness of Polish entrepreneurs engaged in international road freight transport.

In addition, initiatives are planned to support **the development of non-public recharging infrastructure for road vehicles,** which will further increase the availability of zero-emission vehicles in the transport sector. As part of the RRP funds, investments related to the purchase of electric passenger motor vehicles are also implemented, through co-financing for the purchase of these vehicles for natural persons and persons running a sole

proprietorship.

In addition to the development of zero-emission mobility, **an essential priority is to improve the coherence of the road network** and road safety, which is mainly due to the construction of motorways, express roads and city bypasses on the TEN-T network (roads particularly important for transport in the European Union). New investments in this area will be implemented in accordance with ***the Government Programme for the Construction of National Roads until 2030 (with a perspective until 2033), thanks to which it will be possible to*** place alternative fuel stations for heavy motor vehicles on the TEN-T network. The Connecting Europe Facility (CEF) funding plays an important role. *The Connecting Europe Facility* (CEF), which aims to support the modernisation and construction of infrastructure located on the trans-European transport network TEN-T. In parallel to the new investments, investment activities will be carried out on the existing network of national roads. These include comprehensive redevelopments/extension of sections of national roads, point tasks aimed at improving safety and other tasks aimed at ensuring the proper functioning of the road network. The implementation of these investments will ensure the fluidity of traffic over long distances, and thus reduce the fuel consumption of vehicles.

These actions will be implemented under the multi-annual programme entitled National Road Network Reinforcement Programme 2030 (link). The programme shall in particular aim at maintaining the required technical condition of the existing infrastructure, increasing the coherence of the national road network adapted to the traffic of vehicles with a single axle load of up to 11.5 tonnes, improving road safety and intensifying actions to reduce the negative impact of road infrastructure on the environment.48

Support will be given to the development and deployment of Intelligent Transport Systems (ITS) as a tool to achieve sustainable mobility policy objectives, enabling dynamic traffic management on the national road network, streamlining road infrastructure maintenance processes and integration with ITS systems deployed by other road managers, including in urban areas.

Popularization and decarbonizac :ja transporti Ji railwayg 10

Tasks will be carried out to improve the accessibility, safety and temporary competitiveness of rail transport and domestic carriers. Actions will consist in particular of:

- further electrification of (selected) railway lines,
- modernization of railway lines,
- construction of new railway lines with supply infrastructure,
- construction of collision-free intersections,
- implementation of modern systems ensuring interoperability,
- increasing the number and technical standard of rolling stock.

All this is expected to gradually contribute to making rail transport more attractive than other modes of transport and, consequently, to shifting some passengers and cargo to this more environmentally friendly mode of transport. The investments will be implemented as part of multi-annual programmes related to the development of rail transport. These actions will gradually contribute to making rail transport more attractive than other modes of transport and, consequently, to shifting **some passengers and cargo** to this more environmentally friendly mode of transport.

Developed railway infrastructure, attractive rolling stock and a convenient network of connections, together with a passenger-friendly information system and the purchase of integrated tickets, will contribute to the public's choice of rail as the optimal mode of transport, which will translate into a reduction in air pollutant emissions from other modes of transport, in particular road transport. This will be done by:

- implementation of the ***National Railway Programme until 2030 (with a perspective until 2032).*** The main objective of railway investments carried out and planned to be carried out under the NCP is to carry out works on

48 After 2024, the BRD component of the Safe Road Infrastructure Programme 2021-2024 took over the National Road Network Reinforcement Programme 2030 (NRTSP).

the main lines forming the TEN-T core and comprehensive network, as well as constituting rail transport corridors and removing existing bottlenecks. The actions undertaken aim at removing the backlog in the expansion, modernization and revitalization of transport infrastructure and connecting the infrastructure of the most important growth centers with areas with lower development dynamics and integrating them into the European transport network.

- construction and modernisation of railway passenger stops as part ***of the Government's programme for the construction or modernisation of railway stops for 2021-2026***. The aim of the programme is to increase access to rail transport for local communities. The available funds are used, inter alia, to build or modernise railway stops, as well as to finance tasks related to the availability of parking spaces for travellers. The programme will contribute to reducing transport exclusion and will allow passengers access to regional and inter-regional rail transport; implementation of projects under the Programme for Complementing Local and Regional Railway Infrastructure – Rail+ by 2032. The main objective of the Railway + Programme is to obtain/improve the rail connection between localities with a population of more than 10 000 inhabitants and voivodship cities, which will contribute to eliminating transport exclusion by the possibility of supplementing the rail network with new connections that will primarily provide passengers with access to inter-voivodship transport.
- construction of new railway lines provided for under the 'Central Communication Port Investment Programme. Stage II. 2024-2032', including the power supply infrastructure. The priority implementation of the 'Y' high-speed line will integrate central Poland with its western part, connecting 4 of the 5 largest cities in the country.

Due to the lack of comprehensive regulations concerning the system of statutory discounts and the lack of appropriate legal mechanisms enabling tariff integration, activities under the project of the National Integrated Ticket (NIP) will focus, in the first place, on ordering and comprehensive approach to the issue of statutory discounts, which will ultimately contribute to the process of tariff and ticket integration with other modes of transport. The next steps will focus on the elaboration and adoption of a legislative package that will provide a solid legal basis for further organisational and technical efforts in the field of tariff system integration.

In order to determine a well-planned transport offer from the point of view of a rail passenger, comprehensive analyses are carried out within different time horizons. They will be an important contribution to the development of the Transport Plan for transport, in particular long-distance interprovincial and international transport. On the basis of this, a tender procedure will be conducted for the selection of railway operators operating services under a public service contract (PSC) after 2030. The proposed offer will primarily meet the criteria of a competitive and attractive transport offer for travellers. The draft offer is widely consulted with the public and industry stakeholders, in particular with regional transport organisers and potential operators. As part of the work on the Horizontal Driving Schedule, it is assumed that a coherent railway system will be created that will enable the integration of commercial connections operated by carriers with public service connections. The train timetable developed in this way will also be an important contribution to the railway infrastructure planning process, so that it results from actual needs and does not limit the possibility of shaping the transport offer.

The modal shift from less environmentally friendly means to rail will be achieved through the development of intermodal transport, in line with the Intermodal Transport Development Directions until 2030 with a perspective until 2040. Priority will be given to the efficiency of train movements and the increase in commercial speeds, especially for freight trains. It is important to develop technical solutions and build loading and unloading terminals for semi-trailers, caravans, containers – this will make it possible to link road transport with rail transport ('track-to-track') or to shift at least partially 'heavy' freight transport to rail.

Decarbonisation of transpor1 in marine > marine

In the area of maritime transport, regulations indicating that the competent entities, within the scope of their competences, will carry out activities in the field of:

- carrying out checks on the obligation to comply *with the provisions of the Act of 15 May 2015 on substances that deplete the ozone layer and certain fluorinated greenhouse gases* as regards the operation on ships of refrigeration, air conditioning, electrical switchgear and fire protection systems and fire extinguishers containing controlled substances or fluorinated greenhouse gases;
- to carry out checks on the requirements to reduce emissions of nitrogen oxide from ships under the

International Convention for the Prevention of Pollution from Ships (MARPOL Convention): Annex VI – Provisions for the Prevention of Air Pollution from Ships, together with the Technical Code for the Control of Emissions of Nitrogen Oxides from Marine Diesel Engines (NOX Code);

- implementing *the provisions of Regulation (EU) 2015/757 on the monitoring, reporting and verification of carbon dioxide emissions from maritime transport, as amended by Regulation (EU) 2023/957 to include maritime transport in the EU Emissions Trading System and to monitor, report and verify additional GHG emissions and emissions from additional ship types*;
- implementing *the provisions of Regulation (EU) 2023/1805 on the use of renewable and low-carbon fuels in maritime transport*.

The inclusion of maritime transport in the EU ETS will contribute to the reduction of greenhouse gas emissions from this sector. Shipping companies and shipowners will need to use zero-emission technologies and fuels if they want to avoid incurring the cost of purchasing greenhouse gas emission allowances.

Decarbonizac:I aviation

The development of aviation in Poland should be carried out in accordance with **the Policy for the Development of Civil Aviation in Poland until 2030 (with a perspective until 2040)** (link). The directions of intervention concern, among others, the development of airport networks, investments in airports, the functioning of airspace, support for research, education and development in the field of civil aviation and safety, but also **environmental protection in air transport** (intervention direction VII).

The policy in the aviation area takes into account that from approx. Serially produced zero-emission aircraft should be available by 2035, but sustainable *aviation fuels (SAF), which do not require fleet modification,* will be the most important until then. The EU Regulation 2023/2405 on ensuring a level playing field for sustainable air transport (ReFuelEU Aviation), which inter alia obliges fuel suppliers to deliver SAF to EU airports, as well as to support SAF research, development and innovation at national level, will be pursued. In accordance with Annex I of the Regulation, the minimum share of sustainable fuel in aviation fuel at EU airports is shown in the table below.

Table 2. Minimum share of sustainable fuel in aviation fuel at Union airports between 2025 and 2050 [%]

Period	Annual minimum share of SAF	Of which minimum share of synthetic fuels	Average share of synthetic fuels over the period
From 01/01/25	2%	0%	-
From 01/01/30 to 31/12/2031	6%	0,7%	1,2%
From 01/01/32 to 31/12/2033		1,2%	2,0%
From 01/01/34 to 31/12/2034		2,0%	
From 01/01/35	20%	5%	-
From 01.01.2040	34%	10%	-
From 01.01.2045	42%	15%	-
From 01/01/50	70%	35%	-

An important element motivating the reduction of pollutant emissions from air transport is the participation of Polish aviation operators in the EU ETS – the system applies to flights within the EU and to the European Economic Area. Partially left-over free allowances for the period 2024-2030 are to be mobilised to phase out fossil fuels, with full auctioning to take place from 2026 onwards. Funds from aircraft operators' fees for surrendering emission allowances under the EU ETS should be a source of funding for decarbonisation efforts.

Complementary to the EU ETS is Poland's participation in the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). Carbon Offsetting and Reduction Scheme for International Aviation)49. It is an

49 Article 25a of the ETS Directive, inserted by Article 1(9)(b) of Directive 2023/958.

offset system for international aviation emissions, in which airlines can offset CO2 emissions from international flights by purchasing carbon credits (climate protection projects or the use of more climate-friendly fuels) corresponding to their emissions above historical levels. The Union and its Member States, including Poland, have been implementing CORSIA since the start of the pilot phase, i.e. the period 2021-2023, in accordance with Council Decision (EU) 2020/954. From 2027, the scheme will be a mandatory worldwide market-based measure aimed at offsetting carbon emissions from international aviation at global level.

Investments resulting from the requirements of Article 12 of the AFIR Regulation for the provision of renewable energy to stationary aircraft will be carried out at airports. Airport managing bodies **should aim to obtain electricity from renewable sources,** thereby moving towards the zero-emissions of these facilities. For security reasons, each airport should have two independent sources of electricity, which requires connection to external electricity grids.

In addition to improving infrastructure, airports should also strive to improve the operational efficiency of air transport and implement innovative solutions in air traffic.

At the same time, it should be emphasized that the reduction of greenhouse gas (GHG) emissions in the transport sector is extremely difficult, among others due to the observed increase in the activity of this sector. It is therefore important that measures to reduce emissions do not come at the expense of reducing the mobility of society.

ACTIVITIES BX

On the decarbonisation of urban and public transport:

Action 36. Financial instrument - Fund for the development of bus services of a public utility nature
Action 37. Development of urban transport networks
Action 38. Development of zero-emission public transport in cities
Action 39. Creation of clean transport zones
Action 155. Actions to combat transport poverty under the PSK

On the decarbonisation of road transport:

Action 34. Intelligent Transport Systems (ITS)
Action 35. Enhancing coherence and improving the standard of national roads
Action 40. Financial support instruments for electromobility
Action 41. Instruments for non-financial support for electromobility
Action 43. Development of intermodal transport
Action 44. Development of electrification of road freight transport (TLS industry)
Action 52. Increasing vehicle emissions requirements
Action 53. Issuance fee
Action 54. Development of alternative fuels infrastructure records

On the decarbonisation of rail transport:

Action 42. Modernisation of rolling stock and railway infrastructure and local development and regional railway infrastructure, as well as the construction of new railway lines
Action 43. Development of intermodal transport
Action 155. Actions to combat transport poverty under the PSK

On the decarbonisation of shipping:

Action 45. Ensuring the availability of alternative fuels in maritime ports
Action 46. Implementation of innovative technologies in maritime vessel traffic management
Action 51. Support for the construction of innovative hydrogen and derived

transport units

On the decarbonisation of aviation:

Action 48. Improving airport infrastructure and the operational efficiency of air transport
Action 49. Implementation of innovative solutions in air traffic
Action 50. Decarbonising aviation in line with EU priorities
Action 51. Support for the construction of innovative hydrogen and derived transport units

Cell 1.2.4. Reduction of GHG emissions in the industry < send

Industry is OK. ¼ of energy consumption in the European Union, therefore - in addition to the building sector - was given special attention in terms of reducing the environmental impact. The transformation and decarbonisation of the industrial sector is an important element in maintaining the competitiveness of the economy. Companies implementing low-carbon technologies gain a cost and image advantage in increasingly demanding markets. Reducing the decarbonisation of production processes is also becoming a prerequisite for access to European value chains, where environmental standards are increasingly important. At the same time, the high energy intensity of industrial processes and the rising costs of energy consumption have a negative impact on the competitiveness of Polish companies, limiting their investment opportunities and ability to compete on international markets.

Ensuring the competitiveness of Polish industry is becoming one of the key challenges of the energy and climate transformation. Due to the complexity and characteristics of individual industrial sectors, it is recommended to develop a comprehensive strategy for maintaining competitiveness and indicating the decarbonisation activities and tools necessary to carry out the transformation of industrial sectors.

Poland will prepare a strategy for increasing competitiveness and industrial transformation.

Industry has also become a particular area of interest for the European Union, which in recent years has issued a number of key documents and initiatives to support its modernisation. Among the most important are *the Clean Industry Pact50 and the U E Competitiveness Compass,51* which define a set of actions to support the development of a low-carbon economy and strengthen the competitiveness of European enterprises, especially in energy-intensive sectors.

Emissions process50w

Most heavy industries (e.g. cement, metallurgy, chemicals, petrochemicals) have significant **process emissions resulting** from the processing of raw materials, which are much more difficult to avoid than the reduction of emissions associated with the production of energy for process purposes.52

According to the forecasts of the WAM and WEM scenarios, process emissions in industry in 2030 will significantly decrease compared to 1990. In the WEM scenario, the emission resulting from industrial processes in 2040 will be approx. 22 million tons eq. CO2 and is close to the 2030 value. However, the largest GHG reduction due to active industrial transformation will be observed in 2040 in the WAM scenario, in which the projection of greenhouse gas emissions from industrial processes is estimated at approx. 12.8 million t eq. CO_2.

50 Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - A Clean Industry Pact: Joint Competitiveness and Decarbonisation Action Plan' (COM/2025/85 final), (link)
51 Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions EU Competitiveness Compass (COM/2025/30 final), (link)
52 Where production facilities produce electricity and heat for their own use, the greenhouse gas emissions accompanying the production of that energy shall be attributed directly to the industry sector.

The WEM scenario projections indicate that process emissions in the industry sector53 in Poland it may amount to 23.7 million t eq. CO_2 in 2030. The WAM scenario assumes lower emissions at 20.3 million tonnes eq. CO_2.

[estimates are not objective]

The graph below shows greenhouse gas emissions in the industry sector, broken down into emissions related to energy consumption from manufacturing industries and emissions from industrial processes and product use. The WAM scenario envisages greater emission reductions, as it assumes an active industrial transformation including, inter alia, the modernisation and electrification of processes, increased use of energy from RES and the use of CCUS technology in the mineral industry and renewable hydrogen of non-biological origin in the fertilizer industry.

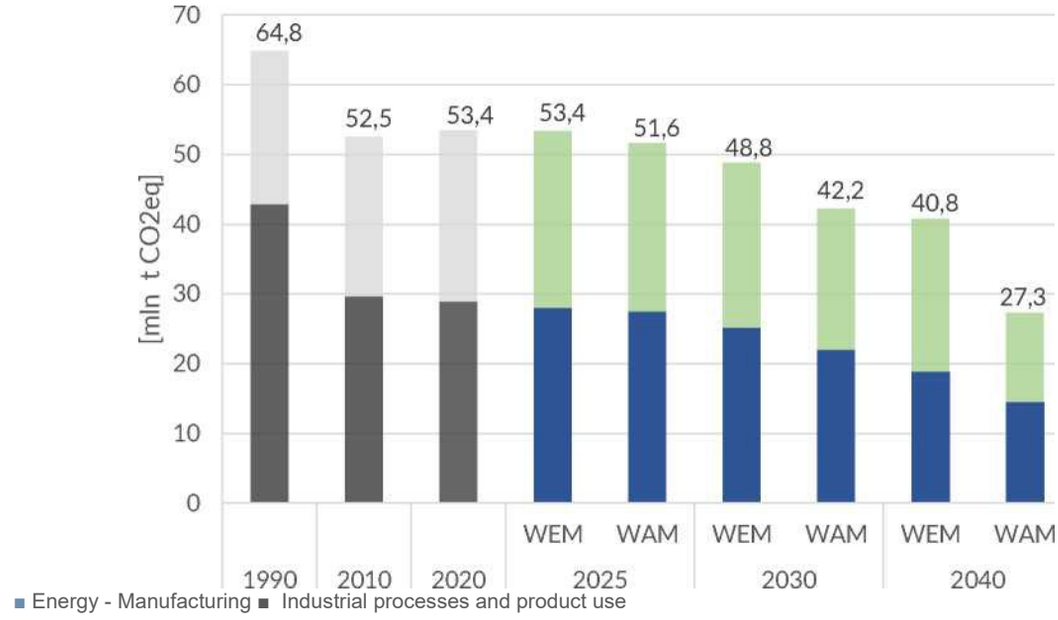


Figure 6. GHG emissions from industry [million t CO2 eq]

Energy-intensive industries are covered by the EU ETS, which operates a temporary and quantified free allocation of greenhouse gas emission allowances. In addition, selected industries may benefit from a compensation scheme for energy-intensive industries and sub-sectors. In sectors subject to border tax (CBA M),54 **there will be a significant decrease in the available number of free allowances after 2030** and their full phase-out is foreseen by 2034. 55The use of low- and zero-emission, high-efficiency, state-of-the-art technologies and solutions will allow transformative processes to be carried out in sectors hitherto covered by the EU ETS.

The rest of the industrial activity contributes to the common reduction target (non-ETS sector). A significant part of the heat used in these industrial sub-sectors does not require high temperatures, which increases the use of cheaper renewable energy sources. **Improving the energy efficiency of processes and optimising processes play an important role in the decarbonisation of the sector,** in particular due to the potential to decrease energy intensity and reduce operating costs.

It should also be noted that the growing *information and communication technologies* (ICT) sector is becoming a new branch of the economy with the character of an energy-intensive industry. It is estimated that in 2020 the ICT sector was responsible for the consumption of approx. 3.6 TWh, the forecast indicates that in 2030 it will exceed

53 Values refer to category 2. Industrial processes and product use (mineral products; chemical industry; production of metals; production and use of other non-energy products from the consumption of fuels and solvents; other), according to the IPCC classification. Emissions from the combustion of fuels for soaring energy in industry, i.e. generated by industrial energy, are separately accounted for.

54 CBAM (CBAM) *The Carbon Border Adjustment Mechanism*) is a carbon border adjustment mechanism that will apply to imports into the EU of selected carbon-intensive goods from third countries.

55 In accordance with the ETS Directive - 2023/959.

approx. 6 TWh. High energy consumption may put an additional burden on the power system, but the sector is also characterised by a high level of innovation, which may have an impact on creating new solutions in the area of production and optimization of energy consumption, worth replicating in other parts of the economy. In addition, the ICT sector has the potential to become the main source of waste heat.

Emission reduction

In pursuit of greenhouse gas emission reductions in the industrial sector, additional targets should support:

- increase in the **use of RES** in industry,
- industrial use of renewable hydrogen of non-biological origin,
- ensuring conditions for **the development of** *carbon capture and storage* **(CCS)** and *carbon capture and utilisation* **(CCU)** technologies.

Research and development (R&D) in industrial processes and energy production can be a key factor in the decarbonisation of industry. The promotion of **sustainability standards and their reporting (ESG,** *environment, society, corporate governance)* can also play an important motivating role.56 ESG can greatly facilitate access to unified information that can be compared and based on which business decisions can be made.

Under RED III, Member States were required to strive to increase the share of renewables in energy consumption in the industry sector by an indicative increase of at least 1.6 percentage points on average per year between 2021 and 2025 and between 2026 and 203 057.

in industry .e

So far, biomass has played a key role in the share of RES in industry, but it is expected that biomethane, wind and solar power will become increasingly important.

Forecasts of the WEM scenario indicate that in 2030 Poland may reach approx. 17% the share of RES in energy consumption in the industrial sector. The WAM scenario assumes Increased participation at the level of approx. 29,6%58.

However, in 2040, the WEM scenario indicates the share of RES in energy consumption in the industry sector at the level of 21.2%, the WAM scenario assumes an increase in the share at the level of approx. 49,3%.

56 Under *Directive (EU) 2022/2464 of the EP and of the Council of 14 December 2022 amending Regulation (EU) No 537/2014, Directive 2004/109/EC, Directive 2006/43/EC and Directive 2013/34/EU, as regards corporate sustainability reporting,* the so-called CSRD.

57 Article 22a *of Directive (EU) 2023/2413 (RED III), amending Directive (EU) 2018/2001 (RED II), OJ Ooh, ooh, ooh. EU L 328, 21.12.2018, p. 82, as amended.*

58 Currently, there is no official methodology for determining the share of RES in final energy consumption in industry, so the value provided is indicative and may even change significantly.

The development of a hydrogen economy (low-carbon and renewable hydrogen, including of non-biological origin) can support the decarbonisation of many sectors of the economy. renewable hydrogen

EU climate policy is also strongly focused on growth

hydrogen•

the use of hydrogen as an alternative to fossil fuels. One of the main areas of market development for this raw material is the use of renewable hydrogen of non-biological origin in industry. In view of the EU RED III policy requiring Member States **to ensure that hydrogen used in industry for final energy and non-energy purposes is 42% by 2030 and 60% by 2035.** The implementation of this target will have an impact in particular on the nitrogen artificial fertilisers industry, as well as on the refining sector. Renewable hydrogen of non-biological origin used in industry must come from renewable energy that meets the requirements set out in *Regulation (EU) 2023/1184*, which introduces, inter alia, the principle of additionality and a temporal correlation that limits the possibility of using existing RES capacities to achieve the above-mentioned objectives in industry.

Think about it .e

Poland is one of the largest producers and consumers of hydrogen obtained from steam reforming of natural gas in Europe, therefore achieving the target of increasing the share of renewable hydrogen of non-biological origin by 2030 is assessed as impossible. The use of renewable hydrogen of non-biological origin in the industry at the level of 42% in 2030 would **require the provision of approx. 160,000 tons 59 of raw material.** For the last 10 years, the fertilizer sector has been the largest consumer of hydrogen in Poland, which is why most of the domestic consumption of renewable hydrogen of non-biological origin (approx. 80% of total demand) will be related to the production of ammonia to maintain fertilizer production. In the WEM scenario, projections indicate that **in 2030 domestic production of renewable hydrogen (including non-biological origin) 60 may amount to approx. 20 000 tonnes, while the WAM scenario assumes a production of 122 000 tonnes.**

Due to the high production costs of renewable hydrogen of non-biological origin, ensuring the remaining part of the Polish demand for hydrogen to achieve the industrial target RED III requires the stimulation of domestic production through the proposed financial support instrument. The provision by 2030 of part of Poland's demand for renewable hydrogen of non-biological origin by imports, including in the form of renewable ammonia of non-biological origin, is significantly hampered by the limited capacity of the transport system, the lack of infrastructure to import hydrogen by sea and the lack of properly developed international cooperation to ensure the supply of hydrogen or ammonia that meets the requirements set out in *Regulation (EU) 2023/1184*. Achieving the RED III targets for renewable hydrogen of non-biological origin is a huge challenge for many Member States in the coming years, which, together with the limited availability of raw material imports, also affects competition in this scope.61

CO2 **capture, storage and utilisation technologies are also one of the ways to** reduce process emissions in industry. The use of such installations can reduce emissions in sectors that are difficult to decarbonise or electrify, such as the mineral, steel or chemical industries.

The development of CO2 transmission infrastructure will potentially allow access to shared transmission infrastructure for different industrial sectors. Many other industries use CO2 as a raw material to produce products such as fuels, chemicals and building materials. Carbon dioxide is also widely used in industrial processes. Part of the captured CO2 could be used for domestic industrial production and part could be stored in suitable locations.

The investment decisions and participation of entities in CCS/CCU projects will depend on a number of factors, such as, among others, the cost of emission allowances, fuel and electricity prices, as well as the availability of alternatives to reduce GHG emissions. It is necessary for the State to ensure a coherent and stable legal framework, in particular with regard to the storage of CO_2, its transport and the licensing system. The challenge for the development of CCS projects is the high costs of infrastructure construction, the potential and real availability of

59 According to estimates by the Ministry of Climate and Environment.

60 Based on Annexes 1 and 2 to the NECP – Chapter 3.2

It should be noted that as part of the implementation of the third part of the investment of the National Recovery and Resilience Plan B2.1.1. *Investments in hydrogen technologies, production, storage and transport in the form of non-repayable support have been contracted* for projects to build facilities for the production of renewable hydrogen of non-biological origin with a total installed capacity of 343 MW. All installations should be in place by 2033 at the latest and the expected production of renewable hydrogen of non-biological origin should be approx. 45 thousand tons per year.

61 The broader context of hydrogen demand coverage was discussed under dimension 3.

CO2 transport infrastructure, the possibility of locating an underground carbon storage complex and the available capacity of underground carbon storage sites, as well as the need for coordination throughout the value chain. When determining the underground storage areas of CO_2, account will be taken, among others, of geological and natural conditions and the characteristics of underground storage complexes, as well as the need to ensure universal safety, protect the health and life of people and care for the good condition of the environment. An important factor influencing the development of CCS technology and wide implementation on a commercial scale is gaining public acceptance.

As such technology is currently not popularised in Europe, the **EU has set the target of reaching an annual injection capacity of at least 50 million tonnes of CO2 in geological storage sites authorised under Directive 2009/31/EC on EU territory, in its exclusive economic zones or on its continental shelf within the meaning of the United Nations Convention on the Law of the Sea by 2030.** Implementation of CCS technologies and obligations in this area under *EU Regulation 2024/1735, the so-called EU CCS Regulation. The Net Zero Industry Act* – NZIA will be incumbent on both Member States and hydrocarbon mining companies (in Poland, it will primarily be ORLEN S.A.). Member States are required to provide data on the areas on their territory where CO2 storage sites may be authorised. On the other hand, entities extracting hydrocarbons are required to contribute to the above-mentioned EU target for 2030 in terms of providing annual CO_2 injection capacity - in accordance with their production volume in the period 2020-2023 (with entities being able to invest in storage projects that will not be implemented in Poland, but on the territory of the European Union, in its exclusive economic zones or on its continental shelf). In addition, obligated entities should make public geological data on extraction sites that have been decommissioned or reported for decommissioning as potential storage sites for CO_2. Commission Decision 2025/1479 of 22 May 2025 determining the proportional contribution of entities holding a permit as defined in Article 3 of Directive 94/22/EC *of the European Parliament and of the Council* to the achievement of the Union target for CO_2 injection capacity by 2030 identified 2 Polish obliged entities to contribute to that target, at a total level of approx. 4.3 million tons per year.

In July 2024, an initiative was taken to conclude *a letter of intent on the development of CO2 sequestration technology in Poland* between the Ministry of Climate and the Environment and representatives of entrepreneurs, science and non-governmental organisations. Concluding the letter of intent and undertaking and intensifying the actions specified in it will allow for the final assessment of the potential for the development of CCS/CCUS technology in Poland, which is strongly dependent on the verification of estimates regarding the capacity of underground CO_2 storage complexes in Poland. For this reason, precise estimates for Poland regarding, inter alia, the amount of CO_2 emissions that can be captured annually until 2030, the mode of transport of captured CO_2, or the storage capacity and volume of CO_2 injections available until 2030 can be determined at a later stage of work, in particular as part of the planned strategy for the development of carbon capture, transport, storage and utilisation technologies.

Poland will prepare a strategy for the development of capture, transport, storage of CO2 and its use in the economy.

POLICY)X

National policies should be geared towards actively supporting innovation, competence development and the emergence of new industries based on clean technologies. At the same time, it must ensure appropriate conditions for the functioning of already existing industrial sectors, especially those of strategic importance and important for national security.

Reduction of gas emissions greenhouse in the sector industry will be held Multiple tracks. Part of the action will be motivated EU and national regulations targeted decarbonisation, also due to the functioning of the EU ETS. Increasingly, entrepreneurs will take action on their own initiative. Of particular importance are the increasing economic benefits, as well as the increase in market attractiveness resulting from the demand for products and services with a low carbon footprint.

It is recommended to develop a comprehensive **strategy for the transformation and decarbonisation of Polish**

industry. The analysis should cover all industrial sectors and diagnose, among other things, actual energy consumption in individual industries, identify actions to improve energy efficiency and identify technologies that can be implemented in production processes. The aim of the study will be, among others, to determine the paths and directions of transformation, support instruments, and thus ensure greater predictability of the process of decarbonization of Polish industry and support its competitiveness.

Particularly important tools and actions influencing decarbonisation include:

- Increasing the use of RES and other low- and zero-emission sources

  The increasing availability of financing for 'green' investments, including by commercial banks, will particularly contribute to the uptake of RES in industry. Since October 2023, it has been possible to share connections between several generating installations, i.e. *cable pooling,* which, together with the increasing availability of long-term *power purchase agreements* (PPAs), should promote the greening of energy in industry. It is also important that new energy sources are integrated into the environment in a way that does not interfere with the environment, and if possible in the case of solar energy with the provision of additional functions, e.g. roofing. **Such solutions will be rewarded by additional tax reliefs or co-financing for the construction part.** It will also be important to promote decarbonised gases (biogas, biomethane, low-carbon and renewable hydrogen, including of non-biological origin), which can be a viable alternative to fossil fuels, including for heavy industry. The industrial sector is also showing an interest in the use of nuclear energy, so legal conditions will be provided for this type of installation.

- Increasing the efficiency of industrial processes

  Entrepreneurs should identify the potential to increase the efficiency of their processes and reduce energy consumption. In addition to reducing the energy consumption of machines, replacing them with newer ones, if economically justified, the use of electric furnaces, as well as secondary raw materials in production, should also be considered. It is worth implementing solutions that reduce unnecessary lighting, unnecessary water consumption and the potential for using waste heat.

- Popularisation of the use of waste heat

  Actions in this area can relate both to the more efficient use of energy in a given enterprise, as well as provide an additional heat stream for district heating systems. In both cases, a positive energy effect will be achieved.

- R&D development in the area of industrial processes and energy production

  In many cases, the solutions already used or known on the market do not allow for further reduction of energy intensity or emissions, therefore there is a need for R&D activities. They also have an impact on the innovation of the economy, which is why there are incentives for entrepreneurs to do so – more information is provided in the Dimension.

- Use of low-carbon and renewable hydrogen, including renewable hydrogen of non-biological origin

  In order to develop industrial hydrogen applications, R&D&I and investment projects will be carried out, which will contribute to cooperation between local, national and foreign stakeholders. Common objectives and shortening the distance between supply and demand centres will enable the exchange of information and experience between participants in hydrogen valleys. As part of the provisions transposing into national law the target of renewable fuels of non-biological origin from the amended RED Directive, a framework will be defined for achieving the 42% target for the share of renewable hydrogen of non-biological origin in the total use of hydrogen in industry. The policy framework for the development of hydrogen and ammonia import, transmission and storage infrastructure will be defined as part **of the update of the Polish Hydrogen Strategy to 2030 with a view to 2040.** A broader context for the development of the hydrogen economy is presented in Area 3.4.

- ESG regulations

  ESG reporting regulations should also be consistently implemented to help identify environmental impacts and thus take corrective action. Information is also a sector benchmark.

- Ensuring conditions for popularization of CCS

  Currently, the possibility of sequestration of CO_2 is limited, but the activities resulting from the signed on On 5 March 2025, at the initiative of the Ministry of Climate and Environment, *the Letter of Intent should* open

up the possibility of applying this technology in particular to industries with difficulties in reducing GHG emissions. It is envisaged, inter alia, **to define a national strategy for the development of technologies for the capture, transport, storage and use of carbon dioxide,** to develop a comprehensive legal framework enabling the development of technologies in Poland, including the efficient implementation of investment projects, to define support mechanisms for the development of technologies, etc. It will also be extremely important to identify research and development needs in terms of technologies for capture, transport, carbon sequestration or its use in the economy, to develop strong national and local competences in this area, but also to identify needs and a model for the development of transport and storage infrastructure and to exchange knowledge, including in the framework of international cooperation.
In addition, the *Regulation of the Minister of the Environment of 3 September 2014 on areas where the location of an underground carbon dioxide storage complex is allowed will be revised.* The work carried out should result, among other things, in allowing the location of the underground carbon dioxide storage complex also on land.

- Industry cooperation with electricity and heating

  The popularization of the use of waste heat and the management of surplus RES energy will be achieved by increasing the volume of industrial production in periods of overproduction of RES. This action will have a limited impact on the 'accounting' decarbonisation of industry, but will have a cumulative effect. Exploiting cross-sectoral opportunities should also have a positive economic impact.

  The industrial sector can also support the balancing of the electricity system, which is why the development of supply and demand management services is particularly important. Flexibility of processes is necessary here, but it is also justified to develop own sources of electricity generation and various types of energy storage systems that will affect a higher degree of self-consumption and cooperation with the PPS.

The following are particularly important areas of activity in particular industries, which should result in decarbonisation or total emissions. Decarbonisation will improve the competitiveness of these sectors, creating an impetus for decarbonisation efforts in industry.

industry/industry	possible decarbonisation measures
mineral industry	
Cement production	• reduction in the use of clinker • application of CCS technology (cryogenic method)
production of lime	• use of a less carbon-intensive fuel (instead of the currently widely used coal) for energy production for own use • partial electrification of the high-temperature heat generation process
manufacture of glass and glass products ceramic	• further electrification of the heat generation process high temperature • fuel switch from natural gas to biomethane/biogas
chemical and petrochemical industry	
Ammonia production (for nitrogen fertilizers)	• application of CCS technology • production of renewable hydrogen, including non-biological origin and its green ammonia • fuel switch from natural gas to biomethane/biogas
production of soda ash and evaporated salt	• use of less carbon-intensive fuel for energy production for own use heat recovery •
production of products Petrochemicals and Fuels	• application of CCS technology *the market will shrink, which will reduce emissions*
metallurgical industry	
steel production	• decarbonising the production of recycled steel – increasing the use of scrap in electric furnaces and promoting purchase of energy from RES

	• decarbonisation of primary steel, ‘green steel’ (direct iron reduction – DRI-EAF+H2) and use of natural gas (and eventually biomethane, biogas or renewable hydrogen) as a process reducer • use and purification of process gases to reduce emissions
Copper production	• purchase of energy from RES • use of less carbon-intensive fuel for own-account energy production • application of CCS technology (amino method)
production of zinc	• application of CCS technology (amino method)

ACTIVITIES BX

- Action 1. Participation in the EU-ETS Emissions Trading System
- Action 2. Financial instrument – Modernisation Fund

Action 55. Update of the Polish Hydrogen Strategy

Action 56. Financial instrument – industrial transition support

Action 57. Support for the construction of generating capacity for the production of renewable hydrogen (non-biological origin) and low-carbon

Act 58. Analysis of the need to build and use infrastructure for the import of ammonia or hydrogen, including the construction of an offshore port terminal for the transhipment of ammonia or hydrogen

Action 59. Activities in support of commercial CCS and CCU projects

- Action 60. Actions to support the decarbonisation of energy-intensive industries
- Action 61. Actions to support industrial competitiveness and decarbonisation cement

Action 62. Actions to support the competitiveness and decarbonisation of the chemical industry

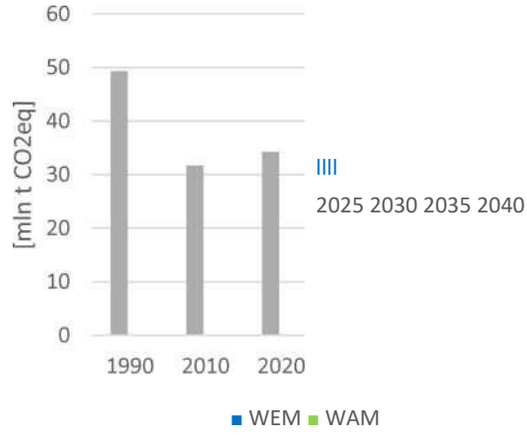
Action 63. Actions to support the competitiveness and decarbonisation of the steel and coke industry

Action 64. Actions to support the competitiveness and decarbonisation of industries

- Action 118**. Financial** instrument - white certificate scheme

Cell 1.2.5. Reductions3 emissions and GHG in agriculture

Agriculture is a source of greenhouse gas emissions, which have remained stable at 31-34 million tonnes of eq. for about two decades. CO_2. Emission sources in agriculture include enteric fermentation and animal excrement (CH_4), incineration of vegetable waste, emissions from agricultural soils (N_2O) and use of fertilisers – liming, urea, other (CO_2), with CO_2 emissions in agriculture being marginal. Agriculture is responsible for about 8-9% of national greenhouse gas emissions. The share of agricultural emissions in the non-ETS group is around 16-17%.



Graph 7. GHG emissions from agriculture [million t CO2eq] process

Emissions from agriculture are to a large extent in nature, making it difficult to achieve reductions in this sector.

The implementation of GHG emission reductions should not have a negative impact on food security and dependence on external sources of supply.

At the same time, climate change manifested in anomalies and extreme weather conditions accelerates environmental degradation, causing droughts, storms, floods and fires, among others, and promotes the spread of diseases and pests. Recurring droughts are a particularly severe phenomenon in Poland. Extreme weather and climate conditions have a negative impact on yields and quality, and consequently on the availability of good quality and affordable food on the market. They also have serious economic consequences for farms, related to losses caused by weather anomalies or the fight against diseases and pests. Therefore, a climate change adaptation mindset is needed to make agriculture more resilient to unpredictable weather events.

Both the WEM and WAM scenarios indicate the possibility of achieving
Reduction is OK. 35% of GHG emissions in agriculture (compared to 1990).
In 2030, GHG emissions from agriculture will reach approx. 32 million t eq. CO_2.
[estimates are not objective]

Projections for the WEM scenario indicate the possibility of achieving a reduction in GHG emissions from agriculture to **32.4 million tonnes eq. in 2040. CO_2**. In contrast, in the WAM scenario in 2040, this figure could be **30.5 million tonnes eq. CO_2.**

POLICY)X

A significant part of the measures to reduce greenhouse gas emissions in agriculture are implemented through *the Common Agricultural Policy (CAP)* instruments, which are detailed in the **CAP Strategic Plan 2023-2027 (CAP SP)** (link). The CSP is a tool to support sustainable management methods that promote climate- and environmental-friendly actions that protect soil, water and air, and biodiversity. The support is implemented both through annual payments (Pillar I of the CAP) and multiannual commitments (investments under Pillar II of the CAP). Actions to reduce GHG emissions – resulting from the CSP Strategic Plan – include:

- **the application of environmental conditionality ,** a set of rules consisting of good agricultural and environmental condition (GAEC) standards and statutory management requirements (SMRs) that a farmer must comply with on his holding in order to receive full CAP support. Actions are aimed at both reducing GHG emissions and increasing removals (e.g. ensuring minimum soil cover during the most sensitive periods) and reducing pollutants into the air (e.g. banning the burning of agricultural land);
- **the use of eco-schemes,** i.e. additional voluntary farming practices that protect soil, water, climate, animal welfare and biodiversity resources in agricultural production but are adapted to national conditions and needs;
- the use of agri-environment-climate payments to compensate for costs incurred and income foregone due to the voluntary use of production methods conducive to the conservation of biodiversity, landscape and nature resources, in particular soil and water. Such measures allow adaptation to climate change;
- support for afforestation of agricultural land, creation of field trees, establishment of agroforestry systems;
- **co-financing of investments contributing to the protection of the environment and climate,** such as: purchase of precision fertilizer application machines, equipping farms with tanks and natural fertilizer storage devices, supporting low-emission livestock maintenance systems.

There is scope for developing a catalogue of measures to reduce emissions in the agricultural sector. Potential actions could include reducing methane emissions from livestock metabolic processes, increasing carbon sequestration and storage, and reducing emissions from crop soils. In order to minimise possible pressure on agricultural production and the risk of production reduction, measures in this area should be based on an appropriate incentive system. The scope and pace of development of potential future actions depend on the available financial means, the design of the CAP post-2027 and future EU and national legislation.

With regard to emissions from the agricultural sector, in line with the National Programme for the Reduction of Air Pollution – update, the development of low-emission fertiliser distribution and storage techniques, animal husbandry and feeding systems, as well as the rationalisation of nitrogen fertilisation and the wide dissemination of good agricultural practices is necessary.

Measures are also being taken to make **rural areas more energy efficient.** Although the GHG emission reductions achieved in this way are not accounted for in the agricultural sector, but contribute to the total national reduction, it is worth emphasizing. To this end, programmes have been provided for individual entities engaged in agricultural activity, as well as for energy cooperatives, financing the equipment of renewable energy sources and energy storage facilities, which should result in both reducing emissions and improving energy efficiency.

A significant part of renewable energy installations is located in rural areas, where **biogas plants producing electricity and heat for the needs of local communities, including peak biogas plants, and in subsequent years also biomethane plants introducing enriched biomethane into the gas network, may gain particular importance. These** installations allow the use of residues from agricultural and agri-food waste for energy purposes. Taking into account the advantages of biogas plants and the extremely important role of biomethane plants for the decarbonisation of the national economy, activities related to the construction of such installations will continue to be supported, both at the investment level and through organisational support.

ACTIVITIES BX

Action 65. Supporting measures to use green energy sources and improve energy efficiency on farms under the CAP

Action 66. Application of (environmental) conditionality under the CAP

Action 67. Use of eco-schemes under the CAP

Action 68. CAP agri-environment-climate measures

Action 70. CAP forest and forest-based interventions

Action 71. Support for the development of agricultural biogas plants

Action 72. Financial instrument - NFOŚiGW Rural Energy Programme

Action 75. Introduction of conditions for the development of certification of carbon removals and emission reductions from agricultural soils

Action 76. Rationalisation of fertilisation

Actions indirectly reducing GHG emissions:

Action 69. CAP support for organic farming

Action 73. Reducing food waste

Action 74. Shaping the ecological attitudes of future farmers and food producers.

Action 162. Scientific and educational research and projects in the field of rational and low-carbon agricultural production

Obszair 1.3. Share of LULUI JF sector in meeting reduction targets

Flora, as well as soils, sequester CO_2, which is why measures to increase *the absorption of CO_2 from the atmosphere by the LULUCF sector (land use change and forestry*) balance some of the GHG emissions that cannot be eliminated completely from the economy. This assumption underpins the European Union's objective of reducing GHG emissions by 55% compared to 1990, as well as the objective of achieving **climate neutrality** by 2050.

The LULUCF sector is associated with the use of land, land use change and forestry.

Includes soil and vegetation management, in these forests, and harvested wood products. A particular feature of the LULUCF sector is that it can absorb CO_2 from the atmosphere.

The rules for accounting nett balances of GHG62 emissions from removals by the LULUCF sector – including emission limits – are detailed in *EU Regulation 2018/841* (LULUCF Regulation) and its amendments by EU Regulation 2023/839 (LULUCF II Regulation).

An assessment of national capacities and policies for the generation of removals by the LULUCF sector is set out below.

Cell 1.3.1. Striving d<3 l to increase gas absorption greenhouseclh by:z sektoi *r* LULUCI F

The EU's 2030 target for net greenhouse gas removals is 310 million tonnes eq. CO_2. This is the sum of Member States' net greenhouse gas emissions and removals in 2030. A separate target, based on historical data, has been set for each Member State. For Poland, a **target of 38.1 million tonnes of eq. has been set for 2030. CO 263.** In addition:

- for the period 2021-2025, ensure that emissions from the LULUCF sector do not exceed removals from that sector, in addition to:
  - for managed forest land (cat. 4A) settlements are made using the forest reference level, which for Poland amounts to 28.4 million eq. CO_2;
  - for cultivated, grassy and wetland (cat. 4B-4D) accounting refers to emissions and removals in the base period from 2005 to 2009.
- for the period 2026-2029, removals should follow a linear trajectory, based on the average removals for the period 2021-2023, starting in 2022 and ending with an absorption target of 38.1 million tonnes of eq. CO2 in 203064

Once the requirements of the LULUCF II Regulation are met, Poland will potentially also be able to benefit from the **LULUCF F flexibility (compensation) mechanism.65** This involves transferring any surplus removals from LULUCF to account for emissions from non-ETS sectors based on the ESR (Article 12), excluding emissions related to natural disasters (Article 10), as well as maintaining flexibility for managed forest land for the period 2026-2029. The maximum value of the latter two flexibilities is 22.5 million eq. CO_2divided equally between the two accounting periods.

In Poland, **forests (forest land) are the largest sink of** CO2 emissions, alongside cropland, grassland, wetland and harvested wood products. In forests, the following are crucial for the level of removals in a given year and

62 Some areas covered by the LULUCF sector generate emissions, such as agricultural activities, so the targets relate to the net balance.

63 Article 4 and Annex IIa of the LULUCF II Regulation.

Emissions 64 data for 2023 will be available in 2025, so it is not possible to determine this trajectory.

65 Possibility to use an additional limited net removal pool derived from LULUCF-generated net removals separately in the five-year period 2021-2025 and 2026-2030.

subsequent years:

- age of stands (the trees absorb the most carbon during the intensive growth and development phase, i.e. mainly when they are young and middle-aged, with an average forest age of 62 la t in 2024)66,
- species structure,
- condition of stands taking into account disturbances resulting, among others, from climate change such as hurricanes, fires, rainfall gradations and droughts (which cause a decrease in growth and even die-off of trees and stands).

Actions such as irrigation of peatlands, afforestation or conversion of forests to more diverse and resilient stands **can only have the desired effects in the long term (in particular afforestation).** By contrast, halting peatland degradation provides an immediate and very favourable climate balance – not only increases CO_2 absorption capacity, but above all stops the release of huge amounts of carbon stored in peat. In turn, the action of biotic and abiotic agents destructive to wetlands and forests almost immediately reduces the potential for storing and absorbing CO_2 from the atmosphere.

Therefore, the LULUCF sector is vulnerable to very high variability in CO2 sequestration (both due to biotic and abiotic factors), which translates into a lack of ability to ensure high accuracy of the threshold of67.

Given the current challenges related to the impacts of climate change and their impact on forest ecosystems and society's expectations, **ensuring the sustainability of forests, in particular by adapting forests to climate change, in conjunction with strengthening the natural and social functions of forests, should be a key objective of forest transformation processes.** The pursuit of targets in the LULUCF sector is one of the building blocks of transformational processes in forestry, broadly aligned with objectives related to enhanced nature conservation and social functions.

The WEM scenario indicates that 28.8 million tonnes of eq. could be absorbed by 2030. CO 2 GHG by the LULUCF sector. In the WAM scenario, absorption may increase up to 46.5 million t eq., respectively. CO2 in 2030

Projections for the WEM scenario indicate a GHG removal potential for the LULUCF sector of **19.9 million tonnes eq. in 2040. CO 2.** In contrast, in the WAM scenario in 2040, this figure could be **35.3 million tonnes eq. CO 2.**

POLICY)

Absorption of emissions by forestry

Land **afforestation measures will contribute to the removals and emissions reduction targets in the LULUCF sector,** with the country's forest cover projected to increase to 33% by 2050 (29.6% in 2023)68. **Actions will be aimed at dispersing the risk in forest breeding to** as many tree species adapted to habitat conditions as possible, thus minimising the risk of forest stand dying. Species-depleted and structurally simplified stands will be rebuilt towards more diverse ones. This will also contribute to ensuring a diverse age structure of stands.

Natural forest restoration will be initiated wherever possible and justified, using already existing natural restorations, and **natural succession will also be used in hard-to-renew** areas. This will speed up the **restoration of sustainable forests** and contribute to the carbon fixation of biomass. It is also planned to use the least invasive ways of preparing the soil for forest renewal and, under favourable conditions, forest renewal without soil preparation due to related emissions. In this context, it is important to develop carbon-intensive techniques in forest management, including by introducing a new generation under the cover of old trees, which will increase the natural capacity to absorb CO2. Using the EU CO 2 certification framework, 69 it is planned to sell additionally absorbed

66 *Large-scale Forest Inventory as at 1 January 2024*, Office of Forest Management and Forest Surveying 2024, link
67 This is confirmed by historical data on absorption, cf. *National Inventory Report 2024. Inventory of greenhouse gas emissions and removals in Poland for 1988-2022, KOBiZE 2024.*
68 Data from the Central Statistical Office.
69 *Regulation (EU) 2024/3012 of the European Parliament and of the Council of 27 November 2024 establishing a Union certification framework for permanent carbon removals, carbon farming and carbon storage in products*

CO_2 removal units, which may constitute a new revenue stream for the forest sector and the management.

Forest management will support natural processes that enhance **biodiversity in forests .** The stand type will be treated flexibly as a dynamic category that can change over time. This will allow the biological characteristics and ecological requirements of individual tree species to be taken into account and will also allow the forest stands to be adapted to the new climatic conditions. **Tree grooming will** focus on the stability, viability and sustainability of forests, on improving the quality of production and on favouring species and individuals of trees that are adaptable to changing environmental and climate conditions. The latest developments in **selective forest tree breeding will also be used.** The indicated actions will be used to counteract forest dying in the context of climate change, and will be undertaken primarily on the premises of the State Forests State Farm (PGL LP) in accordance with the Forest Management Instruction and other internal documents of the Forest PGL LP.

In the State Forests, pan-European criteria will be used to plan sustainable forest management in order to preserve and strengthen forest resources, maintain the health and vitality of forests, maintain productive functions of forests, preserve forest biodiversity, preserve protective functions and maintain the socio-economic conditions of forests. Thanks to these measures, due account will be taken of the ratio of use to growth, allowing for an increase in forest resources. However, measures to increase sequestration capacity in forests have limitations due to the lifespan of trees and their results should therefore be considered in relation to forests in a perspective well beyond 2030.

It is planned to **permanently reduce economic use in order to strengthen natural and social functions on the area of approx. 20% of Polish forests on State Treasury land managed by the State Forests,** including through the establishment of social forests and the protection of forests of high natural value and high potential for permanent coal storage, including areas selected as part of the National Forest Council.

It is also envisaged **to increase water resources in forests ,** which will facilitate the adaptation of forests to projected climate change, including through the construction and modernisation of small-scale retention facilities (contributing to water retention in forests) or the restoration of hydrogenic habitats, which are a particularly rich carbon store (marshes, peatlands and wetlands), including the exclusion of forests on marsh and floodplain habitats from forest management.

Both from the point of view of removals of GHG emissions and adaptation to climate change, action in the area of firefighting is necessary. For this reason, **fire-fighting infrastructure** will be maintained and expanded in more than 200 forest districts, which will reduce emissions from forest fires, which lead to the release of large amounts of CO2 accumulated in trees.

Currently, the **National Forest Programme is being developed,** which will constitute a comprehensive, long-term strategy for the development and transformation of forestry. It will take into account the multidimensionality of forest resource management in the context of nature conservation needs, climate change adaptation, carbon sequestration, material and energy use of wood, and social functions of forests. It will take into account the need to balance the various functions performed by Polish forests.

Absorption of GHG emissions by agriculture

In addition to forest land, agricultural activities will also contribute to increasing soil carbon stocks and reducing their release into the atmosphere, albeit to a much lesser extent. However, it should be emphasised that the objectives of removals in the agricultural sector must be achieved with a view to ensuring food security. Measures to increase carbon removals in agriculture are implemented *under the Common Agricultural Policy Strategic Plan*[70] *2023-2027* through **conditionality standards:**

- limiting the conversion of permanent grassland and peatlands and wetlands to arable land,
- the requirement to maintain a minimum soil cover,
- special requirements for the use of organic soils.

Also, the CSP 2023-2027 will support **investments related to forestry and tree cover on arable land and agricultural practices** that lead to an increase in soil carbon stocks and reduce their release into the atmosphere. Three interventions are most important to increase carbon sequestration opportunities for forest and woodland

[70] *Strategic 70 Plan for the Common Agricultural Policy 2023-2027*

activities:

- afforestation of agricultural land,
- creation of field trees, and
- establishment of agroforestry systems.

Under Pillar I of the CAP, an **eco-scheme has been specifically designed to increase soil carbon stocks: carbon farming and nutrient management**. This eco-scheme supports eight agricultural practices that promote soil carbon sequestration, build soil fertility and reduce the loss of fertilising components, thus reducing emissions.

The adopted U E regulation 71 concerning, inter alia, the certification of carbon farming practices in, inter alia, the agricultural sector can contribute to increasing carbon removals in the LULUCF sector.

ACTIVITIES b

As regards removals by the forestry sector

Action 77. Preparation of water management plans in forests
Action 78. Setting objectives and principles for sustainable forest management
Action 79. Seed management in forestry
Action 80. Increasing CO2 removals and storage in forests
Action 81. Certification and trade of CO2 units in the forestry sector
Action 82. Combating forest decay
Action 83. Determination of directional tasks in the field of forest fire protection

71 *Regulation (EU) 2024/3012 on establishing a Union certification framework for permanent carbon removals*, carbon farming and carbon storage in products

Action 84. Restoration and conservation of wetlands, peatlands and wetlands
- Action 85. Development of small water retention and landscape retention
- Action 87. Developing a bioeconomy strategy
- Action 88. Development of the National Forest Programme
- Action 94. Conducting soil monitoring
- Action 162. Scientific and educational research and projects in the field of rational and low-carbon agricultural production

As regards removals by the agricultural sector

- Action 66. Application of (environmental) conditionality under the CAP
- Action 67. Use of eco-schemes under the CAP
- Action 69. CAP support for organic farming
- Action 70. CAP forest and forest-based interventions
- Action 75. Introduction of conditions for the development of certification of carbon removals and Reducing emissions from agricultural soils

Obszair 1.4. Improving the quality of the environment

The environment is a complex system consisting of natural and anthropogenic elements that coexist and interact with each other. It includes the atmosphere, the hydrosphere, the lithosphere, as well as the biosphere, people and their activities. Environmental protection focuses on sustainable management natural resources, minimising the negative impact of human activities on ecosystems and promoting harmonious cooperation between the community and nature. Today's environmental challenges call for a global approach and action focused on protecting biodiversity and sustainable development.

Improving the quality of the environment is an introduction process actions and measures to protect, Restoration or improvement of the overall quality environment around us. This includes various areas, such as air quality, water quality, Soil, Biodiversity and Generally

This section sets out objectives for improving the quality of the environment in terms of air, water, soil and waste management. As these components are sensitive to climate change or remain linked to the effects of climate and energy policies, their inclusion in the NECPs aims to ensure the coherence of cross-sectoral actions and maximise synergies between different public policies.

Cell 1.4.1. The EU's clean air policy framework is based on three pillars. The first pillar comprises the Ambient Air Quality Directives (2004/107/EC and 2008/50/EC) and sets air quality standards for concentration levels of 12 air pollutants a72. On 11 December 2024, the new *EP and Council Directive (EU) 2024/2881 on ambient air quality and cleaner air for Europe* entered into force, which not only consolidated the former Ambient Air Quality Directive, but also introduced significant changes to the air quality assessment and management system, including new, ambitious limit values for selected substances in ambient air that will have to be reached by 2030. The second pillar is *Directive 2016/2284 on national emission reductions* (NEC Directive), which sets out the emission reduction commitments of individual Member States for major air pollutants and their precursors to achieve a common reduction in cross-border pollution. The third pillar includes provisions setting emission standards for relevant sources of air pollution, such as: road transport vehicles, domestic heating and industrial installations. The NEC Directive established commitments for EU countries to reduce anthropogenic pollutant emissions to atmospheres.73

Emissions of air pollutants have a negative impact on the natural environment, including human health. The most dangerous effects are acid rain, the increase in the greenhouse effect, the ozone hole, exceedances of air quality standards, the formation of smog, soil and water pollution, which is why action to reduce them is highly desirable.

Air quality is affected by a number of various factors, including: emissions pollution, meteorological conditions, topography, use of fossil fuels, activity Human or seasonal changes.

Poland has been required to achieve the reduction targets for anthropogenic pollutants into the atmosphere over two periods, which cover the years 2020 to 2029 and 2030 to the reference year 2005. A detailed diagram is presented below.

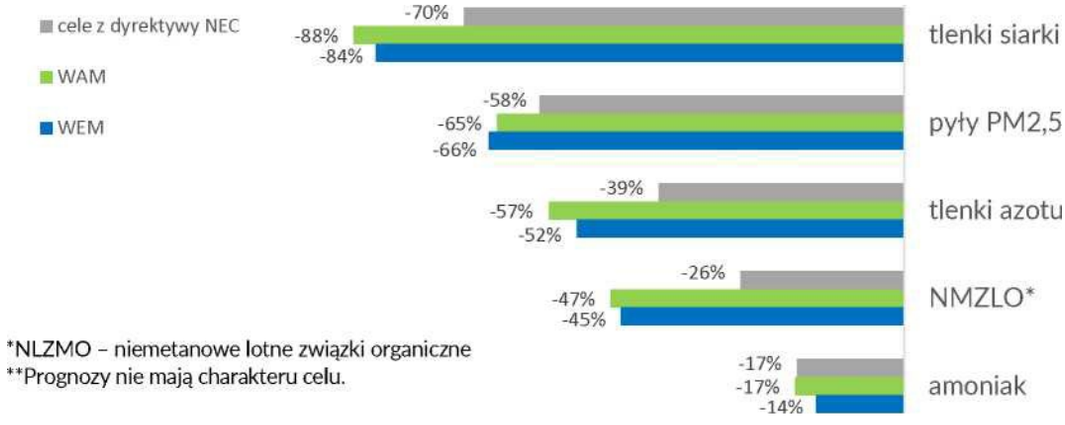


Figure 8. Comparison of emission reduction targets and projections for 2030 for the WEM and WAM scenarios [%].

The biggest problems with inadequate air quality concern urban areas, which are large population centres, and regions of intensive industrial activity. Exceedances of the limit values for PM10 and PM2.5 and the target level for benzo(a)pyrene remain an important problem, especially in winter. In addition, in urban agglomerations there is a problem of exceedances of the limit value for nitrogen dioxide (NO_2) resulting from heavy vehicle traffic. Emissions from the combustion of fossil and biomass fuels in the domestic-municipal sector, road transport, industrial production processes and energy are the main sources of pollutant emissions into the air. Concentrated areas of residential buildings equipped with individual heat sources using fossil fuels, as well as solid biomass fuels and areas of cities with high vehicle traffic often face exceedances of air quality standards, which is why they require special concentration of activities. The main source of ammonia (NH_3) emissions in Poland is agriculture.

72 Limits have been set for six: sulphur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), benzene (C_6H_6), ozone (O_3), fine particulate matter PM10 (up to 10 µm in diameter), fine particulate matter PM2.5 (up to 2.5 µm in diameter);
Targets have been set for the other six: heavy metals: lead (Pb), arsenic (As), nickel (Ni), cadmium (Cd) as determined in PM10 and benzo(a)pyrene as determined in PM10. For plant protection reasons, 3 substances are evaluated: sulphur dioxide (SO_2), nitrogen oxides (NOx) and ozone (O_3).
73 Annex 2 of the NEC Directive.

This sector is responsible for nearly 96% of the total emissions of this pollutant. It is dominated by two sources of livestock manure and the application of natural and mineral fertilizers to agricultural soils.

Poland declares striving to reduce atmospheric pollution in accordance with with the objectives set out in the NEC Directive.

The use of hard coal in households for heating purposes has a direct impact on air quality, but also affects the needs of hard coal imports and affects the energy efficiency of the economy. Reducing the consumption of hard coal in individual boilers is therefore the most important action to improve air quality in Poland.

POLICY)

The framework for air quality management in Poland is laid down in the Environmental Protection Law Act and implementing acts. An important document in this area is the ***National Air Pollution Reduction Programme – update*** (link), which sets out measures to achieve the objectives of the NEC Directive. The actions of local governments, which prepare and implement air quality **programs along with short-term action plans and anti-smog resolutions, also play an extremely important role.** Programs and resolutions are acts of local law regarding 74 the standards of heating devices and the type and quality of fuels allowed to be burned. They may specify and introduce restrictions or prohibitions on the operation of installations in which the combustion of fuels takes place.

Action to reduce emissions of air **pollutants from the individual heating sector will contribute to the objective of improving air quality,** in particular by developing RES and increasing energy efficiency, road transport, adapting fuel and combustion plant quality standards and increasing environmental awareness and public education.

The measures will target in particular zones exceeding the limit values for PM10 and PM2,5 and nitrogen dioxide (NO_2), the target level for benzo(a)pyrene. On the other hand, the actions set out in ***the Update of the National Air Protection Programme until 2025 (with a perspective until 2030 and until 2040)*** (link) are to lead to **the fact that in 2030 there are no zones in Poland where there are areas where the population is exposed to** the negative effects of air pollution caused by exceedances of air quality standards for PM10 and PM2.5.

Measures to reduce the burning of fuels for heating purposes play a huge role in improving air quality. Activities focus **on the replacement of obsolete solid fuel stoves and thermal modernisation of buildings,** as well as on the decarbonisation of district heating systems, which are a priority under the financial support programmes implemented by the National Fund for Environmental Protection and Water Management, in particular Clean Air, My Heat, etc. Existing and new support programmes should be developed towards the digitalisation of the support implementation process, raising the expected final condition of the building, increasing the quality and environmental requirements for **connection to new and existing district heating networks and introducing alternatives to the retrofitting of buildings with very poor technical condition**. It is worth noting that financial support cannot cover coal installations, and co-financing of natural gas installations should only take place in the case of installations of hybrid heating systems involving the use of a source of OZ E75.

Undoubtedly, the need to meet the energy efficiency requirements for new buildings, as amended in 2021, and to ensure zero-emission buildings from 2030 onwards also have a positive impact on improving air quality. Such buildings must be characterised, among other things, by not producing on-site CO2 emissions from fossil fuels and greenhouse gases (or producing very small amounts of GHG emissions).

An important tool in the air quality management system in Poland at the national, provincial and municipal level is ***the Central Building Emission Register (CEEB).*** It is particularly important to use the CEEB to monitor progress in the implementation of air quality programmes and anti-smog resolutions and the effectiveness of actions

74 In accordance with Article 96 of the Environmental Protection Act.

75 In accordance with Art. 15 of EU Directive 2024/1275 from 1 January 2025, Member States shall not provide any financial incentives for the installation of individual fossil fuel boilers, with the exception of those selected for investment before 2025.

resulting from central programmes, in which direction development work will be carried out.

As regards the reduction **of air pollutant emissions from transport**, in addition to **supporting the development of public transport and the electrification of road vehicles,** an obligation has been introduced to create clean transport zones in cities with more than 100 000 inhabitants, where, according to data from the General Inspectorate for Environmental Protection (GIOŚ), the permissible annual average level of nitrogen dioxide (NO_2) has been exceeded. This action will improve air quality by reducing emissions from transport. It should be stressed that reducing the level of particulate matter PM2.5 and nitrogen dioxide pollution is important for improving public health and quality of life in cities. In addition, the introduction of zones will reduce the negative impact of noise emitted by internal combustion engines, which is particularly burdensome in dense urban areas.

In addition, due to the entry into force *of the new Directive 2024/2881 on ambient air quality and cleaner air for Europe*, it will be necessary to intensify efforts to prepare new, additional solutions that will accelerate the pace of air quality improvement in Poland, so that the objectives of the Directive can be achieved by 2030. The Ambient Air Quality Directive will generate a very large number of tasks to be carried out not only by government administration, GIOŚ services, but also by various types of regional, district and municipal self-government units.

However, citizens will have the biggest impact on the real achievement of the new air quality targets, as it will depend on their actions in the area of residential heating and road transport whether Poland will meet the challenges posed by the new Directive by 2030. Existing and modified financial support programmes will be a particular incentive for citizens, and education will also play a major role alongside regulation.

As regards ammonia emissions from the agricultural sector, it is necessary, in accordance with the update of the National Air Pollution Reduction Programme, to develop low-emission techniques for the distribution and storage of fertilisers, animal husbandry and feeding systems, as well as to rationalise nitrogen fertilisation and widely disseminate good agricultural practices.

ACTIONS IB

- Action 3. Reducing the use of fluorinated greenhouse gases
- Action 9. Accelerating the development of onshore wind energy
- Action 10.Accelerating the development of photovoltaics
- Action 14.Instrument financial – ProgrammePriority NFOŚiGW – ‘My Current’
- Action 15.Instrument financial – ProgrammePriority NFOŚiGW – ‘Energy Plus’
- Action 16.Instrument financial – ProgrammePriority NFOŚiGW – "Polish Geothermal Plus’
- Action 17. Development of the electricity and heat storage market
- Action 28 Development of Power to Heat technology and heat storage facilities in Poland

Action 38. Development of zero-emission public transport in cities

Action 39. Creation of clean transport zones

Action 40. Financial support instruments for electromobility
Action 41. Instruments for non-financial support for electromobility
Action 52. Increasing vehicle emissions requirements
Action 53. Issuance fee
Action 66. Application of (environmental) conditionality under the CAP
Action 67. Use of eco-schemes under the CAP
Action 68. CAP agri-environment-climate measures
Action 69. CAP support for organic farming
Action 70. CAP forest and forest-based interventions
Action 76. Rationalisation of fertilisation
Action 105. Introduction of requirements for the use of solar energy in buildings
- Action 106.Instrumentfinancial –NFOŚiGW Priority Programme – 'My heat'
- Action 107.Instrumentfinancial –Priority Programme of the National Fund for Environmental Protection and Water Management – 'Clean Air'
- Action 108.Instrumentfinancial –Tax credit for expenditure incurred on thermomodernization of single-family residential buildings (thermomodernization relief)

Action 109. Financial instrument – TERMO programme, support for energy efficiency improvements in multi-apartment buildings
Action 110. Financial instrument – Priority Programme of the National Fund for Environmental Protection and Water Management (NFOŚiGW) – 'Modernisation of schools'
Action 111. Financial instrument - NFOŚiGW Priority Programme - "Modernisation of public buildings"
Action 112. Support scheme for micro-enterprises - Energy efficiency of buildings
Action 114. Introduction of a tender evaluation model for tenders for the construction of public buildings based on total life-cycle cost (LCC)
Action 115. Implementing new energy standards for new buildings and buildings undergoing major renovations
Action 116. Energy assessment system for buildings and technical building systems
Action 117. Energy efficiency in social housing and the housing stock of municipalities, taking into account the needs of vulnerable groups

Cell 1.4.2. Water stain cell

Water pollution is a complex problem resulting from various human activities such as industry, agriculture and municipal management.Substances chemical, pathogenic micro-organisms, as well as other pollutants introduced into waters, have the potential to affect the balance of ecosystems and pose a threat to the quality of water captured for the supply of drinking water to the public. It should be emphasized that human intervention includes not only direct water pollution, but also the transformation of riverbeds and their valleys, including by interrupting fish migration routes or changing the natural regime of water flow as a result of progressive water catchment sealing.

Water pollution can be the result of a variety of factors, including: wastewater municipal and industrial, fertilizers and pesticides from agriculture, pollution from areas urbanised and waste, spills of substancesDegradation of river banks.

On the other hand, the **most effective form of increasing the resilience of aquatic ecosystems to the effects of climate change** remains to preserve or restore their natural character. The restoration of water courses is not only conducive to the restoration of ecological balance, but can also contribute to slowing down water runoff, thus limiting the process of drainage of agricultural land. Such activities are particularly important from the perspective of climate protection, including by maintaining the irrigation of peat soils, which counteracts carbon dioxide emissions from peat moulding processes.

Directive 2000/60/EC establishing a framework for Community action in the field of water policy – the so-called Water Framework Directive (WFD) required EU Member States to **achieve good status for all waters**, unless

derogations from environmental objectives were applied in the form of an extension of the deadline for achieving the objectives (derogation under Article 4(1)(b) CTMR). 4. WFD) or setting less stringent targets (derogation under Art. 5 of the WFD). The directive stresses that water is not a mere commercial product, but rather a heritage that must be protected and defended. The implementation of the WFD in Poland includes the review and update of the river basin management plans (RBMPs), which are the basis for water management decisions.

The quality of water intended for human consumption at EU level is regulated by Directive (EU) 2020/2184. It required EU Member States to ensure that water intended for human consumption is healthy and clean, and to improve universal access to water intended for human consumption. Member States, in addition to measures to improve the quality of water intended for human consumption and surveillance, must take measures to improve public access to water intended for human consumption, especially for vulnerable and marginalised groups. In addition, the Directive requires Member States to assess losses of water intended for human consumption, to communicate the results of that assessment to the European Commission and, if the threshold for water leakage to be set by the Commission is exceeded, to draw up an action plan to reduce those losses.

Surface waters such as rivers and lakes play a key role in ecosystems, providing habitats for a variety of plant and animal species. The Odra and Wisła rivers, as one of the largest watercourses in Poland, also perform important economic functions, being a source of water for industry and agriculture, a transport route and a place used for recreational purposes. Unfortunately, industrial activity (including mines) leads to an increase in salinity, which negatively affects the health of aquatic ecosystems and water quality. Mine water discharges promote the development of invasive species such as gold algae (*Prymnesium parvum*), which releases toxins harmful to fish and other aquatic organisms. Its blooms can lead to massive fish deaths, posing a serious threat to biodiversity and ecosystem health.

Poland will consistently strive to improve the status of its waters, in particular by implementation of water management plans and economic activities sewage.

POLICY)

In order to improve water status, it is necessary to focus on the identification, monitoring and implementation of measures to reduce and prevent water pollution and increase the resilience of water management to the effects of climate change, in order to protect the environment and ensure access to safe water resources for current and future generations, including improving universal access to water intended for human consumption. These actions should also take into account the new obligations under Directive 2024/3019, including the extended requirements on urban wastewater quality, monitoring and energy management in treatment plants.

River Basin Management Plans (RBMPs) form the basis for decision-making on the state of water resources and define the principles for their management. The implementation of the tasks resulting from the **second update of the RBMPs is of particular importance in the area of improvement of water status in Poland.** As part of these updates, which were published at the turn of 2022 and 2023, 24 690 actions worth almost PLN 26 billion were planned for implementation.

The second particularly important component in the field of water protection is investment in wastewater management, including the construction, extension and modernisation of wastewater treatment plants, as well as the development **of the sewage network on the basis of the National Municipal Wastewater Treatment Programme and its subsequent updates**. The implementation of these measures should be coordinated with the requirements of the new Waste Water Directive, including mandatory energy audits and the maintenance of a national data set on the emissions and energy consumption of treatment plants.

Priority shall be given to the carrying out of inventories, critical review (possible revision) and appropriate prioritisation of plans and programmes, including investment and non-investment activities, with particular regard to activities resulting from:

– River basin management plans,

– flood risk management plans,

– a plan to counteract the effects of drought,

–water maintenance plans,

–the Marine Water Protection Programme,

— a national surface water restoration programme,

– the national shipping programme until 2030,

– a water scarcity programme.

In accordance with the requirements of the Water Framework Directive, various types of water monitoring are carried out in Poland. Water monitoring makes it possible to obtain information on the status of surface and groundwater necessary to plan water management and assess the achievement of environmental objectives. In addition, a system of constant monitoring of surface waters is being created, which will be equipped with an early response system to potential crises, failures and catastrophes. It will enable faster detection and response to contaminants, including increased salinity of water.

As regards the quality of water for the supply of drinking water to the population in Poland, the policy will focus on ensuring that water intended for human consumption is safe and free of harmful substances. As part of our efforts, we will work towards the full implementation of Directive 2020/2184, which will include, inter alia, the introduction of a risk-based approach to water safety, including supply systems and catchment areas, as well as internal water supply systems, with a particular focus on priority facilities. An action plan will be developed to reduce water losses when the EU leakage threshold set by the European Commission through a delegated act is exceeded. An important element is also the protection of waters against nitrate pollution from agriculture. In this area, the implementation of the *actions of the Programme of Action to reduce water pollution by nitrates from agricultural sources and to prevent further pollution,* the so-called Nitrates Programme, adopted by means of a regulation (link) and the provisions of the Fertilisers and Fertilisation Act, which regulate the rules for the use of nitrogen fertilisers, plays a key role. Good agricultural practices in the field of fertilization are promoted through the preparation and dissemination of the Code of Good Agricultural Practice. In addition, support for practices affecting, inter alia, the reduction of air pollutant emissions is provided under *the CAP Strategic Plan 2023-2027*. The new wastewater directive also stresses the need to reduce nutrient inputs, which remains consistent with actions related to the protection of waters against nitrates and with commitments to reduce the impact of urban wastewater on water status.

ACTIVITIES b

Action 66. Application of (environmental) conditionality under the CAP

Action 67. Use of eco-schemes under the CAP

Action 84. Restoration and conservation of wetlands, peatlands and wetlands

Action 85. Development of small water retention and landscape retention

Action 90. Bringing water quality to good and very good status, in accordance with the Water Framework Directive

Action 91. Ensuring access to clean drinking water
Action 93. Support for the development of water and wastewater management
Action 101. Financial instrument – National Fund for Environmental Protection and Water Management (NFOŚiGW) programmes supporting climate change adaptation

Cell 1.4.3. Soil stagnation objectivel

Soil states basic, restricted and a non-renewable natural resource. It is one of the main elements of the natural environment and the habitat of a huge number of living organisms. The soil performs numerous environmental, economic, social and cultural functions. For the agricultural sector, its production function, providing food, biomass and raw materials, is extremely important.

to sectors of the economy that have an impact on soil condition and degradation are mainly accounted for
waste management, industry, transport, energy, mining and agriculture. Relevant Construction is also important, including Seizure and cover of new land

The soil can be degraded as a result of, among other things, pollution, erosion, organic matter decline, compaction, salinisation, acidification, sealing. Climate change can also affect the rate of soil degradation. Changes in rainfall patterns can lead to prolonged droughts or heavy rainfall. Droughts reduce soil moisture, which hinders plant growth and leads to wind erosion, while heavy rainfall can cause water erosion by washing away the humus layer of the soil. Higher temperatures accelerate the decomposition of organic matter in the soil, leading to deterioration of its physical, chemical and biological properties. Climate change-related extreme weather events such as storms, floods and hurricanes can also negatively affect soil quality.

Reversing soil degradation benefits climate change adaptation objectives and supports the climate neutrality objective. Soil health improves water retention, protects biodiversity and protects human health and well-being. Soils in good condition are also an important element of a clean and circular economy. The condition of soils can be considered as good when none of their functions is significantly affected.

Different methods of protection are used to protect soils from degradation and to preserve their functions. Proper crop rotation and balanced fertilization help to maintain soil fertility, prevent nutrient depletion and reduce the risk of soil erosion. The use of organic fertilizers, such as compost or manure, helps to maintain organic matter in the soil, which improves its structure, water retention capacity and increases the efficiency of fertilization. The use of simplified cultivation techniques, such as ploughless or strip tillage, helps to protect the soil structure and reduces the risk of erosion and affects the protection of humus in the soil. Planting trees and shrubs in erosion-prone areas helps to stabilize the soil and prevents it from being washed away by water. Restoring functions to degraded soils (reclamation) can be done, e.g. by introducing vegetation that improves soil structure and fertility.

Poland recognises the key role of soils in the natural environment and climate protection. Preventing soil degradation and preserving soil functions, as well as restoring proper functions to degraded soils, taking into account their current and planned use, is therefore a desirable course of action for soil protection. The parameters for determining good soil condition should be differentiated and selected taking into account the use, type of expected degradation and soil characteristics.

Soil resources should be used in such a way as to ensure
the best possible condition for future generations.

The EU Soil Strategy for 2030 – Benefits of healthy soils for people, food, nature and climate, the so-called EU Soil Strategy for 2030. ***The EU Soil Strategy*** (link) sets out actions to achieve the objectives of the EU Fit for 55 package on climate change mitigation and adaptation, restoring biodiversity, ensuring food security, zero pollution and protecting human health, increasing land reuse and reducing land take.

Directive **(EU) 2025/2360 of the European Parliament and of the Council of 12 November 2025 on soil monitoring and resilience (Soil Monitoring Law) entered into force on 16 December 2025** (OJ Ooh, ooh, ooh.

EU L 2025/2360, 26.11.2025), hereinafter referred to as **the SML** Directive. The SML Directive aims to halt degradation and achieve healthy soils across the EU by 2050. The Directive applies to all soils in the European Union, regardless of their use, covering both agricultural, forest and urban soils. Member States are required to establish a framework for monitoring and assessing soil health in designated soil units and soil sealing and removal in soil districts. On the basis of the monitoring results obtained, soil health will be assessed and the impact of soil sealing and soil removal on the loss of ecosystem services will be assessed. The Directive also introduces rules on land take reduction as a contribution to climate change mitigation. Removal of CO2 76 and water storage as a result of sustainable soil management so that they can balance greenhouse gas emissions is an essential element of the actions needed to achieve climate neutrality. In this respect, the Directives are fully complementary and synergistic with the Land Use, Land Use Change and Forestry (LULUCF) Regulation. In addition, the SML Directive requires Member States to identify all potentially contaminated sites and collect them in a publicly available register. Subsequently, studies of these sites should be carried out and risk mitigation measures should be implemented, including, but not limited to, remediation at sites where unacceptable risks to human health and the environment have been identified.

POLICY)X

Among the identified numerous threats to soils, the issue of soil contamination and the issue of loss of organic matter and acidification are of high priority from the point of view of environmental protection in Poland.

In the Polish legal system, soil protection is linked to the broader concept of soil surface protection and also includes protection against pollution and other forms of degradation of the soil layers under the soil. **Activities will continue to identify contaminated soils and support their remediation,** i.e. the removal or reduction of harmful substances to a level safe for human health and the environment, their control and containment.

Also important from the point of view of soil protection is **the principle of priority of secondary use of space in investment processes,** which serves, inter alia, to reduce the occupation of new land and sealing of the earth's surface.

Soil is the basic productive resource of agriculture and forestry, so the good condition of Polish soils represents the potential for the production of food and other high-quality raw materials. Protecting the productivity of agricultural and forest land will consist primarily in preventing soils from being excluded from agricultural and forest use, preventing soil erosion and loss of soil organic matter. Preventing degradation processes aims to preserve soils as much as possible to perform ecosystem functions in order to ensure food security, as well as to ensure that CO2 sequestration in soils is maximised. In doing so, active measures are foreseen for the biological sequestration of CO2 in soil. The CAP 2023 2027 CSP intervention will continue to protect resources and improve soil quality. Among the mandatory conditionality requirements included in the CSP 2023-2027, the most important for soil protection are:

- tillage management, contributing to reducing the risk of soil degradation and erosion, including consideration of slope,
- minimum soil cover during the most sensitive periods,
- crop rotation and diversification on arable land.

In order to protect and improve the quality of soils, the implementation of the eco-scheme 'Carbon farming and nutrient management', which is described in Objective 1.3.1, will also continue.

To improve soil quality, policies will be developed to support the rehabilitation of degraded and devastated land. Remediation will include actions to restore the useful or natural value of degraded land by properly shaping the terrain, improving the physical and chemical properties of soils, regulating water relations, restoring soils, strengthening slopes and building the necessary roads.

With the entry into force of the SML Directive, it is envisaged to introduce additional solutions that will strengthen

76 There are about 1,500 billion tons of carbon in the soil globally. Soils are the second largest active carbon store in the oceans (40,000 billion tons). They store more carbon than the total in the atmosphere (760 billion tons) and vegetation (560 billion tons). Source: European Environment Agency.

the existing national soil protection system. The SML Directive also aims to harmonise soil health actions across the EU. Under the new policy, particular emphasis will be placed on monitoring and assessing soil health, support to improve soil health and the identification and remediation of contaminated sites.

ACTIVITIES BX

Action 66. Application of (environmental) conditionality under the CAP

Action 67. Use of eco-schemes under the CAP

Action 68. CAP agri-environment-climate measures

Action 69. CAP support for organic farming

Action 70. CAP forest and forest-based interventions

Action 94. Conducting soil monitoring

Action 95. Identification and remediation of soil contamination sites

Action 96. Identification and improvement of the environment in large-scale degraded areas

Action 99. Supporting the rehabilitation of degraded and devastated land

Action 100. Financial instrument – Priority Programme of the NFOŚiGW 'Protection of the Earth's surface'

Action 101. Financial instrument – National Fund for Environmental Protection and Water Management (NFOŚiGW) programmes supporting climate change adaptation

Cell 1.4.4. Waste target

Waste can contaminate air, water and soil, so it is crucial that it is properly managed to reduce its negative impact on the environment.

Waste management in Poland and its perception by society, Entrepreneurs, service providers, etc., have been changing dynamically in recent years. Arrives modern installs enabling sorting, processing, including recycling, as a result of a change in the approach to waste – they are no longer treated as unnecessary, unnecessary materials, but as valuable resources to be used.

Factors That Affect Quantities
the waste generated includes, inter alia, the population,
Number of people living in each
households, volume of production,
the type and degree of efficiency of the production
methods, and
volume of consumption and waste management
It can have a negative impact on the environment.
All when the wrong methods are used.
processing or non-compliance with requirements

Given the diversity of waste resulting from diversified industrial processes, manufactured products, offered services, the possibilities of their applications are wide. The composition of waste (e.g. post-consumer waste) can be partially influenced by product design. Due to its properties, some of the waste is not reusable, hence disposal technologies are also necessary.

Modern waste management, in line with the EU waste hierarchy and striving to **implement the circular economy model ,** requires continuing the above-described changes in the approach and perception of waste as a source of resources (including the possibility of substituting primary raw materials with secondary raw materials generated from waste) as well as accelerating the development of recycling.

Waste management is subject to a relatively wide range of EU regulations. The requirements are regulated, among others, in:

- Directive *2008/98/EC on waste,*
- *Directive 1999/31/EC on the landfill of waste,*
- Directive *94/62/EC on packaging and packaging waste, which will expire on 12 August 2026 and be replaced by EU Regulation 2025/40 on packaging and packaging waste (PPWR),*
- *Directive 2012/19/EU on waste electrical and electronic equipment (WEEE),*
- *Directive 2000/53/EC on end-of-life vehicles,*
- Directive *2010/75/EU on industrial emissions (integrated pollution prevention and control),*
- *Directive 2006/21/EC on the management of waste from extractive industries,*
- *Council Directive 91/271/EEC concerning urban waste-water treatment,*
- *Directive 2024/3019 on urban waste water treatment;*
- *Council Directive 86/278/EEC on the protection of the environment, and in particular of the soil, when sewage sludge is used in agriculture,*
- *Council Directive 96/59/EC on the disposal of polychlorinated biphenyls and polychlorinated terphenyls (PCB/PCT),*
- *EU Regulation 2023/1542 on batteries and waste batteries;*
- EU *Regulation 2019/1021 on persistent organic pollutants;*
- EU *Regulation 2017/852 on Mercury.*

The implementation of the targets set at EU level is part **of the implementation *of the 2023 National* Waste Management Plan 2028 (NWMP 2028), an update of the** NWMP 2022.

The key waste management targets are set out below. The aim is to reduce the impact of waste on the environment.

The overall objective of waste management is to reduce the impact of
on the environment through the implementation of circular economy solutions
closed, including through the implementation of waste management plans.

General objectives for waste management:

1) implementing waste prevention (WTP) and reducing the amount of waste generated in77;
2) increasing the levels of preparation for re-use and recycling of municipal waste achieved;
3) minimising the amount of waste landfilled;
4) increasing the recycling rates achieved for packaging waste;
5) maintaining a high level of preparation for re-use, recycling and other forms of recovery of construction and demolition waste;
6) increasing the recovery of critical raw materials and recycling of extractive waste;
7) reducing the role of waste incineration facilities by directing only non-recyclable waste to incineration;
8) building public awareness of the differences in the labelling of plastics, with a view to their better segregation and further management;
9) promoting activities aimed at obtaining raw materials (especially critical raw materials) through recycling and from anthropogenic deposits, including waste dumps and extractive waste facilities.

Plastics:

In recent years, there has been a sharp increase in the amount of plastic products, both in the world and in Poland. Plastics are primarily used as packaging for various types of food. In the past, their use was small, but today they make up a significant part of our daily lives. They are used in construction, medicine, automotive, articles daily use and packaging. popularity products made of plastics is mainly due to the low cost of production, durability and resistance to external factors. However, these utility advantages become a disadvantage after using the products, making them one of the most troublesome categories of waste.

Plastics are materials that
polymers are the main component:
synthetic or macromolecular compounds
modified natural compounds. In addition to
polymers, plastics contain
also support measures that aim to
improving their performance,
lowering the cost of production and improving
aesthetic qualities. Auxiliary measures
They are divided into two main groups: extras
Processing aids that assist in processing
plastics, and functional additives, which
affect the usable properties of plastics.

Statistical data show that the production of plastics is constantly increasing, which is associated with an increase in the amount of waste in the process of their processing and an increase in the amount of used products. Plastic waste is the fastest growing waste group in terms of both volume and weight. In Poland alone, the annual consumption of plastics was over 70 kg per inhabitant. These values require good management in such a way that they can be recovered or recycled, thereby reducing the use of natural resources for their production.

It should be remembered that the decomposition of plastics as a result of biodegradation is very slow. These products, depending on the material used, can decompose in the ground up to several hundred years. In addition, the storage of this type of waste, due to its large volume, results in faster filling of landfills, and the aim is to minimize the creation of new landfill sites. Only waste that is no longer suitable for any kind of management should be disposed of in landfills. Most plastic waste materials are too valuable to landfill, which makes this phenomenon extremely undesirable. In addition, plastics imported from abroad are a huge problem, mainly due to the spread of online shopping. Imported plastic products are often not subject to the same controls as those produced locally, making it difficult to manage their waste and increasing the risk of environmental pollution.

77 Targets for the reduction of packaging waste generation per capita will be able to be set taking into account the provisions of Regulation 2025/40 of the European Parliament and of the Council of 19 December 2024 on packaging and packaging waste, amending Regulation (EU) 2019/1020 and Directive (EU) 2019/904, and repealing Directive 94/62/EC (the so-called 'Packaging Waste Directive'). PPWR). It shall apply from 12 August 2026, with correspondingly later deadlines for specific obligations.

Recycling is a key element of waste management that reduces the consumption of natural resources and reduces the amount of waste going to landfills.

uOne of the main challenges in recycling is **additives used in the production of plastics**. These additives, such as dyes, UV stabilizers, plasticizers and other chemicals, can hinder the recycling process as they change the physical and chemical properties of plastics. Dyes can affect the color and purity of the recycled material, and UV stabilizers can change its durability. Plastic products should be designed and manufactured taking into account both performance and recyclability.

POLICY)X

Waste management policy aims to reduce waste generation, increase the amount of waste sent for recycling, eliminate improper waste management, raise environmental awareness of the society in the field of waste prevention and proper waste management. These measures should contribute to the reduction of the environmental impact of the waste sector, including the reduction of pollution of water, land and air.

The objectives will be achieved, inter alia, through the implementation of the *National Waste Management Plan 2028 (NWMP 2028),* adopted in 2023. The waste management policies adopted in KPGO 2028 will be reflected in the provincial waste management plans.

Among the actions planned in the KPGO 2028 are, in particular, educational and information measures on waste prevention (WTP) and prevention of littering; supporting the development of infrastructure for ZPO and waste recycling; supporting research in the field of new technologies in the field of ICZM and waste management, recommended actions concerning critical raw materials and aimed at combating littering of the marine and terrestrial environment.

Achieving the objectives requires both the implementation of appropriate systems, regulations and incentives, but also commitment at the societal level to reduce and segregate waste generation and at all levels of economic activity, from product and packaging design and production processes, through the design of processes related to the transport of products to the provision of services in a waste-efficient manner.

Promoting circularity and sustainable use of packaging by encouraging the use of reusable packaging and re-use systems will be an important element of policy implementation. **A particular role will be played by the**

deposit and return system implemented from October 2025, which includes single-use plastic bottles with a capacity of up to 3 litres, reusable glass bottles up to 1.5 litres and metal cans with a capacity of up to 1 litre.

The *Single-Use Plastics Directive (SUP) bans* the sale of many single-use plastic products, such as cutlery, plates, straws, drink stirrers, hygiene sticks and Styrofoam food and beverage containers.

The future state policy in the field of plastics will be based on provisions on the design of products, as well as new laws on disposable products and the management of waste from imports.

ACTIVITIES b

Act 97. Reduction of illegal shipments of waste and identification and prevention of illegal waste deposit sites
Action 102. Reducing the use of plastics
Action 103. Circular economy
Action 145. Strengthening cybersecurity in the waste management sector

Obszair 1.5. I will close the circular economy with this

Circular economy closed (GOZ) is a modern economic model that strives to minimise waste and maximise resource efficiency through the proper design of production processes and products and reuse, recycling and recovery. The main objectives of the GOZ are to minimise waste, save resources, reduce CO2 emissions and increase innovation. Waste minimisation is about reducing the amount of waste generated through efficient management of resources and production processes. Saving resources means optimising the use of natural resources by reusing materials and products. The increase in innovation stimulates the development of new technologies, services and methods of resource management, closing material circuits or improving the quality of products.

The GOZ is an economic model in which:
while maintaining the condition of performance met
the following basic assumptions are made:

a) added value of raw materials/resources,
Materials and products are maximized
or
b) The amount of waste generated is
minimized, and the resulting waste is
Developed in accordance with the hierarchy
Ways of dealing with waste
(Waste prevention,
preparing for re-use,
recycling, other means of recovery,
disposal).

Cell 1.5.1. Support transforma< : ji in the direction of the circular economy;

In the face of the depletion of non-renewable raw materials, rising prices and Poland's dependence on imports of these raw materials, the transformation towards the GOZ is becoming crucial to ensure sustainable economic development and environmental protection. The introduction of the GOZ requires reforms at every stage of the product life cycle – from design, through sourcing of raw materials, processing and production, to consumption and waste management. Unlike the linear economy model, which consists of a simple 'take-produce-use-dispose' model, the GOZ treats waste as secondary raw materials that can be used in production. Therefore, the adoption of the principles of the GOZ not only contributes to reducing the negative impact on the environment, but also forces technological development, cooperation between entities in value chains and creates new opportunities for economic development and innovation, strengthening Poland's competitiveness on the international market.

The GOZ is also increasingly used as a horizontal principle to be taken into account in other EU policies and legal acts, as is the energy efficiency first principle78. An example is the regulation of critical raw materials, which provides for actions to increase the recovery and recycling of materials relevant for the energy and industrial

78 More in the description of dimension 3 and in Objective 3.1.2.

transition, including waste and historical landfills. These actions are part of the broader framework for the circular transformation of the EU economy set out in the EU Action Plan for the Circular Economy (CEAP II), which envisages doubling the circularity rate by 2030, i.e. to the level of approx. 22-24%, as one of the key conditions to reduce pressure on resources, strengthen raw material security and decarbonise the economy.

Poland will strive to increase the potential of the circular economy by reducing the consumption of natural resources, increasing productivity resources, innovative public procurement and eco-innovation.

The general objectives for increasing the efficiency of the circular economy include the following:

1) Resource saving – optimising the use of natural resources by reusing materials and products;
2) Enhancing raw material security – ensuring stable access to essential raw materials through their recovery and reuse;
3) Reducing the use of primary raw materials – reducing the exploitation of natural resources through the use of secondary raw materials;
4) Improving product quality – producing durable and easy-to-repair and recyclable products;
5) Increased innovation – stimulating the development of new technologies and resource management methods;
6) Waste minimisation – reducing the amount of waste generated through efficient management of resources and production processes.

In the context of the climate and energy transition, it is important to integrate actions that allow for more sustainable resource management, reduction of greenhouse gas emissions and reduction of raw materials consumption. In the energy sector, the key objective of the GOZ is the transformation towards the closure of material and energy cycles. This means increasing the share of renewable energy sources, improving energy efficiency**, including the use of waste heat,** and implementing innovative technologies that minimise negative environmental impacts. An example of this is the development of biomethane production from waste.

In the context of the GOZ, the optimal use of energy and materials is also important, including increasing the efficiency of energy systems, minimizing heat losses and recycling post-process waste, such as ashes and slags.

In energy-intensive industries such as cement and steel production, increasing the efficiency of the GOZ is particularly important due to the high greenhouse gas emissions associated with production processes. Cement plants are one of the largest sources of CO2 emissions, mainly due to the clinker firing process and the burning of fossil fuels. The GOZ implements technologies that allow the recycling of materials, e.g. the use of ashes and slags generated during combustion, which can be processed into new building materials or the use of steel scrap in the steel industry. In addition, the use of alternative fuels, such as organic waste or biogas and biomethane, can significantly reduce emissions and reduce dependence on fossil fuels. CO2 capture and utilisation (CCU) technologies will play a role in energy-intensive industries, assuming the use of captured carbon for economic purposes or the decarbonisation of other sectors (e.g. aviation). For the cement industry, integrating these technologies into production processes will lead to reduced emissions and minimised climate impact. The development of the biogas and biomethane industry is also an important element of the transformation of the economy towards the GOZ. The use of biogas and biomethane in energy and industrial systems will contribute to closing the cycle of organic matter, reducing dependence on fossil fuels and reducing greenhouse gas emissions.

In the context of recycling and management of waste heat pumps and photovoltaic cells, it is necessary to develop effective solutions for their responsible management at the end of their useful life. At the end of their life, heat pumps can be recycled, which includes the recovery of valuable materials such as copper, aluminium, steel and electronic components. This process requires a specialised approach, including the safe disposal and recycling of refrigerant, which can be harmful to the environment.

Similarly, photovoltaic cells that have reached the end of their life can be recycled, allowing the recovery of raw materials such as glass, aluminum, copper and silicon. The recycling process of photovoltaic cells is more complicated due to the presence of toxic metals such as lead and cadmium, which require specialized processing.

POLICY)X

Circular economy policy aims to create a legal, economic and social framework that supports the transition from the traditional linear to circular economy model. Key policy areas include legislation and regulation, investment in infrastructure, support for innovation and research, economic incentives, education and public awareness.

Current national strategies, such as *the State Environmental Policy for 2030* and *the National Waste Management Plan 2028,* place great emphasis on the implementation of the GOZ principles. *The country's environmental policy for 2030* focuses on sustainable resource management and environmental protection, while *the National Waste Management Plan 2028* focuses on increasing recycling, reducing landfilled waste, and promoting the recovery of raw materials. It is also worth pointing out that the task of obtaining raw materials from anthropogenic deposits and supporting the development of the circular economy is one of the specific objectives pursued under *the State's Raw Materials Policy 2050* (link).

The Roadmap *for the Transition to a Circular Economy , which set out concrete steps and area-based actions,* has also guided the activities of the GOZ. In view of the dynamic development of regulatory initiatives at EU level aimed at strengthening the circularity component in sectoral policies and extending requirements to new product groups, as well as the role of the circular economy in achieving the objectives of the National Energy and Climate Plan, it is appropriate to work on updating or developing a new strategic document at national level setting out a framework for the further transformation of the economy towards a circular economy model.

ACTIONOX

- Action 12. Biomethane and biogas market development support package

Action 71. Support for the development of agricultural biogas plants

Action 73. Reducing food waste

Action 78. Setting objectives and principles for sustainable forest management

Action 87. Developing a bioeconomy strategy
Action 102. Reducing the use of plastics
Action 103. Circular economy
Action 121. Research project - Reduction of methane from ventilation air in the process of coal mining transformation
Action 122. Analysis of the possibility of implementing a system of halted operation
Action 123. Updating the State's Raw Materials Policy

Obszair' 1.6. Adaptation (dc) of klimalt changes

The currently observed global temperature increase contributes to the intensification and changes in the frequency of extreme phenomena, such as heavy rains, floods, flooding, heat waves, droughts, hurricanes, landslides. For this reason, it is necessary not only to prevent climate change (mitigation **actions),** but also **to take action to adapt to** it by society, the economy (including infrastructure) and the environment.

This section sets out the lines of action to adapt society, the economy and the environment to the new environment in the face of the growing challenges of climate change, i.e. **adaptation measures.**

Cell 1.6.1. Aiming for d(3i adaptation to climate change

Adaptation to climate change is - alongside mitigation - one of the two pillars of global climate policy. For the first time, the need for states to engage in assessing the potential impact of climate change on different areas of life and to develop strategies to reduce it by adapting to these changes was recognised at the United Nations Framework Convention on Climate Change (UNFCCC) forum. *United Nations Framework Convention on Climate Change*) in Nairobi in 2006. As a follow-up, the EU has developed its strategy papers in this area. In 2021, the

European Commission presented 'Building *a climate-resilient Europe – the new EU Strategy on Adaptation to Climate Change'.79* The main objectives formulated at EU level are: strengthening the evidence base on climate change, introducing adaptation to key EU policies, financing adaptation and exchanging knowledge and good practices. Poland has also developed an adaptation strategy for sectors and areas sensitive to climate change. It aims to ensure sustainable development and the effective functioning of the economy and society in a changing climate, both to reduce the economic and social risks of climate change and to avoid the costs of non-adaptation.

Adaptation to climate change requires a two-pronged implementation. In addition to initiatives focusing on adaptation to climate change, action should be based on integrating adaptation aspects into policies and actions that are driven by other socio-economic needs.

In order to adapt more effectively to climate change, Poland will strive to:

- increasing the resilience of the energy sector, including linear infrastructure, to extreme weather events;
- implementation of activities related to maintaining and increasing forest resources taking into account adaptation to climate change, including by adapting the species composition of stands to changing climatic conditions,
- ensure adequate water resources and increase retention,
- adapting agriculture and agricultural production to climate change;
- better access to knowledge and information in order to build competences among decision-makers and raise awareness of adaptation measures.

POLICY)

Adaptation to climate change requires a horizontal approach and integration into the implementation of individual economic policies, so that the actions taken strengthen the resilience of various sectors of the economy and areas of social life.

The ***Strategic Adaptation Plan for climate-sensitive sectors and areas up to 2020 with a 2030 perspective*** (SPA 2020) in force since 2013 (link) will be updated, but the ongoing actions must cover various areas, including: agriculture, forestry, water management, spatial management and construction or energy.

Different sectors have different vulnerabilities to climate change and therefore require different, tailored actions. Adaptation to climate change includes ongoing activities used, among others, in forestry, agriculture, urban areas, as well as strategic planning of infrastructure investments or land use so that they are resistant to the effects of climate change. The development of new infrastructure and spatial planning should be climate-resilient, energy efficient and compatible with the circular economy. It is also necessary to carry out integrated actions between the various sectors of the economy and to assign tasks appropriately at different levels – national, regional and local. The current *Strategic Adaptation Plan for climate-sensitive sectors and areas up to 2020 with a 2030 perspective* will be updated to better address this issue. The main areas concerned by climate change adaptation with targeted actions are as follows:

- Water management and coastal zone

  It is necessary to have up-to-date river basin management plans, flood risk management plans, water maintenance plans, flood hazard maps, flood risk maps, an up-to-date drought prevention plan and a preliminary flood risk assessment, while covering municipal, domestic **and technological and industrial needs, also taking into account the potential for the use of treated sewage**. In addition, it is justified to further develop monitoring and information systems on hydrological conditions and dangerous hydrological and meteorological phenomena in the country, as well as to prevent the degradation of coastlines and the development of monitoring of coastal zones.

- Agriculture

79 Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, COM(2021) 82 final.

Adaptation measures include water retention, measures to combat animal diseases, investment support, as well as measures to protect soil health, increase the potential for soil carbon sequestration and protect biodiversity. They are implemented under CAP SP 2023-2027 through the implementation of eco-schemes, agri-environment-climate and afforestation measures, as well as through CAP (environmental) conditionality standards. For details, see Objective 1.2.5.

- Forestry

The effects of climate change have a negative impact on the removal potential of greenhouse gas emissions. Key adaptation measures include: increasing the structural and species diversity of stands, preserving and increasing intra-species genetic variability, increasing the resistance of individual individuals to abiotic and biotic stresses, rebuilding stands with a high level of risk of causing various types of damage, preventing excessive increase in the abundance of stands, increasing small water retention facilities. For details, see Objective 1.3.1.

- Transport

The implementation of transport policy aimed at ensuring, among other things, the uninterrupted availability of transport infrastructure requires the implementation of building and design standards that will increase the resilience of road transport infrastructure to extreme weather events. These standards include the appropriate selection of materials, water drainage and infiltration systems, the construction of roads, railway lines, bridge viaducts or tunnels, taking into account the flood potential, as well as the location of vegetation (e.g. protecting against sunlight), at an appropriate distance from roads and railway lines. Vehicles and rolling stock also need to be adapted to extreme weather conditions and, above all, to ensure a highly efficient use of energy. The aviation sector also faces a number of challenges, as the construction and modernisation of aerodromes should ensure that the impact of stress on the operation of aerodromes is limited.

- Spatial management, including in urban areas

Adaptation to climate change in many areas involves spatial planning. Effective spatial planning makes it possible to protect against the effects of violent weather events, reduce and eliminate urban heat islands, as well as adapt large infrastructure investments to changing climate conditions.

It is an instrument that can significantly increase the efficiency and effectiveness of adaptation to climate change in Poland. Adaptation to climate change is particularly important in urban areas, due to the impact of extreme phenomena on large concentrations of people. Effective spatial planning improves people's safety and quality of life by creating climate-resilient spaces. For this reason, *the National Urban Policy* (link) particularly emphasises the need to secure access to drinking water due to droughts, adapting urban infrastructure to heavy rainfall (why the so-called concrete treatment is not conducive), preventing floods, including by ensuring low retention, as well as protecting floodplains. A significant role in increasing retention in urban areas is played by the development of blue-green infrastructure, i.e. a system of distributed solutions of various scales that serve the management of rainwater. Urban greenery is extremely important (appropriately selected, located and nurtured), which lowers the temperature in given spaces by shading and has a soothing effect on the effect of the urban heat island, improves the quality of water and air, slows down surface runoff, maintains biodiversity and has a beneficial effect on human health and comfort of life. Urban ***Climate Adaptation Plans (MPAs) are a functional tool for defining adaptation*** policies and coordinating their implementation. As part of the project entitled 'Development of adaptation plans to climate change in cities with more than 100 000 inhabitants', implemented by the Ministry of the Environment in 2017-2019 together with the largest cities in Poland, co-financed by the European Union from the Operational Programme Infrastructure and Environment 2014-2020, documents containing a diagnosis of climate threats and identification of sectors most sensitive to climate factors have been prepared for 44 cities. In accordance with the applicable law, all cities with at least 20 000 inhabitants are obliged to adopt the MPA by 2 January 2028. Part of the documents will be the concept of greening the city, including increasing the area of green areas and trees, and the concept of rainwater and meltwater management in the city.

Construction

Buildings must be adapted not only to increasing temperatures and periodic frosts, but also to unprecedented hurricanes, elevated groundwater levels and landslide hazards. Heat nuisance increases the importance of energy efficiency, including but not limited to thermal insulation of partitions, shading systems for facades, ventilation and air-conditioning systems with heat (cool) and moisture recovery and installations using heat pumps with the possibility of using them for cooling and heat recovery. Flooding rains and droughts motivate us to look for solutions other than draining water directly into the sewage system. In order to reduce the damage associated with landslides, the most important solution is to locate buildings outside endangered

areas. The implementation of the new regulations resulting from *Directive 2024/1275 on the energy performance of buildings*, successive versions of which raise energy efficiency standards for buildings, point to ever lower energy needs and promote the use of renewable and local energy sources. These measures aim to reduce greenhouse gas emissions and support the adaptation of buildings to climate change. For details, see Section 2.2.

- Energy

Adaptation in the energy sector is most relevant to energy transmission and distribution infrastructure, which is particularly vulnerable to extreme weather events. Therefore, in addition to the implementation of standards supporting the resilience of linear infrastructure, it is important to cable medium voltage networks in forest areas, as well as install devices supporting the identification of failures.. This further requires the development of system management at local level, as island network operation is currently hampered. Energy storage, the development of demand management tools and additional energy sources that will allow for continuity of supply in adverse weather conditions and increased energy demand are also important. In district heating, in addition to the development of zero-emission sources, a positive direction of action is the adaptation of existing and construction of new networks in a low-temperature system, taking into account the possibility of receiving waste heat allowing cooling of connected facilities.

ACTIVITIES BX

Action 39. Creation of clean transport zones

Action 42. Modernisation of rolling stock and railway infrastructure and local development and regional railway infrastructure, as well as the construction of new railway lines

Action 66. Application of (environmental) conditionality under the CAP

Action 67. Use of eco-schemes under the CAP

Action 68. CAP agri-environment-climate measures

Action 69. CAP support for organic farming

Action 77. Preparation of water management plans in forests

Action 78. Setting objectives and principles for sustainable forest management

Action 82. Combating forest decay

Action 83. Determination of directional tasks in the field of forest fire protection by Measure 84. Restoration and conservation of wetlands, peatlands and wetlands

Action 85. Development of small water retention and landscape retention

Act 89. Development and implementation of the National Plan for the Reconstruction of Natural Resources

Action 93. Support for the development of water and wastewater management

Action 94. Conducting soil monitoring

Action 95. Identification and remediation of soil contamination sites

Action 98. Preventing the degradation of natural land and land used for agriculture and forestry

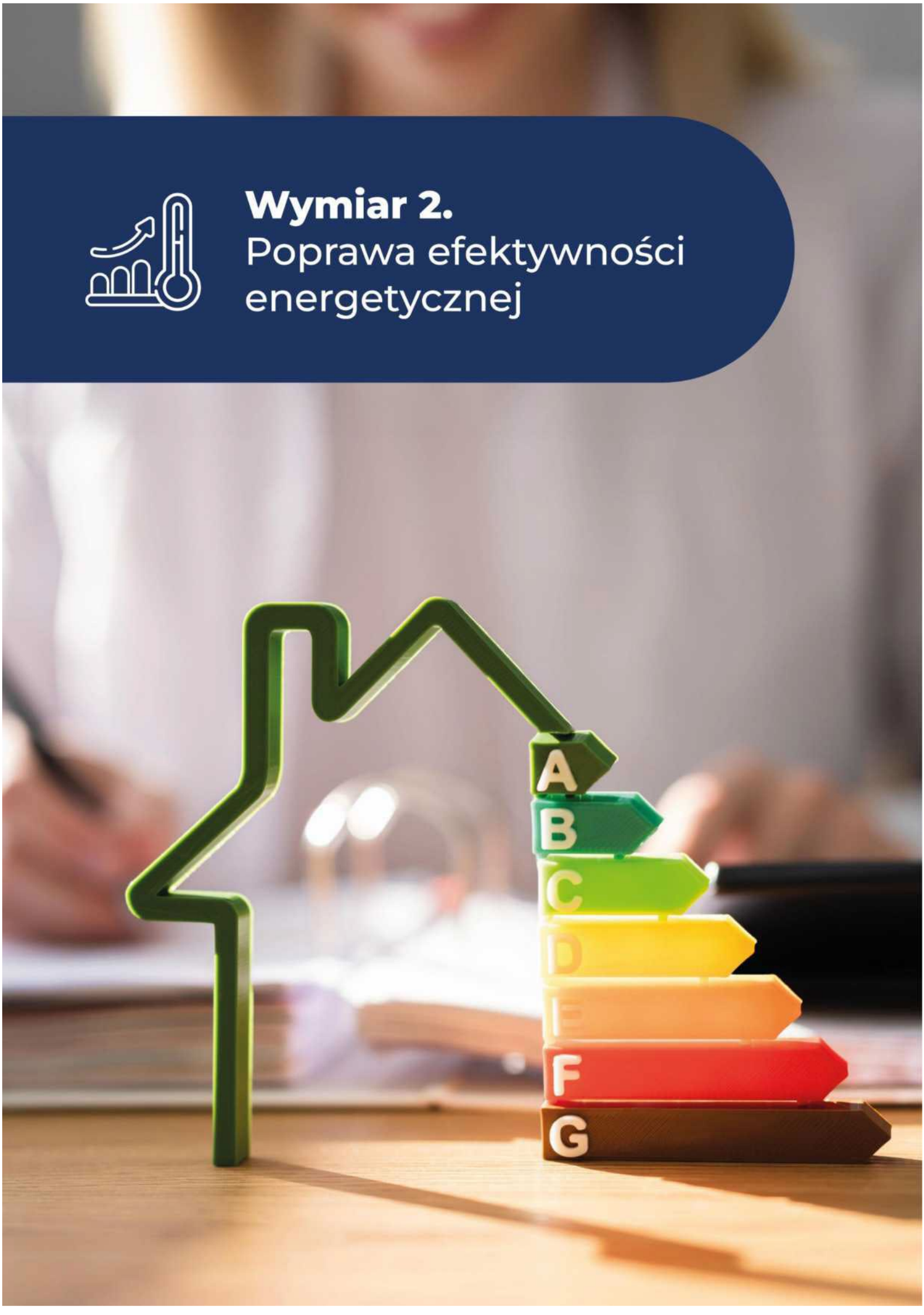
Action 99. Supporting the rehabilitation of degraded and devastated land

Action 100. Financial instrument – Priority Programme of the NFOŚiGW 'Protection of the Earth's surface'

Action 101. Financial instrument – National Fund for Environmental Protection and Water Management (NFOŚiGW) programmes supporting climate change adaptation

Action 110. Financial instrument – Priority Programme of the National Fund for Environmental Protection and Water Management (NFOŚiGW) – 'Modernisation of schools'

Wymiar 2.
Poprawa efektywności energetycznej



Improving energy efficiency is both economically and socially beneficial. Energy efficiency is not only about reducing energy consumption, but also increasing energy efficiency, which leads to lower operating costs, improved economic competitiveness and reduced negative environmental impact.

Applying the **energy efficiency first principle,** prioritising efforts to reduce energy demand before deciding to increase energy supply, allows the maximum use of available energy resources while minimising energy losses at every stage of energy processing and use.

Reducing energy needs contributes to energy security, and integrating **the energy efficiency first principle into** policy and investment planning means that energy efficiency can in some cases be considered as an energy source (virtual). The benefits of reduced energy consumption make the pursuit of increased energy efficiency the **second dimension of the Energy Union.**

This part of the NECP sets out objectives and targets to achieve specific levels of energy consumption across the economy, taking into account the exemplary role of public administrations, and sets targets in the area of energy consumption in buildings (new and existing), as they account for the largest amount of energy consumed in Europe.

Obszair' 2.1. Improving efficiency :and energy efficiency in economy B

This section sets economy-wide targets for *primary energy consumption* (PEC) and *final energy consumption* (FEC), as well as energy savings achieved each year. It also presents the tasks of the public sector as part of the exemplary role of public administration in the area of energy efficiency improvement.

In simple terms, **primary energy is** energy raw materials or RES, while **final consumption energy** (or final energy) is energy that has been delivered to the final recipient, Excluding transformation needs energy and losses.

Directive 2023/1791 on energy efficiency – the so-called EED establishes a framework for action to improve energy efficiency across the EU to ensure that the EU's 2030 energy efficiency target is met. The EU target is set as an **11.7% reduction in final energy consumption compared to the projections for the so-called PRIMES 2020 Reference Scenario** developed by the European Commission.81 In addition, Member States are to collectively ensure that EU final energy consumption in 2030 does not exceed 763 Mtoe and primary energy consumption does not exceed 992.5 Mtoe. Each Member State shall set indicative national contributions for final energy consumption and primary energy consumption j82. Posted in December

In 2023, the EC's assessment shows that many Member States face significant challenges in meeting the level of ambition of their national contributions to these objectives in83.

The following are the primary and final energy consumption paths according to the WEM and WAM scenarios and in the PRIMES 2007 and PRIMES 2020 scenarios for Poland (with the correction for 2030 provided by the European Commission in January 2024) and the values set for Poland on the basis of the formula set out in Annex I to the EED.

At the same time, it is important to underline **the importance of the energy efficiency first principle ,** introduced by *EU Regulation 2018/1999*. Before making planning, policy and investment decisions, it is necessary to analyse

81 The PRIMES 2020 reference scenario shows economy-wide and climate-energy projections based on the policy framework put in place until 2020. For Poland, the projections are similar to those presented in the WAM scenario in the NECP submitted to the European Commission in 2019.

82 The energy efficiency improvement targets set in the 2019 NECP referred to the PRIMES 2007 scenario, while under the revised EED, the NECPs set targets in relation to the PRIMES 2020 scenario.

83 The assessment of the NECP projects submitted by Member States shows a significant gap in the achievement of primary and final energy consumption reduction targets due to the limited capacity of individual countries. *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – EU wide assessment of the draft updated National Energy and Climate Plans An important step towards the more ambitious 2030 energy and climate objectives under the European Green Deal and RePowerEU*, link

whether the objectives will be achieved in such a way that only as much energy as is needed is produced and used. In addition, the implemented solutions should be technically, economically and ecologically rational. The principle should be applied taking into account an approach based on efficiency and system integration, as well as a social and health perspective. As a result, the energy efficiency first principle should contribute to increasing the efficiency of individual sectors and of the energy system as a whole.

The detailed results of the final energy consumption and primary energy consumption projections are set out in Annex 1 and Annex 2 to the NECP in Chapter 2. Energy efficiency dimension.

Table 3. Primary and final energy consumption [Mtoe]

Primary energy consumption [Mtoe]	**2020**	**2030**	**2040**
PRIMES 2007	109,8	118,6	119,8*
PRIMES 2020	85,7	93,3	81,0
According to the EED Formula	96,9**	79,9	–
Forecast NECP WEM	**96,9****	**85**	**76,7**
Forecast NECP WAM	**96,9****	**80,7**	**70**

Final energy consumption [Mtoe]	**2020**	**2030**	**2040**
PRIMES 2007	77,4	85,5	86,8*
PRIMES 2020	62,7	67,2	64,8
According to the EED Formula	71,1**	58,5	–
Forecast NECP WEM	**71,1****	**66,8**	**59,8**
Forecast NECP WAM	**71,1****	**64,4**	**55,6**

** extrapolated value **historical data*

Cell 2.1.1. Contribution of Poland vf for consumption of enesrgia primary, j

The EED indicates that EU Member States should work together towards the indicative target that primary energy consumption in the Union should not exceed 992.5 Mtoe in 2030. [84]

National contributions to the EU target should be determined on the basis of one of the methodologies set out in the EED, including the formula in Annex I of the EED, which takes into account the existing activities in the

Primary energy is energy contained in primary energy carriers – in coal, oil oil, natural gas and energy produced directly from the environment – water energy, wind, solar, geothermal used for generation of electricity, heat or cold and biomass

on improving energy efficiency

GDP per capita, energy intensity and potential for cost-effective energy savings. For Poland, the indicative national contribution should lead to a reduction of primary energy consumption of 14.4% compared to the projection in the PRIMES 2020 scenario. Poland is projected **to achieve a primary energy consumption reduction of 8.9% in the WEM scenario and 13.5% in the WAM scenario in 2030** compared to the PRIMES 2020 scenario.

In the 2019 NECP, Poland's target in this respect was -23% compared to PRIMES 2007 (-27.3 Mtoe). The current level expected for Poland on the basis of the formula from the EED in relation to PRIMES 2007 is as high as -32%. In absolute terms, this means that primary energy consumption should be lower in 2030 than in 2020, when the economic slowdown caused by the COVID-19 pandemic occurred.

Poland will aim to achieve a reduction in primary energy consumption in 2030 14.4% compared to PRIMES2020 forecasts, i.e. reduction in consumption up to 79.9 Mtoe as an indicative contribution to the EU target.

The historical data and the indicative trajectory according to the EED formula are presented below and the figure compares the NECP forecast with the indicative trajectory according to the EED formula.

Table 4. Historical primary energy consumption 2014-2023 taken into account when setting the indicative trajectory of the national contribution [ktoe]

2014	2015	2016	2017	2018	2019	2020	2021
89 494	90 054	94 832	99 076	104 059	100 195	96 859	103 950

Source: EUROSTAT - Energy efficiency

Table 5. Indicative trajectory for the implementation of the national primary energy contribution in 2022-2030 (based on formula) [ktoe]

2022	2023	2024	2025	2026	2027	2028	2029	2030
103 842	103 734	103 734	103 734	98 973	94 213	89 453	84 692	79 932

POLICY)X

Reducing primary energy consumption will be the result of changes across the economy. The application of the energy efficiency first principle will play a key role in achieving the objective, which should serve to reduce energy demand. Increasing the use of renewable energy in electricity and heat production will also be key to reducing primary energy consumption.84

The priority in terms of reducing energy consumption is the intensive implementation of high energy efficiency standards that will support the development of energy-efficient technologies and the optimisation of industrial processes, the modernisation of residential and commercial buildings. It is also important for the building sector to provide primary (total) energy understood as energy from renewable and non-renewable sources that has not undergone any transformation or transformation process. Increasing public awareness of the benefits of energy efficiency through education campaigns and training programmes will together contribute to reducing final energy consumption.

Reducing primary energy consumption will be the result of a variety of activities and projects, but as final energy consumption better reflects the efficiency of processes, a description of policies and actions to improve energy efficiency has been included in the final energy consumption targets.

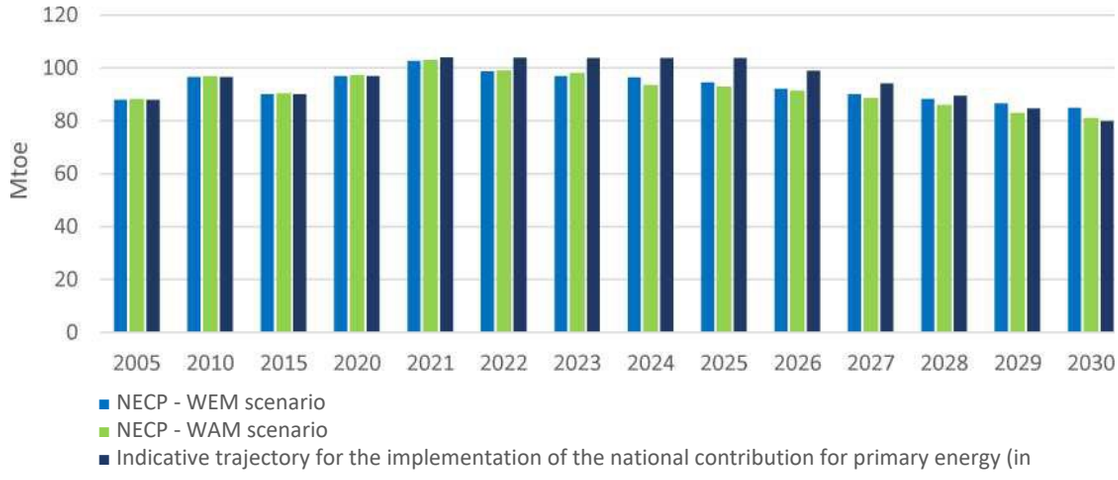


Figure 9. Primary energy consumption by 2030 in accordance with the EED formula and the NECP [Mtoe]

Cell 2.1.2. PolskJ contribution to final energy consumption

Under the EED, EU Member States should ensure that energy consumption is reduced by at least 11.7% by 2030

Final energy consumption is fuel consumption (used directly, e.g. in a furnace individual or in the form of gasoline for the car) or energy (forms of district heat or energy electric) delivered to the final **customer**

. _____ _____ _____7

compared to PRIMES 202 0 forecasts,86 so that final energy consumption in the EU does not exceed 763 Mtoe. Therefore, each EU Member State should define an indicative contribution to achieve this objective with an indicative trajectory. Same as national contribution in the field of primary energy, the formula should be used, according to which this **value was 12.8%**

84 Electricity produced from RES is treated as *equal to* primary energy, while the generation of electricity from conventional fuels must take into account conversion losses, as a result, for the generation of 1 MWh of energy, e.g. from hard coal, 2.5-3 MWh of primary energy is needed, and from a wind power plant - 1 MWh.

86 Article 4 of the EED.

for the reference scenario PRIMES 202 087.

Compared to PRIMES 2007, the expected reduction in final energy consumption (79.7 Mtoe) would be 39%. Projections in the 2019 NECP indicated a reduction in final energy consumption of 27.4% (-18.4 Mtoe) compared to PRIMES 2007.

It should be noted that Poland is still a country where per *capita* energy consumption is significantly below the EU average.88 Economic growth (initiating new processes) and the need to raise living standards generate the need for higher global energy consumption, despite the choice of highly efficient solutions. For example, while households in more developed countries exchange equipment for higher-efficiency ones, Polish households equip themselves with some equipment for the first time, which results in higher consumption despite purchasing high-energy-grade equipment.

At the same time, it should be emphasized that the economic development forecasts for Poland are positive. Therefore, there may be a situation in which there will be a decrease in the rate of increase in energy consumption, instead of a significant reduction in consumption, also taking into account a significant improvement in process efficiency and a decrease in the energy intensity of equipment. Despite the above-mentioned sensitivity of forecasts, current trends indicate a decrease in final energy consumption, but not as ambitious as the European Commission's predictions. However, according to the forecasts, in 2030 Poland can achieve a reduction in final energy consumption of 0.6% in the WEM scenario and 4.2% in the WAM scenario compared to the forecasts in the PRIMES 2020 scenario.

Poland will aim to achieve a reduction in final energy consumption in 2030
by 12.8% (-8.6 Mtoe) compared to PRIMES 2020 forecasts according to the formula
as set out in the EED, i.e. reducing energy consumption to 58.5 Mtoe;
as an indicative contribution to the EU target.

The historical data and indicative trajectory according to the EED formula are presented below, and the figure compares the NECP forecast with the indicative trajectory according to the EED formula.

Table 6. Historical final energy consumption 2012-2021 taken into account when setting the indicative trajectory of the national contribution [ktoe]

2014	2015	2016	2017	2018	2019	2020	2021
61 547	62 299	66 601	70 899	74 879	73 730	71 145	75 154

Source: EUROSTAT - Energy efficiency

Table 7. Indicative trajectory for the implementation of the final national energy contribution 2022-2030 (based on formula) [ktoe]

2022	2023	2024	2025	2026	2027	2028	2029	2030
75 428	75 703	75 978	75 978	72 488	68 999	65 510	62 021	58 532

80

87 The revised PRIMES 2020 scenario of January 2024. Before the revision of the 2030 projections provided by the EC in January 2024, the value was 12.6%.

88 In 2019, energy consumption per capita: Poland – 2 751 kgoe/year, EU – 3349 kgoe/year, Source: Eurostat.

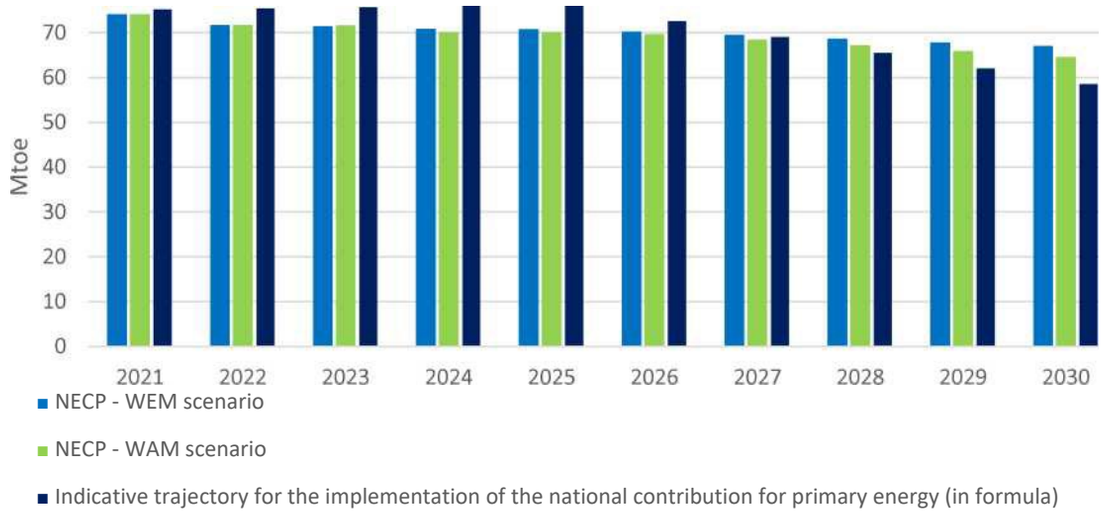


Figure 10. Final energy consumption by 2030 in accordance with the EED formula and the NECP [Mtoe]

POLICY)

The reduction of final energy consumption will be the result of a number of implemented projects, as well as the implementation of ambitious actions to improve energy efficiency resulting from the implementation of the EED.

Final energy consumption is broken down by sector – industry, transport, households (housing) and services. However, bearing in mind the exemplary role of the public sector, pro-efficiency measures in this subsector are approached separately. Actions relating to the generation and transport of electricity and heat shall also be identified separately.

In any case, the application of the energy efficiency first principle should play a key role, according to which, before taking decisions on new policies and investments, it should be examined whether the objectives of those policies and investments will be achieved in such a way that only as much energy is produced and used as is needed. At the same time, the solutions used should be technically, economically and environmentally sound.

In order to improve energy efficiency in the national economy, the **system of energy efficiency certificates (with a surrogate fee mechanism), the so-called 'white certificates' system, which imposes** an annual energy savings obligation on obliged entities, will remain a key tool. Obliged entities are undertakings selling electricity, district heating, gaseous fuels to final customers and fuel entities placing liquid fuels on the market. This obligation may be fulfilled by implementing an energy efficiency improvement project with the final customer, implementing a non-repayable co-financing programme to co-finance energy efficiency improvement projects, demonstrating high efficiency in relation to classical solutions or market standards or obtaining/purchasing white certificates**.** However, it is worth emphasizing that the aim of the system is that everyone who meets certain requirements, i.e., among others, presents an energy efficiency audit for a specific investment, receives an advantage in the form of property rights resulting from energy efficiency certificates. The system is therefore a market-based mechanism that incentivises performance-enhancing tasks.

In addition, additional solutions have been identified, the so-called **alternative measures,** which are complementary to the basic scheme. These include the following:

- Thermomodernisation and Renovation Fund – TERMO programme;
- Tax credit for expenditure incurred on thermal modernisation of single-family residential buildings;
- Development of public transport in cities;
- Improving the energy efficiency of residential buildings;
- Energy efficient public sector.

Both toolboxes respond to the obligation under Article 8 of the EED that each EU Member State is required to generate annual end-use energy savings (1.3-1.9% depending on the period up to 2030). *This obligation is further*

described in sections: Objective 2.1.3. and Annex 4 to the NECP.

Historical data on **indicators of final energy intensity of** GDP by sector show that households had the highest level of this indicator in 2020 (1405 toe/million EUR'2020), followed by transport (1066 toe/million EUR'2020).89 The forecast indicates that the highest rate of reduction in energy intensity will occur in the transport sector. Particular attention should be paid to households and the public sector, which, without adequate support, may have a particular problem in addressing the challenges of reducing energy demand.

The following are the focus areas for action that should be taken into account by the different sectors as part of the drive to improve energy efficiency:

- **Industry and services** – measures to reduce the energy intensity of processes; implementing energy consumption management systems, including eliminating unnecessary lighting, powering appliances and non-demand correlated heating; use of waste heat; thermomodernization preceded by an energy audit; the exchange of energy sources for more efficient and zero-emission energy sources;
- **Transport** – developing intelligent transport systems; promoting economical driving; development of public transport; replacing the depleted fleet with more efficient vehicles, in particular zero-emission vehicles; reducing the use of individual transport;
- **Households (housing)** – thermal modernisation preceded by an energy audit and completed with an energy performance certificate; replacing heat sources with more efficient, low- and zero-emission heat sources; connection to the district heating system; rational use of heat and electricity;
- **Energy generation and supply** – popularisation of distributed energy production; use of high-efficiency cogeneration and local energy sources; efficient distribution of heat and cold, including the use of low-temperature networks; efficient supply of electricity;
- **Public sector** – including energy efficiency in public procurement; implementation of tasks related to the exemplary role of the sector in the field of energy efficiency and implementation of modernisation using energy performance contracting.

89 For details, see Annex 1 to the NECP in chapters 2.5 and 2.6.

An important role in increasing the efficiency of final energy consumption is also to ensure appropriate energy efficiency standards for products related to energy consumption both at the stage of their design (increasing the energy efficiency of products) and at the stage of their use. **Energy labelling** plays a particular role in this process, i.e. the obligation to provide consumers with information on, inter alia, the energy consumption and energy class of these products.90

Education and access to knowledge in the field of energy efficiency is an extremely important element of energy efficiency improvement policy. The **website of the Ministry of Climate and Environment plays the role of an information platform** (link). In addition, detailed information is provided by periodically updated notices and regulations of the Minister for Climate and the Environment:

on a *detailed list of energy efficiency improvement projects (updated 30 November 2021),*

– *on the list of financial programmes and instruments for end-user energy efficiency improvement projects (updated 12 August 2025),*

– *on delegated acts on energy labelling (updated 23 July 2021),*

– *on conformity procedures for energy-using products and their labelling (updated 3 March 2025).*

Cell 2.1.3. Generation3(final energy savings

EU Member States are required91 to **achieve new final energy consumption savings each year**, calculated as a percentage of the average actual energy consumption over the period 2016-201 892:

- 2021-2023 –0,8%annual finalconsumptionenergy (i.e.566 ktoe);
- 2024-2025 –1,3%annual finalconsumptionenergy (i.e.920 ktoe);
- 2026-2027 –1,5%annual finalconsumptionenergy (i.e.1047 ktoe);
- 2028-2030 –1,9%annual finalconsumptionenergy (i.e.It is 1326 ktoe.

Final energy consumption 2016-2018

year	ktoe
2016	65 663
2017	69 908
2018	73 875
average	**69 815**

In accordance with Art. Member States shall decide how to spread the calculated amount of new energy savings over each of the above-mentioned periods, provided that the required total cumulative final energy consumption savings are achieved at the end of the obligation period.

Poland sets out path to achieving end-use energy savings
between 2021 and 2030 at 44 465 ktoe (according to the trajectory in the table below).

Reducing energy needs is also a tool to tackle existing energy poverty. For this reason, Art. 3 The EED obliges Member States to ensure that **a certain percentage of cumulative end-use energy savings result from their actions among people affected by energy poverty, vulnerable customers and people living in social housing .** Based on the EED, it is at least equal to the arithmetic mean share of the four indicators relating to energy poverty for 2019, which was 9,05% for Poland93.

Poland will aim to achieve cumulative totals in 2024-2030
final energy savings for people affected by poverty

90 It is based on *Regulation (EU) 2017/1369 of the EP and of the Council of 4 July 2017 setting a framework for energy labelling and repealing Directive 2010/30/EU*.

91 For the period 2021-2023 under Article 7 *EED 2012/27/EU* and for the period 2024-2030 under EED Article 8.

92 Based on: *Complete energy balances* (NRG _IND _EFF), Eurostat. For the 2021-2023 obligation, the base is 70 793 ktoe. For the period 2024-2030, the basis is different due to statistical adjustments, i.e. 69 815 ktoe.

93 The indicators and their levels for 2019 are indicated in Objective 4.3.1. Reducing energy poverty.

energy at the level of 2,678 ktoe.

Table 8. Trajectory for cumulative end-use energy savings by 2030 [ktoe]

year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
End-use energy savings (ktoe)										1255	Total cumulative end-use energy savings (until 2030)
									1225	1225	
								1205	1205	1205	
							1180	1180	1180	1180	
						1150	1150	1150	1150	1150	
					1130	1130	1130	1130	1130	1130	
				926	926	926	926	926	926	926	
			552	552	552	552	552	552	552	552	
		503	503	503	503	503	503	503	503	503	
	552	552	437	437	437	437	437	437	372	372	
Total (Ktoe)	**552**	**1055**	**1492**	**2419**	**3548**	**4698**	**5878**	**7083**	**8243**	**9498**	**44 465**

POLICY)X

The final energy savings obligation in Poland has been implemented since 2021 through the energy efficiency obligation scheme, the **energy efficiency certificates scheme,** and through so-called **'alternative measures'.** Poland will continue its approach in achieving the new objective under Art. 1 of the EED. It is planned to maintain the existing level of obligation for obliged entities under the energy efficiency certificate scheme, Poland will provide the remaining part of the required total cumulative savings through alternative measures, which are set out in Annex 4 to this document.

Cell 2.1.4. Reduction of final consumption;3and energy by the public institution

Public bodies should be exemplary role w scope energy efficiency. Article 5 of the EED requires Member States to ensure that total final consumption energy by all Total public bodies was reduced by at least 1.9% per year compared to 2021

Table 9. Characteristics of groups of public institutions by type and size of administrative unit

group	type and size of administrative unit	the entry into force of the savings obligation	estimated energy consumption in 2021
G1	city >50 000 inhabitants	11 October 2025	1 309 ktoe
G2	City <50 000 inhabitants	1 January 2027	1 702 ktoe
G3	rural area	1 January 2030	1 103 ktoe

Quantitative is intended to strengthen the role of the public sector in exemplary efficiency. energy.

The final energy consumption of public institutions in 2021 amounted to a total of **4 114 ktoe** (excluding public transport and the armed forces, in accordance with the exemption provided for in Art. 1 of the EED).

In accordance with Art. 3 of Directive 2023/1791, the obligation to reduce final energy consumption by public bodies should be implemented progressively, taking into account size units administrative. Therefore, it is necessary was determination reducing energy consumption in three groups: in cities with more than and less than 50 000 inhabitants and in rural areas. The figure next shows the estimated final energy consumption in each group for the period 2021-2024 and gradual implementation of the obligation from 2025

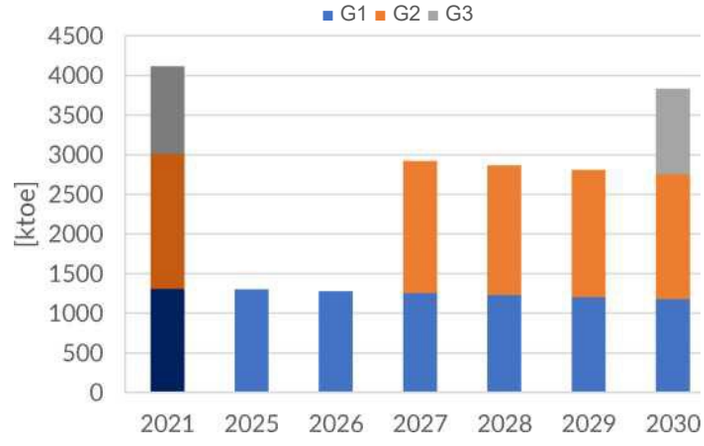


Figure 11. Estimation of FEC consumption reduction [ktoe]

Poland will strive to achieve the goal of reducing final energy consumption by all public institutions to achieve reductions in 2030 78.17 ktoe a year.

POLICY)

In view of the ongoing work to implement the EED, it is not possible to specify at the time of adoption of the NECP how the objective of reducing energy consumption by different groups of public bodies can be achieved in detail.

The current *Energy Efficiency Act of 20 May 2016 strengthened* the role of the public sector by:

- the requirement to apply energy efficiency improvement measures,
- the inclusion of the energy efficiency criterion in public procurement; and

- the possibility of implementing and financing a project or project of the same type to improve energy efficiency under an energy performance contract.

In 2023 and 2024, there was a requirement to take measures to reduce electricity consumption by 10% by public sector entities, as a specific tool to counteract the poor situation on the energy price market. This requirement was implemented *by the Law of 7 October 2023 on special arrangements for the protection of electricity consumers* .

In the near future, a key solution will be the obligation for public bodies to reduce total final energy consumption by 1.9% per year as a quantification of the measures already taken to reduce energy consumption in the public sector.

Financial support will be provided for improving the energy efficiency of public buildings with a view to achieving an annual useful energy demand index (EU) of no more than 60 kWh/m²/year. The specificities of buildings forming part of the public sector fabric, including historic buildings – which may be the subject of further work – may pose a challenge. Particular emphasis will be placed on educational buildings, due to the fact that the youngest generations spend a significant part of their time in these facilities, which is why their thermal comfort is so important.

ACTIVITIES b

- Action 104. Roadmap for the dissemination of the ESCO model
- Action 110. Financial instrument – Priority Programme of the National Fund for Environmental Protection and Water Management – Modernisation schools'

Action 111. Financial instrument - NFOŚiGW Priority Programme - "Modernisation of public buildings"

Action 113. Energy efficient public sector

Action 114. Introduction of a tender evaluation model for tenders for the construction of public buildings based on total life-cycle cost (LCC)

Action 115. Implementing new energy standards for new buildings and buildings undergoing major renovations

Action 116. Energy assessment system for buildings and technical building systems

Action 149. Creation of an Energy Transition Support Centre (CWTE)

Action 150. Energy System Simulator for Local Government

Obszair 2.2 I ■ Low emission j construction

Across the EU, buildings are responsible for approx. 40% of energy consumed and 36% of energy-related direct and indirect GHG emissions, with heating, cooling and domestic hot water accounting for 80% of energy consumed by households.

The EU's determination to reduce the environmental impact of buildings is demonstrated by the setting **of a target for the consumption of energy from RES in buildings**, as well as by the setting of a new system for greenhouse gas emission allowance trading **EU ETS-294. These** mechanisms are intended to incentivise a reduction in the use of fossil fuels in buildings.

First, however, care must be taken to reduce (rationalise) thermal needs. Technological progress in construction allows new buildings to have significantly lower thermal needs than existing ones, so reducing the energy intensity of existing buildings remains a key challenge. The process of refurbishment of buildings should be based on the use of high-quality insulation materials, ventilation with heat and moisture recovery, and heating systems should be electrified to the highest degree and installed in cooperation with energy, including thermal

94 More in Objective 1.1.2.

storage. These measures aim to reduce energy demand in the economy and GHG emissions and air pollutants, including in particular PM10 and PM2.5 particulate matter and benzo(a)pyrene, but also to reduce energy costs. **The Renovation Wave** is seen as a means to fight energy poverty, as well as an opportunity to improve air quality and human well-being and health by removing carcinogenic products containing asbestos from buildings.

This section discusses objectives for existing buildings and commitments for new buildings.

Cell 2.2.1. Reductions and needs of energy existingclh buildings

Improving the energy efficiency of buildings has a number of benefits. It reduces the consumption of energy and its carriers, which thus increases energy security. The costs associated with energy consumption in buildings are reduced and the quality of life is improved. Standards for the development of energy performance certificates for buildings provide information on the technical and energy condition of buildings and their potential for improvement. On a broad scale, building renovations contribute to climate objectives by reducing greenhouse gas and other pollutant emissions from buildings.

In 2022, Poland developed *a Long-Term* **Building Renovation Strategy** *(DSRB)* (link)95 which sets out the necessary actions to achieve high energy efficiency and decarbonisation of buildings in Poland with a 2050 perspective. The new *Directive 2024/1275 on the energy performance of buildings (EPBD)* indicates that Member States should submit a draft **National Building Renovation Plan (NRP)** to the European Commission by the end of 2025 and its final version by the end of 2026.96 Until then, the current document remains the 2022 DSRB, the assumptions of which were implemented in the WEM scenario in the AKPEiK. The WAM scenario assumes that Poland will make even greater efforts in the area of thermomodernization.

95 Developed on the basis of Article 2a *of Directive 2010/31/EU on the energy performance of buildings* (the so-called EPBD).
96 Article 3 *of Directive 2024/1275 on the energy performance of buildings* – EPBD.

As part of the current DSBR, the recommended scenario was adopted, which provided for widespread shallow thermal modernization with gradual dissemination of deep, comprehensive thermomodernization **in the 2030 perspective,** the scenario adopted in *the Long-Term Building Renovation Strategy* was to allow the least efficient buildings (with energy consumption above 330 kWh/(m2 year)) to be retrofitted by 2027.

Thermomodernization is based on exchange of a high-emission heat source, which is, for example, a coal boiler, the so-called cinder,

Deep thermomodernization is associated with The need for additional measures, such aslike warming the building, replacing windows or

The purpose of the newly created NRPB will remain directionally unchanged, although individual numerical values will change. The implementation of each of the documents is to improve the energy performance of buildings and reduce the maintenance costs of the building, positively affect air quality by reducing greenhouse gas emissions to the atmosphere, improve people's living conditions by removing products containing asbestos from buildings during thermomodernization, and positively affect the generation of new jobs related to the thermomodernization of buildings using modern insulation materials and ventilation with moisture and heat recovery. It should also be borne in mind that thermal modernisation should lead to a reduction in the maintenance costs of the building. Heating systems should be highly electrified and installed in cooperation with energy storage, including thermal storage. Modernization should be carried out primarily where it will bring the greatest energy and economic benefits. This takes into account that a certain percentage of buildings in the worst-performing compartments will be decommissioned.

The EPBD identifies a broad catalogue of areas that should be included in *the National Building Renovation Plan*. This document should be fully consistent with *the National Energy and Climate Plan .* The NECP sets out strategic lines of action, while the details and specific instruments to achieve the objectives will be set out in the NRP.

The energy demand reduction target for existing buildings is
Ensuring that all existing buildings are high-rise by 2050
energy efficiency, with a renovation rate of around 2% per year.

POLICY)X

Withdrawal of fossil fuels from households and thermomodernization are among the main priorities of Poland's policy. A *National Building Renovation Plan (replacing the 2022 Long-Term Building Renovation Strategy) will be developed by the end of* 2026, in line with the EPBD.

The national building renovation plan shall include, inter alia:

– overview of the national building stock,
an action plan with nationally determined targets and measurable progress indicators;
an overview of implemented and planned policies and measures,
– an outline of the investment needs for the implementation of the National Building Renovation Plan;
– minimum energy performance standards for non-residential buildings,
- the definition of renovation trajectories, with average annual renovation rates, should remain around **2% of the stock of the different building types (single-family, multi-family, public utility, including healthcare)**; it is assumed that the share of deep thermal modernization in the conducted activities will gradually increase while using staged thermal modernization of other buildings.

It is worth noting that during thermal modernisation works, asbestos-containing *products should be removed from buildings, in accordance with the Programme for the Cleansing of the Country from Asbestos for 2009-2032*, as well as with the applicable regulations.

Both funds from priority programmes, but also tax incentives in the form of tax credits – the so-called thermomodernisation credit – are earmarked for the purpose of thermomodernisation. Individual programs will be designed separately for single-family buildings (eg. Clean Air), multi-family (eg. Program TERMO), public utility

(eg. Modernization of schools).

Financial support for projects in non-single-family buildings requires **an energy efficiency audit.** The document is an assessment of the existing state of energy use in a given facility and identifies opportunities and measures to improve it. It also contains an analysis of economic and energy improvements in the building along with the selection of the optimal scope of modernization works. Providing appropriate requirements for people developing such documents allows you to maintain professionalism, although it is also necessary to provide access to the latest knowledge. The Energy Transition Support Centre (CWTE) can also play an important role in the future. One of its tasks will be to provide information support in the scope of planned projects.

The promotion of energy **performance certificates for buildings will also play a role in improving the energy efficiency of buildings.** These documents will provide unambiguous information on the energy consumption of the building and, consequently, on the potential energy costs, ensuring comparability for potential buyers. The existing **Central Emission Register of Buildings (CEEB)** together with the developed **Central Register of Energy Performance of Buildings (CRChEB)** - expected to be launched in a new installment in 2026 - will provide an excellent information tool on the condition and needs of existing buildings in general.

ACTIVITIES b

- Action 106.Instrument financial– NFOŚiGW Priority Programme – 'My heat'
- Action 107.Instrument financial– Priority Programme of the National Fund for Environmental Protection and Water Management – 'Clean Air'
- Action 108.Instrument financial– Tax credit for expenditure incurred on thermomodernization of single-family residential buildings (thermomodernization relief)

Action 109. Financial instrument – TERMO programme, support for energy efficiency improvements in multi-apartment buildings

Action 110. Financial instrument – Priority Programme of the National Fund for Environmental Protection and Water Management (NFOŚiGW) – 'Modernisation of schools'

Action 111. Financial instrument - NFOŚiGW Priority Programme - "Modernisation of public buildings"

Action 112. Support scheme for micro-enterprises - Energy efficiency of buildings o Measure 113. Energy efficient public sector

Action 114. Introduction of a tender evaluation model for tenders for the construction of public buildings based on total life-cycle cost (LCC)

Action 152. Development and implementation of the Social Climate Plan

Action 149. Creation of an Energy Transition Support Centre (CWTE)

Action 153. Reducing energy poverty and protecting vulnerable customers

Action 158. Awareness-raising on the energy and climate transition

Cell 2.2.2. New construction be:emissions

Under the current approach, all newly constructed buildings are *nearly zero energy buildings* **(NZEBs).** NZEB is a building that meets certain requirements related to energy savings and thermal insulation included in the technical and construction regulations that apply to buildings occupied by public authorities and owned by them from 1 January 2019, and to all others from 31 December 2020.

The EU Energy Performance of Buildings Directive 2024/1275 (EPBD) indicated that all new buildings will have to be erected to an even higher energy standard. According to the Directive, from 1 January 2028 all new buildings owned by public bodies and from 1 January 2030 all new buildings must be zero-emission buildings. Under the

EPBD, new buildings will have very high energy performance j 97 or will require zero or very little energy, without directly generating any CO2 emissions from fossil fuels or any operational greenhouse gas emissions on site, or generating very small operational quantities of such emissions. Such a building should have a low value of the annual primary and final energy demand index and high thermal insulation of the building envelope. This will only be possible when connecting such buildings to energy-efficient district heating systems or extensive use of RES.

In order to promote RES, the use of solar energy installations for energy supply to buildings (real estate) must be made mandatory as a basic condition, if technically appropriate and economically and functionally feasible. The EPBD has defined the implementation of this obligation for different types of buildings, as shown in the table below.

Table 10. Obligations to equip a building with a solar installation

sector / type of real estate	***building/property type***	***usable area***	***deadline for implementation***
public	new	more than 250 m^2	from 31 December 2026
	existing	more than 2000 m^2	until 31 December 2027
		more than 750 m^2	until 31 December 2028
		more than 250 m^2	until 31 December 2030
commercial	new	more than 250 m^2	from 31 December 2026
	existing, undergoing a thorough modernization	more than 500 m^2	from 31 December 2027
residential building	new	all	from 31 December 2029
covered parking adjacent to the building	new	–	from 31 December 2029

The objective in terms of energy demand for new buildings is to ensure that:
from 1 January 2030, all new buildings in Poland should be zero-emission,
and in the case of buildings owned by public bodies
– from 1 January 2028

Energy 97 performance means the calculated or metered amount of energy needed to meet the energy demand associated with a typical use of a building, which includes the energy used for heating, cooling, ventilation, domestic hot water and lighting.

POLICY)X

The need to reduce energy consumption in buildings, and thus reduce their operating costs, means that the requirements that new buildings must meet are gradually increased. From the beginning of 2030, new buildings will have to comply **with the technical conditions specific to the zero-emission building status, and** from 2028 all buildings owned by public bodies.

For this reason, an analysis of the existing technical and construction regulations in the area of energy efficiency is planned. As a first step, **it will be verified whether the requirements set out in the regulations properly take into account the level of technological development in the construction sector.** It will be necessary to determine whether commonly available construction products, equipment and applied technologies allow to meet the requirements set in the regulations or allow to tighten these requirements. The analysis will determine the direction of activities in the area of possible support activities in the area of the use of high-efficiency technical and installation solutions, construction products, etc.

It will be necessary to assess in the area of needs to support the development, application and dissemination of these innovative solutions, which, due to their initial phase of existence, are particularly expensive to apply.

Support actions will focus not only on possible targeted aid programmes or preferential sources of funding, but also on **increasing the supply of qualified experts and co-financing research works.**

The need for a rational and efficient housing policy, as well as the persistent shortage of housing, at affordable prices for society, make it necessary to take measures to increase the availability of housing.

ACTIONOX

Action 28. Development of Power to Heat technology and heat storage in Poland

Action 105. Introduction of requirements for the use of solar energy in buildings

Action 106. Financial instrument – Priority Programme of the National Fund for Environmental Protection and Water Management – 'My Heat'

Action 114. Introduction of a tender evaluation model for tenders for the construction of public buildings based on total life-cycle cost (LCC)

Action 115. Implementing new energy standards for new buildings and buildings undergoing major renovations

Action 116. Energy assessment system for buildings and technical building systems

Action 117. Energy efficiency in social housing and the housing stock of municipalities, taking into account the needs of vulnerable groups

Wymiar 3.
Bezpieczeństwo energetyczne

Access to energy determines the functioning of the national economy, including covering basic human needs such as access to fuels, electricity and heat. **Energy security is therefore a prerequisite for achieving all the objectives of the energy transition**. From a national perspective, energy security is a priority and strengthening energy independence has become crucial in the face of the consequences of the crises triggered by the war in Ukraine and the Middle East. Ensuring a secure supply of fuels and energy, as energy security can be called in simpler terms, requires that changes in the energy sector take place in a planned manner and should therefore be based on specific objectives and targets.

While the pursuit of climate neutrality entails a shift away from fossil fuels, it is essential to guarantee the security of supply of these raw materials to the economy and consumers during the transition period. Ultimately, zero-emission technologies and energy storage will cover - in a system saturated with weather-dependent renewable sources and at an acceptable cost - energy demand, provide thermal comfort in buildings and support companies in their efforts to produce products and services based on clean and always available energy.

This part of the NECP covers the objectives and targets related to energy independence and access to critical raw materials, **certainty of meeting demand for natural gas, oil and liquid fuels**, followed by issues related to meeting **demand for coal**, and demand for **nuclear fuel and hydrogen** and its chemical derivatives. A further area of this dimension is the certainty of electricity demand coverage**.** Issues are prioritized without prioritization.

Obszair 3.1. Ensuring energy security - general cell

W capturing legal safety energy is the state of the economy that makes it possible to cover the current and prospective demand of consumers for fuels and energy in a technically and economically justified manner, while maintaining requirements resulting from the need for protection environments and[98].

From a practical point of view, from the supply chain – *energy security* is the certainty of covering the demand for raw materials Energy (domestic resources or imported) for the economy; certainty the transport and distribution of those raw materials and fuels; then the certainty of electricity production and heat, as well as their transmission and distribution

This section sets out an overall energy security objective. being the result of the achievement of the targets set for the different segments of the fuel and energy sector, as set out in the subsequent areas of dimension 3.

Cell 3.1.1. Ensuring energy independence

The energy crisis, which started in 2021 and was aggravated by the outbreak of war in Ukraine in February 2022, made energy security - for the first time in many years - require direct and immediate intervention. These crises have highlighted the need to strengthen the security of fuel and energy supply and to reduce the impact of one event on fuel prices and, consequently, on inflation. Particular discussion was given to the issue of supply dependency on imported raw materials and fuels and related expenditure. In 2023, the cost of importing energy raw materials into Poland amounted to approx. 130 billion zlotys. Such important expenditure could alternatively be incurred for investments in zero-emission and innovative solutions, supporting the national economy and its competitiveness, reducing delays in the climate and energy transition and reducing energy production costs.

Both EU and national energy policies have strongly started to emphasise the importance of **energy independence and strengthening resilience to geopolitical disruptions**, which should be understood as the ability to cover the demand for raw materials and energy regardless of the actors' actions and external situation. This means that it is necessary to ensure the diversification of imports both in terms of energy sources and directions of supply. Such diversification should minimise the impact of possible disruptions in one sector or in supplies from a specific direction

98 In accordance with Article 3(16) of the Energy Law Act.

on the energy sector as a whole and limit the risk of energy prices rising.

Poland sets the goal of ensuring energy independence on a sustainable basis and striving for to strengthen it. In this context, Poland will seek to ensure thatan energy independence rate above the Union average. 99

The implementation of the NECPs will lead to a progressive **reduction of import dependency in** the supply of energy raw materials. In total, the import and export balance of energy carriers will decrease from over 45 Mtoe in 2020 to approx. 41 Mtoe in 2040 (i.e. -11%) according to the WEM scenario and up to approx. 33 Mtoe in 2040 according to the WAM scenario (i.e. -27%)100.

Due to the multidimensionality of energy security, it is difficult to find indicators that would allow to fully assess the achievement of the target. The implementation of this objective is affected by the fulfilment of the other objectives set out in this dimension – from optimising the mining structure, diversifying the structure of energy consumption to diversifying the supply of raw materials, and if they are not met, the assessment of ensuring energy security depends on the occurrence of severe energy supply disruptions or an increase in energy prices to levels unacceptable to the economy.

POLICY)

The properly diversified **fuel structure of primary and final energy consumption** in the economy and **the maintenance of a limited level of import dependency will contribute to ensuring energy independence and, consequently, the resilience of the** economy. Diversification **of the energy generation structure based on structurally** differentiated growth in the use of domestic, in particular zero-emission energy sources, will be key in this respect. However, in the case of covering electricity demand, it is necessary to ensure the stability of the operation of the national electricity system at the same time. Despite the many benefits, the development of nuclear energy is associated with dependence on the import of nuclear fuel. At the same time, it can - thanks to the possibility of creating long-term stocks of this fuel - have a positive impact on energy security, which allows maintaining stability of supply and is required by international standards.

99 In 2024, the energy independence rate for the EU average was ca. 43%, while in Poland it was at the level of approx. 54%. *Eurostat, Energy imports dependency*

100 See Annex 1 for more details. Table 3.3. and Annex 2. Table 3.7.

While we are ultimately aiming to gradually replace fossil fuels with zero-emission energy sources and alternatives, an **adequate level of diversification of natural gas and oil supplies needs to be maintained during the** transition period. With regard to the demand for hard coal, **efforts will be made to** cover the demand for this raw material with national resources, which will be particularly challenging in the area of demand from households and other small customers. In order to **secure national energy needs,** the aim will be to meet them on the basis of generation sources located in the country. At the same time, the continuation of inter-system energy exchanges with neighbouring countries is not excluded. The demand for heat, due to the specificity of the sector's functioning, will be covered by own sources.

The above-mentioned issues are detailed through the policies and actions indicated in the sectoral objectives.

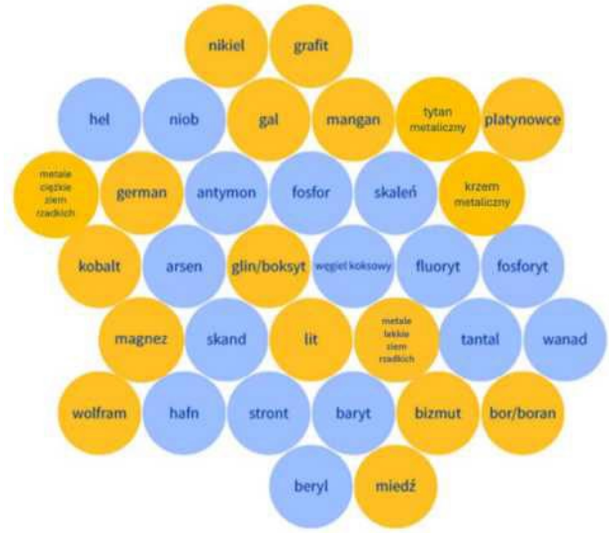
ACTIVITIES BX

Actions described in relation to the next specific objectives will contribute to the objective, ranging from actions affecting the diversification of the supply of imported raw materials, to ensuring that electricity and heat demand is covered and replacing fossil fuels with other energy sources and raw materials, in particular own ones.

Cell 3.1.2. Prospective coverage of raw material requirements•

In the light of the implementation of the assumptions of the energy and climate transition, the role of non-energy raw materials is increasing. Lithium, nickel, cobalt and graphite are crucial for battery production and energy storage. Rare earth elements form permanent magnets, which are necessary for the production of electric motors and wind turbines. The production of 'green' hydrogen requires nickel or platinum metals, depending on the type of technology. Copper and aluminium are the primary raw materials in almost all electricity-related technologies. Critical raw materials are raw materials of high economic importance for the EU, whose supply is likely to be disrupted by the concentration of sources and the lack of good, affordable substitutes.

The EU Critical Raw Materials Regulation lays the foundation for defining priorities for access to critical raw materials and sets out a clear course of action in this regard. A list of critical raw materials is defined at EU level and updated periodically. In 2011, the European Commission prepared the first list of critical raw materials for the European Union, guided by *the European Raw Materials Initiative* of 2008. The list of critical raw materials for the EU is updated every 3 years. **Of the 34 critical raw materials identified in 2024, 17 were included in the list of raw materials strategic c h 101** (in the drawing marked in yellow).



**strategic raw materials for heavy metals and light rare earths: Nd, Pr, Tb, Dy, Gd, Sm and Ce.*

The EU climate and energy transition will require the expansion of local production of batteries, solar panels, permanent magnets and other clean technologies. Analyses to date show that both the European Union and Poland are heavily dependent on supplies of critical raw materials from third markets, mainly China.

To reduce dependence on third countries for access to strategic raw materials, the EU has set the following targets for 2030:

– **extraction in the EU** – at least 10% of the EU's annual consumption is to come from extraction in the EU;
– **processing in the EU** – at least 40% of the EU's annual consumption is to come from processing in the EU;

The strategic101 relevance is determined on the basis of the relevance of the raw material for the green transition, digital technologies, defence and space applications. Critical Raw Materials Act - Consilium

– **recycling in the EU** – at least 25% of the EU's annual consumption is to come from internal recycling;

– **external sources** – no more than 65% of the Union's annual consumption of each strategic raw material at the relevant processing stage is to come from a single third country.

To meet these objectives, the next EU Critical *Raw Materials Act, Regulation 2024/1252,* was adopted in 2024 and the list of critical and strategic raw materials was updated. Its implementation aims to strengthen all stages of the European value chain by:

- implementation of national exploration programmes for the discovery of new deposits of raw materials;
- supporting mining and processing projects;
- diversifying EU imports and reducing strategic dependencies;
- diversifying EU imports and reducing strategic dependencies;
- enhancing the EU's capacity to monitor and mitigate the risk of disruptions in the supply of critical raw materials;
- improving circularity and sustainability.

Achieving the above-mentioned objectives and thus increasing the security of raw materials is possible through the implementation of a coherent and complementary raw materials policy at EU and national level. The current actions of the EU and Poland consist in diversifying the supply of these raw materials, but also in conducting exploration works within the EU and supporting recycling and substitution. National actions are implemented as part of the implementation of the State's Raw Materials Policy.

The aim in the near future is to verify the possibility of covering demand for critical and strategic raw materials following national acquisitions.

POLICY)

There may be mineral deposits in Poland, which are crucial for the production of strategic and critical raw materials, both for domestic needs and in the wider EU context. Their exploitation would require a detailed inventory of primary and secondary deposits and technical and economic analyses devoted to the possibilities of their use for the needs of industry.

According to the Balance of resources of mineral deposits n 102 at the end of 2024, there are deposits of various minerals in Poland, which creates the opportunity to obtain raw materials responding to the needs of innovative transformation, including the so-called critical and strategic raw materials. Therefore, the National Critical Raw Materials Exploration Programme (IPRO1) has been developed and will be implemented, with the aim of identifying prospective mineral deposits used for the production of critical and strategic raw materials necessary for the implementation of the climate and energy transition in the EU.

The EU Critical Raw Materials Regulation lays the foundations for defining priorities for access to these raw materials and sets out a clear course of action in this respect. Taking into account the objectives related to the implementation of the above-mentioned Critical Raw Materials Regulation and the current geopolitical situation, **updating *the State's Raw Materials Policy becomes crucial in the context of*** ensuring energy stability. Its main goal is to ensure the country's raw material security by securing current and future needs in Poland and the EU and constantly expanding the resource base of minerals for the production of raw materials. Rising international tensions and changes in global supply chains demonstrate the importance of ensuring energy security, which can only be achieved through a stable supply of key raw materials. The update *of the State's Raw Materials Policy* will allow, among others, to set new directions of action regarding ensuring the country's raw materials security also in the field of critical raw materials for the EU. Nevertheless, it should be made clear that the insufficient supply of critical and strategic raw materials may have an impact on the failure to achieve the intended pace of transition. This in turn justifies the need to maintain

102 *Balance of mineral resources in Poland as at 31 December 2024, PIG-PIB 2025*, link.

at least partial access to energy raw materials, infrastructure and competences.

ACTIVITIES b

Action 119. Development and implementation of the National Critical Raw Materials Search Program

Action 120. Efficient management of raw materials important for the national and EU economy

Action 123. Updating the State's Raw Materials Policy

Obszair 3.2 I ■ Coverage3 Demands ina carbonl

Energy coal has been the basis for covering primary energy demand in Poland for many years, but this trend is changing as Poland has entered the path of energy and climate transformation. In the following years, the use of coal will gradually be replaced by zero-emission fuels, and temporarily also by natural gas, which is characterized by lower emissions than in the case of coal. During the transitional period, it is also necessary to cover the demand for this raw material.

Coking coal has been recognised at EU level as a critical raw material103 for the European economy since 2014, in particular because of its key role in the production of steel and other heavy industries as input. Unlike coal for energy purposes, the demand for coking coal remains stable and is closely linked to the European steel market. This, in turn, is necessary to carry out the transformation and104.

Lignite is a relatively cheap raw material, but at the same time high in emissions. In the light of rising prices of CO2 emission allowances, its use is becoming less and less profitable, and additionally environmental aspects have caused that in recent years no investments in the exploration, documentation of lignite deposits and new opencast mines have been undertaken. This part of the document will describe the approach to the use of this raw material.

Cell 3.2.1. Provision of ; supply to Hungaryl. stone Energy y j ri koksov /y

The domestic raw material covers most of the demand for hard coal. Until 2016, extraction (without taking stock changes into account) in domestic hard coal mines (KWK) accounted for 90% of domestic consumption, in subsequent years up to 2024 it was 87-79%105. Due to its physico-chemical properties, the domestic raw material primarily meets the needs of the professional energy sector. Household demand is largely covered by imported raw material at106.

Although the energy use of coal is associated with emissions, the advantage of the sources based on this fuel is their operational capacity, allowing the production of energy in accordance with demand at different times. Therefore, reducing the use of coal must be correlated in time with the construction of new sources and solutions such as energy storage. This is the main determinant of demand for domestic raw material.

The use of coal in the national economy is influenced by EU climate and energy regulations. In addition to the general GHG emission reduction targets, they are also shaped by **methane emission reduction regulations .** *EU Regulation 2024/1787 on methane emissions reduction in the energy sector* aims to preserve and improve the environment by reducing methane emissions from fossil energy produced or consumed in the EU. The regulation also concerns the reduction of methane emissions from the coal sector and assumes imposing, among others, on mining companies the reduction of methane emissions respectively: up to 5 t/kt of coal extracted by 1 January 2027 and up to 3 t/kt of coal

Critical 103 raw materials are discussed in the previous chapter.

104 Through blast furnace steel production, coking coal is the beginning of the chain of every strategic economic sector from defence, through automotive, construction, to renewable energy sources. Coking coal is an important link in renewable energy and the development of a low-carbon economy, because the by-products of the coking process are used in high-tech, semi-finished products for a variety of carbon materials used in the production of batteries, fuel cells or electrodes for steel smelting using the electric arc method.

Primary Energy105 Balance Sheet , ARE S.A. on behalf of MKiŚ 2025, link.

106 Households use medium- and coarse-sorted hard coal, while domestic extraction primarily supplies small-grained sorts that could be used in massively phased-out 'snouts'. In addition, the price of such imported raw material is often competitive, especially due to the open-cast rather than deep-sea nature of extraction.

extracted by 1 January 2031, which in Polish conditions will create additional challenges, as in many mining companies the level of methane emissions is higher than the above threshold values. Projects to date show that the investment costs associated with the economic use of mining methane represent a significant economic challenge.107 108.

Coal mining and coal-based energy is a relatively large segment of the national economy, so the way in which the transition is carried out must also take into account the fairness of the transition of coal regions. For this reason, two social agreements have been concluded to ensure the stability of the process of extinction of mines.108 The Social Agreement sets out a timetable for the gradual reduction of hard coal mining, while maintaining the country's energy security. This document provides a framework for a predictable transformation, the implementation of which is consistent with the provisions of the White Paper on transformation (link), in particular in terms of maintaining selected coal units as a system reserve, diversification of the fuel mix and the development of alternative energy sources in coal regions.

The role of hard coal in the national energy system and industrial economy is shaped in a flexible manner, taking into account both international commitments to reduce emissions and national circumstances. In accordance with the provisions of the Social Agreement of 28 May 2021 The coal phase-out process in Poland will continue orderly and socially acceptable, while maintaining protective mechanisms for workers in the mining sector and ensuring the continuity of plant operations until their planned shutdown.

In 2022, a notification application was submitted to the European Commission regarding the so-called ***The new Support System for the Hard Coal Mining Sector ,*** which took into account the 2021 Social Contract for the Transformation of the Hard Coal Mining Sector. In order to prevent uncontrolled bankruptcy of companies, the system provides for surcharges where the difference between costs and revenues is positive, but at the same time a reference price mechanism and certain extraction limits are established. Dedicated aid is also to be used for protective services for employees (mining leave, leave for employees in coal processing plants, one-off cash severance payments), as well as financing the process of liquidation of mining plants. The intention of the Polish side is to approve the assistance provided as soon as possible.

The process of phasing out the activity concerns 12 underground mining plants – mines and movements (ZG) extracting energy coal:

- 7 mining plants in Polska Grupa Górnicza S.A.: KWK RUDA in Ruda Śląska (Movement Peace has already been liquidated, the Bielszowice Movement and the Halemba Movement remain to be liquidated), the Bolesław Śmiały KWK in Łaziska Górne, the Sośnica KWK in Gliwice, the Piast-Ziemowit KWK in Bieruń, the Staszic-Wujek KWK in Katowice, the Mysłowice-Wesoła KWK in Mysłowice and the ROW KWK in Rybnik (Ruchy Rydułtowy, Marcel, Chwałowice and Jankowice),
- 3 mining plants in South Koncern Węglowy S.A. – ZG Brzeszcze in Brzeszcze, ZG Sobieski in Jaworzno and ZG Janina in Libiąż,
- 1 mining plant in Lubelski Węgiel Bogdanka S.A. – Bogdanka mine,
- 1 mining plant in Węglokoks Kraj S.A. – KWK Bobrek–Piekary.

As part of the planned activities, the decommissioning of three production units will start in 2026:

- KWK Bobrek in Bytom,
- Bielszowice Movement in KWK Ruda in Ruda Śląska,
- The Uncle's Movement in KWK Staszic-Wujek in Katowice.

In addition to its historical role, hard coal remains an important element of the energy balance in the short and medium term. Its use will be gradually reduced, but it will retain its function of stabilising the power system during periods of scarcity of zero-emission power. The transition away from coal will depend on the actual pace of development of renewable, nuclear and gas energy and the availability of energy storage technologies. The flexibility adopted in the NECP is reflected in the WEM and WAM scenarios (Annexes 1 and 2), which differ in the dynamics of emission reductions and the scale of the use of fossil fuels. Taking into account the assumptions *of the White Paper on Transformation,* Poland is taking a flexible approach to the timetable for reducing the use of coal. This document assumes that the pace of reduction will depend on real progress in the development of low-carbon sources of production and on the geopolitical situation. It is allowed to maintain selected coal units as a system reserve, with the

107 Mine methane statistics in the publication *Information on the de-methaneisation and management of methane from hard coal mines in Poland*, ARP S.A., link.

108 The aspect of just transition of coal regions and the so-called social contracts was discussed in the 4th dimension.

possibility of their gradual deactivation as the available zero-emission capacity increases.

Over-reliance on imports increases vulnerability to price spikes and logistical risks. The costs of raw materials imported from abroad – plus transport, insurance and contract risks – in total may exceed the costs of using domestic resources. Therefore, the policy of balancing the mix will be implemented by maintaining a rational level of domestic extraction, diversification of supply directions and the development of modern generation capacities.

Mining of hard coal in Poland is gradually decreasing. After the outbreak of the pandemic, it fell below 60 million tonnes and stood at nearly 44 million tonnes in 2024,109 of which 32.6 million tonnes were power coal and the remaining over 11 million tonnes were coking coal. The national exploitation of coal will be completed by 2049 at the latest.

Projections indicate that the national consumption of hard coal in 2030.
It will be OK. 28 million tonnes under the WEM scenario, with
- depending on the pace of transformation, it may decrease to approx. 19 million t
In the script of WAM. Imports should only be complementary.

Given that the extraction of **coking coal serves in particular the production of** steel and other elements necessary for the transformation, and not the production of energy for communal and domestic purposes, its extraction is desirable. Currently, the EU methane regulation does not apply to coking coal mines, but by 5 August 2027, the Commission shall adopt a delegated act110 restricting the release into the atmosphere of methane from ventilation shafts for this activity. This requires proper preparation by mining companies.

POLICY)

State policy is aimed at reducing the demand for hard coal. Domestic **extraction will be the main source of covering the demand for hard coal in** the transition period, and imports should only be complementary. Therefore, the priority is to ensure the highest possible economy of raw material extraction in the country.

The social agreements concluded111 and **the new Support System for the hard coal mining sector in the European Commission are intended to ensure the supply of raw material to the** economy, while at the same time aiming at a just implementation of the energy transition – taking into account the impact on workers in the coal industry and entire markets dependent on the coal economy.

Financial and organizational support may also be directed **to reduce the negative impact on the environment resulting from the extraction of minerals** or the liquidation of mining plants. The existing programme *of the National Fund for Environmental Protection and Water Management (NFOŚiGW) should* be adapted to the identified problems in order to minimise the negative impact on the most affected areas. Support actions should consist in particular of:

- land reclamation,
- treatment, drainage or management of mine waters,
- the introduction of technologies to reduce the negative impact of mining on the environment.

Due to the fact that the characteristics of the domestic raw material primarily correspond to the needs of the professional energy sector, **reducing the demand for hard coal in households and moving away from its use remains a priority,** which will reduce import needs and affect the use of air quality. **In the case of some mining plants, it is permissible that the termination of work should not be a permanent closure, but should be based on the so-called halted operation system.** Avoiding flooding and destruction of infrastructure will make it possible

109 Domestic coal production has been falling steadily from nearly 140 million tons at the end of the 1990s, for approx. 70-80 million between 2009 and 2016. Coking coal production has remained stable in recent years at approx. 11-12 million tonnes. On the basis of several editions *of the publication Balance of Primary Energy, ARE S.A. on behalf of the Ministry of Science and Higher Education and the Report on the circulation of hard coal and the prices and sales directions of hard coal, ARP S.A.*

110 On the basis of Art. 3 of EU Regulation 2024/1787.

Social 111 contract on the transformation of the hard coal mining sector and selected transformation processes of the Silesian Voivodeship from 2021 and Social contract on the transformation of the power sector and the lignite mining industry from 2022.

to provide a kind of reserve of a strategic nature, in case the course of transformation differs from the selected scenario or if there is a crisis situation requiring the restoration of exploitation of deposits.

Due to the fact that coking coal is essential for heavy industry, it is difficult to replace, and at the same time has a limited level of pollutants, it is not expected to reduce the production of coking coal. Local production will be protected by national regulations and should be supported by EU regulations. At a time of challenges posed by the energy transition, **coking coal reserves are a strategic reserve for** the European and national steel industry.

ACTIVITIES BX

Action 119. Development and implementation of the National Critical Raw Materials Search Program

Action 120. Efficient management of raw materials important for the national and EU economy

Action 121. Research project - Reduction of methane from ventilation air in the process of coal mining transformation

Action 122. Analysis of the possibility of implementing a system of halted operation

Action 123. Updating the State's Raw Materials Policy

Action 156. Providing support for coal regions

Action 157. Ensuring the development of coal regions

Cell 3.2.2. Gradual phasing out of lignite go

Power plants for hard coal and lignite have been the basis for electricity generation in Poland for decades. They are still responsible for most of the production, but their role is gradually changing. The technical unit cost of generating energy from lignite is relatively low, but due to the high emission performance of such units, the cost of emission allowances significantly increases the cost of generating each MWh112. The negative impact on the environment (including lowering the level of groundwater, degradation of the soil environment), high emission levels affecting the rising costs of electricity generation from lignite and additionally difficult participation in support mechanisms, as well as dependence on opencast mines, cause that the use of lignite in the national economy will decrease.

In Poland, lignite mining takes place in mines located near the Bełchatów Power Plant, Turów Power Plant in Lower Silesia and ZE PAK in Wielkopolska and is closely related to the operation of these power plants. Each of these units has a specific plan for the decommissioning of units, with the termination of the plant's operation taking place earlier than the depletion of deposits.

Due to the scale of employment, lignite-related workplaces are entities with a significant impact on the regions in which they operate. In order to address the socio-economic impact, a social contract on the transformation of the electricity and lignite mining sectors was concluded in 2022. The Act of 17 August 2023 on social protection for employees of the power sector and the lignite mining industry (Journal of Laws of 2023, No. 101, item 926, as amended) was also adopted and notified. U. item 1737, as amended).

POLICY)X

Given the negative impact on the environment, the high level of emissions affecting the rising costs of lignite-fired electricity generation, conventional lignite mining for energy purposes will be reduced.

112 Visualisation of generation data dating back to the mid-20th century is available on the PSE S.A. website in the annual reports on the operation of the PPS, link. Emissions of generating units are available in KOBiZE reports.

Lignite deposits of significant size and value will constitute a ‘strategic reserve’. For this reason, such deposits will be protected against compact development of areas above them (applies only to previously undeveloped areas).

Obszair 3.3 ' ■ Coverage Demanded a for natural gas

Natural gas accounts for a significant part of the country's primary energy demand. Demand for this raw material will not fall earlier than approx. 2030 when demand peaks are expected. **Due to the bridging role in the transformation process energy**, it is necessary to guarantee the security of supply of this raw material to customers.

Due to limited national resources Natural Gas, Most of the Demand is covered with imported raw material.

This Part sets out the objectives of diversifying the supply of natural gas, covering part of the demand for a raw material with own resources, as well as providing a well-developed and efficient national and cross-border infrastructure that allows customers access to the raw material.

In addition to defining policies and actions to cover demand for natural gas, it is also necessary to define targets for preparedness to cope with curtailments or interruptions in the supply of raw material, which is also included in this part of the document.

Some interconnection issues are in the 4th dimension. On the other hand, detailed data on infrastructure and sources of imports are available in Annex 2 to the NECP in chapters 4.1 and 4.2 and 3.6.

In 2024, the total consumption of natural gas was more than 19 billion m3 (high-methane equivalent).113 Analyses to the NECPs predict that domestic demand for natural gas will peak around 2030 and that demand will decrease in the perspective of 2040. 114

consumption of natural gas

2030 23.5 (WEM)-24.7 (WAM)

2040 19.3 (WEM) - 13.6 (WAM)

bcm 3

Cell 3.3.1. Diversification of the supply (import) of ground gasO

The 2021-2022 energy market crisis has shown the importance of ensuring a sufficiently deep diversification of natural gas supplies, with a view to making domestic demand coverage dependent on imports. In 2024, non-domestic supplies of natural gas accounted for almost 81%of 115annual consumption.

The situation of Poland in the area of security of natural gas supply remains much better than in the case of most other European countries, as infrastructure investments (including the LNG terminal in Świnoujście and the Baltic Pipe) were carried out in such a time that it was possible not to extend the contract with the Russian company Gazprom. Their use also creates opportunities to increase the role of Poland in the context of gas transmission and trade in the region.

The objective in the area of diversification of natural gas supplies is to maintain

113 In total, high-methane and nitrogen-rich natural gas amounted to approx. 704 PJ, *Balance of Primary Energy*, ARE S.A. on behalf of MKiŚ 2025, link.

114 It is worth emphasizing that forecasts of natural gas demand prepared by the natural gas transmission system operator may give higher values. The operator forecasts based on detailed knowledge of customer consumption on a daily basis, risk analyses for this market segment, as well as the risk of incomplete implementation of government scenarios in the area of the development of alternative solutions. Details are set out in Annex 1 and Annex 2 to the NECP in Chapter 3.5.

115 Report on the results of the monitoring of the security of supply of gaseous fuels for the period from 1 January to 31 December 2024, Ministry of Energy 2025, link

achieved independence from supply from a single source (or direction) during the period
oftransformation and export opportunities to the countries concerned
the use of cross-border infrastructure.

The target may change in the long run, when the demand of the domestic economy for natural gas will fall to the level for which the largest part of the supply will be provided by domestic and foreign extraction. Ultimately, natural gas should be replaced by electrification of processes, as well as by replacing natural gas with biomethane and hydrogen.

POLICY)X

The objective of diversification of natural gas supplies will be pursued by:

- continue to ensure that natural gas supplies can be taken back, by adequately protecting and maintaining full functionality:
  - the Baltic Pipe pipeline, enabling imports from the Norwegian and Danish shelf,
  - about the LNG regasification terminal in Świnoujście,
  - about connections to the systems of neighbouring countries (Germany, Lithuania, Czech Republic, Slovakia, Ukraine).
- the construction of a FSRU LNG terminal; *Floating Storage Regasification Unit*) in the Bay of Gdansk by 2027/2028,
- ensuring well-developed and efficient transmission infrastructure within the country.

The total import and regasification capacity of the LNG terminal exceeds the national annual demand for natural gas. No expansion of existing interconnectors is foreseen, but the investment in the FSRU terminal is justified due to the projected increase in domestic daily demand, in the winter season, price competitiveness of LNG and gas demand in the region.

The key role in covering the demand for natural gas will be played by supplies from the Norwegian direction via the Baltic Pipe, then from the USA and Qatar in the form of LNG (based on long-term contracts concluded by ORLEN S.A.). No imports are expected from the east (i.e. Russia, Belarus).

ACTIONOX

Action 125. Maintaining efficient interconnections and the LNG terminal in Świnoujście

Action 126. Construction of the FSRU terminal in the Gulf of Gdansk

Cell 3.3.2. Maintenance? domesticge) gas extractionLand 1°

Although the main source of demand for natural gas in Poland is supplies from outside the country, part of the demand is covered by domestic extraction. Local use of the raw material reduces transport costs, and at the same time it is an activity that contributes to GDP growth. Activity economic affects also to maintain national technical competence, which may also be used in other areas related z transformation and the functioning of the economy.

Natural gas is extracted in Poland high-methane and nitrided, which differ Physical properties and value fuel. Therefore, the latter is upgraded to gas quality high-methane or is used locally.

Domestic extraction of high-methane and nitrogen-rich natural gas remains relatively stable. In 2024, the extraction of natural gas from documented deposits amounted to 4.5 billion m3116. However, the national reserves of nitrogen-rich gas are gradually depleting. Therefore, in 2025-2035, it will be necessary to gradually switch the transmission system powered by nitrogen-rich gas to high-methane gas. This action will thus increase the demand for a transmission service for high-methane gas. An alternative to reduce imports of natural gas into the country and to increase the use of domestic energy sources may be to popularise the production of decarbonised gases. This applies in particular to the start of the production of biomethane, which by its physical parameters does not differ in practice from natural gas, but also the production of hydrogen.

The goal by 2030 is to maintain the level of domestic natural gas extraction at the most constant, stable level and developing the use of gases renewable and low-carbon alternatives to natural gas.

POLICY)X

Imports and domestic extraction will continue to be the main means of meeting demand for natural gas. In the longer term, as demand for the raw material decreases, the rate of decline in own production will be lower than the reduction in imports, although this may change based on changing market conditions.

Maintaining the stable production of own natural gas requires continuing the exploration, exploration, documentation and development of new deposits that will replace the depleted deposits, as well as increasing the efficiency of production, also by using innovative methods of intensifying hydrocarbon extraction. This is beneficial for both customers and entities from the exploration and production industry, because natural gas from own production is usually characterized by the highest price competitiveness. Measures will also be taken to improve the process of recognizing and documenting natural gas deposits, supervision of the volume of natural gas extraction from deposits and effective flow of information.

The development of the use of biomethane and hydrogen are described in Parts and Area 3.4 respectively.

116 ‘Balance of mineral resources in Poland as at 31 December 2024’ – National Geological Institute. Warsaw, June 2025

ACTIVITIES b

Action 120. Efficient management of raw materials important for the national and EU economy
Action 123. Updating the State's Raw Materials Policy

Cell 3.3.3. Ensuring adequate Staniya and development of } infrastructures, storage and distribution of ground gas*

The natural gas transmission system shall consist of two interoperable systems managed by the transmission system operator:

- the National Transmission System, which consists of high-methane natural gas systems E and nitrogen-rich Lw (in the Lubuskie, Wielkopolskie and Dolnośląskie voivodships), the Transit Gas Pipeline System
- The LNG terminal.

Some final customers are also connected to the national gas transmission system. Underground natural gas storage facilities play an important role in ensuring the continuity and security of gas supply to final customers and distribution networks. Deliveries to final customers take place directly through the transmission system or through the distribution system, but 7 underground natural gas storage (PMG) facilities117 connected to the gas transmission system play an important role in the management of gas supply and emergency protection.

As Lw's national nitrogen-rich natural gas resources are gradually being depleted, a phased transition of the nitrogen-rich gas transmission system to high-methane gas will be necessary between 2025 and 2035. This action will thus increase the demand for a transmission service for high-methane natural gas.

Ensuring the proper condition of gas infrastructure, its expansion, as well as sufficient storage capacity in relation to consumption, are factors affecting the current and prospective certainty of natural gas supply to customers, which is important for the functioning of the economy.

The national transmission system shall be powered by imports of gaseous fuels from abroad, domestic and underground mining

For this reason, activities in this area are strictly defined in the Energy Law Act and regulated by the President of the Energy Regulatory Office. The operation of national gas systems shall be supervised by the minister responsible for energy in cooperation with the minister responsible for the management of energy resources. The key role is played by the gas transmission system operator (GSO) – OGP GAZ-SYSTEM S.A. and the storage system operator (SSO) – Gas Storage Poland sp. z o. o. In addition, OGP GAZ-SYSTEM S.A. is also the operator of the Polish section of the Yamal-Western Europe (SGT) Transit Pipeline System until 2068118. In addition to TSOs and TSOs, there are also operators of the natural gas liquefaction and regasification system, as well as gas distribution system operators. Among dozens of gas distribution system operators in Poland, the dominant role is played by Polska Spółka Gazownictwa sp. z o.o., which annually distributes nearly 12 billion m3 of gas via over 213 thousand km of gas pipelines (the length of the gas network with active connections).

The entities performing tasks in the area of operation and development of the transmission and distribution system and natural gas storage face challenges related to the need to adapt installations and equipment for transporting and storing also other gases and in the area of cybersecurity.

The aim is to ensure an appropriate level of security of supply and sustainability of gas infrastructure, to meet current and future needs, including

117 UGS Wierzchowice (Wielkopolska); Sanok Group: UGS Husów, UGS Strachocina, UGS Swarzów and UGS Brzeźnica; Cavern warehouses: KPMG Mogilno and KPMG Kosakowo.
118 The designation period of the TSO for the Polish section of the Yamal-Western Europe Transit Pipeline System (SGT) follows from the Act amending the Energy Law Act of February 2022.

in the regional context, as well as possible adaptation of infrastructure
for the transport and storage of renewable and low-carbon gases,
in line with market rationale and technical capabilities.

POLICY)X

Ensuring the proper condition and development of natural gas infrastructure will be based on the regulated activities of dedicated operators. As before, **the transmission system operator** will carry out the tasks set out in the development plans to meet current and future demand for gaseous fuels for a period of 10 years (the current plan for the period 2026-2035 is in force), and **distribution system operators will** continue to develop and implement such plans over a 5-year period. The storage system operator will also carry out the tasks set out in the development plan to meet current and future storage capacity needs for a period of 10 years.

Shipments

Transmission system development plans (link) are determined on the basis of technical analyses and forecasts of demand for raw material, and the investments carried out should take into account the possibility of transporting decarbonised gases.119 Key investments in this area will enable the connection of the FSRU Terminal with the National Transmission System and the transport of natural gas towards central and south-eastern Poland.

In the perspective of 2035, investments are planned in the area of expansion of transmission capacity in those areas of Poland where there is an increase in gas fuel consumption (Warsaw agglomeration and Upper Silesia). The most important investments for 2033 are:

1) missing infrastructure from the eastern side of Warsaw (the Stanisławów – Wola Karczewska gas pipeline),
2) infrastructure closing the corridor from the Gulf of Gdansk through central Poland,
3) completion of the network in Śląskie Voivodship (the Rybnik – Oświęcim gas pipeline),
4) missing infrastructure in Małopolska and Silesia (Skiczów – Komorowice – Oświęcim gas pipeline), 5) network replenishment in Lower Silesia (Krzeczyn – Legnica gas pipeline).

In addition to the investments identified as strategic for the development of the national gas transmission system, numerous smaller investments are being carried out and planned, both to modernise and expand existing natural gas transmission and compressor capacities.

In connection with the operation by OGP GAZ-SYSTEM S.A. of the technical assets of the Yamal-Western Europe Transit Pipeline System, the operator is also carrying out investments related to this infrastructure. The actions in the 2027 perspective shall address in particular:

- reconstruction and modernization of TGPS facilities,
- separation of the entrusted technical property from the non-entrusted,
- the connection of the national transmission system to the entrusted TGPS infrastructure. The key points include connections in Zambrów, Ciechanów, Issuertów, Włocławek and Długa Goślina.

Functional programmes such as the New Concept of Warsaw Power Supply, the Centre-East Corridor and related investments in the construction of transmission infrastructure do not fill gaps or deficiencies in the natural gas transmission system, but are a response to the growing demand from final customers, the development of electricity based on gas blocks or result from the need to comply with obligations imposed on TSOs in terms of ensuring security of natural gas supply and the appropriate condition of gas infrastructure.

Warehousing

Natural gas storage facilities are an extremely important infrastructure affecting supply management, but also long-

119 It should be emphasized that gases such as hydrogen should not end up in sections built with old technologies, exposed to corrosion and penetration of gases through the walls of the pipeline. Transport of biomethane should be ensured in any case, provided that adequate gas purity is ensured.

term gas security. The current capacity of UGS to store 3.3 billion m3 will be increased as a result of the completion of the expansion of the largest natural gas storage facility in Poland, UGS Wierzchowice (from 1.3 billion m3 to 2.1 billion m3 by 2026), to a total capacity of approx. 4.1 billion m^3 and the possibility of receiving approx. 60 million m3 per day in the 2030/2031 perspective.

Further analyses will be carried out on the need and appropriateness of further storage investments, with a view to detailed forecasts of system needs, as well as the forward-looking use of renewable gases, such as biomethane, renewable hydrogen.

ACTIONLX

Action 127. Increasing the capacity and take-up capacity of the gaseous fuel storage system by Measure 128. Development and modernisation of the gas transmission and distribution system in accordance with the adopted development plans and their updates

Cell 3.3.4. Ensure readiness and to cope with restrictions on the supply of c:h natural gas

The disruption of the supply of natural gas to the national gas system or unforeseen situations affecting its operation and meeting the needs of customers and the possibility of exceptionally high demand require specific safeguards.

This area is regulated by *EU Regulation 2017/1938* on security of gas supply, which sets out rules covering issues such as liability, supply and infrastructure standards, risk assessments and the need to develop preventive and emergency plans. In accordance with Art. 2 a-b Poland has a **preventive action plan and an emergency plan,** both updated in 2023. The update is carried out every 4 years or more frequently when needed.

The *2023 Preventive Action Plan* (link) sets out measures to remove or mitigate risks and threats in the supply of high-methane natural gas, and characterises Poland's capacity to supply natural gas in line with the standards set out in *Regulation (EU) 2017/1938*. The document also refers to the nitrogen-rich gas segment. Particular attention was paid to ensuring compliance with the standard for supplies to customers belonging to the group of protected customers, during 30 days of exceptionally high demand for natural gas with a probability of occurring once every 20 years (in Poland it is approx. 1 226,8 million m^3). The document also contains the main elements of regional cooperation and a description of the mechanisms used for cooperation between Member States in the relevant risk groups.

The *Emergency Plan (link*) sets out:

(a) responsibilities of market participants and the competent authority for the security of natural gas supply (within the meaning of Art. 2 *of Regulation (EU) 2017/1938*);
(b) rules for monitoring the national natural gas market;
(c) roles, procedures, available means, communication patterns between actors in case of different crisis levels;
(d) actions taken by public administrations, electricity undertakings, the gas transmission system operator or the combined gas system operator, the gas distribution system operator, the natural gas liquefaction system operator and the storage system operator, in each of the crisis levels;
(e) the role of the competent authority and the procedures to be followed in the event of a crisis, including the use of market-based and non-market-based measures.

At the same time, national legislation lays down universal rules for dealing with a crisis situation within the framework of the following legal acts:

— *the Act of 16 February 2007 on stocks of crude oil, petroleum products and natural gas and the rules of procedure in situations of threat to the state's fuel security and disturbances on the petroleum market ,*
— *Regulation of the Council of Ministers of 17 February 2021 on the method and procedure for introducing restrictions on the consumption of natural gas*,
— *Regulation of the Minister for Climate and the Environment of 2 May 2023 on the method of conducting settlements and balancing the gas transmission system during the period of activation of compulsory stocks of natural gas*

and during the period of introducing restrictions on the consumption of natural gas.

The aim is to provide a comprehensive system of readiness to cope with restrictions on the supply of natural gas in emergency situations Increased demand for raw material.

POLICY)

The readiness to cope with natural gas supply constraints in emergency situations is based primarily on the possession of adequate transmission and storage infrastructure, as well as on an effective set of procedures and solutions to avoid crisis situations or significantly reduce their effects.

To this end, the **preventive action plan and the emergency plan will be updated periodically and verification of** its implementation and effectiveness will be based on monitoring and reporting so far. Entities implementing the measures set out in ***the Preventive Action Plan are*** required to submit **quarterly reports to the minister responsible for the management of energy resources** on the implementation of measures to improve the security of natural gas supply. The reports shall include the work schedule, the expected date of completion of the investment, the risks to the implementation of the investment identified by the developer and its impact on the crisis scenarios identified in the current *Risk Assessment* and *Preventive Action Plan* .

In addition, by 1 September of each year, the gas transmission system operator, in consultation with undertakings importing natural gas into the territory of Poland, shall prepare a report on the preparation of the gas system for the winter season, taking into account the analysis of the coverage of peak demand for natural gas in trouble-free conditions. At the same time, the minister responsible for the management **of energy resources annually prepares a report on the results of monitoring the security of gaseous fuel supply,** which allows assessing the state and taking any necessary measures to strengthen the state's gas security.

ACTIVITIES BX

Action 124. Continuous update of the Preventive Action Plan and the Emergency Plan and monitoring of the implementation of the tasks included in the Preventive Action Plan

Obszair 3.4 >. Coverage of demand for renewable fuels gases— biomethane ora:from hydrogen

The transformation of energy systems takes into account alternatives to natural gas, such as sustainable biomethane production and low-carbon and renewable hydrogen of non-biological origin. With the increasing share of weather-dependent renewable energy sources in the energy system, such as wind and solar power plants, available gas sources will play an important role in stabilising the electricity supply and ensuring the flexibility of the electricity system. Biomethane, while ensuring appropriate quality, can be mixed with natural gas in virtually any proportion and transported via gas networks and stored in the gas system for a long time. This renewable fuel can be used together with natural gas in peak gas blocks during periods of insufficient supply of solar and wind energy. In the medium and long term, low-carbon hydrogen and renewable hydrogen will also play a balancing role in the electricity system. These gases should eventually partially replace natural gas for final energy purposes, with a view to decarbonising the national economy.

Both biomethane and low-carbon and renewable hydrogen of non-biological origin will play a key role in the decarbonisation of industry, especially in hard-to-abate GHG emissions sectors where electrification is not yet a viable option for large-scale deployment. Low-carbon and renewable hydrogen of non-biological origin will be used primarily as a raw material for the chemical industry (fertilizer production), refining and steel industry (steel production). Both gases will also play a role in the decarbonisation of transport, with hydrogen particularly in the production of aviation

fuels.

In view of the above, ensuring conditions for the development of production and markets for decarbonised gases as a viable alternative to natural gas is becoming a new component in ensuring energy security from a forward-looking perspective. The development of the biomethane market does not require a new national infrastructure backbone, and above all organisational and financed support. However, for the hydrogen industry, it is necessary to provide infrastructure for the transport and storage of hydrogen, and the level of domestic production of renewable

hydrogen of non-biological origin must serve to cover the demanding RED III regulations.

The objectives for the conditions for the development of domestic production of biomethane and low-carbon hydrogen and renewable hydrogen of non-biological origin, as well as for ensuring the development of hydrogen transport and storage infrastructure, are set out below.

Cell 3.4.1. Ensuring conditions/7development of domestic biomethane production

Biomethane is obtained by purifying biogas or agricultural biogas resulting from the methane fermentation of organic matter. **Sustainable biomethane production** should be based in particular on the management of residues, by-products and waste, such as: animal manure (slurry and manure), waste from crop production, waste from certain industries (e.g. agri-food processing, papermaking), sewage sludge, separately collected bio-waste (e.g. kitchen waste). Intercrops and energy crops can also be used to produce biomethane. Biomethane produced from waste substrates is part of the implementation of the circular bioeconomy. The national technical potential for the production of biomethane from waste substrates is 8 billion m^3, but taking into account the diverse size of the sources of substrates and the degree of their dispersion in the field, the implementation potential is 4.7 billion m^3, of which the investment potential available in the locations (municipalities) with the highest concentration of substrates is smaller and amounts to approx. 3,2 billion $m^3$120. This is a size that is important for increasing the country's energy security. Part of the potential will be developed for biogas plants, in particular for smaller feedstock sources.

Biomethane is a gas with similar parameters to natural gas produced as a result of purification of biogas and agricultural biogas.

In Poland, the biomethane sector is in a very preliminary stage of development, with nearly 100 investments being prepared at different stages.121 Investors point to the crucial importance of the support system, both in the area of capital expenditures and operating costs. The market is awaiting the first auctions for biomethane. Although the challenges related to investment and operating costs and the connection of installations to the gas network with adequate absorption are still very high, the development of this technology offers a significant opportunity to reduce the costs of producing biomethane in the following years.122

In addition to biomethane plants introducing biomethane into the gas network or producing biomethane in liquefied form, there will also be biogas plants that are important for the creation of so-called local balancing areas, as well as for providing heat to the local community.

In the WEM scenario, domestic biomethane production in 2030 It is projected to be OK. 0.5 billion m^3, while the results of the scenario WAM indicates the production is almost ok. 1 billion m^3.

The domestic production of biomethane in 2040 according to the WEM scenario will be close to 2030 and will amount to approx. 0,56 billion m^3. However, the WAM scenario assumes an increase in production to approx. 3.3 billion m3, so that in the long term a significant part of the demand for gaseous fuels can be covered by biomethane and natural gas from own sources.

POLICIES;

According to the forecast of fuel supply for 2030 and beyond, **biomethane** will be an important element of the diversification of the national energy mix and the energy and climate transition. In addition, biomethane production

120 Analysis of p. *Real potential for biomethane production in Poland*, National Centre for Research and Development 2024, link.
121 Analysis *State and prospects of development of biomethane installations in Poland,* Polish Biomethane Organization 2025, link.
122 *Insights into the current cost of biomethane production from real industry data*, Biomethane Industrial Partnership, link.

has many benefits for local communities and the circular economy and support in this area will be intensified.

Facilitating the incorporation of biomethane into gas networks is a priority, with a projected increasing share of biomethane in gaseous fuel in networks over time. The limited production potential of sustainable biomethane and its current higher production costs than the purchase price of natural gas (including the CO2 allowance) mean that biomethane should be used in the most efficient and rational way, as close as possible to the place of production, which will help to substitute fossil fuels rationally. This will replace fossil fuels in balancing RES in the PPS. Biomethane will also be used in district heating, in which cogeneration plants powered by gaseous fuels will play a growing role. Biomethane is also a fuel and raw material for industry and fuel in the transport sector (especially heavy).

The existing operating support scheme for biomethane is a *premium feed-in* surcharge scheme for RES installations producing biomethane up to 1 MW (converted into installed electricity). To stimulate the industry:

- Regulations will be implemented in the form of **auctions for biomethane,** so that generators in RES installations with an equivalent capacity in gaseous fuel above 1 MWe will be able to benefit from a dedicated support system, provided that biomethane is introduced into the gas network. It is worthwhile that the support system promotes the use of solutions related to the absence of odour nuisance and the reduction of biomethane emissions to the atmosphere, i.e. **non-price criteria**. This will help to increase public acceptance of this type of installation.
- It is advisable to extend the auction system to biomethane supplied to the national gas network by means other than a direct connection of the installation to the gas network.

Cooperation between local governments and investors is also extremely important, especially by including biogas and biomethane plants in the general plans of municipalities. Other incentives for the development of the industry related to, for example, the possibility of modifying the requirements for gas injection into the network or the implementation of mechanisms stimulating the demand for biomethane in individual sectors may also be analyzed.

ACTIVITIES BX

Action 11. Financial instrument – system of feed-in tariffs and market price subsidies by Measure 12. Biomethane and biogas market development support package

Action 71. Support for the development of agricultural biogas plants

Cell 3.4.2. Ensuring conditions for the development of domestic hydrogen production

According to data for 2023, Poland is the third producer and consumer of hydrogen for industry in Europi e123, with Poland mainly producing so-called grey hydrogen, derived from steam reforming of fossil fuels. The climate and energy policy being implemented currently requires the use of primarily renewable hydrogen of non-biological origin, produced using fully renewable energy. The part on the reduction of process emissions in industry (Objective 1.2.4) presents the role of renewable hydrogen of non-biological origin in the transformation of the sector.

RED III requires Member States to ensure that renewable **hydrogen of non-biological origin accounts for 42 % by 2030 and 60 % by 2035 of fuels used for final energy and non-energy purposes in industry.124** Under Polish conditions, this target primarily concerns the chemical industry, in particular the production of nitrogen fertilizers, and in the longer term also the steel industry. In addition, it should be ensured that the share **of RFNBOs in energy supplied to the transport sector is at least 1 percentage point in 2030.** 125The use of renewable hydrogen of non-biological origin in these sectors of the economy will contribute to greenhouse gas emission reductions.

In the longer term, low-carbon and renewable hydrogen of non-biological origin (alternatively with biomethane) and

123 *Clean Hydrogen Monitor 2024*, Hydrogen Europe, link.
124 Article 22a *of the amended Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources*.
125 Article 25 para. 1b of EU Directive 2023/2413 – RED III.

ammonia combusted in power plants and combined heat and power plants will partially replace natural gas, contributing to electricity system balancing.

In order to meet the EU's **industrial and transport targets,** Poland will need approx. **200,000 tonnes of renewable126 hydrogen of non-biological origin (approx.** 12 TWh of electrical energy j127). So far, it has been estimated that it is possible to achieve in 2030 the construction of generation capacity from low-carbon sources and processes at the level of **about 2 GW** (in accordance with *the Polish Hydrogen Strategy until 2030 with a perspective until 2040*). However, this volume will not cover the entire demand for renewable hydrogen of non-biological origin in Poland in 2030, so the development of domestic production capacity is desirable. In addition, the construction of new capacity of RES sources meeting the requirements *of Commission Delegated Regulation (EU) 2023/1184* will be difficult to implement. Covering the missing values requires importing the raw material.

In the perspective of 2030, the priority is to pursue the objective of the Directive RED III on the use of renewable hydrogen non-biological in industry and transport estimated at a total of 200,000 tonnes per year.

POLICY)

The limited availability of hydrogen in neighbouring countries – also due to the transformation they are undergoing, as well as the risk of import lock-in in an underdeveloped market – makes it a priority to build up their own production capacity. The priority is to ensure renewable hydrogen of non-biological origin for industry and transport in order to meet the ambitious objectives of RED III.

As part of the work on sectoral policy, **it is planned *to update* the Polish Hydrogen Strategy to 2030 with a perspective to 2040**. The document will set out the paths for the development of the hydrogen market in Poland along with an indication of optimal scenarios. Challenges will be analysed, such as: the national production potential of low-carbon and renewable hydrogen (including non-biological origin) with regard to the specificities of the operation of the electricity system with a high share of RES, the construction of transmission infrastructure and the potential import of low-carbon hydrogen and renewable non-biological origin or its derivatives (e.g. ammonia). The update *of the Polish Hydrogen Strategy to 2030 with a 2040 perspective* will take into account the need to adapt it to the EU requirements for the use of renewable hydrogen of non-biological origin, as well as national circumstances and the planned role of different types of hydrogen (due to its emissions) in the energy transition.

It is planned to continue activities related to the preparation of **comprehensive legislative solutions that** will complement the rules for the functioning of the hydrogen market set out in the *Act of 21 November 2024 amending the Energy Law and other certain acts*, as well as support instruments **for the production and use of hydrogen, including renewable hydrogen of non-biological and low-carbon origin to achieve decarbonisation and transformation objectives .** In parallel, legislative work will be carried out resulting from the implementation of RED III, which is planned to be implemented in separate acts amending: the Renewable Energy Sources Act (with regard to the industrial target) and the Biofuels and Biocomponents Act (with regard to the transport target). *A broader description of hydrogen in industry in Objective 1.2.4.*

Existing initiatives under the 2021 *Hydrogen Compact as well as under the* so-called Hydrogen Valleys will be developed.

ACTIVITIES BX

Action 55. Update of the Polish Hydrogen Strategy

Action 57. Support for capacity building for the production of renewable (non-biological) and low-carbon hydrogen

Act 58. Analysis of the need to build and use infrastructure for the import

126 According to the estimates of the Ministry of Climate and Environment.

127 That amount of energy would be fine. 6.7 GW of wind power.

of ammonia or hydrogen, including the construction of an offshore port terminal for the transhipment of ammonia or hydrogen

Cell 3.4.3. Ensuring the development of infrastructure for transport and storage and hydrogen and jegio derivatives

With the development of the hydrogen market, it will be necessary to build a completely new transmission infrastructure for hydrogen, in particular interconnections. Thanks to its central geographical and political position, Poland has the ambition to play an important role in this process, as it can be both a transit country between the countries of the Baltic Sea region and Germany, as well as responsible for coordinating hydrogen trade throughout the Central and Eastern European region, including with Ukraine. The development of this type of infrastructure will significantly contribute to Poland's role as a real integrator of the regional hydrogen market. In addition, cross-border infrastructure can play a key role in meeting domestic demand for renewable hydrogen.

For economic reasons, the most efficient solution is often to use hydrogen locally, in the immediate vicinity of the place of production. This minimizes transport losses and reduces logistics costs, increasing the cost-effectiveness of its use. At the same time, production centres in Poland will in many cases be remote from hydrogen use sites, necessitating **the development of infrastructure for the transmission and distribution of hydrogen,** ammonia or their chemical derivatives. It is important to develop both suitable pipelines and transhipment terminals. It is likely that some of the natural gas infrastructure will be able to be used for hydrogen, but this is particularly true for new and upgraded sections.

The aim of the activities undertaken is to ensure the construction and development of safety infrastructure for the transport of hydrogen or its chemical derivatives, enabling to cover current and prospective demand for these energy carriers and raw materials.

POLICY)

Issues of ł

In order to ensure the development of infrastructure for the transport **of hydrogen, the missing provisions setting out the rules for the functioning of the hydrogen market and the rules for its transmission and distribution, including the rules for their financing, will be developed.** In November 2024, the *Act amending the Energy Law Act and certain other acts was adopted (Journal of Laws No. Journal of Laws 2024, item 1881)* laying down certain elements of the legal framework for the transport and distribution of hydrogen, including renewable hydrogen of non-biological origin. The full legal framework will require the implementation of the 2024 *Gas and Hydrogen Package, which consists of the EU Directive 2024/1788 on common rules for the internal markets in renewable gas, natural gas and hydrogen* and *the EU Regulation 2024/1789 on the internal markets in renewable gas, natural gas and hydrogen*.

At the same time, as part *of the update of the Polish Hydrogen Strategy to 2030 with a perspective to 2040,* key projects related to hydrogen infrastructure or infrastructure for ammonia transport will be identified from the point of view of the hydrogen economy. Poland will also **support the initiative to build the Nordic-Baltic Hydrogen Corridor,** with a potential route from Finland, through the Baltic States, Poland to Germany, and the development of other infrastructure for cross-border hydrogen transmission and the national hydrogen transmission network. Such actions will allow for a real verification of import potential, provide opportunities for wider knowledge exchange in the context of efficient hydrogen transport and storage, and allow market participants, including hydrogen producers and consumers, to connect to the national hydrogen network.

Warehousing

Considering the importance of hydrogen for carrying out the energy transition in a safe manner and taking into account the Union's climate targets, it is considered of utmost importance to recognise the storage capacity of this gas. According to *the Polish Hydrogen Strategy, salt* **caverns were considered to be the optimal solution on the economic side, as well as in terms of the specificity of hydrogen, among potential underground hydrogen storage facilities, such as depleted oil and gas deposits or aquifers,** *with a view to 2040.* On the other hand, storage of hydrogen in above-ground tanks may be needed when hydrogen technologies start to be deployed on a massive scale, and the increase in demand and the number of customers will result in the need to build large buffer tanks.

Due to the potential for the development of the hydrogen industry and the dynamics of the increase **in the results of research and development activities, a document will be prepared at the next stages of market development, which will define an action plan in the field of underground hydrogen storage**, the selection of on-board and off-board rock salt deposits in Poland for underground hydrogen storage or the indication of technologies applicable in the construction and use of underground hydrogen storage in salt caverns. Participation in international initiatives that will increase knowledge of hydrogen management can also be important to identify potential.

ACTIVITIES b

Action 127. Increasing the capacity and take-back power of the gaseous fuel storage system

Action 129. Support for the implementation of the Nordic-Baltic Hydrogen Corridor and other infrastructure for cross-border and national hydrogen transmission

Action 130. Preparation of an action plan for large-scale hydrogen storage in salt caverns

Obszair 3.5 ' ■ Coverage Demand) for crude oil and liquid fuel

Crude oil is a strategically important energy resource for the domestic economy, and global demand for it will not decline before 2030, when demand is expected to peak. Petroleum fuels will continue to play a key role in the transport sector after 2030, and their economic importance will remain high, also due to the growing role in the petrochemical sector.

Due to limited resources
The National Oil Industry, Decisive
Most of the demand is
coated with imported raw material

The Russian Federation's aggression against Ukraine in February 2022 made it necessary to redefine strategic priorities for the oil and petroleum-related energy sector. The embargo on Russian oil and liquid fuels and, consequently, the cessation of imports of crude oil and fuels from Russia have led to profound changes in the energy security system of EU countries as regards the supply of energy raw materials.

This section sets out objectives for diversifying the supply of crude oil and liquid fuels from outside the country, as well as providing a well-developed and efficient national infrastructure that allows customers access to crude oil and liquid fuels.

Cell 3.5.1. Diversification of crude oil supplies (imports),j

In the years 2011-2024, Poland consumed approx. 24-27 million tonnes of crude oil per year, but only approx. 3-4 % is covered by own extraction m[12 8,129.]

As a result of changes in the structure of energy supplies, the oil import route using the 'Przyjaźń' pipeline until 2022 was replaced by maritime supplies via Naftoport in Gdańsk, which resulted in an increase in the level of use of the Naftoport infrastructure and the Pomorskie pipeline to near maximum volumes. The shift in the focus of the oil supply system from the East to the Sea has resulted in

National fuel transmission and distribution system
liquids are powered by production in plants
refineries in Płock and Gdańsk, as well as

[128] The highest global consumption in this period was in 2018-2019. *Primary Energy Balance Sheet* , ARE S.A. on behalf of MKiŚ 2025, link.

[129] More detailed data and information on the raw material and fuel infrastructure can be found in Annex 2 in Chapter 4.2.3. On the other hand, a diagram of the infrastructure for the production and transport of oil and liquid fuels is set out in Annex 3, Chapter 3.

that the 'Przyjaźń' pipeline began to play a much smaller role in Poland's fuel security system.

Changes in the structure of energy security in Germany have also resulted in a significant increase in the role of Naftoport and the Polish transmission infrastructure. In 2023, oil supplies from Naftoport to the two East German refineries in Schwedt and Leunie accounted for 75% of their demand. It should be stressed that even the expansion of the reception capacities of the port of Rostock and the Rostock-Schwedt pipeline will not reduce the importance of oil transit through Poland, but will still be crucial and will account for around 50% of the import needs of the Leuna and Schwedt refineries.

The above infrastructure is therefore of key importance for both Poland and Central Europe, which makes it necessary

to ensure its uninterrupted operation, including the possibility of carrying out repair and modernization works on the working infrastructure.

The present situation calls for **the development of internal infrastructure aimed at ensuring the possibility of increasing oil imports by sea.** The overarching goal remains to ensure uninterrupted crude oil supplies to refineries in Poland and abroad, also in crisis situations.

Poland sets a target for 2030 to further ensure the stability of oil supplies
oil by sea to domestic and foreign refineries at the same time
expansion of transmission and transhipment infrastructure.

POLICY)

Due to the outbreak of the war in Ukraine, the change and diversification of the directions of oil imports by Poland, including increased supplies of oil tankers of its various species, necessitate putting at the forefront of investment priorities the expansion of demand infrastructure, including Naftoport, and ensuring properly developed and efficient transmission infrastructure within the country, including optimizing the efficiency and safety of operation of the Pomeranian Pipeline.

The Polish fuel market is liberalised, therefore, in order to provide an appropriate basis for investor decisions, it is extremely important to ensure proper forecasting of the needs of the refinery sector. To this end, since 2019, the Government Strategic Reserve Agency has been preparing forecasts of domestic storage capacity requirements for emergency and commercial stocks of fuels and crude oil for a period of 10 years, which are updated periodically every 2 years.

A summary of projected stocks and storage capacities shows that in subsequent years there is a surplus of spare capacities over the storage needs for intervention and operational stocks. At the end of 2023, the surplus was 4%. Taking into account the current crude oil storage capacity and the forecast demand for crude oil by 2030, the construction of new crude oil tanks is not expected. Actions related to the pursuit of climate neutrality are geared towards reducing the use of fossil fuels, but at the same time it is important to ensure adequate storage capacities for liquid fuels (oil processing products) until their consumption can be significantly reduced. Therefore, the adjustment of storage capacities for liquid fuels will be carried out in accordance with the plans of the companies, taking into account the needs of the market in this respect.

The objective of ensuring an uninterrupted supply of crude oil will be pursued by:

- ensuring the functioning and development of the transhipment capacity of Naftoport in Gdańsk;
- ensuring properly developed and efficient transmission infrastructure within the country, including optimisation of the efficiency and safety of operation of the Pomorskie Pipeline;
- cyclical analysis of market needs in terms of storage capacities for oil and fuels;
- improving the technical conditions for the use of underground oil and fuel storage facilities.

HEADINGS)

Action 132. Monitoring of storage needs for crude oil and liquid fuels
Action 133. Support for investments aimed at diversifying and increasing the supply of crude oil, including, among others, increasing the transhipment capacity of Naftoport and ensuring properly developed and efficient transmission infrastructure within the country, including optimizing the efficiency and safety of operation of the Pomorskie Pipeline

Cell 3.5.2. Ensuring adequate star IU and the development of) f fuel infrastructures

As a result of Russia's military aggression against Ukraine, Poland stopped importing liquid fuels from Russia in 2023, with the exception of LPG, whose imports from Russia had completely ended by 20 December 2024.

Changes in the structure of liquid fuel supplies to Poland have made the supply of fuels by fuel terminals in seaports in Szczecin, Świnoujście, Gdańsk and Gdynia crucial in this respect. The importance of land supplies from Germany, the Czech Republic, Slovakia and Lithuania has also increased. Changing the focus of deliveries poses new logistical challenges for Poland in the field of road and rail transport of liquid fuels.

Poland sets a 2030 target to further ensure operational stability
transmission and distribution systems for liquid fuels and their further expansion.

POLICY)

In view of the change in the fuel supply structure, the overarching objective for transmission and distribution systems is to ensure their stable operation and to ensure an adequate amount of fuels on the market. Poland will continue its current fuel security policy primarily due to the forecasted further increase in domestic fuel demand, but also due to Poland's political and allied interest.

The objective will be pursued by:

- maintaining efficient logistics facilities with the systems of neighbouring countries (Germany, Czech Republic, Slovakia, Ukraine, Lithuania) and maritime fuel terminals;
- ensuring the operation and development of transhipment capacity of marine fuel terminals (including LPG) in Szczecin, Świnoujście, Gdańsk and Gdynia, including the storage base in Dębogórze;
- expansion of the capacity of fuel bases; according to the current demand for storage capacity;
- activities related to the extension of the NATO fuel pipeline system to Poland;
- cyclical analysis of market needs in terms of storage capacity for oil and fuels.

HEADINGS)

- Action 120. Efficient management of raw materials important for the national and EU economy

Action 131. Ensuring well-functioning fuel supply logistics, supporting the development of transhipment, transmission and storage infrastructure and activities aimed at extending the NATO's Pipeline System (NATO's Pipeline System). NPS) to Poland

Action 132. Monitoring of storage needs for crude oil and liquid fuels

Obszair 3.6 [1] ■ Coverage3 needs i1la bioma sa

The technical potential of biomass is inherently limited because it depends on the resources that are actually available at a specific place and time. For this reason, the use of biomass for energy purposes should take into account those parts of the resource that represent an unexploited surplus. **Currently, biomass plays a key role in the Polish energy system, especially in the heating sector.** According to the data of the Energy Regulatory Office for 2024 r k 128 in district heating, biomass was responsible for the production of 14.3% of heat and as much as 97% of heat production from renewable energy sources.

National biomass resources include biodegradation products, waste or residues of biological origin from agriculture, forestry and related headings industry, including fisheries and aquaculture, and biodegradable fraction waste, including industrial waste and urban biological origins.

For energy installations using biomass with a heat output above 20 MW (the threshold will be lowered to 7.5 MW through the implementation of the RED III Directive) a requirement to meet the sustainability criteria (KZR) has been introduced. **Energy produced from sustainable biomass can be considered renewable.** The RMF criteria are set out in RED I I129, including a ban on obtaining biomass from land with a high biodiversity value and land with high carbon stock, or the introduction of a requirement to achieve a certain level of GHG reduction, which clearly promotes the use of residues and waste for energy purposes.

Projections of domestic solid biomass production in 2030 are similar in both the WEM and WAM scenarios, taking the value of approx. 365 – 377 PJ. By contrast, in 2040, in the WAM scenario, output falls to 328 PJ, while in the WEM scenario it remains at around 328 PJ. 370 PJ**.**

National solid biomass resources include: forest biomass (from public, private and so-called non-recorded forests), by-products of wood processing, biomass of agricultural origin (biomass from energy crops, as well as waste or residues from agricultural production and the industry processing its products). In addition, agricultural biomass consists of residues and by-products from agriculture and the agri-food industry, which are currently used for the production of agricultural biogas and, in the future, also for the production of biomethane. Their use is systematically growing with the development of biogas plants and agricultural biomethane plants. In 2024, 7.5 million tonnes of feedstock were used for agricultural biogas production, of which more than 90% were waste feedstocks. In the perspective of 2040, a gradual change in the structure of the biomass used in the energy sector is envisaged towards greater use of biomass of agricultural origin, including from energy crops and waste fractions. This change will result from, among others, the regulatory environment and the forecasted increasing availability of domestic agro biomass resources and the progressive integration of the agricultural sector with energy. The increase in the use of biomass from waste and by-product streams will be in line with the objectives of the circular economy and will promote the use of local potentials.

Woody biomass resources are currently largely used for energy purposes: in individual heating and the professional energy sector, including heating. On 7 September 2025, the *Regulation of the Minister for Climate and the Environment of 30 May 2025 on detailed quality and dimensional characteristics of energy wood,130 which defines the characteristics of* energy wood that can be used for energy purposes, entered into force. The above-mentioned Regulation prevents the processing of whole wood in order to classify it as energy wood and then burn it, thanks to which the above-mentioned raw material will be used in the most efficient way. It should be emphasised that the above-mentioned regulation **does not introduce restrictions on the use of wood for heating purposes in**

128 *Report on Thermal Energy in Figures 2024,* Energy Regulatory Office, Warsaw, November 2025.
129 Article 29 of RED II.
130 Journal of Laws 2025, item 746.

households, in particular in fireplaces.

For energy purposes through combustion, a significant surplus of straw and the development of targeted energy plantations remain to be managed. An increase in the amount of biomass from energy plantations is forecast, taking into account conservative assumptions about acreage and yields.

The RED III Directive introduces *the principle of cascading use of biomass131 y* . According to this principle, **the use of forest biomass for material purposes over energy use is a priority.** The objective is to ensure equitable access to biomass resources with a view to innovative biomass products and high value-added applications and **the development of a sustainable and circular bioeconomy.** This is important in the context of bioenergy support schemes. However, the Directive indicates that it is possible to deviate from the cascading principle, e.g. due to ensuring security of energy supply or the lack of a local wood processing plant. However, these derogations always require justification and information to the European Commission and are therefore an exception to the cascading rule. The principle of cascading use of biomass is implemented through a number of regulations, in particular in:

1) the Renewable *Energy Sources Act of* 20 February 2015,
2) the Biocomponents *and Liquid Biofuels Act of 25 August 2006 ,*
3) the Waste Act of 14 December 2012,
4) Regulation of the Minister for Climate and the Environment of 30 May 2025 *on the detailed quality and dimensional characteristics of energy wood,* which entered into force on 7 September 2025.

POLICIES;

Responding to the need to use wood in the most economically and environmentally beneficial way, it is necessary **to ensure that in the professional energy sector the use of biomass applies only to wood raw material of the lowest quality.**

In the district heating sector, biomass can be a fuel during a transitional period, due to the need to meet the criteria for an efficient district heating system. Especially in smaller heat plants, in regions with high biomass resources, this will be a rational solution. In the longer term, increasing the share of zero-emission renewable energy sources, such as solar and wind, in the national electricity system will allow for an increasing degree of electrification of heating.

The definition of **energy wood** is contained in *Article 2(7a)* of the Renewable Energy Sources Act. That provision states that energy wood is wood raw material which, due to its qualitative and dimensional characteristics, has a reduced technical and functional value preventing its industrial use, as well as wood raw material constituting biomass of agricultural origin. *Regulation of the Minister for Climate and the Environment of 30 May 2025 on detailed quality and dimensional characteristics of energy wood (Journal of Laws No. U. item 746)* organizes the situation on the domestic wood market by indicating the types and parameters of biomass that can be used for energy purposes by energy companies, while securing a full-fledged wood raw material for use by the wood industry.

ACTIVITIES BX

`Action` 86. Principle of cascading use of biomass
`Action` 87. Developing a bioeconomy strategy

Obszair 3.7■ Prospective coverage of the demand and fuel

REQUIREMENTS OF nudrov/e

There are currently no nuclear power plants in the Polish energy system, but in the perspective of 2040 it is possible to launch the first large-scale nuclear power plant (after 2035) implemented under the Polish Nuclear Energy

131 Article 3 para. 3 of RED III.

Programme (PPEJ) in Pomerania (the municipality of Choczewo) and the first unit of the second power plant also planned under the PPEJ programme. The total installed capacity of nuclear units may amount to nearly 6 GW in 2040, after 2040 approx. 9.5 GW (net), and according to investors' declarations, the implementation of the first commercial installations of small modular reactors (SMRs) may take place even around 2035.

Therefore, this part of the strategy sets out an approach to ensuring a safe supply of nuclear fuel, but also a reference to national uranium reserves.

The rules of operation of nuclear energy are strictly standardized on the international arena, which is why their observance is crucial in the area of ensuring nuclear safety.

It's cell 3.7.1. Provision of ; safe supply (import) of nuclear fuel

The security of supply of nuclear fuel depends on the certainty of supply of uranium concentrate, access to fuel cycle services, as well as the certainty and reliability of the transport of nuclear materials at different stages of the fuel cycle and, finally, of the transport of finished nuclear fuel. The rules for the supply of uranium and nuclear fuel cycle services within the EU are governed by the Euratom Treaty.

Uranium ore deposits are found in different parts of the world. The economic viability of uranium mining depends mainly on its market price. Currently, due to increasing demand, there is an increase in the price of uranium, which will encourage mining companies to develop new deposits. According to the arrangements adopted in the *Polish Nuclear Energy Programme* (link) from 2020, uranium and fuel should be supplied from safe countries, in particular from EU countries or more broadly from the OECD. Contracts for the supply of nuclear fuel shall be concluded by the owners of the power plant in advance for a period of at least several years and shall cover all nuclear fuel cycle services needed to create the final product in the form of fuel cartridges for the reactor. Such contracts shall be notified to the Euratom Supply Agency (Euratom Supply Agency). *Euratom Supply Agency*), which has instruments in place to protect Member States against possible fuel availability problems.

In parallel, consideration should be given to the feasibility of building own or regional nuclear fuel cycle capacities. Potential investments in this area may become an element related to the construction of a second nuclear power plant, and in particular may become an element of the integrated offer for its construction. Security of fuel supply issues will be taken into account when selecting the technology for the second nuclear power plant. At the same time, allowing heavy water reactor technology to compete, which does not require a uranium enrichment process for fuel production, potentially opens up the possibility of reducing dependence on external supplies solely for the import of uranium concentrate by ensuring fuel production, without the need for uranium conversion, enrichment and reconversion services. In parallel, efforts should be made to strengthen European capabilities in all phases of the nuclear fuel cycle.

Poland sets the 2030 target of concluding a fuel supply contract
for the first unit of the first Polish nuclear power plant.

POLICY)X

With a view to energy security, efforts will be made to build up long-term stocks of nuclear fuel. Gathering several years of stock of this fuel is relatively easy to implement, due to its specificity.

The purchase of fabrication services (production of finished fuel cassettes) for nuclear power plants in the first phase of the operation of Polish nuclear energy (e.g. for the first and second fuel input) will be associated with the purchase of a specific technology. It is worldwide practice for the technology provider to also provide fabrication services during the first few years of operation of the reactor (and potentially during the following years) and to have access to data for fuel fabrication by third parties (to avoid monopolistic practices).

Poland will strive to ensure the possibility of supplying uranium and fuel from safe countries, in particular from EU or

OECD countries. At the same time, Poland will support national and European investments aimed at expanding nuclear fuel cycle production capacity. With the development of the nuclear programme, the location of such plants in Poland will also be considered.

ACTIONOX

Action 21. Implementation of nuclear energy

Cell 3.7.2. Inventory Ći country by < : h fold urć inu

Analyses so far show that Poland does not have industrial quantities of uranium from conventional deposits, however, there is potential for unconventional deposits. These include, among others, uranium co-occurring in ashes, phosphate rock or copper deposits, which is treated as waste of the copper industry (in the Lubin-Sieroszowice area).

Their exploitation would require a detailed inventory of unconventional deposits, and in the future, as uranium prices rise, technical and economic analyses of the possibilities of their use for the needs of domestic industry, including nuclear energy.

POLICY)X

Poland has both conventional and unconventional uranium resources. Currently, the extraction of uranium in Poland due to, among others, its content (percentage composition), uneven distribution in deposits and the size of deposits would be unprofitable. Domestic uranium reserves, on the other hand, represent potential that could be exploited in the future.

ACTIVITIES b

Action 21. Implementation of nuclear energy

Obszair 3.8 ■ Coverage Demanded for Electricity

Covering the demand for electricity determines the functioning of the economy, and unlike fuels, its storage is limited, which is why electricity security seems to be the most sensitive element of energy security.

There are many components to the security of electricity supply. The first is the provision of raw materials for energy production, as discussed in the previous pages of this document. Another factor is the certainty of energy production. In this area, there has been a significant change in the last decade, due to the successive increase in the power of RES depending on weather conditions. The paradigm of sufficient available capacity (so far combined with coal-fired capacity) had to be supplemented by the need to provide flexible capacity (such as gas capacity) as well as other solutions to cover power demand. In order to maximise efficiency, the impact of seasonality of the energy mix and the development of energy storage should be taken into account. Another component of electricity security is properly developed and properly managed transmission and distribution infrastructure. It is also important that there is an ever-increasing shift from centralised to distributed energy generation in smaller units and by households and entities whose main activity is not energy production, e.g. energy communities. Increasingly frequent situations requiring intervention call for appropriate preparation and solutions to limit their effects.

All the above elements are presented below in the form of objectives. Some issues related to cross-system exchange are also discussed in the 4th dimension, in Objective 4.1.1, and issues related to the reduction of GHG emissions from the sector and the development of RES in the sector are discussed in Objective 1.2.1. The figures below show the structure of installed capacity and electricity production for 2040 under the WEM and WAM scenarios.

A detailed description of the production and power structure can be found in Chapters 3.7 and 3.8 of Annexes 1 and 2

to the NECP.

Cell 3.8.1. Ensuring sufficiency3;ci mc)cy

Challenges to ensure capacity adequacy are also linked to the description of target 1.2.1. for GHG emission reduction in the electricity sector.

The increase in the use of energy from RES is extremely necessary in the context of the decarbonisation of the electricity sector, but the cheapest, most popular and almost cost-free variable RES based on solar and wind energy cannot be taken into account as sources guaranteeing security of supply. The parallel **development of stable and controllable generation units (including** weather-independent RES) is warranted, while promoting solutions aimed at current and local self-consumption of energy, such as various types of energy storage.

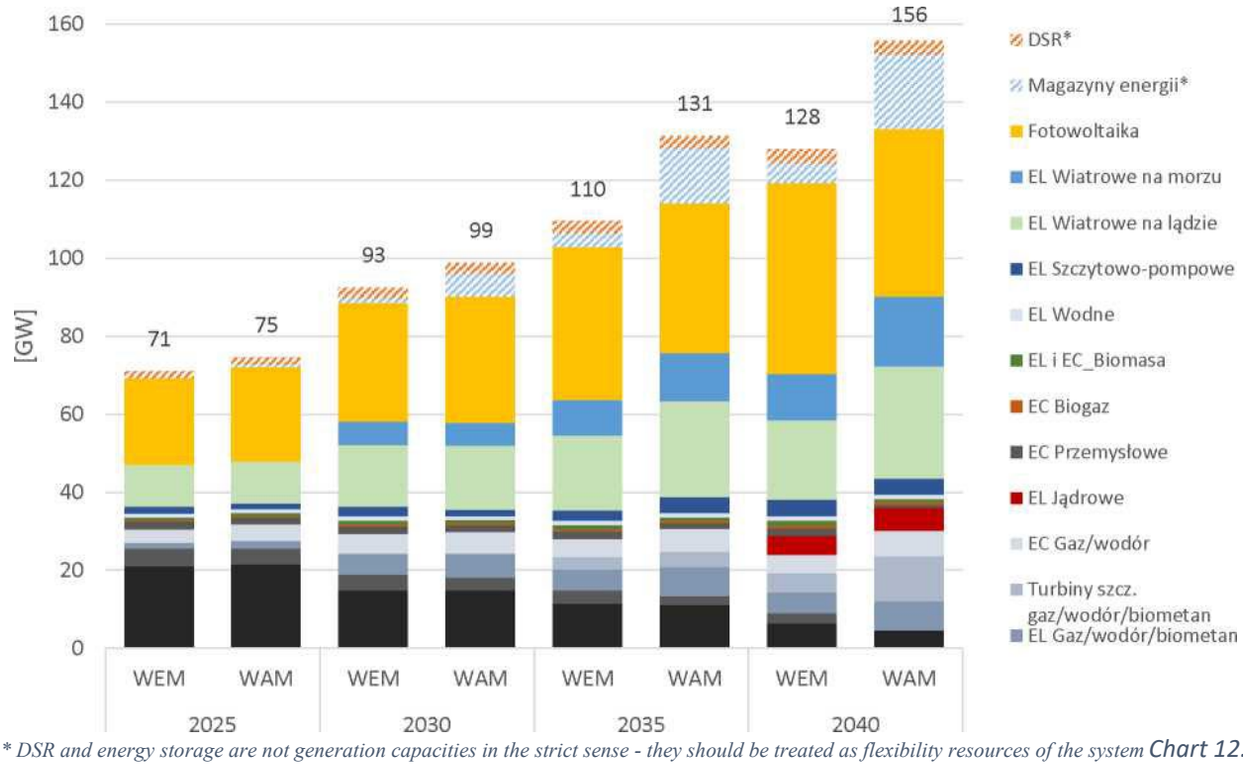
Coal units, which have been the basis for electricity production in Poland for decades, have been changing their role in recent years in order to supplement the daily electricity balance, beyond what is produced by weather-dependent RES.

Successively, these units are set aside, taking into account the needs of the system in terms of the amount of available power in the system.

In order to ensure power adequacy and at the same time ensure greater flexibility of the system, in recent years approx. 2 GW of new **gas capacity and** approx. 4.4 GW of further gas capacity may arise as a result of the implementation of contracts concluded in existing capacity auctions. As a result of the energy crisis in 2021 and 2022, some of the previously planned projects were re-examined for substitution with innovative solutions. However, in the near term, at least some of these investments are necessary. Importantly, gas units will be able to use biomethane in the future, as well as hydrogen (after technological adaptation).

In the long term, ensuring power adequacy and stable operation of the electricity system will also be achieved through the use of nuclear units, including as technological maturity progresses and increases, by SMR units. The interest of investors in the implementation of projects related to the construction of SMR is observed, which is reflected in both strategic and administrative activities, including the issuance of positive decisions essential for several planned projects and the presence of SMR in the strategies of some entities. The development of these technologies will depend on the progress of work and increasing technological maturity. Nuclear power can provide high reliability and continuous electricity production, independent of weather conditions.

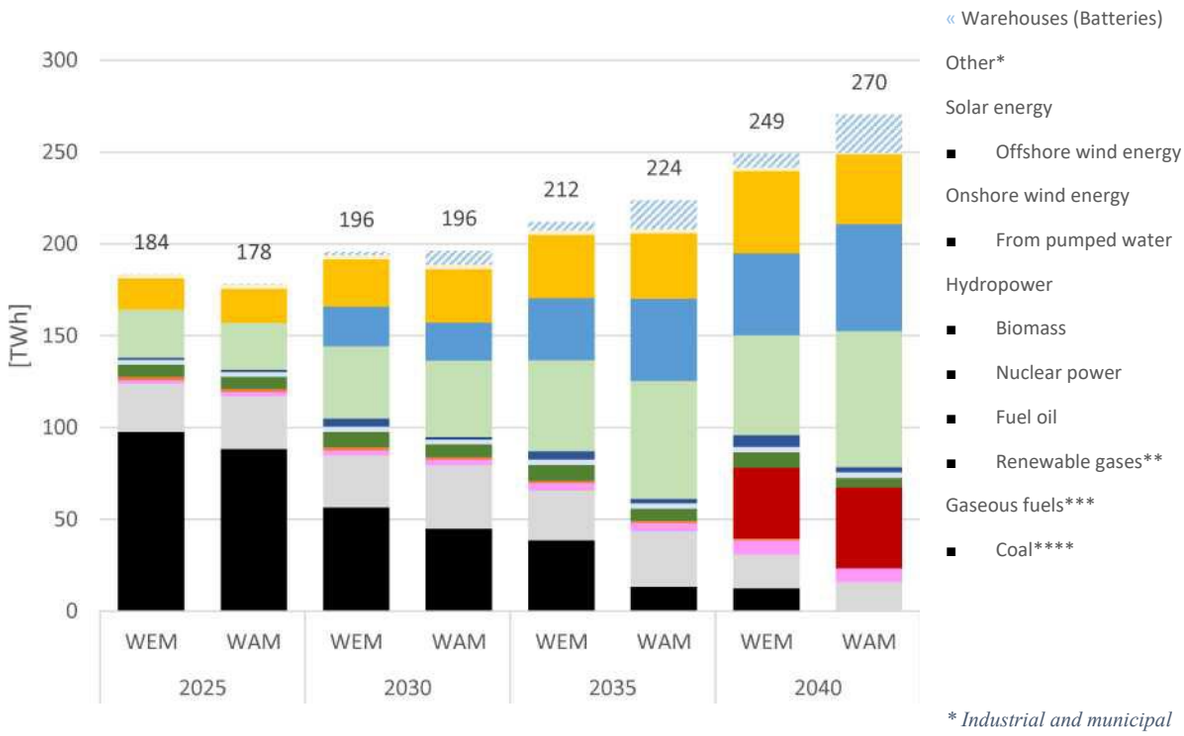
The projected capacity structure in the WEM and WAM scenarios is presented below. The forecasts were analyzed by the Transmission System Operator [134] in terms of ensuring the adequacy of generation resources in the national electricity system.



** DSR and energy storage are not generation capacities in the strict sense - they should be treated as flexibility resources of the system* Chart 12.

Projection of net achievable power generation capacity - WEM and WAM scenario [GW]

[134] PSE S.A.



** Industrial and municipal waste*
*** Biogas, biomethane, renewable hydrogen*
**** High-methane and nitrogen-rich natural gas, mine de-methane gas, accompanying petroleum gas*
***** Including coke oven and blast furnace gas*

Figure 13. Gross electricity production forecast – WEM and WAM scenario [TWh]

Standards for the functioning of the EU electricity market are the subject of EU Regulation 2019/943 on the internal market for electricity. In addition, the Agency for the Protection of Human Rights and Fundamental Freedoms Cooperation of Energy Regulators (ACER) *The European Union Agency for the Cooperation of Energy Regulators*) develops framework guidelines in this area. On the basis of the above-mentioned Regulation and the ACER guidelines, the European Network of Transmission System Operators for Electricity (ENTSO-E) is an association of the European Network of Transmission System Operators for Electricity. *The European Network of Transmission System Operators for Electricity (ENTSO)* develops draft guidelines and network codes that define the technical rules for the functioning of the electricity market, including, inter alia, the principles of network security and reliability and the functioning of energy markets, which in turn need to be translated into national systems. Thus, *power sufficiency* is determined on strictly technical principles that take into account the availability of individual sources.

Poland sets the objective of ensuring security of electricity supply
for final customers in accordance with a national safety standard
(as of 2024, the *loss of load expectatio* n was 3 h/year).

POLICY)X

In order to ensure capacity adequacy, a **capacity market will operate** at least until 2030. Its operation is to result both in maintaining the necessary amount of existing capacity, as well as in encouraging investors to build new stable and available capacities, without which there will be no more intensive development of weather-dependent RES - photovoltaics and wind farms. Various other forms of support will support solutions based on renewable and low-carbon gases, i.e. biomethane or hydrogen, so that they can provide an alternative to fossil fuels in the long term.

Taking into account the projected significant share of variable generation RES capacity in the PPS, together with the high level of conventional power withdrawals and the parallel risk of accelerated phase-outs for economic and technical reasons (due to a reduction in lifetime), an **analysis will be carried out in the longer term of the appropriateness of implementing a complementary support mechanism for dispatchable generation units ,** in order to ensure capacity adequacy and ensure the balancing of the electricity system. It is provisionally assessed that,

in the longer term, the mechanism could further diversify unit sizes, reaction parameters (RRPs) and other parameters. *Service Level Agreement* (SLA), but also specify transformation requirements, e.g. through the use of a specific level of biomethane (or hydrogen) by gas units. One of the priorities will be the finalization of work on the final shape of the new power mechanism, which will be a continuation of the solutions that have been functioning so far with appropriate modifications.

The analysis may also demonstrate the appropriateness of maintaining some coal units or even partially upgrading them to cover capacity needs, but the annual average use of these units after 2030 is likely to be very low.

The implementation of investment processes aimed at modernizing and developing the National Power System (KSE) will affect the security of electricity supply for the inhabitants of Poland. In addition to the implementation of the investment activities themselves, however, it is crucial to create appropriate mechanisms that will support the process of integration of the Polish energy sector and increase its resilience and efficiency.

In order to maximise the benefits of demand elasticity for the electricity system and customers, it is advisable to increase the availability and popularisation of solutions (e.g. automation of energy consumption) enabling customers to participate in market mechanisms, such as dynamic electricity price tariffs, so that price benefits are achievable for a wide range of customers.

An important element of activities for the security of the national electricity system will be the implementation of works in the field **of the so-called anti-blackout package,** including draft acts to increase the reliability of the electricity system and protect customers, which will be submitted in subsequent stages.

An important element of the capacity adequacy policy is the deployment of **nuclear power,** the first unit of which will be operational after 2035. The capacity of nuclear power plants in 2040 should reach approx. 6 GW. In the projections to the NECP by 2040, nuclear reactor capacities are aggregated, without distinction of type or size, with a view to ensuring investment flexibility and adapting to market, technological and deployment conditions. The development of small modular reactors (SMRs) will depend on the degree of commercialisation, availability and cost of this technology (decision on the implementation of the project on the part of private investors) and may supplement and increase the capacity indicated above.

New capacity connection and other system adequacy factors correlate with the degree of **development of electricity transmission and distribution networks.** Therefore, system operators will consistently implement development programmes so that adequate transmission and distribution of energy across the country is possible.132

In addition, financial support for renewable energy sources will gradually be directed towards solutions that reward the balancing of non-disposable sources, so as to ensure that the development of weather-dependent sources is accompanied by the development of capacity and solutions.

ensuring their balancing, which may be reflected in the modification of the auction system for the purchase of electricity from RES.

Power sufficiency will also be affected **by peak energy mitigation** measures which determine peak power demand. At the same time, they should improve flexibility. Dissemination **of dynamic price contracts as well as equipping prosumer installations with** energy storage and their efficient use will play a particular role.

ACTIVITIES BX

- Action 2. Financial instrument – Modernisation Fund
- Action 17. Development of the electricity and heat storage market
- Action 21. Implementation of nuclear energy
- Action 135. Financial instrument — Capacity market
- Action 136. Anti-blackout package

132 The expansion of linear electricity infrastructure is described in Objective 3.8.3.

Cell 3.8.2. Ensuring flexibility of the power system for better integration of RES

The increase in the share in the national energy mix of RES generation sources, the generation of which is largely dependent on weather conditions and varies over time, makes covering the demand for electricity and power in the electricity system an increasing challenge. One of the answers to this challenge is to increase the flexibility of the power system, i.e. to provide sources and solutions that will allow to cover energy demand in periods of lack or low availability of energy from RES.

In recent years, the flexibility of the system has been mainly provided by gas-fired generation units or pumped storage plants, as well as partly coal-fired capacity. The possibilities for using these resources to ensure the flexibility of the system depend, inter alia, on their technical parameters as well as the level of emissions. However, the increasing share of weather-dependent RES in electricity generation is a challenge for those generation units that will have to be supported by other sources of flexibility to ensure the flexibility of the electricity system, including disposable capacities (e.g. gas capacities, including those using biomethane, biogas or hydrogen), energy storage or *demand side response* (DSR), including through the dissemination of dynamic price agreements, the provision of services by 'large' industrial customers or aggregators. Cooperation with the sector of electromobility and heating and heating can also play an increasing role, allowing, in particular, for the management of surpluses from RES at low prices.

The flexibility of the system should lead to security of electricity supply, as well as to a reduction in energy prices, in particular price *spikes,* which may result from, for example, adverse weather conditions, high peaks of daily demand in the evening or a further increase in peak energy demand.

In accordance with the 'market' Regulation, as amended by Regulation (EU) 2024/1747, the energy market should function and develop in such a way that it is **competitive, transparent and market-based, ensuring the free flow of energy, taking into account the participation of consumers in133.** One of the key elements of the implemented activities should be ensuring flexibility of the electricity system, which applies both to the generation of energy, its dispatch by operators, as well as to increasing the flexibility of demand. Directive 2019/944 of the European Parliament and of the Council also lays down rules for the functioning of the market based on flexibility and incentives for active participation in the market. It follows from the above regulations that the tools for implementing the principle of flexibility should be primarily:

- Proper **redispatching**, based on transparent and non-discriminatory criteria, open to all generation, energy storage and demand response technologies, including from other Member States (Article 13 *of Regulation 2019/943*);
- Measures to **reduce congestion** both within Member States (bidding zone) and between bidding zones and to manage it appropriately (Article 14 of Regulation 2019/943);
- Appropriate **design of network charges for** the use of networks that are transparent, reflect the costs of operators and take into account the need to ensure network security and flexibility, and even support the use of flexibility services. At the same time, network charges must not lead to positive or negative discrimination of energy storage and aggregation and must not create disincentives for self-generation and consumption or participation in demand response (Article 18 of Regulation 2019/943);
- Ensuring conditions for market participation and exploitation of the production and reduction potential of **customers, aggregators** (Articles 13, 15 and 17 of Directive 2019/944);
- Dissemination of **smart metering systems** that improve the management and use of energy supply (Articles 19 and 20 of Directive 2019/944);
- Ensuring **the functioning of futures and balancing markets according to** well-defined rules and the possibility for bundling (product) to implement a smoothed demand profile in specific crisis situations (Article 5; 6, 9 of the Regulation 2019/943);
- **Appropriate allocation of cross-zonal capacity**, strengthening the possibilities to exploit the flexibilities arising from cross-border links (Article 17 of Regulation 2019/943);
- Taking into account the possibility of **purchasing flexibility services** when establishing distribution network development plans (Article 32 of Directive 2019/944).

133 Article 3 of Regulation (EU) 2019/943.

The role of electricity system flexibility has also been highlighted in the Communication of the European Commission setting out an Action *Plan for Affordable Energy and*134. Strengthening flexibility by developing storage and shifting demand to periods when energy is cheapest is indicated as the only tool to reduce the cost of energy supply. Flexibility of electricity systems will be a key element on the path to a decarbonised energy system.

The aim is to ensure such flexibility of the electricity system,
which will enable a stable supply of energy for final consumption and limit growth
maintenance costs of the system.

POLICY)

The expansion of the electricity system will aim to decarbonise the sector, in particular by increasing the use of renewable energy and nuclear energy by 2040. In such a system, it is necessary to ensure and strengthen flexibility, which will be achieved in particular by the following policies:

• During the transition period, existing disposable generation sources, including those based on coal, can operate in the electricity system. Gas sources, which provide greater flexibility of work, will have a longer perspective of use than coal sources. Therefore, **the construction of new units** is also allowed . Prospectively, gas-fired power plants can use biomethane, as well as hydrogen, i.e. renewable and low-carbon fuels.

• **Electricity storage** in a variety of forms, including battery-based and renewable gas-based, should be promoted and increase the share of the electricity market.

• **Demand-supply flexibility mechanisms, aggregation, tariffs and the uptake of dynamic price contracts should be promoted.** The effectiveness of using this type of contracts is correlated with the awareness of energy users and prosumers. The development of **smart systems** plays an important role in the area of energy efficiency, generation, storage and grid integration ***and*** will continue to be supported by all market players, including users, energy producers, energy communities and electricity system operators.

• Work will be carried out on providing **legal solutions and developing the concept of mechanisms for market integration of RES** in connection with the challenges of growing production and installed capacity in the electricity system, including market services provided by RES, taking into account the location of RES in the network, cooperation of RES with warehouses and services affecting the balancing of the electricity system and the conditions for the operation of the electricity network. The range of services for the flexibility of the electricity system may be extended. The active participation of other participants in the balancing market should also increase.

• Financial support for the direct development **of the most efficient types of RES for a given area of the electricity system will be gradually shifted towards solutions that condition their safe operation in the system**. This may include rewarding the use of electricity storage, making the aid conditional on its use or supporting only storage. Systemic support, so far based on auction subsidies for the production of electricity from weather-dependent RES, may be directed to solutions based on hybrid installations, **characterised by high availability .** These installations should integrate a variety of renewable energy sources, energy storage technologies and, where necessary and possible, peak sources, which will allow building the stability of the energy system already at its core.

• An important supporting solution is **the possibility for several generation installations to share the connection (cable pooling)**, allowing different, mutually complementary energy sources to be combined in a common connection infrastructure. Up to now, connection sharing has only been provided for RES, but it will be extended to other energy installations and storage facilities.

- The **expansion and modernisation of electricity networks** (transmission and distribution) remains a priority so that the system is able to receive energy from generation sources, including RES, and to ensure an adequate distribution of electricity in the system, which will promote a more efficient use of available capacity and reduce system costs.

134 *Action Plan for Affordable Energy: Unlocking the true value of our Energy Union to secure affordable, efficient and clean energy for all Europeans,* Communication from the Commission to the EP, the Council, the European Economic and Social Committee and the Committee of the Regions, COM (2025) 79 final, link.

ACTIVITIES b

Action 17. Development of the electricity and heat storage market
Act 23. Measures to increase the flexibility of the electricity system in relation to renewable energy generation and to adapt to the expected changes in the PPS
Action 143. Measures to integrate and improve the functioning of the electricity market
Action 146. Dissemination of dynamic price contracts
- *All actions identified in the sections on ensuring the availability of natural gas and developing the market for biomethane, biogas and hydrogen – Area 3.3 and Area 3.4.*

Cell 3.8.3. Infrastructural developments7 transmission and distribution of:ji electric energy

Ensuring **the proper condition and expansion of linear electricity infrastructure and** the construction of interconnections are factors affecting the current and prospective certainty of electricity supply to customers, more precisely:

- **ensuring security of electricity supply** – understood as the ability of the electricity system to ensure security of electricity network operation and balancing electricity supply with electricity demand,
- **ensuring the long-term ability of the electricity system** to meet reasonable domestic and cross-border electricity transmission needs.

Properly developed and maintained and efficiently managed **electricity transmission infrastructure** is to ensure that energy is diverted from generation units to the transmission system and distributed **to distribution systems,** ultimately to final customers. This infrastructure also provides opportunities for efficient energy exchange with the systems of EU and Energy Community countries.135

The electricity transmission system is based on a backbone network, which is built and managed by the electricity transmission system operator (OSPe). The backbone network is essential for the proper functioning of the national electricity system while ensuring:

- the reliability of power supply to customers, including large urban agglomerations, by meeting the n-1 criteria for the reliability of power supply and maintaining the quality parameters of network operation,
- connection and removal of capacity from existing and built generation sources, including large-scale RES and nuclear power plants,
- meet the regulatory capacity to exchange capacity with the EU's neighbouring countries.

The backbone network allows for flexible adaptation to various PPS operation scenarios, even if the role of the transmission network is limited to the booking function, which is to guarantee only the security of system operation.

Deliveries to customers shall be made from the distribution network. Since the uptake of energy production by prosumers and energy communities, the nature of distribution infrastructure has changed. Its main task is to provide energy to end users, but changing the market model requires successive adaptation of infrastructure to receive energy generated by prosumers and energy communities and cooperation with energy storage. As a result, the passive *one-way network is gradually being transformed* into an active *two-way network.* Due to a number of technical factors, **the amount of energy supply** depends most on the condition of the distribution infrastructure and the efficiency of the operators. However, it should be stressed that climate change is leading to an increasing number of extreme events affecting supply disruptions.

The stability of electricity supply requires the fulfilment of appropriate technical conditions. As ensuring continuity of

135 The members of the Energy Community are: Albania, Bosnia and Herzegovina, Macedonia, Montenegro, Serbia, Kosovo, Moldova, Georgia and Ukraine, European Union.

supply determines the functioning of the economy, activities in the area of electricity system management are strictly defined in the Energy Law Act and regulated by the President of the Energy Regulatory Office (URE). The situation is closely monitored both by the minister responsible for energy and by the Government Plenipotentiary for Strategic Energy Infrastructure – in terms of key investments from the point of view of electricity import and export capacity. The key role is played by the electricity transmission system operator. As the time of infrastructure investments and the perspective of their use is long-term, the TSO is determined in a multi-annual perspective. The President of the Energy Regulatory Office appointed Polskie Sieci Elektroenergetyczne S.A. to act as TSO until the end of 2030. There are five largest electricity distribution system operators (OSDe) and a larger number of local operators on the market, with the first group subject to closer monitoring by the President of the Energy Regulatory Office.

TSOs and OSDe plan to develop the power grid adequately to the growing demand, the requirements of the energy market and the needs of PPS users. **In recent years, there has been a very intensive increase in RES, which requires a properly developed and adapted linear infrastructure. Therefore, the development of the transmission and distribution network has become a priority in the transformation of the electricity sector.** At the same time, the dependence of wind and solar power plants on weather conditions, as well as the increasing frequency of extreme weather events, pose more and more challenges for TSOs and OSDe.

Operators' activities must be based on EU regulations and close cooperation with operators of other systems, in particular within the European Network of Transmission System Operators for Electricity (ENTSO-E). *European Network of Transmission System Operators for Electricity*). They concern in particular:

- planned development of transmission networks,
- allocation of transmission capacity for cross-zonal exchanges of electricity,
- ensuring the safe operation of connected systems,
- striving to reduce congestion,
- shaping network charges,
- flexibility services and their integration in the establishment of distribution network development plans.

The key regulations that operators implement or implement are, in particular:

- *EP and Council Directive 2019/944 on common rules for the internal market in electricity , •EU Regulation 2019/943 on the internal market in electricity ,*
- so-called network codes and guidelines (implementing or delegated acts issued pursuant to Article 59 *of Regulation (EU) 2019/943)* in the bidding, connection, operational and cybersecurity areas;
- *EP and Council Regulation 2019/941 on risk preparedness in the electricity sector;*
- *Directive 2022/2555 of the EP and of the Council of 14 December 2022 on measures for a high common level of cybersecurity across the Union*.

The objective of linear electricity infrastructure is to provide security of electricity supply and ensuring long-term capacity of the electricity system to meet supply needs electricity. The aim will be to achieve SAID Iin 2030.[136] at the level of 85 min./recipient.

POLICY)

Ensuring the proper condition and development of the electricity infrastructure will be based on the regulated activities of professional entities. The opinion of the President of the Energy Regulatory Office on the plans for the development of transmission and distribution systems, as well as qualitative regulation, is a kind of guarantee that the linear infrastructure will be carried out in accordance with the needs of market development, energy transformation and security conditions.

Actions taken in the area of ensuring efficient electricity transmission and distribution infrastructure will focus on:

136 Average duration of an electricity outage *System Average Interruption Duration Index*.

- security of supply, thanks to interoperability, appropriate connections and the safe and reliable operation of the system,
- Ensuring sufficient capacity resulting from the forecast the power and electricity demand of individual PPS areas,
- connection and withdrawal of capacity from new generation sources (both conventional and RES),
- ensuring the possibility of connecting new energy consumers,
- increasing the reliability of power supply to large collection centres,
- increasing the ability to regulate tensions,
- creating conditions for the safe operation of the PPS, ensuring the cooperation of energy sources with different generation technologies and different work characteristics,
- increasing the operational flexibility of the transmission system to allow the discontinuation of important network elements from operation and maintenance, which are difficult to switch off under the current design and load of the network.

Electricity Transmission

So far, **the transmission system operator** will carry out the tasks set out in the *development plan in terms of meeting current and future electricity demand (the so-called Electricity Demand Plan).* PRSP) for a period of 10 years, which will be updated every 2 years in accordance with the direction of market development. The current document covers the period 2025-203 4137.

TSOs' activities in the near future will be particularly focused on:

- development of the transmission network for connection **of offshore wind farms** in the Baltic Sea,
- connection and decommissioning **of nuclear power plants**,
- ensuring efficient energy transmission from the north to the south of Poland,
- improvement **of supply conditions,** especially in northern Poland, where a large aggregate the amount of installed capacity,
- connecting new customers, generating units – both RES and other zero- and low-carbon – and energy storage,
- supporting various areas of the energy transition related to, inter alia, the development of electromobility, the hydrogen economy, the scale of prosumerism and energy communities.

Individual investment tasks undertaken in the area of modernisation and expansion of linear transmission infrastructure usually have more than one effect – e.g. investments to remove capacity from nuclear power plants and offshore wind farms will improve the conditions for supplying customers in the north of the country. Some of the investments undertaken will also have an impact on the development of cross-border connections and interconnections, as extended in Objective *4.1.1. Ensuring conditions for the exchange of electricity between systems*.

Electricity Distribution and Energy

So far, **distribution system operators** will implement the plans in a 5-year perspective, and their overarching goal is to meet current and future electricity demand. OSDe's development plans should specifically focus on:

- striving for system **flexibility,** the development of networks necessary for **the connection of RES and electricity storage and their efficient use,** as well as for electromobility and electrification of other sectors of the economy,
- aiming at a gradual change in the structure of the medium voltage network from overhead to cable,
- digitalisation, automation and the construction of a smart electricity grid, in particular through the installation of smart meters,
- ensuring a high quality of electricity supply,

137 PRSP 2025-2034 can be found on the website of PSE S.A., link. A public consultation on the new version of the PRSP for 2027-2036 was carried out in 2026.

- connecting new customers.

The new model for the functioning of the energy market requires **efficient management and flexibility of the system**. Actions and investments undertaken in the area of modernization and compaction of distribution infrastructure networks and equipment are extremely important. Therefore, they should be conducted in such a way as to optimise the costs of balancing the system.

The importance and role of the development of distribution systems in the transformation process was highlighted by the signing in 2021 of *the Charter for Effective Transformation of the Distribution Networks of Polish Energy (link*) by the President of ERO and the five largest OSDe. The project aims to join forces in identifying tools that will meet the needs related to the operation of the network in the new model, identifying the method and sources of financing and assessing their impact on the tariff and modifying the regulatory model of the DSO.

ACTIVITIES BX

Act 23. Measures to increase the flexibility of the electricity system in relation to renewable energy generation and to adapt to the expected changes in the PPS
Action 25. Development and modernisation of electricity transmission networks and distribution
Action 137. Modernisation and extension of transmission lines within the PPS to enable increased cross-border flows
Action 144. Strengthening cybersecurity in the energy sector

Cell 3.8.4. Ensure readiness :and long prevented;and coped with constraints in the supply of electric energy

The risk of a situation of reduction of electricity supply or an electricity crisis resulting in disruptions or interruptions in the supply of electricity to customers requires the definition of preventive or mitigating actions and procedures to be applied in the event of materialisation of risks.

This area is partly regulated by *EU Regulation 2019/941 on risk-preparedness in the electricity sector, which sets out,* inter alia, issues of authority responsibility, procedures for identifying national and regional electricity crisis scenarios and cooperation, and, above all, requires Member States to develop national risk-preparedness plans. Poland has a *risk-preparedness plan,* which according to the Regulation was adopted in 2022.

In addition, restrictions on the supply of electricity and measures taken by the electricity transmission system operator in the event of a threat to the security of electricity supply are comprehensively regulated by the provisions *of the Energy Law Act of 10 April 1997, together with the Regulation on detailed rules and procedures for introducing restrictions on the sale and consumption of electricity, imposing appropriate obligations on electricity market participants.*

In addition, the electricity transmission system operator shall draw up action plans in the event of a major emergency in the electricity system and the restoration of that system after the occurrence of a failure. The relevant provisions are also contained in *Regulation (EU) 2017/2196 establishing a network code on electricity emergency and restoration,* under which the TSO is required to develop and apply a restoration plan.

Every two years, the minister responsible for energy prepares a report on the results of monitoring the security of electricity supply, which comprehensively presents the state of the electricity sector, including a forecast of balancing electricity supply with electricity demand in the next 5 years and the possibility of balancing supply in the period from 5 years to at least 15 years.

The aim is to reduce the risk of a situation resulting in restrictions
supply of electricity to customers or prevention of a crisis
in the electricity sector, especially in the event of a situation
extraordinary regardless of the causes of its occurrence and the scale of its impact

POLICY)X

Preparedness to prevent and cope with electricity supply constraints in emergency and crisis situations is based primarily on the possession of adequate technical resources to ensure sufficient capacity for the generation, storage, transmission and distribution of electricity by qualified staff, as well as a set of procedures and solutions to take appropriate action, professionally manage resources and avoid or manage crisis situations and mitigate their effects in the event of their occurrence.

To this end, in accordance with the deadlines set by law and the needs to ensure the state's energy security, the following will be updated:

- Energy Law Act,
- a risk-preparedness plan,
- Regulation on detailed rules and procedures for introducing restrictions on the sale and consumption of electricity,
- Regulation on detailed rules for the qualification of persons involved in the operation of equipment, installations and networks,
- the restoration plans and the report prepared on the results of the monitoring of the security of electricity supply.

ACTIVITIES b

Action 134. Prevention and management of electricity supply constraints

Action 144. Strengthening cybersecurity in the energy sector

- *All actions identified in the sections on power adequacy (Purpose 3.8.1), flexibility (Objective 3.8.2) and linear infrastructure development (Objective 3.8.3)*

Replaces r 4.

W(= >in1EU market

Energy and the Social Aspect of Transformation

One of the features of the functioning of the European Union is the existence of an internal market which, on the one hand, ensures the free movement of goods, persons, services and capital and, on the other hand, is based on common operating rules for all participants. For this reason, the energy market is also a component of the intra-EU market, so as to reduce barriers to trade (technical, physical and regulatory), approximate tax and pricing policies, while ensuring uniform standards and norms. These concern not only technical issues and joint risk-preparedness plans, but also a certain level of consumer protection and, in some dimensions, a just transition. For these reasons, intra-EU **energy market** issues have been identified as **the fourth dimension of the Energy Union,** ensuring that they are based on the fundamental principles of the functioning of the European Union.

This part of the NECP covers objectives and targets related to the market and transmission infrastructure for natural gas and electricity, as well as in the areas of social aspects – energy poverty, consumer protection and the just transition.

Οβσζαιρ 4.1. Με dzysystemovva ενεργψ εξχηανγε

The intra-EU flow of fuels and carriers mainly concerns natural gas and electricity, which is reflected in the two objectives below. The issue of oil and fuel system exchange has been dealt with together in Area 3.5, which is located in the dimension of energy security.

The cross-border exchange of hard coal has not been included in this area as no significant development of dedicated infrastructure is required and the use of coal will decrease. Biomass is also not included in this part, as this energy carrier should be used closest to generation. The issue of intra-Community imports of hydrogen was also exclusively addressed under Objective 3.4.3.

Cell 4.1.1. Ensuring conditions for the exchange of \ v ej electricity

Electricity interconnection depends on two factors: efficient and well-developed internal transmission infrastructure and well-developed interconnections. For this reason, the content contained in Section 3.8. The coverage of electricity demand, in particular Objective 3.8.3 and Objective 3.8.4, corresponds to these issues.

The Polish SEZ is adjacent to other systems the Synchronous Europe Area continental – German, Czech, Slovak, Ukrainian and Lithuanian, as well as The Swedish system, which is the Nordic Synchronous Area connected asynchronously.

Polish National Electricity System (KSE) operates within the synchronous area of continental Europe. The Polish electricity transmission system operator PSE S.A. is a member of the ENTSO-E association of European electricity system operators. The Continental Europe synchronous area is coordinated by the Continental Europe Regional Group (RGCE) ENTSO-E.

Market integration is achieved by gradually increasing capacity on cross-border (cross-system, cross-zonal) connections, including by reducing system constraints and increasing the use of cross-border capacity, as well as by harmonising the rules of market coupling mechanisms. For cross-border exchanges to be possible, not only cross-border infrastructure but also well-developed in-country infrastructure is essential. In the EU, the most important investments affecting the reinforcement of transmission networks and the removal of bottlenecks have the status of investments of common interest (PCI). *Project of Common Interest*).141

In accordance with EU law, TSOs should maximise interconnection capacities offered **for cross-border trade .** The provisions of Regulation (EU) 2019/943 required TSOs to make available to market participants cross-zonal capacity at a level not lower than 70% of the capacity for a given border or critical *network element with contingency* (CNEC), determined taking into account operational security limits (the so-called 70% CEP objective). In 2019, Poland adopted an *Action Plan* to implement this obligation, which included network investments to increase cross-border transmission capacity. The increase in capacity made available for inter-system trade follows an agreed timetable, i.e. linearly, gradually reducing structural constraints. According to *the Action Plan,*

141 The rules for the qualification of projects as PCIs are laid down in *Regulation 2022/869.*

the deadline for achieving the 70% CEP target at Poland's borders (synchronous and asynchronous) with the systems of EU countries was 31 December 2025. Achieving this target, in addition to increasing the volume of cross-zonal trade, which is already clearly recorded, will contribute to equalising wholesale electricity prices in the region and mitigate the impact of internal and external factors) on the price of electricity in Poland.

The aim is to increase the use of cross-border capacity and the integration of electricity systems.

Thanks to the preparations carried out in 2022 (in fallback mode), the Ukrainian142 (and Moldovan) system was connected to the synchronous area of continental Europe via the Slovak, Hungarian and Romanian systems. In **February 2025, the Polish system connected the power systems of the Baltic States (Lithuania, Latvia and Estonia) to synchronous work with continental Europe.** KSE has one connection with the Lithuanian system, which from 2015 to 2025 worked as a line asynchronously connecting the systems of Poland and Lithuania. A second link is being prepared by the end of 2030, which will ensure the safety and efficiency of synchronous work of the Baltic States in the synchronous area within continental Europe. Work was also carried out to improve connections on the synchronous profile.

POLICY)

Poland shall endeavour to **increase the capacity** of cross-border electricity connections in order to increase opportunities for trade in electricity, as well as **to strengthen the secure operation of the electricity systems of the Baltic States with those of continental Europe**. This will be achieved primarily by making optimal use of existing links and removing bottlenecks.

The achievement of this objective will be based in particular on the following assumptions:

- Further reducing grid constraints in the PPS and bottlenecks affecting the improvement of the use of existing electricity cross-border connections **through** modernisation and extension of missing lines and transmission stations in the PPS. Important in this area will be the investments included in the European *Ten-Year Network Development Plan Electricity (TYNDP) Ten-Year Network Development Plan*), which include:
  - for the synchronous profile (Germany, Czech Republic, Slovakia) within the capacity calculation region CORE – northern and western part of the PPS, including infrastructure related to Baczyna, Mikułowa, Świebodzice, Krajnik, Plewiska stations,
  - in order to strengthen the synchronisation effects of the connection of the Baltic states – the northern and north-eastern parts of the PPS, including infrastructure in the vicinity of Koszalin and Słupsk, connected with the Jewish, Kierzkowo and Dunowo stations, and in the vicinity of Szczecin from the Krajnik station to the east.

  Some of the linear investments in the northern and north-eastern parts of the PPS were granted the status of *Projects of Common Interest* (PCI).
- Ongoing monitoring of the application of capacity allocation rules.
- Construction of a new Poland-Lithuania cross-border link (Harmony Link) to strengthen the security of synchronous operation of the Baltic States' electricity systems with continental Europe.
- Continuation of activities in the field of cooperation of the power systems of Poland and Ukraine within the synchronous area of continental Europe.

The investments and actions undertaken will be carried out on the basis of EU regulations regarding the technical

142 The PPS has two connections with the power system of Ukraine, of which the 400 kV Rzeszów-Chmielnicka EJ line was included in synchronous operation in 2023 after more than thirty years of non-use, and the 220 kV Zamość-Dobrotwór line operates as a radial (one-way) line.

aspects of energy system integration and their safe operation, and PSE S.A. will participate in the work on the implementation of these regulations on an ongoing basis and actively cooperate with other operators.

The transmission system operator will also monitor the impact of the investment on the achievement of the above objective, develop an adequate development plan and verify the need and possibilities of introducing projects on the PCI list.

Detailed data on the national electricity infrastructure and the transmission capacity of individual interconnections can be found in Chapters 4.1.1 and 4.2.1 of Annex 2 to the NECP.

ACTIVITIES b

Action 137. Modernisation and extension of transmission lines within the PPS to enable increased cross-border flows
o Action 138. Optimising the allocation of available cross-border capacity
Action 139. Activities within the framework of the regional cooperation of the BEMIP Group on the implementation of projects related to the synchronisation of the Baltic States' electricity systems with the Continental Europe system
Action 140. Electricity market integration measures and Ukraine's electricity transmission system with the EU energy market
Action 141. Monitoring the use by TSOs of revenues resulting from the allocation of interconnection capacity
Action 142. Monitoring the implementation of PCI projects in the power sector and gaining support for strategic projects by introducing them to subsequent PCI lists
Action 143. Measures to integrate and improve the functioning of the electricity market
Action 144. Strengthening cybersecurity in the energy sector

Cell 4.1.2. Provision of ; terms of exchange
\va Ground Gas Intersystem 3

The interconnection of natural gas depends on two factors: efficient and well-developed internal infrastructure (transmission and storage) and interconnections (cross-border entry and exit points to the gas transmission system). In a situation where most of the demand for natural gas is covered by raw material from outside the country, it is difficult to separate the issues of interconnections and national infrastructure also in the context of energy security. For this reason, the content contained in Section 3.3. *The coverage of natural gas demand* also has a direct impact on the objective of inter-system exchange.

The aim is to maintain a well-developed and efficient national infrastructure gas and efficient interconnections that will ensure customers domestic access to raw material, increase commercial opportunities for domestic entities, and create diversification opportunities for foreign actors.

POLICY)X

The important role of natural gas as a transitional fuel and supporting the transition process requires the provision of adequately developed and efficient internal and inter-system infrastructure for the transmission of natural gas. Actions taken in this area must ensure access to raw material for domestic consumers, secure and possibly increase commercial opportunities for domestic operators, and enable diversification opportunities for foreign operators.

As with the objective of diversifying natural gas supplies (Objective 3.3.1), the following are key to ensuring appropriate conditions for inter-system exchange:

- ensuring properly developed and efficient transmission infrastructure within the country,
- the smooth functioning of connections with the systems of neighbouring countries – Germany, Lithuania, Czechia, Slovakia, Ukraine,
- continue to ensure the possibility of receiving natural gas supplies using: the Baltic Pipe pipeline, enabling imports from the Norwegian and Danish shelf, and the LNG regasification terminal in Świnoujście,
- construction of an FSRU-type LNG terminal in the Gulf of Gdansk in the perspective until 2027/2028.

At the same time, it is worth emphasizing that in the case of the LNG terminal in Świnoujście and the FSRU type terminal in the Gulf of Gdańsk, it is possible to expand them. The certification process of the LNG terminal in the biomethane/bio LNG sustainability chain is ongoing. There is potential to increase the capacity of transhipment services, as well as some potential to increase the capacity of regasification. In the field of FSRU, activities related to the analysis of the potential expansion of capacity by a second unit are carried out.

After the completion of the expansion of the regasification capacity of the LNG terminal in Świnoujście in 2025 (up to a capacity of 8.3 billion m3) and the launch of the FSRU terminal in the Gulf of Gdansk at the turn of 2027 and 2028 (with a capacity of 6.1 billion m3), the prospect of implementing other investments resulting in increased import and export opportunities in Poland will depend on market conditions, including the demand for LNG supplies from market participants in the Central Europe region. In addition, investment in national gas infrastructure is still needed to ensure efficient supply to domestic customers, inter-system exchange, but also for forward-looking use for the transport of gases other than fossil gas. The total import capacity will be 41.7 billion m3, while exports - depending on the development of the situation - will be 13.05 or 14.45 m3 of firm capacity.

Details of the national gas infrastructure and the transmission capacity of individual interconnections are set out in Chapters 4.1.2 and 4.2.2 of Annex 2.

ACTIVITIES BX

Action 125. Maintaining efficient interconnections and the LNG terminal in Świnoujście

Action 144. Strengthening cybersecurity in the energy sector

Obszair 4.2 !. Developments of energy < anddispersion iej

The development of distributed energy is one of the key trends of the energy transition, having a significant impact on many sectors, in particular the construction sector. One of the key directions of activities increasing the share of RES in construction is the strengthening of the role of energy communities, as well as the participation of prosumers in this process. The aim is to ensure that as much as possible the energy demand of new and renovated buildings is covered by renewable energy sources generated on-site or nearby, including in particular energy supplied by energy communities.143 In the development of prosumers and local energy communities, it is important to strive for their self-sufficiency.

At the same time, local government units (which are closest to citizens) will play a particularly important role in creating new and enabling the development of existing energy communities.

The development of distributed energy is also gaining particular importance in the industry sector, which, as one of the largest energy consumers, is increasingly implementing solutions based on its own generation sources, such as photovoltaic installations, cogeneration or energy storage. This allows not only to increase the energy independence of companies, but also to optimize costs and reduce greenhouse gas emissions. The implementation of distributed energy sources in industrial plants also helps to stabilise the operation of the

143 In accordance with Art. 7 EPBD and Art. 15a para. 3 of the REDIII Directive

electricity network, especially in regions with a high density of production plants.

Cell 4.2.1. Develop and integrate prosumentc)W

The definition of **a prosumer appeared** in the Polish legal system for the first time in 2016 (Renewable Energy Sources Act). Subsequently, a **collective and tenant prosumer was introduced,** which made it possible to include residents of multi-family buildings in the system. In addition, since 2 July 2025, there has also been a **virtual prosumer** (currently in one DSO, and since 20 October 2026 throughout the country), i.e. a final customer who has a micro-installation or shares in an installation located in a place other than the place where electricity is supplied to that customer.

At the end of 2024, nearly 1.5 million renewable energy prosumers generated energy for their own needs in Poland, based on approx. 12 GW installed almost exclusively in photovoltaic micro-installationsc h144. A particularly dynamic development took place in 2019-2022, when more than 1 million new prosumers started operating on the national energy market.

The extremely dynamic development of prosumer energy required a change in the system of settlement of prosumers, so as to ensure the stable development of distributed energy and a fair distribution of the cost of living by all participants of the energy market and to ensure adequate benefits on the part of prosumers. Therefore, since April 2022, the energy introduced by prosumers into and taken from the electricity grid has been accounted **for under a valuable net-billing system** (previously net-metering). The need to change the system also stemmed from the need to implement this solution into the Polish legal system in accordance with *EU Directive 2019/944 on common rules for the internal market in electricity .*

As in the case of large-scale RES sources, electricity networks – distribution and transmission networks in turn – are a bottleneck affecting the pace of their development for micro-installations. Therefore, the further development of this market segment is closely linked to investments in grids and increased energy storage capacity. Coupling storages with generating installations allows more prosumers to be connected, but without a significant negative impact on grid management, both during periods of high RES production and during periods of low generation and145.

It is estimated that in 2030 Poland may operate approx. 2 million prosumers.
[estimates are not objective]

POLICY)

The development of prosumer energy will continue to be supported through the development of co-financing programmes with a particular focus on **energy storage and energy management systems.**

The desired direction of change is to make prosumers **conscious market participants,** which is a condition for the further dynamic development of prosumer energy. According to it, they will properly manage their demand (DSR) by striving to maximize the self-consumption of electricity produced by them, including the use of energy storage, which in effect will relieve the distribution networks. The development of **smart grids and energy communities integrating prosumers into larger groups will be a major support for prosumers in** this area. This is also to reduce the need to build additional reserve capacity and to force a significant reduction in the work of other generation units.

An economic incentive to do so will be billing at hourly prices. This will naturally reward the highest possible level of self-consumption also for the production of heat and cold by means of, inter alia, heat pumps and the introduction of energy into the grid at a time when there is greater demand for it, thereby helping to balance the electricity

Statistical 144 *information on electricity. Monthly Bulletin – December 2024,* Table 9, ARE S.A. on behalf of MKiŚ and URE.
145 Then prosumers use the energy they produce and do not increase demand. Thus, peak demand is lower, which reduces the reserve capacity needs that must be present in the system for this purpose and generates additional costs.

system.

Regulatory policy and financial support will also target **the activities of distribution network operators to expand and modernise their networks** so that they are better adapted to the growing market share of prosumers. Increasing installed capacity and the number of micro-installations change the characteristics of system operation to distributed generation, which requires the use of new solutions and network operation in two-way mode.

The **National Contact Point for Renewable Energy is a great support for entities interested in RES investments. RES** (RES NCP). The RES NCP is intended primarily for people who want to become renewable energy prosumers or producers of energy from RES. At the same time, the RES NCP also supports professional entities already participating in the renewable energy market. The point operates as part of the website https://www.gov.pl/web/kontaktoze, where a handbook is made available that will provide investors with comprehensive knowledge about investment processes in RES installations. In addition, the website allows you to request individual help via the contact form. In addition, a nationwide Energy Transition Support Centre is planned. It will provide information on administrative procedures, technologies, available funds and investment partners. The CWTE should be structured with administrative advice and expert assistance in the fields of energy, transport, heating, construction, industry and agriculture.

ACTIVITIES b

- Action 14. Financial instrument – NFOŚiGW Priority Programme – 'My Current'
- Action 17. Development of the electricity and heat storage market
- Action 28. Development of Power to Heat technology and heat storage in Poland
- Action 146. Dissemination of dynamic price contracts
- Action 147. National Contact Point for Renewable Energy
- Action 149. Creation of an Energy Transition Support Centre (CWTE)
- Action 158. Awareness-raising on the energy and climate transition

Cell 4.2.2. Energy development and integration local communitiesd 1

The development of civic energy, based on local communities, is one of the main directions of the energy transition, and the appropriate choice of technologies for generating energy from renewable sources, based on the locally existing potential of RES, can significantly reduce energy prices for stakeholders, counteract market monopolisation and support the implementation of the principles of the Fit for 55 package. Self-consumption of electricity produced by these communities should be crucial in this process, as well as the balancing function (including local balancing), when distributed generation units located close to customers allow for rational and effective use of the existing local renewable energy potential, as well as significantly affect the reduction of losses in electricity transmission and distribution and rationalization of expenditure on infrastructure development. The assumed balancing effect will be a reduction in the operating costs of electricity networks, which will be reflected in tariffs for final customers. The scope of local initiatives and prosumerism was defined by the RED I I Directive ,146 and the RED III Directive sets out further changes to contribute to their deeper dissemination.

In particular, **energy clusters and energy cooperatives, which organise themselves to produce, distribute and** store electricity for their own needs for the benefit of members of their community, are to be the precursors of such activities on the national market. 2023 also defines **citizen energy communities** that can generate and sell renewable electricity, but have as their main objective to provide environmental, economic or social benefits to their members, shareholders, partners or the local areas in which they operate.

One of the overarching goals of the development of broadly understood civic energy should be to strive to achieve

146 Articles 20-22 of RED II.

energy independence at the local level by maximizing self-consumption of produced energy and providing market services, taking into account the location of RES installations of energy communities in the network, cooperation of these installations with energy storage, positively affecting the balancing of the electricity system and the conditions for the operation of the electricity network. **Balancing** is understood as the partial or complete balancing of locally produced energy in near real time with its local consumption. Such balancing brings a number of benefits to both consumers and the electricity system, it is a resource that can be valued, which should form the basis of new business models of energy communities. Balancing carried out within a well-defined part of the distribution network will lead to a reduction in the scope of modernization and expansion of electricity networks, reduction of network losses, effective use of contractual capacity, reduction of the costs of the capacity market operation, increase in the potential of connected distributed sources and energy storages, better balancing of the commercial positions of trading companies reported on the balancing market, and thus to lower needs in the area of non-market redispatching. In such a model, consumers are guaranteed cheap energy produced from their own sources, on the one hand, and lower distribution and transmission charges, on the other.

The RED III Directive (Articles 16 to 16e) laid down obligations **to create new opportunities in Member States to accelerate investments in RES by streamlining the investment process for RES** (permit procedures for new investments). This will be extremely important for the development of local energy, but will require a very large administrative effort.

It is estimated that by 2030 the number of cooperatives operating in Poland, energy communities and clusters may exceed 1 000.[147]
[estimates are not objective]

POLICY)

The development of citizen energy communities (CECs), energy clusters and energy cooperatives is one of the key pillars of the modern energy transition. These local initiatives not only increase the resilience of the electricity grid, but also enable the active participation of citizens and local governments in energy production and management. By self-consumption of the electricity produced by these communities, as well as **local balancing measures,** understood as energy production and consumption, these systems can effectively reduce energy costs. Importantly, they are also a real tool for lowering energy prices for industry, supporting its competitiveness and stability in times of dynamic changes on the energy market. This is the best direction for a sustainable, cheap and "democratic energy" future. Support for these initiatives will therefore be sought.

Strengthening the role of energy clusters and energy cooperatives in the national energy system will be ensured by further **administrative and legal improvements and by encouraging the provision of local balancing services and increasing the flexibility of the NPS**. The aim will be for energy cooperatives, energy clusters and citizen energy communities to develop towards balancing, to increase self-consumption of the electricity produced and to strive for energy independence at local level, which, where economically viable, can lead to **self-sufficiency.** In order to provide incentives for balancing, support schemes should be modified to take into account the real costs and benefits while responding to market signals. The development of energy communities will be supported by creating incentives for maximum self-consumption of energy generated in their area of operation, e.g. in the form of the creation of local balancing areas, as well as energy sharing. There is also a need to review the operating models of energy communities and create incentives for increasing self-consumption, as well as broadening the scope of cooperation with the electricity grid and the electricity market.

The **involvement of local government units in their creation and improvement of the investment process will be crucial for the development of** local communities. The aim will be to accelerate the path of issuing permits for new investments, while the implementation of the provisions of the RED III Directive into Polish law will require many profound organizational and administrative changes. The **National Contact Point for Investments will be a great support for those interested in investments. RES.** An important facilitation will also be the implementation **of the Energy System Simulator for Local Government -** local governments will be able to

147 At the end of 2025, 391 energy cooperatives were registered in the register of the National Centre for Agricultural Support.

analyze local energy needs and possible solutions on an ongoing basis. A very important initiative is the implementation **of the Energy Transition Support Centre,** which will provide assistance to an even wider extent than the RES NCP and the Simulator.

Undoubtedly, the development of local energy communities will also be supported by activities aimed at the development of individual RES technologies – wind, solar, biogas and biomethane, described in Objective 1.2.1., as well as incentives for local balancing and energy sharing activities.

Smart solutions will continue to enable efficient and informed management in the area of balancing needs and energy production by these actors. In addition, the development of this market segment will be positively influenced by the modernization of distribution system management systems, as well as development towards smart grids. The development of electricity distribution networks and various forms of energy storage, as described in Objective 3.8.3, will be of lesser importance. Investments made in distribution systems are and will be directed towards improving the energy supply to customers, taking into account the direction of network development, which also has a beneficial impact on the development of energy communities.

ACTIVITIES BX

- Action 11. Financial instrument – system of feed-in tariffs and market price subsidies • Αχτιον 15. Φινανχιαλ ινστρυμεντ ΝΦΟiΓΩ Πριοριτψ Προγραμμε Ενεργψ Πλυσ
- Action 18. Development of citizen energy communities (OSE)
- Action 19. Development and improvement of the functioning of energy cooperatives
- Action 20. Development of energy clusters
- Action 71. Support for the development of agricultural biogas plants
- Action 72. Financial instrument - NFOŚiGW Rural Energy Programme
- Action 147. National Contact Point for Renewable Energy
- Action 148. Digitization and standardization of investment processes for energy and climate transformation
- Action 149. Creation of an Energy Transition Support Centre (CWTE)
- Action 150. Energy System Simulator for Local Government
- Action 151. Development of modelling centres and systems

Obszair 4.3 I ■ Fair and Transformation of Consumers

The transition to a low-carbon economy has a number of benefits (e.g. reducing the negative environmental impact of sectors, reducing dependence on fuel imports and volatile prices, reducing the cost of energy production, modernising the economy, increasing GDP, improving the quality of life, etc.), but like any change, it needs to be carefully implemented to offset the potential negative effects of the change. For this reason, the need to ensure **a just transition,** which should take into account the three aspects covered in this area, is strongly emphasised.

Particularly noteworthy is the fact that, contrary to widespread concerns, the transition does not have to result in an increase in energy prices if support schemes are well planned and coordinated. On the contrary, both WEM and WAM scenarios show a consistent decrease in electricity generation costs, which can be up to approx. 8% in 2030 and up to approx. 18% in 2040 compared to projections for 2025. This effect, with market reforms and at the same time significant investment support from public funds (national and EU) available until 2030, can and should translate into real stabilisation and a target drop in energy prices. However, it is crucial to ensure the protection of the most vulnerable groups in this process, especially households at risk **of energy poverty.**

It is equally important to combat transport poverty by making public transport and alternative forms of mobility more accessible and affordable.

A third key aspect in the context of a just transition is **to provide support to lignite and hard coal regions and**

other high CO2 intensive industrial regions in order to minimise the risk of negative socio-economic impacts in those areas.

The broader context of social and macroeconomic impacts is described in Annex 1 to the NECP in Chapter 5.

Cell 4.3.1. Reducing energy poverty

In accordance with Article 5gb *of the Energy Law of 10 April 1997,* energy poverty is understood as a situation in which a household is unable to provide itself with sufficient heat, cold, lighting and electricity to power electrical equipment. This phenomenon is a complex issue combining social, technical and economic issues. Energy poverty affects both rural and urban areas, single-family houses and multi-apartment buildings. Due to its complexity, effective combating of this negative phenomenon requires precise identification of its causes and proposing solutions tailored to the individual situation of the household.

Energy poverty can be considered when a household meets the following three cumulative criteria:

- **incurs high energy expenditure** – which may be due both to the poor quality of the housing fabric (low energy efficiency of buildings and equipment), the availability and prices of energy carriers, but also to behavioural factors (bad habits and habits of energy consumers);
- **low-income** – energy poverty often affects low-income households. It is assumed that this applies to households whose income after deduction of housing expenses (AHC). *After Housing Cost)* is less than 60% of the median AHC income in the population;
- **lives in a premises with low energy efficiency -** leaking roofs, moisture, mold and lack of adequate insulation result in a low energy efficiency class of the building. These are structural problems causing more energy to be needed to heat the building, which increases costs and exacerbates energy poverty.

According to GUS data (link), in 2019-2023, energy poverty rates in Poland were at the lower level indicated.

Table 11. Values of energy poverty indicators in Poland in 2019-2023 according to GUS data [% of households]

(% of households)	2019	2020	2021	2022	2023
High Cost, Low Income (LIHC) *Low Income, High Costs*)	9,3	10,3	10,5	10,5	9,4
double median energy expenditure (2M)	17,7	17,2	18,8	19,3	20,1

Table 12. Values of energy poverty indicators in 2019 and 2023 [%]

Indicators	2019	2023
Average of four energy poverty indicators	**9,05%** (10,5%)	**7,1%** (12,3%)
(1) inability to maintain adequate room temperature [ilc_mdes01]	**4,2%** (6,9%)	**4,7%** (10,6%)
(2) arrears in energy bills [ilc_mdes07]	**5,8%** (6,2%)	**4,0%** (6,9%)
(3) total population living in dwellings with leaking roof, damp walls, floors and foundations or rotten windows or floors [ilc_mdhod01]	**10,8%** (12,7%)	**5,7%** (15,5%)
(4) At-risk-of-poverty rate [ilc_li02]	**15,4%** (16,2%)	**14,0%** (16,2%)

(X%) – EU-27 data

The increase in the share of households at risk of energy poverty was due, among others, to the crisis conditions related to the COVID-19 pandemic and the fuel crisis related to Russia's aggression against Ukraine. In recent years, *the concept of energy poverty* has been subject to numerous attempts to define and dimension it. *The EP and Council Directive (EU) 2023/1791 on energy efficiency* introduced a reference to the four components of

energy poverty. The phenomenon is measured by the arithmetic mean of the four indicators in148. The 2019 average is the starting point for determining the level of energy poverty in line with the content of Directive (EU) 2023/1791149.

In the transitional transition period, there is a risk of deepening energy poverty**, so it is of utmost importance to ensure the protection of households** for whom the costs of the transition are too high. This is one of the most important tasks of the NECP. As a rule, energy poor households are those that use fossil fuels and have limited access to basic and affordable energy services that underpin a decent standard of living and health. It is therefore important to ensure that the most vulnerable households are protected from the effects of the implementation of the EU ETS-2150 and to reduce the risk of deepening energy poverty as a result of the implementation of the EU ETS-2. More broadly, in addition to *ad hoc* protective measures, it is necessary to reduce the scale of the problem in subsequent periods through investment measures aimed at improving the technical condition of buildings and changing energy sources (thermomodernization, modernization of heating systems and the use of RES).

148 Article 2(52) and Article 8(c) 3 of the EED.
149 The 2019 values are derived from the EED as a reference. Contextually, the following values have been added to the table: 2023 and the EU-27 average.
150 See also Objective 1.1.2, which describes the implementation of the EU ETS-2.

The effects of the EU ETS-2 may also be felt by micro-enterprises, which incur significant expenditure on heating fuels as part of their activities and151. Therefore, investments should be planned to reduce the dependence of micro-entrepreneurs on the use of fossil fuels.

To reduce the social costs of introducing the EU ETS-2 in the buildings and transport sectors, Regulation (EU) 2023/955 established a new source of financial support, **the Social Climate Fund (SCF).** The Fund aims to help households, micro-enterprises and transport users, who are particularly affected by energy and transport poverty. Spending will be based on **the Social Climate Plan.**

In order to estimate the expected change in the extent of energy poverty and set targets for its reduction by 2030 and 2040, indicators with a high correlation with the average share of energy expenditure in revenues were used and their changes by 2030 and 2040 were estimated based on the results of energy cost modelling for the WEM and WAM scenarios. The estimated paths of selected indicators of energy poverty in Poland up to 2040 are presented below.

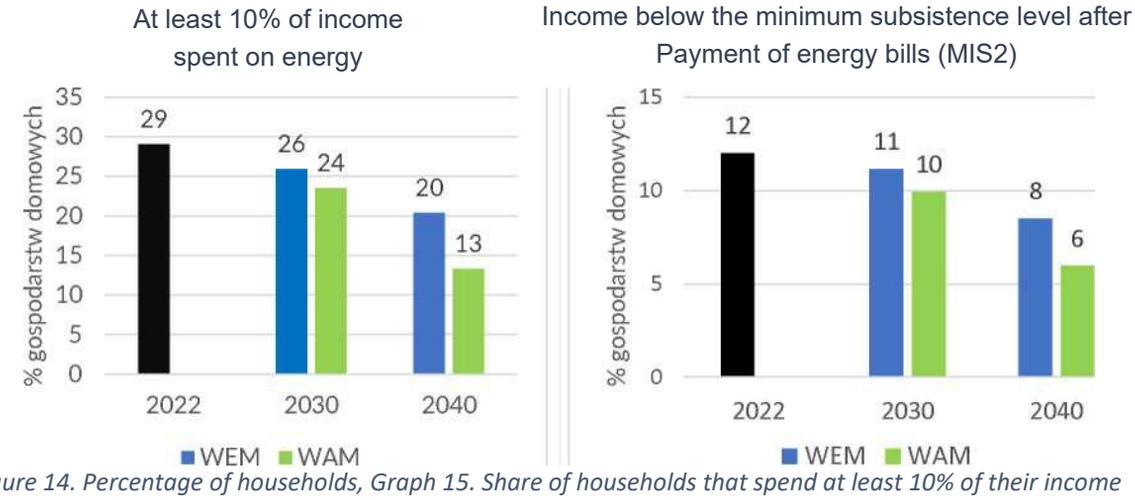


Figure 14. Percentage of households, below the energy minimum [% of households]

Graph 15. Share of households that spend at least 10% of their income social welfare after paying energy bills [% households]

Source: Own estimates of ME and the Institute of Reform based on forecasts to the AKPEiK and PIE calculations based on GUS data

Estimates indicate that the implementation of the NECP will reverse the negative impact of the fuel crisis of the early 1920s to the end of the decade and further rapidly reduce energy poverty in the 1930s. This will be possible by combining the effects of reducing energy costs as a result of the energy transition and increasing the income of the population, while maintaining the effectiveness of measures to support people struggling with energy poverty. At the same time, additional measures will be taken to improve the effectiveness of the above-mentioned support.

Poland will develop a ***Social Climate Plan ,*** which will include actions to protect the most vulnerable social groups from the negative effects of the transition, based on the **Social Climate Fund** (eligibility falls between 2026 and 2032). This will allow for a wider use of existing activities, as well as the introduction of new ones as needed and available resources.

The aim is a downward trend in the level of energy poverty not exceeding

151 According to a survey carried out by the Ministry of Development and Technology on a sample of micro-enterprises (single-person companies without employees and companies under 10 employees) that use fossil fuels to heat buildings or use cars powered by fossil fuels, almost 40% of surveyed entrepreneurs declare that current energy costs significantly reduce the possibility of investing in the company's development. One in five companies uses coal (cost 6,100 USD). PLN), every fourth of gas (costs almost 10 thousand PLN). PLN) and only 3.5% from fuel oil. On average, fuel costs for heating account for 8.6% of the total operating costs of companies with their own buildings.

EU average by 2040

POLICY)X

Conducting a comprehensive state policy aimed at solving the problem of energy poverty requires the actions of various public entities - from the authorities of the general public administration in determining the directions of reducing the phenomenon, to the level of local government units and social assistance institutions that are most able to reach the people affected by this problem, as well as to assess the adequacy of assistance to needs.

The **continuation and possible adaptation of publicly funded programmes (including the EU) to the needs of energy poor customers, in particular programmes aimed at replacing heat sources with zero-emission ones, or financing modernisation measures related to** improving energy efficiency, preceded by an energy efficiency audit and concluded with an energy performance certificate, will play a key role in long-term, rather than short-term, poverty reduction. The reduction of energy needs is aimed at reducing the costs associated with energy consumption, which will reduce the degree of poverty, not only energy. It should be emphasized that in every case, a thermomodernization investment will not be justified, especially in houses in very poor technical condition and low energy class. In this case, **consideration should be given to the development of other housing-related social programmes,** such as social housing, support for renting another dwelling, use of the existing housing fabric (e.g. 'empty for renovation') or the creation of an alternative in the form of support for the construction of new senior buildings adapted to the needs of the elderly.

The provincial environmental funds should **provide support to municipalities in responding to the problems of the transition**. As a result, information and support points should be run at local level to support beneficiaries in submitting applications for co-financing for thermomodernisation and replacement of heat sources. An important element is the monitoring of the number of households in energy poverty (at local and national level), but also **the identification of households most affected by energy poverty**. It may also be appropriate for **municipalities to play a proactive role** in encouraging specific households to benefit from support schemes. An important element will also be educational programs on effective energy management and advice on choosing the most effective solutions.

HEADINGS)X

Action 152. Development and implementation of the Social Climate Plan
Action 153. Reducing energy poverty and protecting vulnerable customers
Action 154. Statistical survey on fuel and energy consumption in households
- *All activities identified in Objective 2.2.1. Reducing the energy needs of existing buildings.*

Cell 4.3.2. Reduction of transport poverty

In a significant part of Poland, mainly in rural areas and small towns, the phenomenon of transport exclusion is identified. Transport exclusion is often a consequence of the dismantling of bus connections, the closure of railway stations or the lack of alternative means of transport. In regions with low population density, residents have to travel long distances to get to work, schools, health facilities or offices, which increases their dependence on private cars. The Social Climate Fund is part of the 'Fit for 55' legislative package. Fit for 55), introduced the need for Member States to identify a phenomenon more complex than transport exclusion, i.e. transport poverty.

In the context of the Social Climate Plan, the definition of transport poverty requires comparing the results of the diagnosis of transport exclusion with data showing the financial situation of residents. The phenomenon should be considered through demand-side analysis (based on income and wages in municipalities) and supply-side analysis (availability of public transport services).

Transport poverty therefore implies difficulties for individuals and households to access private or public transport, including to cover its costs, resulting in restrictions on the use of essential services and participation in socio-economic life. On the national level, analytical work related to the identification and definition of the phenomenon of transport poverty began in 2024 and their preliminary results indicate that over 8 million Poles

may be affected by this phenomenon. The definition of transport poverty developed above should, where necessary for other programmes, be adapted accordingly.

However, research work carried out so far has shown that transport poverty in Poland is closely linked to the uneven development of transport infrastructure and acceptable transport services. The wide variation in the development of transport infrastructure between cities and rural areas, regional disparities and the level of wages and incomes of households affect the degree of transport poverty. In large cities, especially agglomerations, this problem is less acute due to the developed public transport network. The problem of transport poverty is much more visible in smaller cities, rural areas, internal peripheries of voivodships, or areas located at state borders (including, above all, mountain areas and areas located along the eastern border), where access to public transport is insufficient.

Like the burning of fossil fuels in households, fossil fuels used for transport purposes will also be subject to additional costs of the EU ETS-2, further exacerbating transport poverty for vulnerable transport users.

Despite the many benefits, regulations prohibiting the use of ICE vehicles in certain zones may also have negative effects on the scale of poverty. It is therefore of the utmost importance to provide alternatives to reduce transport poverty or prevent transport exclusion. The aim is to counteract negative transport trends (poverty and transport exclusion).

The aim is to ensure communication accessibility for the inhabitants of Poland.

POLICY)X

Transport poverty reduction policy, while tackling transport exclusion, will focus on several key areas without banning the use of passenger cars. Activities with which the widest possible range of transport users can be reached will be based on comprehensive solutions aimed at **increasing the accessibility and attractiveness of the public transport offer**.

First of all, it will be necessary to improve the process of launching bus connections under programmes such as **the Fund for the development of public bus transport,** which aims to restore decommissioned bus lines, especially in smaller towns and rural areas. In addition, it is planned that municipalities affected or exposed to the phenomenon of transport poverty will be retrofitted with modern bus rolling stock and stop infrastructure. Such initiatives will increase the accessibility of public transport, especially for the elderly, young people and people on low incomes.

Equally important will be investments in **the modernisation and extension of the rail network (lines,** connections and rolling stock), **the development of local roads** and **the construction of infrastructure for public transport in cities**. Key in this context is the implementation of Programmes such as **the National Railway Programme until 2030 (with a perspective until 2032), the Central Communication Port Investment Programme Stage II. 2024-2032, the Programme for Supplementing Local and Regional Railway Infrastructure - Rail + until 2032** and **the Government Programme for the Construction or Modernisation of Railway Stops for 2021-2026**. The aim of the above Programmes is, among others, to strive to connect the most important growth centres with areas with lower development dynamics with the railway infrastructure, and thus to counteract the transport exclusion of individual regions. As a complement to the above actions, a new mechanism is planned to provide the Railway Fund with funds, which will ultimately be used to co-finance public rail transport in regions affected by transport poverty. In the Ministry of Infrastructure, work is being carried out to help prepare the optimal rail transport offer from the passenger's perspective and form the basis for the Transport Plan. The aim of the work is to create a coherent, integrated railway system that reflects the real needs of passengers and supports infrastructure planning. It is assumed that the journey time and the affordability of rail transport will be competitive with individual motorization and will contribute to ensuring constitutional freedom of movement while increasing the share of rail in the distribution of transport tasks. Equally important in the railway sector is support for the modernisation and replacement of passenger rolling stock. These measures not only improve the accessibility of transport, but also counteract transport exclusion and have an impact on reducing transport poverty.

Transport policy will include various forms of financial support for transport infrastructure, the purchase of means

of transport or subsidies for public transport (excluding public transport under the responsibility of individual local government units) as well as the introduction of institutional, IT or technical solutions enabling passengers to search for connections and purchase a ticket covering the entire route in one place.

Actions to promote alternative forms of transport, such as **the development of infrastructure for bicycles and pedestrians and e-scooters, car sharing or on-demand transport, will also play an important role in transport policy.** These initiatives also reduce reliance on private cars, especially in high-traffic areas, and can complement public transport as the backbone of sustainable mobility.

For urban and rural development, policy will focus on integrating spatial planning with public transport planning. The aim of such a policy will be to minimise the distances between the place of residence and the place of work and access to services, which in turn leads to a reduction in dependence on private transport.

The Social Climate Fund, which Poland will use on the basis of the national Social Climate Plan, will play a special role in increasing transport accessibility, while taking measures to combat transport poverty. Due to the limited envelope foreseen for the transport sector, these activities will focus on the supply side of the phenomenon, i.e. they will be related to investing in the development of modern and accessible public transport. The above will allow the inhabitants of Poland to move more freely in order to meet their needs. Actions will be based, among others, on the spatial criterion, i.e. they will target areas affected or threatened by transport poverty. The currently developed spatial distribution of areas indicated for support, due to ongoing analytical work, may be subject to change. The proposed Action Plan will aim to reduce the negative impact of the EU ETS-2 on transport poverty levels.

ACTIVITIES b

Action 36. Financial instrument - Fund for the development of public bus services
Action 37. Development of urban transport networks
Action 38. Development of zero-emission public transport in cities
Action 42. Modernisation of rolling stock and railway infrastructure and development of local and regional railway infrastructure, as well as construction of new railway lines
Action 152. Development and implementation of the Social Climate Plan
Action 155. Actions to combat transport poverty under the PSK

Cell 4.3.3. Support for fi J coal:h and carbon-intensive regions

There are several regions in Poland that are particularly dependent on the extraction, processing, transport and exploitation of coal and lignite. These areas are inhabited by about 20% of the country's population, and their economic activity accounts for nearly 20% of Poland's GDP. Poland has experience from previous decades, when the rapid liquidation of industrial companies and mines became the cause of negative socio-economic effects. Therefore, the energy transition requires recognizing the challenges of coal regions and those strongly related to industry (especially energy-intensive industries), which faces the need for deep technological change. Proper process management and strategic use of brownfield sites can create opportunities for job creation, especially in industries and areas crucial for its successful implementation. This will make it possible to mitigate the adverse effects of the transformations and use them as a stimulus for innovative development and to strengthen the competitiveness of the national economy.

The implementation of the process of just transition of coal regions is carried out in accordance with **the provisions of the *Social Agreement* on the transformation of the hard coal mining sector and selected transformation processes of the Silesian Voivodeship** of 28 May 2021. This document provides a framework for phasing out coal while guaranteeing protective and investment mechanisms. The key solutions provided for in the *Social Agreement* include:

- shielding mechanisms for workers in the mining sector, such as mining leave, one-off severance pay and voluntary exit schemes,

- guarantees of employment and wage protection during the transitional period,
- financing mechanisms for companies in the coal sector until their activities are terminated,
- coordination with the Just Transition Fund and the Silesian Voivodeship Transformation Fund, which together are to provide funds for the economic diversification of regions, the creation of green jobs and the development of RES, the circular economy and hydrogen technologies.

The Social Agreement is also the basis for cooperation between the government, the social side and local governments in shaping investment and protection plans, ensuring that the process of transformation of the mining sector and seven coal regions of the Silesian Voivodeship will be predictable, participatory and socially acceptable. At the end of 2025, the notification of the *social contract* in the European Commission was awaiting approval. The essence of the process of extinction and closure of mines should be the technical and socio-economic potential of individual mines. In managing changes in mining regions, it is important to have transparent, time-bound planning, predictability for employees of the mining sector, but also to minimize the costs of transformation for the entire Polish society.

In the following years, coal and lignite-based units will be phased out of the capacity structure. The pace and order of withdrawals will depend on their technical condition, maintenance costs and power adequacy in the electricity system.

The provisions of the Act of 17 August 2023 on *social protection for workers in the power sector and the lignite mining industry (Journal of Laws* of 2023, No. U. item 1737, as amended), whose aim is to provide social protection for workers and to support entities in pursuing the transition by phasing out the generation of electricity in carbon-intensive units while developing low- and zero-emission sources. The regulations of this Act were notified to the European Commission, which declared the state aid provided for by this Act to be compatible with the EU market.

The exploitation and large-scale processing of fossil fuels (natural gas, oil, coal) takes place in several regions of Poland, but in the first place the energy transition will be important for regions where coal mining and processing takes place. It is this fossil fuel that will lose its importance the fastest, due to limited geological potential, costs and emissions. In addition, coal-related activities (including mining and processing industries) are important for the economies of these regions. For this reason, planning and support for coal regions is paramount.

In line with the principles set out at EU level, EU support can only cover those areas (NUTS-3 sub-regions) that have a concrete plan to reduce coal-related activities – in the 2021-2027 perspective, these were the so-called ***Territorial Just Transition Plans (TPSTs).*** The aim of the development and implementation of the TPST was to provide a new economic and energy route for these regions, so that their competitiveness and economic activity would be maintained, as well as new energy sources would be created, the protection of households, care for the natural environment and spatial order would be ensured. Importantly, TPSTs are developed locally, with the involvement of the government. Thanks to this, it was possible to identify strengths and potentials, and the process also generated support and involvement of the people affected by the plan.

After a series of arrangements, the Just Transition Fund supports regions located in five voivodships, based on four TPSTs. The list of areas covered by TPST is below.

Coal regions covered by TPST

Voivodeship	areas	TPST
Lower Silesian	m. Wałbrzych, Dzierżoniowski, Kłodzki, Świdnicki, Wałbrzych, Ząbkowicki districts	*The Territorial Fairness Plan Transformation of Lower Silesia 2030*, link
Lodz	m. Piotrków Trybunalski, whole counties of Bełchatowski, Pajęczański, seven municipalities of Radomszczański county (Dobryszyce, Gomunice, Kamieńsk, Lgota Wielka, Ładzice, Radomsko m. i gm.), six municipalities of Wieluński county (Czarnożyły, Konopnica, Osjaków, Ostrówek, Wieluń, Wierzchlas), three municipalities of Piotrkówów county (Gorzkowice, Rozprza, Wola Krzysztoporska), one municipality each from the counties of grace (Widawa) and Sieradzki (Złoczew), Siemkowice, Działoszyn, Rusiec, Kiełczygłów, Rząśnia, Strzelce Wielkie, Nowa Brzeźnica, Sulmierzyce, Kleszczów, Szczerców, Kluki, Zelów, Drużbice	*Territorial Plan for the Just Transition of the Łódzkie Voivodship* , link
Lesser Poland	Chrzanów, Olkusz, Oświęcim and Wadowice districts	*Territorial Plan for the Just Transition of Silesia*
Silesian	m. Bielsko-Biała, m. Bytom, m. Chorzów, m. Dąbrowa Górnicza, m. Gliwice, m. Jastrzębie-Zdrój, m. Jaworzno, m. Katowice, m. Mysłowice, m. Piekary Śląskie, m. Ruda Śląska, m. Rybnik, m. Siemianowice Śląskie, m. Sosnowiec, m. Świętochłowice, m. Tychy, m. Zabrze, m. Żory, powiaty Będziński, Bielski, Bieruńsko-Lędziński, Cieszyn, Gliwice, Pszczyński, raciborski, Tarnogórski, wodzisławski and Żyecki, lubliniecki, zawierciański, mikołowski, Rybnicki	(The document covers both areas. Silesia, as well as Małopolska, in accordance with with arrangements with the EC)
Greater Poland	e.g. Konin, Kola, Konin, Słupsk and Turkish districts	*Territorial Plan for Just Transition of Eastern Wielkopolska,* link https://arrtransformacja.org.pl/tpstw

POLICY)

A just transition is based on support for coal and fossil fuel-related regions. In the first place, attention will be focused on activities and areas related to coal mining and use. A key condition for support is the desire to move towards decarbonisation.

Support for the coal industry in accordance with *social agreements* will be maintained, but voluntary early termination of employment in the industry will be desirable. The plan to go away in individual mining plants should not result in the inability to liquidate efficiently. It is also not permissible to increase employment and at the same time remunerate departures in a given establishment. Support may be granted only once, in addition, it must assume at least several years of work experience (the process requires close monitoring). Young people living in coal regions should benefit from other forms of transition support in order to reduce the risk of inefficient support – i.e. spending on living expenses, for example, instead of investing in increased competences or starting a business.

An important element of the support system will be the Silesian Voivodeship Transformation Fund S.A. Nevertheless, comprehensive support for energy and climate transformation, as well as economic development focused on innovation, create opportunities for all regions of the country.

The effectiveness of the transition will be monitored. The sooner entrepreneurs see and seize opportunities, the

more efficient the change will be. Actions should also be directed towards areas that are not covered by the TPST.

As part **of ensuring a just transition,** action will focus not only on providing social protection for workers, but also on creating new regional specialisations, sustainable jobs and, above all, on developing new industries to support the transformation of the sector. Supporting coal and carbon-intensive regions in the energy transition should lead to economic diversification, creating new opportunities in areas such as RES, energy storage, hydrogen management, alternative fuels, electromobility, logistics, recycling, digitalisation, process automation, medical technologies. It is also important to create conditions for the modernization of heavy industry and automotive plants. These measures will also support adaptation to climate change and improve air quality. The transformation will focus on better development of the infrastructure of closed mines and post-mining areas into new economic and social functions. Such an approach will make it possible to exploit the existing spatial and technical potential of regions, minimizing the effects of the liquidation of traditional industries and creating the basis for the development of new industries compatible with the smart specializations of regions.

In particular, the following initiatives will be carried out, in conjunction with dimension V, on research and development activities, scientific policy, orientations and ways of training and strengthening competitiveness:

- Creating a regulatory environment, supporting the creation of new projects investments related to the decarbonisation of the economy and the social transformation of coal regions;
- Activities related to the rehabilitation and remediation of areas where mining and quarrying activities were carried out and aimed at restoring the natural potential of these areas;
- Develop a system of investment incentives in extractive and carbon-intensive regions;
- Implementation of investment projects, modernization of existing and construction of new industry;
- Mapping the needs of regions in terms of the availability and qualifications of human resources in sectors energy and industry-related projects in the context of investment and transformation projects;
- Mapping the needs of vocational education and retraining;
- Design and programming of vocational education and training courses;
- Integration of training and recruitment activities between public institutions and economic operators;
- Educational and informational counselling and campaigns as well as the creation of support centres for workers affected by the transformation and their families;
- Preserving the traditions and cultural heritage of extractive and industrial regions;
- Carry out an education and information campaign on the plans and practical dimensions of the transition and a multi-level public consultation on the NECPs and strategy papers on the energy transition.

ACTIVITIES b

Action 156. Providing support for coal regions

Action 157. Ensuring the development of coal regions

Cell 4.3.4. Create green have 5>c pre icy

Green jobs are a key element of an economy focused on the climate and energy transition. In the era of growing ecological awareness and growing global related with green jobs becomes becoming more and more important.

Green jobs are jobs that challenge

Green jobs are jobs that directly or indirectly contribute toto protect the environment, promote sustainable use of resources and support Actions to reduce gas emissions greenhouse gas emissions and climate change mitigation.

directly or indirectly contribute to warming, the role of

to protect the environment, promote

sustainable use of resources and support

Actions to reduce gas emissions

greenhouse gas emissions and climate change mitigation.

Green jobs are present in a variety of economic sectors and concern the development of industries consistent with smart specialisations in regions, such as renewable energy, ICT, circular economy, organic farming, water management, waste management, public transport, energy-efficient construction, nature conservation, etc. Examples include positions related to the production and installation of renewable energy sources, work in recycling, eco-design, or management of forests and areas of natural value. Unlike traditional jobs, those associated with the green economy focus on creating solutions that minimize the negative impact of human activity on the environment, while supporting the transition process and strengthening the competitiveness of the economy. These activities support the diversification of the economy, the use of existing industrial infrastructure and the development of new competences, enabling the creation of jobs in low-carbon and innovative sectors.

The need to create green jobs stems from several factors. Firstly, they are a response to the climate crisis and the need to transform the economy towards zero-emission development. In addition, the transformation of these sectors and the development of new sustainable technologies create new employment opportunities that are both economically beneficial and environmentally friendly.

Green jobs also play a key role in the just transition process. Economic and environmental change should not and must not come at the expense of workers and communities that rely on carbon-intensive industries. Green jobs are often a better alternative for people who may lose their jobs in fossil fuel extraction and processing sectors as a result of the transition. By investing in training and education, these workers can acquire new skills and qualifications, allowing them to find employment in more sustainable sectors of the economy. They also support the development of local communities, especially those that have so far been dependent on carbon-intensive industries. Investments in renewable energy, nuclear energy, the circular economy or green agriculture can contribute to the creation of new sources of income and increase the economic stability of former mining regions. Green jobs help build a more responsive and engaged society where the benefits of the climate transition are evenly distributed.

Increasing the number of green jobs by 2030

POLICY)

A key policy objective will be **to create favourable conditions** for the development of sustainable economic sectors, as well as to support a just transition that will provide decent jobs and equitable economic development in the different regions of the country. Given the prioritisation of investments in sectors related to renewable energy sources, the circular economy, sustainable agriculture, environmental protection and public transport, financial and fiscal support schemes will be further developed. Particular attention will be paid to small and medium-sized enterprises (SMEs), which play an important role in local development.

Support will be given to the development of educational programmes and vocational training to enable workers to acquire the new skills needed in the green sectors of the economy. In particular, technical training and the development of retraining programmes will be promoted, in particular for those working in carbon-intensive sectors. Cooperation with universities and training institutions will play an important role in helping to create

modern educational programs that will respond to the needs of the labour market.

Special attention will be given to regions that have historically been dependent on carbon-intensive industries such as mining, metallurgy, coking, chemical, metal, cement and combustion engine-based automotive industries. The policy will include regional strategies that support the development of alternative sources of employment, adaptation to local needs and resources. Support mechanisms for local communities will be set up, including funds for the development of green jobs and innovative projects that will support the local economy.

Ensuring broad cooperation between government, the private sector, workers, NGOs and local communities will be key in creating policies for green jobs. Social dialogue is key to understanding the needs of different stakeholder groups and working together to find solutions that are effective and fair. The government will seek to create collaborative platforms that enable the exchange of knowledge and best practices and joint planning of activities on identified needs.

Investing in green job creation provides long-term economic benefits. For this reason, funding for the just transition will be directed primarily to the development of economic operators that create new sustainable jobs in the areas of the green transition and green and blue infrastructure.

ACTIVITIES b

Action 164. Education and professional development of human resources for the economy in the field of energy and climate transition

Cell 4.3.5■ Preservation2 [1] social and economic equilibrium

Maintaining social and economic balance in the context of a just energy transition is a key element in the transition to a low-carbon economy. This means striving for a change that minimises social inequalities and the negative impacts of the transition, while maximising benefits for all citizens. The energy transition, as a process of changing the economic and energy system, has a variety of distributional effects that can lead to new income and regional inequalities. For example, regions traditionally dependent on the coal industry may experience difficulties in the face of change, such as job losses, while new sectors of the green economy may develop in other locations, creating disparities in regional development.

Responding to these challenges, redistribution mechanisms such as subsidies, tax breaks or investments in local development need to be put in place. Such measures are intended to alleviate potential social and economic inequalities that may be aggravated during the

transformation. An important objective of the energy transition is also to improve the quality of life of citizens by reducing environmental pollution and improving public health. Pursuing more energy-efficient and greener solutions will contribute to improving air quality, reducing the impact of climate change and reducing energy costs. It is equally important that these changes do not lead to a reduction in the standard of living of any social group.

The transition requires upfront investment, which can burden both households and businesses. Appropriate support mechanisms need to be put in place to make them more accessible. Examples of such activities include subsidies for thermal modernisation of buildings, tax breaks or subsidies for small and medium-sized enterprises. Thanks to such solutions, the transition to green energy can become more affordable for all social groups, and thus will not even temporarily negatively affect their financial situation.

Inclusiveness, ***i.e. inclusiveness and inclusiveness of the voices*** of all stakeholders, is also a key element of a just energy transition. This process requires the involvement of various social groups, local leaders, workers, social organisations such as trade unions or informal groups, and NGOs in the decision-making process. Conducting broad public consultations, involving local communities in energy policy planning and implementation, and ensuring transparency and openness in decision-making are an essential part of the energy transition. Only by taking real account of the needs and expectations of different social groups is it possible to build public support for activities related to the energy transition. Such an approach ensures that the transition is not only effective, but also socially and economically just.

POLICY)X

The monitoring of distributional impacts will include a systematic analysis of the impact of the energy transition on different social groups and regions to identify the areas and groups most vulnerable to negative impacts. To this end, mechanisms will be put in place to redistribute benefits, such as subsidies to regions and social groups affected by change and tax breaks that minimise social and economic inequalities. The analyses will be carried out in cooperation with research institutions and on the basis of social monitoring data.

In terms of improving quality of life and well-being, activities will focus on investments aimed at improving the quality of life of citizens by modernising energy infrastructure, improving air quality and supporting public health. Financial support to households and businesses through instruments such as grants for building renovation and subsidies to small and medium-sized enterprises will continue. In order to ensure the inclusiveness of policies and social participation in their development, different social groups, local leaders and non-governmental organisations (NGOs) and others will be involved in the decision-making process for energy policy-making. A broad public consultation will take place and decisions will be taken in a transparent manner, in accordance with laws and regulations on civic participation.

HEADINGS)X

Action 156. Providing support for coal regions

Action 157. Ensuring the development of coal regions

Action 161. Pilotages and demonstration programmes of exemplary solutions to the energy and climate transition

- *All measures under Objective 2.2.1 Reducing the energy needs of existing buildings*

Dimension [5]

Research, innovation and competitiveness

The contribution of the EU to climate neutrality and the energy transition requires huge changes in all areas of life and economy. Therefore, the coming decades are the time for research and development of innovation to bring us significantly closer to achieving these goals. In addition to striving to reduce GHG emissions while guaranteeing energy security and ensuring Europe's global competitiveness, **research, innovation and competitiveness have been identified as the fifth dimension of the Energy Union.**

This section identifies key issues from the point of view of carrying out the transformation in Polish conditions. *There are no areas in the structure of the chapter.*

Cell 5.1.1. Provision of ; Transition measures energy and research and development)j

The energy transition – or more broadly the climate and energy transition – towards climate neutrality requires significant investment and entails many of the technological challenges described in this document. Equity investment is carried out by both the public and private sectors, often requiring support mechanisms and incentives for investors. The effects of the actions taken will affect the innovativeness of the economy and its competitiveness. Importantly, public funding is not the only source of funding for projects, but is supportive, stimulating, multiplier and low-carbon. EU funds, offered through various targeted programmes and funds, will play a very important role in this respect.

Some of the planned activities have earmarked financial resources, but in many cases financial assembly will be necessary. aKPEiK therefore indicates the direction we are aiming for, and obtaining funds or detailed planning of their spending is one of the elements of the future implementation of the NECP. During the implementation of the NECP, new financial initiatives and solutions will emerge that can support the implementation of the ambitious plan. Taking into account the above aspects, it is envisaged to draw up **a financial plan for the activities of the NECP,** which will define the sources of capital, the support mechanisms and the rules for cooperation between public and private institutions. Due to the very specific situation in district heating, a financial plan for the transformation of the sector will also be developed separately. *Annex 5 to the NECP presents the investment needs, available means and sources of financing identified at the time of drafting the document.*

It is also extremely important **to provide the entities implementing the NECP with solutions and tools** to support the transition. The most important initiatives include:

- **the Energy Transition Support Centre,** which is to be an advisory centre accessible to economic operators and citizens, based on the best technological and financial knowledge;
- **Energy System Simulator for Local Government –** JSTs are currently confronted with a lack of knowledge about energy needs, development potential and the optimal transition path. Therefore, equipping JTS with this solution will enable modelling of different decarbonisation scenarios, analysis of investment costs and identification of the most effective integrated activities in the field of energy, heating, transport and building infrastructure;
- **Development of the analytical resources of the central public administration** for the energy transition – currently, the public administration uses various think tanks or external entities, which creates the risk of methodological inconsistency, insufficient knowledge of the existence of data and forecasts, and repeatedly causes organisational problems. Therefore, it is extremely necessary to strengthen the analytical base of the administration.

The transformation will not take place without efficient technological development. Activities in the field of **research and development** lead to the acquisition of solutions that will respond to the broadly identified development needs in various areas of life and functioning of economies. These solutions should also support the use of the country's competitive advantages, increase its investment attractiveness and strengthen innovation. Therefore, research and development should be conducted according to a specific state policy, updated taking

into account discoveries and achievements.

In 2022, the *State Science Policy* (link) was adopted, setting out the lines of action in the field of science and higher education. The implementation *of the State's Scientific Policy* is aimed, among others, at improving Poland's position on the international arena and increasing the impact of science and higher education on the economic and social development of the country.

The aim of the State Scientific Policy is to increase investment in research throughout the economy, including activities related to the energy transition and the broader pursuit of a climate-neutral economy.

Poland sets a target to increase investment in research
up to 2.5% of GDP by 2030

However, the broader context *of the State Scientific Policy (PNP)* needs to be emphasised. This policy is intended to support high-quality research and the optimal use of scientific knowledge, and to ensure the autonomy of universities. The priorities set out in this document translate into coherence, synergy and the development of international cooperation in the higher education and science system. PNP is the basis for the implementation of strategic and development programs of the state. The implementation of the State's scientific policy is financed through expenditure on higher education and science determined on the basis of Article 383 of the Law on Higher Education and Science and expenditure limits of the relevant budget parts.

In the Polish legal system there is a package of reliefs, facilitations and incentives for a higher level of investment in R&D. In order to stimulate R&D investments and support innovation in enterprises, it is ensured that:[152]

- **Tax credits** – the possibility of deducting up to 200% of eligible costs from the tax base;
- **Remuneration of employees** – deductibility on the tax base of costs remuneration of employees employed in R&D departments;
- **Depreciation of fixed assets**– Depreciation costs of fixed assets used R&D activities are considered eligible costs;
- **Administrative simplification** – shortening procedures: Reducing the administrative burden related to the documentation of R&D costs;
- More favourable conditions for small and medium-sized enterprises (SMEs) – special preferences for SMEs that could deduct a higher percentage of eligible costs;
- **Support for start-ups and start-ups –** preferential conditions: new companies and start-ups could benefit from additional relief and financial support programmes;
- Facilitation of patent procedures and support in the protection of intellectual property;
- **Financial support** – e.g. increasing the availability of national and EU funds for the implementation of research and development projects;
- **Running simple public limited companies –** the formula allows, among other things, that shares in a company can be taken up by people who do not have capital, but have an innovative idea, will work on its development and implementation (the specificity of start-ups), as well as people who are ready to contribute capital, enabling both financing and fair reaping of benefits.

Thanks to these solutions, Polish companies gained better conditions for the development of innovative projects, which contributed to the increase of competitiveness and dynamic development of the R&D sector in Poland. The approach will continue, but it is extremely important to keep up with regulations and institutions supporting innovation in a changing environment and global development.

152 As a result of two Acts on Innovation - the *Act of 4 November 2016 amending certain acts defining the conditions for conducting innovative activity (Journal of Laws of 2016, No. U. item 1933, as amended)* and the *Act of 9 November 2017 amending certain acts to improve the legal environment for innovative activities (Journal of Laws, item 2201)*; as well as the *Act of 19 July 2019 amending the Commercial Companies Code and certain other acts (Journal U. item 1655, as amended).*

ACTIVITIES b

Action 159. Gradual increase in outlays and optimal targeting of R&D funds in the areas of transition to a climate-neutral economy
Action 160. Updating the State's Scientific Policy
Action 165. Preparation of a financial plan for the activities proposed in the NECP

Cell 5.1.2. Develop innovation and technology in areas conducive to the transition to a climate-neutral economy

The aim is to create conditions conducive to the development of innovation and technology, which will contribute to a smooth energy and climate transition, while maintaining energy security, striving for growth competitiveness of the economy and taking into account the needs of society.

The state's scientific policy is divided into priority directions. The priority **'Natural resources and environment',** which is divided into three areas, is particularly relevant for the energy transition:

(1) *Energy and climate,*
(2) *Resources and biodiversity*
(3) *Food and bioeconomy*

Within these areas, the sub-areas listed in the table below are of particular importance, complemented by additional elements worth developing and supporting.

The planning of research work should cover these areas holistically and interdisciplinaryally. The practical implementation of solutions may require major technological breakthroughs, which is why it remains important to create effective mechanisms for concentrating resources and human resources.

Areas of innovation and technology development for the energy transition

Resources and biodiversity

Energy and climate

- **energy efficiency** (increasing energy efficiency in industry and construction) and **respect for energy**;
- **climate neutrality of industry** (process emissions reduction, emissions capture);
- **energy storage (including** new materials, hydrogen, biomethane and biogas plants);
- **Smart grids and digitalisation (increased** efficiency, smart control) and metering, connecting distributed sources to the system and 'green' energy);
- **technologies for the production of energy from renewable sources,** including bioenergy, wind energy, photovoltaics, geothermal energy;
- **low- and zero-emission transport** (electromobility, alternative fuels, fuel cell vehicles);
- **hydrogen technologies (production** of hydrogen, in particular from zero-emission sources, hydrogen purification, transmission, fuel cells, use and cost reduction in all areas);
- **nuclear energy (new** generation III and IV reactor technologies);
- **social aspects of the energy transition** (reducing the social costs of the transition to a low- and zero-carbon economy, transformation and transformation of post-mining regions).

- **adaptation to climate change**, including protection against drought and flooding, development of blue-green infrastructure;
- **increasing the potential conditions for water retention,** i.e. the systemic capacity to collect water resources and keep them in the environment for a longer period of time;
- **protection of soils** against degradation and restoration of degraded and devastated soils;
- **prevention of soil contamination** and remediation of contaminated soils;
- support for solutions for various **forms of retention (large** and small, soil and landscape), including natural retention (implemented through measures to protect water resources by restoring or maintaining natural ecosystems).

Food and bioeconomy

- **bioeconomy resources in** agriculture, aquaculture and forestry and their productivity in the context of the development of the bioeconomy;
- the production and **use of bio-waste** from agriculture, aquaculture and forestry and municipal bio-waste, given its importance in circularity, including in the production of bioenergy (in particular biomethane and biogas);
- **the potential for biomass production from various sources**, including waste and its use for the production of bioenergy (in particular biomethane and biogas);
- **the use of natural resources,** in particular ligno-cellulosic raw materials;
- **the impact of the bioeconomy on** climate protection, water quality and air quality;
- **waste management and resource efficiency (e.g.** separate collection of waste, recycling as part of the circular economy) and issues related to the development of waste prevention infrastructure and the development of a separate collection system for municipal waste that ensures the collection of recyclable waste and the development of bio-waste treatment facilities.

It will also be crucial to undertake activities related to the development of national technologies, using, among others, strategic and critical raw materials, e.g. for the production of batteries in energy storage and electromobility. Actions should also target the development of equipment for the production and use of hydrogen, for the production of energy from renewable sources, as well as for the electrification of heating and heating (including heat pumps). An important area is carrying out R&D and implementation works in the field of data transmission and storage, robotics or mobile electronic devices.

ACTIVITIES BX

Action 159. Gradual increase in outlays and optimal targeting of R&D

funds in the areas of transition to a climate-neutral economy

Action 160. Updating the State's Scientific Policy

Action 161. Pilotages and demonstration programmes of exemplary solutions to the energy and climate transition

Action 162. Scientific and educational research and projects in the field of rational and low-carbon agricultural production

Action 163. Financial instrument - Horizon Europe

- *All other actions indicated in individual parts of the document concerning, among others, decarbonization of individual industries, development of CCS and hydrogen technologies, innovation in transport, energy, environment-wide areas.*

Cell 5.1.3. Development of competences and kacilr ii a need for transformation and energy and climate change

Carrying out a responsible energy and climate transition is a multi-year process, which also requires **adapting and building staff and developing skills**, consistent with priority development directions, sectoral challenges and needs, and the progressive development of technology. Skills are essential for social, industrial and economic development, as well as for gaining greater public acceptance for change, especially in communities and regions exposed to the negative effects of the energy transition.

The demand for personnel in the transformation process is huge, especially in the aspect of parallel processes and investments in similar areas of low-carbon development in many European countries (e.g. renewable energy technologies, nuclear energy, energy storage, balancing technologies, maintenance of conventional generation units, hydrogen technologies, energy management, thermomodernization of buildings, network infrastructure, electromobility, automation and digitalisation of solutions and other modern energy solutions and other areas indicated in Objective 5.1.2).

A shortage of qualified staff can be one of the key bottlenecks of the energy transition. At the same time, accelerating the adaptation of the educational offer to the needs of the intensive pace of transformation must not have a negative impact on the quality of education.

The aim is to expand the educational offer tailored to the needs of the transformation energy and climate.

In addition, the education system must ensure appropriately high standards of education and the number of skilled workers must enable the smooth implementation of the transition.

POLICY)X

The implementation of the policy in the area of human resources provision and competence development aimed at the smooth implementation of the energy and climate transition will be focused on:

÷ adaptation of the list of professions in which education is provided in secondary schools (implemented by the minister competent for education and upbringing at the request of the competent minister),
÷ promoting professions that can be educated at tertiary level,
÷ Ensuring adequate standards of education by ensuring the quality of education.

Education will take place in:

(a) secondary and non-primary education, (b) higher education.

An extremely important tool in organizing and standardizing the qualifications system in Poland is **the Integrated**

Qualifications System,153 which provides access to transparent and reliable information about professional requirements. The Integrated Qualifications System also enables the provision of non-formal education qualifications (sectoral qualifications and free market qualifications) enabling citizens to credibly validate skills, including those useful in the climate and energy transition process.

Education in secondary schools and in extracurricular forms

Education for the energy and climate transition is carried out in secondary schools and in non-school forms, in professions defined in the classification of the professions of industry education, in particular in professions:

- techniques of renewable energy equipment and systems,
- energy technicians,
- electrician,
- electrician technician,
- mechatronics,
- mechatronics technician,
- refrigeration and air-conditioning techniques,
- gas engineering techniques,
- installer of networks and sanitary installations,
- drill,
- drilling rig technician,
- operator of machinery and equipment in waste management,
- auxiliary worker in waste management,
- waste management techniques, electromobility techniques.

Ministers will more actively **monitor labour market needs** related to the energy transition, in line with their respective competences. They will then submit applications to the minister responsible for education and upbringing, who defines the professions in the classification of professional education professions154 in order to adapt the qualifications of existing professions to the needs of the market, as well as to introduce new professions. An important role in this area is played by the minister responsible for energy and climate, as well as the minister responsible for construction, spatial planning and development and housing, as well as the minister responsible for infrastructure. In this area, it is crucial to cooperate with the market and industry organisations, which are an important link in the process of developing the qualifications base, and to intensify cooperation between entrepreneurs, institutions and schools providing vocational training in relation to new professions.

In addition to the leading activities of ministers for individual professions, an **active role of the minister competent for education and upbringing** is necessary in the area of providing the most complete professional base possible for the development of the economy and the energy and climate transition.

In this context, it is essential to restore **the image of vocational schools, based on a vision of interesting, respected and well-paid work.** In this context, it is also appropriate to intensify research into pupils' predispositions and to direct their further educational path in terms of their future careers, so as to reduce the risk of not taking up a job in the learned profession.

In order to indicate in which direction the offer of sectoral education should develop and for which professions there will be the greatest demand for the national and voivodship labour market in the following years, from 2019 yearly the minister competent for education and upbringing **announces a forecast of the demand for employees in the professions of sectoral education on the national and voivodship labour market. The forecast determines the demand for workers in individual occupations**. Thanks to the forecast, schools and governing bodies can plan the competitions that will be launched in the new school year. Importantly, decisions taken in this respect will take into account the different ways of financing these professions, i.e.:

- more money to schools for 'national list' and 'voivodship list' occupations with particularly high demand;
- more money for employers to train young workers in 'national list' occupations and in occupations with a particularly high demand from the 'provincial list'.

153 https://eligibility.gov.pl/

154 Pursuant to Article 46 of the Education *Law Act of 14 December 2016 (Dz. Journal of Laws of 2025, item 1043, as amended).*

The increase in funding applies to pupils entering the profession and applies throughout their education. Such a solution ensures the financial stability of local governments in vocational education. Thanks to this, they are sure that the decision to launch education in a profession from the *list of professions of particular importance for the development of the state* will translate into higher funding under the subsidy for all years of education. The list of professions for which, due to the importance for the development of the state, special demand on the labour market is forecast also includes professions important for the needs of the energy and climate transition.

As part of the education system, there is an **education system in extracurricular forms related to the system of sectoral education.** Units of the education system (schools providing vocational training, continuing education institutions, vocational training centres and sectoral skills centres) can construct an educational offer of education in non-school forms (on courses) adequate to the needs of the labour market. Education in non-school forms is dedicated, as a rule, to adults interested in obtaining professional qualifications or retraining. Units of the education system, in consultation with employers, may also provide courses and training for the professional development of employees. This element of the education system can be crucial for workers in fossil fuel industries in need of redevelopment. It is also worth highlighting the niche related to energy efficiency – the development of energy performance certificates for buildings requires appropriate education and registration in the register. In turn, the development of energy audits requires a number of conditions related to experience and education.

Thus, with the right demands and quality of education, it is possible to carry out the transition in an effective and quality-assured way.

Higher education

Polish universities educate in accordance with the principle of program autonomy, which allows them to freely shape the didactic offer tailored to the needs of the economy. Legal solutions place great emphasis on promoting cooperation between universities and the socio-economic environment, especially in the field of education in fields of study for which there is a demand on local labour markets. The higher education and science system provides universities with autonomy and tools they can use to adapt teaching activities to the needs of economic development and the changing demands of the modern labour market, as well as to strengthen cooperation with employers. In this context, it is possible to profile education, which brings the didactic offer closer to the needs of the labour market. In the practical study programme, more than half of the ECTS credits are allocated to practical skills classes, enabling students to carry out practical activities under the conditions specific to the profession. In studies with a practical profile, there is an obligation to organize apprenticeships: at least 6 months in first-cycle and single-cycle master's studies and at least 3 months in second-cycle studies. The participation of practitioners in the education process is also important, especially in the implementation of classes developing practical skills. Universities can conduct studies with the participation of employers, including dual studies (combining theoretical classes with practitioners) and studies in cooperation with institutions granting permission to perform specific professions. Employers can co-create study programs, organize internships, conduct classes and give opinions on the directions of university development. There is also **an Implementation Doctorate Programme which supports the development of** university cooperation with the socio-economic environment by educating doctoral students in cooperation with entrepreneurs, leading to the implementation of research results in these entities.

Support for competence transformation includes the development of human resources towards the skills of the future – such as, for example, green technologies, digitalisation and automation of processes, energy management, energy and heat storage, recycling or operation of modern production systems, etc. At the same time, it is essential to create retraining programmes for workers in declining sectors. Such a model of action will reduce the risk of occupational exclusion, increase labour market mobility and create new jobs in industries compatible with smart specialisations.

In parallel with the setting of transformational objectives, policies and actions in individual sectors of the economy (referred to in the above chapters), actions will be carried out to adapt education profiles, skills and competences development to the needs of the changing economy. This will contribute to the acquisition of highly qualified staff, the development of industry and the creation of high value-added jobs for the national economy. It is an investment in the future, because human know-how is also a valuable asset. The above actions will allow for

optimal and effective implementation of tasks in the area of energy and climate policy, taking advantage of Poland's competitive advantages and strengthening its competitiveness. The creation of a database of specialists in various fields will enable us to respond to the challenges that await Polish energy industry in the coming decades.

ACTIVITIES BX

Action 164. Education and professional development of human resources for the economy in the field of energy and climate transition

Cell 5.1.4. Strengthening the competitiveness of Poland resulting from the implementation of the AKF and EiK

Changes resulting from the implementation of the assumptions of the energy and climate transformation are not only obligations resulting from the need to meet climate and energy goals, but also the potential for further stable development of the Polish economy. Changes in the energy sector open the way for the development of modern technologies, the construction of innovative business models and the creation of new jobs in high value-added industries. At EU level, Net *Zero Industry Act t* 155(NZIA) - *the EU Net Zero Industry Act is* an initiative stemming from the Green Deal Industrial Plan that aims to scale up the production of clean technologies in the EU. The energy and climate transition can provide Polish companies with a way to achieve a competitive advantage on many levels by reducing costs, improving productivity and distinguishing Polish products on the EU market.

Responding to the challenges of energy security and the raw materials crisis, the European Union launched *the REPowerE U programme,156* which aims to accelerate the diversification of energy sources, develop renewable technologies and increase energy efficiency. In 2025, the European Commission also presented the *Affordable Energy Action Plan*, which aims to reduce energy costs for households and industry, increase resilience to price fluctuations and accelerate investments in renewables and grids. This plan supports competitiveness by reducing energy costs and simplifying procedures for RES projects. In turn, *the157 2024 Critical Raw Materials Ac t aims to increase the EU's* strategic independence from third countries in sourcing, processing and recycling critical raw materials in Europe and securing supply chains.

The European agenda is increasingly stressing the need for a balance between climate ambition and the ability of companies to compete on the global stage. In this context, the *Carbon Border Adjustment Mechanism* (CBAM) has been proposed. This is a completely new climate policy instrument that will play an important role in relation to the competitiveness of carbon-intensive industries. It aims to end the phenomenon of 'emission imports' and to support EU producers by eliminating the competitive advantage of third-country companies that do not incur costs related to CO2 emissions. In early 2025, the European Commission also announced the Clean *Industrial Dea l,158 a new* strategy promising affordable energy, an innovative approach to public procurement, as well as new funding for the transition. Work is ongoing on operational and legislative documents to put this strategy into practice.

In addition, in February 2025, the EC presented a simplified Omnibus package as part of the Competitiveness Compass and159. Omnibus introduces simplifications in sustainability reporting regulations to reduce administrative burdens and facilitate investments in green technologies.

The importance of this approach is underlined by Mario Draghi's *report The Future of European Competitiveness,160 which points out that Europe must combine decarbonisation with industrial development, deregulation and large-scale capital mobilisation in order to maintain its position vis-à-vis* the US and China. At the same time, it is important that the energy and climate transition should be a tool for growth and not a barrier,

155 Framework for action to strengthen Europe's climate-neutral technology manufacturing ecosystem (Net-Zero Industry Act), link
156 REPowerEU: Energy Policy in National Recovery and Resilience Plans - Consilium, link
EU157 regulation 2024/1252 on critical raw materials, link
158 A pact for clean industry, link
Competitiveness159 Compass, link
Draghi160 report on the competitiveness of the European Union, link

hence the emphasis on simplifying procedures and building a common market for strategic technologies.

In the Polish context, actions supporting the local component in investments, rewarding domestic companies in public procurement and deregulation of investment processes are crucial. Government initiatives are aimed at shortening the deadlines for issuing environmental decisions and court and administrative proceedings, as well as increasing the transparency of settlements in the energy sector. Such solutions are to accelerate the implementation of projects in the field of renewable energy, conventional energy and network infrastructure, strengthening the position of Polish companies in strategic investments. Combined with European initiatives such as NZIA, CID, CRMA, CBAM, REPowerEU or the Affordable Energy Action Plan, this creates an opportunity to build an economy capable of adapting to dynamic technological and regulatory changes.

The aim is to create incentives and appropriate tools for entrepreneurs to build an economy that can compete effectively in the market European.

POLICY)

Recently, the government has taken a broad initiative to regulate the issue of so-called local content in Poland. For example, a research team has been set up. Participation of the National Component in the Key Investment Processes,161 which, inter alia, is to define the concept of the national component, the methodology for its measurement, carry out analyses of legal regulations and good practices. Defining local content will create a starting point for further work on increasing the share of domestic companies in individual sectors of the economy.

In line with practices in many EU countries, the possibility of implementing mechanisms in Poland favouring national contractors by setting minimum levels of local participation in projects co-financed by public or EU funds will be examined. The policy should also take into account certification and quality requirements for contractors, which will ensure a high standard of implemented investments and enable Polish companies to compete effectively on the domestic and international market.

In addition, support is planned for redirecting public money from foreign companies to Polish contractors as part of the implementation of public contracts in accordance with the idea of shortening supply chains. Polish companies will be rewarded with non-price criteria in tenders if their offers are comparable to foreign competition. The government's initiative is to help Polish companies compete for contracts for the construction of power units, in the development of RES projects and others.

The Polish policy of ensuring the competitive advantage of the economy in the European dimension will be based on several key pillars that create a coherent system of activities. The basis is to ensure access to cheap and stable electricity, with the largest possible share of technologies, supplies and services provided by national actors. Poland will continue to develop renewable energy sources, expand transmission and distribution networks and invest in energy storage technologies to increase system flexibility and reduce operating expenses for companies while strengthening their competitive position. Therefore, it is necessary to provide conditions for accelerating the development of RES, as well as to provide adequate infrastructure to absorb the energy produced.

Deregulation

Poland will also seek to support the competitiveness of the national economy through deregulation. The Polish government has initiated a number of legislative projects on deregulation, **simplification** of procedures and **adaptation** of the law to modern needs, which cover a wide range of issues such as tax and financial issues for individuals and companies.

In the energy sector, deregulation is aimed at simplifying and accelerating investment processes. In 2025, a draft *act on streamlining the investment process for key infrastructure investments (UD262) was submitted for* consultation. The project contains a catalogue of key investments eligible for statutory preferences. The project assumes, among others, shortening the time limit for issuing an environmental decision to 45 days from the

161 Ordinance of the Minister of State Assets of 8 October 2025 on the Team for the Participation of the National Component in Key Investment Processes, (Journal of Laws No. Ooh, ooh, ooh. MAP, pos. 25), link

submission of the application or introducing a 21-day time limit for considering appeals against administrative decisions issued for key investments.

In addition, the changes will also include the simplification of the system of billing and energy bills for households, which will increase transparency for consumers and facilitate the operation of energy companies. The bill provides that recipients will receive clear information about the most important items of the account and the total amount to be paid on the first page of the account. Another assumption is to extend the cable pooling formula with the possibility of using energy storages on the joint connection. The assumptions also plan to waive the application of heat tariffs if it is supplied exclusively for technological purposes without passing it on to households.

Decarbonisation as a business opportunity

Pursuing more energy-efficient and environmentally friendly solutions will also contribute to increasing competitive advantages for companies introducing products produced in a low-carbon manner. Growing public awareness opens up new opportunities for the development of companies. There are more and more declarations among entrepreneurs that they see opportunities related to decarbonisation. More and more consumers are willing to pay more for low-carbon products. Greening the offer will help **Polish companies** build their brand image and competitive advantage not only on the domestic market, but also on the EU market.

In green technologies, it is important that they can be deployed in many sectors of the economy, as 'eco-innovation' covers an extremely wide range of solutions. Poland supports Polish green technologies, including through the *GreenEvo – Green Technologies Accelerator* programme. This programme is an important tool to support sustainable development in Poland and worldwide, including the transition towards a circular economy. It primarily supports small and medium-sized enterprises in their foreign expansion. In this way, it helps them to enter new markets, while spreading the idea of doing business with respect for the environment.

Moreover, an indispensable element of the energy and climate transition is the transformation of coal regions, which is one of the biggest economic and social challenges. It opens up space for the development of domestic companies in many areas, from **the management of cross-sectoral transfer of enterprises, through the rehabilitation of** post-mining areas, the design and implementation of new investments, to the provision of technological and advisory services. Polish companies can participate in the construction of installations of renewable energy sources, energy storage, network modernization and improvement of energy efficiency of buildings, etc. At the same time, it is necessary to develop retraining programmes for workers in the coal sector. Polish training institutions and consulting companies can conduct courses in the field of modern technologies, automation, distributed energy or industrial services, which will serve the economic diversification of regions related to the use of coal and lignite.

Increasing global competition and the need for decarbonisation linked to the climate challenges and the EU's energy and climate policy put the industry in Poland and Europe under high pressure, which carries the risk of **relocation of production facilities** and deindustrialisation.

In response to these challenges, it is necessary to introduce mechanisms for levelling the **playing** field **-** in November 2025, the Sejm adopted a draft law implementing the CBAM mechanism into the Polish legal order. The new regulations are to protect the competitiveness of industry, support the maintenance of existing jobs and the creation of new ones both in Poland and throughout the European Union. The CBAM has the potential to level the playing field for European companies, but it should be borne in mind that its full implementation is protracted over time and poses a number of challenges.

Local content in the development of low- and zero-emission technologies in Poland

With regard to the development of the Polish potential of low- and zero-emission technologies, activities will be aimed at implementing effective mechanisms in the field of energy, which will allow Polish companies to develop and compete on the single European market. Particular emphasis will be placed on projects that add value to the national economy, e.g. they will contribute to the development of national know-how for the Polish and EU economies.

The development of the domestic sector of electricity infrastructure suppliers is crucial to ensure the stability and energy security of the country. **Strengthening the domestic production potential for the** construction and modernization of strategic infrastructure components reduces dependence on foreign entities and protects the Polish market from risks resulting from global disruptions in supply chains. Building a strong national base in the

power sector is also a condition for the efficient implementation of the energy and climate transformation and maintaining the continuity of the power system in crisis situations.

The policy aims to reduce dependence on technologies and components from outside the European Union by stimulating the development of domestic industry in areas of strategic importance for energy security. In particular, it concerns components necessary for the ongoing maintenance and modernisation of the power system, such as wind turbines, automation and control systems, transmission and distribution network elements, cooling systems, equipment for nuclear power plants or modern heat sources.

Therefore, it is necessary to implement mechanisms supporting local participation, i.e. "local content" in the implementation of infrastructure investments, with particular emphasis on the involvement of Polish companies in **the development of technology, supply, construction and engineering works, as well as advisory and maintenance services .** For projects co-financed by public funds and EU funds, clear criteria should apply to strengthen the position of local suppliers and contractors and define a minimum level of participation of entities from Poland and EU countries in supply chains.

In this context, it is worth noting the impact and potential of Polish companies in the production of wind farm components and services for the fuel and energy sector. It is worth mentioning here a very successful example of the sectoral transformation of Polish companies and their transition from mining services to the RES industry.

In the field of **offshore wind farms (IMF)** in the Polish part of the Baltic Sea, the implementation of the investment already generates real orders for domestic industry and Polish enterprises and constitutes an important impulse for the economic development of the country. Prospects for the development of offshore wind farms in Poland provide a strategic opportunity to permanently root the local supply chain and services in this sector. Local content is ok today. 20% may increase to at least 40% with the development of national competences, supply chains and the development of the necessary industrial infrastructure. Poland already has a solid foundation for the development of the sector. Approximately 500 Polish companies today have production and service potential for offshore wind energy.

Polish companies are actively involved in the construction of offshore wind energy as suppliers, subcontractors and technology partners. There are many suppliers on the market with the potential to produce raw materials, including steel and copper, design and preparation of investments or production of turbine components (including rotors, gondolas, towers and supporting structures), steel structures, transformer stations, cables, etc. National shipyards are competent to build a specialised installation and maintenance fleet, and Polish contractors have experience in the field of power outlets. Companies from all over Poland participate in the supply and service chain, which gives a development impulse for the whole country.

The same applies to other **low-carbon technologies.** In relation to solar energy, the EC BREC analysis of the Institute for Renewable Energy shows that in 2020 domestic suppliers of products and services were responsible for approx. 26% contribution to the final product. However, according to the assumptions *of the Polish Nuclear Energy Programme, up to 40% of* the value of the first Polish nuclear power plant can be implemented with the participation of Polish companies. The first power plant of this type in Pomerania in the Choczewo commune will create thousands of jobs and open up new opportunities for Polish enterprises.

Activities will also move towards investment support, enabling Polish companies to fully participate in the transformation process. Investments under the RRPs and sectoral programmes, including nuclear, will generate demand for domestic products and services, supporting the development of local value chains. The National Recovery Plan, through the **'Green Energy and Energy Intensity Reduction'** component, provides financing for investments that directly strengthen the national production potential. Modernization of the network, development of energy storage, hydrogen technologies or improvement of energy efficiency of buildings create a demand for products and services of Polish companies, increasing their competitiveness and ability to expand.

In November 2025, the Industrial Development Agency launched the **Barrier-Free Atom** (and Barrier-Free Offshore Twin) programme to help companies enter the nuclear energy sector. The aim of the initiative is to increase local content in nuclear projects, develop technological competences and facilitate access to contracts. The project includes a package of financial instruments dedicated to enterprises. The most important and new solution is a certification loan - an instrument designed for companies that need to obtain international certificates of quality and safety, conditioning participation in nuclear projects. Thanks to such a loan, companies can go through this stage faster and safer, strengthening their technological and organizational competences. In

addition, the programme includes, among others, investment loans with InvestEU guarantee, development loans for grants enabling the implementation of projects co-financed by EU funds, as well as leasing of fixed assets.

Energy efficiency is an equally important area of local content development. Polish companies can carry out energy audits, thermomodernization, modernization of heating installations and replacement of heat sources with low-carbon ones. Local content in the area of energy efficiency is not limited to the production of materials, but includes design, construction, equipment, service and technological innovation. It is also an opportunity for the development of Polish companies in the construction, installation, IT and consulting sectors, as well as for the creation of new jobs throughout the country.

In order to strengthen national capacity, it is recommended to implement a system of certification and quality standards, which, as in the case of other EU countries, will make it possible to strengthen the position of local companies on the market, while increasing the level of investment security of strategic importance for the country. Creating incentives for the implementation of modern technological solutions and establishing cooperation between scientific units and industry will allow to increase the efficiency of production, its components.

Local content in ensuring the safety of raw materials

Uninterrupted **access to critical raw materials from both Union and third countries is crucial for the security of raw materials.** In order to meet the growing demand, the European Union needs wide access to many raw materials, especially base metals. With the acceleration of the transition to a clean energy system, in addition to the recycling of raw materials, investments in new mines and refinery capacity may prove justified. At the same time, it should be borne in mind that critical raw materials deposits in the Union are scarce and the processing sector is underdeveloped. Poland can play a role in this process in the context of its mining, processing and recycling potential. For this reason, such deposits should be protected against loss of minerals or changes resulting in deterioration of the quality of minerals in the deposit, including before the development of areas above them (applies only to areas not yet built up).

Among the raw materials considered critical according to CRMA in Poland were produced: refined copper, nickel sulphate, platinum, feldspar, coking coal and helium. Copper, nickel (as standard required for batteries) and platinum are additionally classified as strategic raw materials. Poland plays a key role in providing several critical raw materials for the EU, especially in the context of the climate and energy transition and digitalisation. Two of them, i.e.: Coking coal and copper are considered critical for the EU economy and copper is also considered a strategic raw material.

The processing and recycling of raw materials is essential to ensure security and sustainable access to minerals crucial for the energy and climate transition. While recycling does not eliminate the need for investment in mining, it creates a valuable secondary source of supply that reduces mining needs and increases security of supply for mineral importing countries.

The presence on the first list of Strategic Projects of the European Critical Raw Materials Regulation, published in March 2025, and the activities of the European Raw Materials Alliance (ERMA) also give Poland strategic advantages in the processing and recycling of critical raw materials. The list includes projects that will be able to benefit from the support of the European Commission, Member States and financial institutions. Two Polish projects have been recognised by the European Commission as crucial for the security of the EU's raw materials. The above-mentioned projects concern the recovery from batteries of raw materials such as cobalt, lithium, nickel, manganese, copper and platinum group metals and the processing of rare earth elements for the production of magnets originating mainly from the Malawi mine. As part of the first project, a new plant is to be built by 2030, producing metals of critical importance to the European economy. This means that Poland wants to become an important link in the European processing and distribution of these raw materials.

The guideline to guide the national raw materials economy towards the needs of the full value chain of technologies recognised as strategic (digital, biotechnology and clean and resource-efficient technologies) in the EU (and Poland) remains crucial for the successful development of local content.

As a result, the energy and climate transition, implemented using the national potential, will become one of the key factors strengthening the resilience, innovation and competitiveness of the Polish economy in the long term.

ACTIVITIES b

- Action 7. Financial instrument – Contracts for difference for electricity generation in offshore wind farms
- Action 8. Offshore wind energy development support package

Action 21. Implementation of nuclear energy

- Action 60. Actions to support the decarbonisation of energy-intensive industries
- Action 61. Actions to support industrial competitiveness and decarbonisation cement

Action 62. Actions to support the competitiveness and decarbonisation of the chemical industry

Action 63. Actions to support the competitiveness and decarbonisation of the steel and coke industry

Action 64. Actions to support the competitiveness and decarbonisation of industries

Action 65. Supporting measures to use green energy sources and improve energy efficiency on farms under the CAP

Action 119. Development and implementation of the National Critical Raw Materials Search Program

Action 120. Efficient management of raw materials important for the national and EU economy

Action 123. Updating the State's Raw Materials Policy

- Action 147. National Contact Point for Renewable Energy
- Action 148. Digitization and standardization of investment processes for transformation Climate and Energy

Action 156. Providing support for coal regions

Action 157. Ensuring the development of coal regions

- Action 158. Awareness-raising on the energy and climate transition
- Action 161. Pilotages and demonstration programmes of best practices in transformation Climate and Energy

Action 164. Education and professional development of human resources for the economy in the field of energy and climate transition

Cell 5.1.5. Digitization and Processes and Friendships on Wednesday Sectoir IC

Under the 'European Declaration on Digital Rights and Principles for the Digital Decade' 162 (2023/C 23/01), Poland is committed to shaping a digital transformation model that is environmentally friendly and responds to the challenges of the energy and climate transition. It is therefore appropriate to pursue a policy that seeks both to increase the positive climate and environmental impact of digital technology and to reduce the negative environmental impact of the ICT sector.

The digital revolution is based on electricity and thus, with its development, its negative impact on the environment increases. According to the data, the information and communications technology (ICT) sector accounts for about 6-12% of global electricity consumption163 and about 3-5% of global greenhouse gas emissions. The increase in energy intensity of the sector is in particular related to the need to build new data centres and the development of generative artificial intelligence and supercomputers.

162 OJEU.C.2023.23.1 (link)

163 The study took into account the energy consumption of equipment, data centres and networks. Source: Digital economy report 2024. Shaping an environmentally sustainable and inclusive digital future, United Nations Conference on Trade and Development, p. 16 (link)

POLICY)

It is important to implement innovative digital solutions that by automating and optimizing processes support transformation energy and climate, w particular in carbon-intensive sectors of the economy.

In parallel, in view of the negative impact of the ICT sector on the environment, research and monitoring of digital emissions (both in the private and public sectors), building public awareness of the digital carbon footprint, as well as creating good practices and guidelines related to digital greening should be prioritised.

It is estimated that electricity demand in the ICT sector will increase significantly. According to the Polish Economic Institute, from 2015 to 2022, the increase in global energy consumption by data centers alone amounted to 20% to 70%, with over 600% increase in Internet traffic.
According to the Joint Research Cente publication164, data centres in the EU consumed around 45-65 TWh of electricity in 2022, representing 1.8% - 2.6% of total regional consumption. In the case of Poland, this is around 2% of total electricity consumption for data centres, compared to 18% in Ireland, 5.2% in the Netherlands, 4.5% in Denmark and 3% in Germany.

In addition, the demand of the ICT sector for electricity is expected to increase further in the context of, among others, the development of generative artificial intelligence, machine learning, telecommunications networks, supercomputers or cryptocurrencies. According to the forecasts to the NECPs, in both WEM and WAM scenarios, the demand for electricity in the ICT sector may increase to approx. 6 TWh in 2030 and approx. 8 TWh in 2040

It is worth mentioning that the negative environmental impact of the ICT sector is not limited to energy issues, but is also associated with a higher demand for natural resources, water resources or increased sound emission and landscape change.

ACTIVITIES BX

Action 148. Digitization and standardization of investment processes for energy and climate transformation

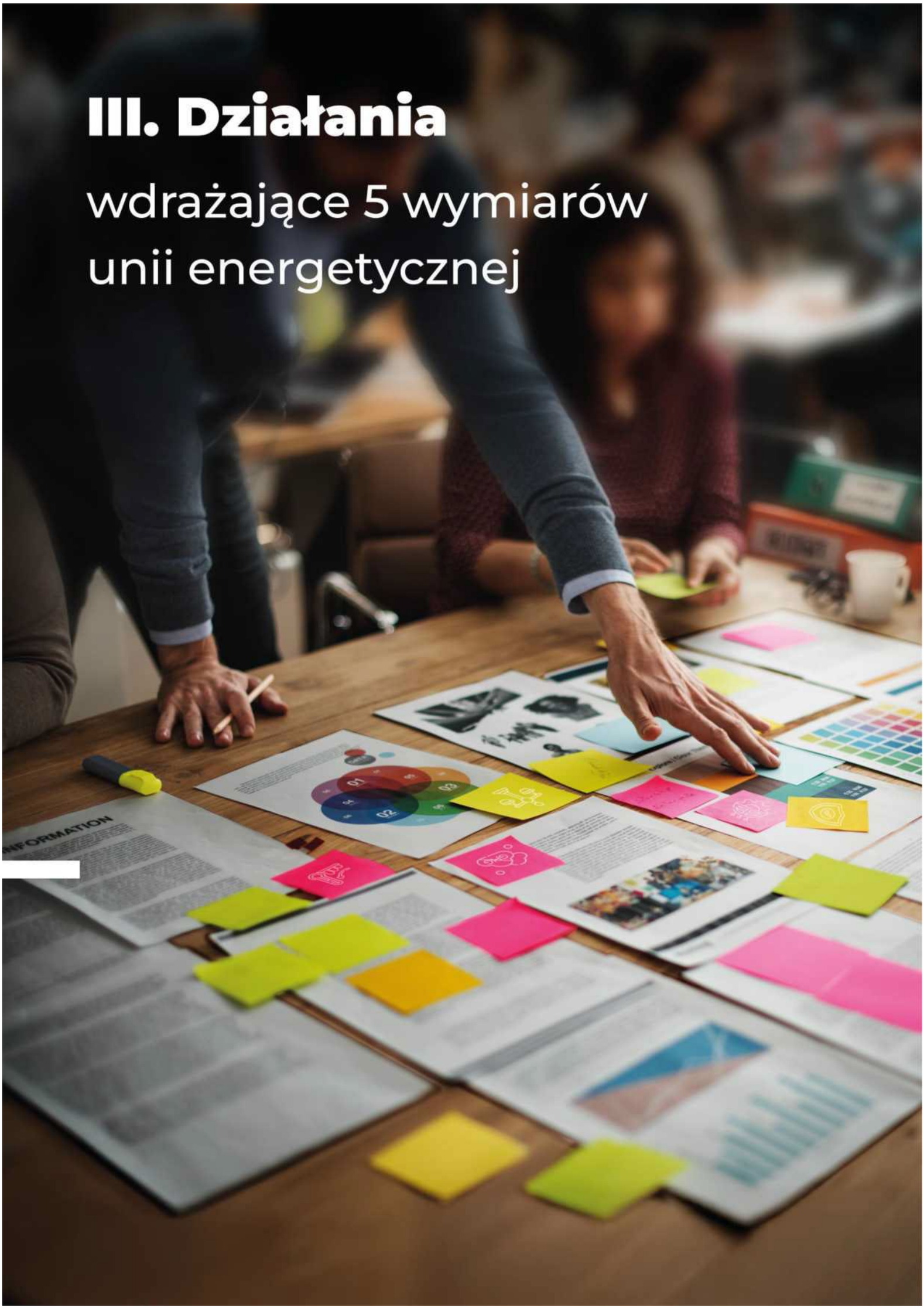
Action 151. Development of modelling centres and systems

Action 166. Reducing the environmental costs of the ICT sector

164 Energy Consumption in Data Centres and Broadband Communication Networks in the EU, JRC, 2024 (link)

III. Działania

wdrażające 5 wymiarów unii energetycznej



Dimension 1. Decarbonisation

Horizontal actions

Action } 1. Participation □and \ *and* EU-ETS

The Emissions Trading Scheme (ETS) in place in the EU since 2005 covers installations from economic sectors emitting greenhouse gases (energy, industry) and aircraft operators (flights within the EU and the EEA) and maritime shipping companies (voyages within the EU and the EEA). Each installation, aircraft operator or maritime shipping company covered by the scheme must account for its greenhouse gas emissions annually with emission allowances (EUAs). The need to purchase allowances motivates obliged entities to participate in the system to decarbonise.

PROVIDING AUTHOR

Minister for Climate

COOPERATING ENTITIES

Minister for Energy
Minister for Transport
Minister for Economic Affairs
Minister for Maritime Affairs

Action j 2. Financial Instructments y - Fundus2: Modernization of iy

Under the Modernisation Fund, it is possible to co-finance the implementation of a wide range of investments aimed at modernising the national energy system and improving energy efficiency within the priority and non-priority areas indicated in the ETS Directive. The Modernisation Fund will be operational until 2030 and will create further priority programmes offering support for investments in these areas.

As part of other activities, they were presented relevant from the perspective of the National Action Plan financed by the Modernisation Fund. The scope of supported projects should be in line with the activities of the NECP.

PROVIDING AUTHOR

Minister for Climate

COOPERATING ENTITIES

Minister for State Assets;
Minister for Construction,
town and country planning and housing;
Minister for Energy;
Minister for Public Finances;
Minister for Economic Affairs;
Minister for Maritime Affairs;
Minister for Water Management;
Minister for Labour;
Minister for Agriculture;
Minister for Development

regional;
Minister for the Environment;
Minister for Transport;

Minister for Inland Waterway Transport;
Government Plenipotentiary for Strategic Energy Infrastructure.

Action 3. Restriction of use] 3i fluorinated greenhouse gases ^ch

The measure concerns the reduction of emissions of fluorinated greenhouse gases (F-gases) by:

- restricting the placing on the market of hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF6), but also other fluorinated substances in bulk and contained in equipment and systems,
- legal requirement to carry out timely leak checks and documentation (in the Central Register of Operators),
- a ban on the marketing of F-gases in single-use containers,
- the requirement for F-gases to be recovered by certified personnel,
- use of remanufacturing or recycling factors instead of primary factors,
- the obligation to certify personnel and economic operators,
- reporting requirements (national and EU),
- Licensing obligation,
- labelling obligation,
- the mechanism for allocating quotas for F-gases,
- a ban on the use of primary F-gases with a specific GWP (global *warming potential)* for servicing or maintenance of, inter alia, refrigeration equipment, as well as air conditioning and heat pump equipment and others, in accordance with Annex 4 to *Regulation (EU) 2024/573 of the European Parliament and of the Council of 7 February 2024 on fluorinated greenhouse gases*.

CONTRACTING AUTHORITY	COOPERATING ENTITIES
Minister for Climate Affairs	-

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Electricity, heating

Action } 4. Instrument: finances

y - obligations (purchase of electricity is more likely to be generated in renewable energy installations (with a specified / m threshold)

The action consists in the obligation for the obligated seller to purchase energy from RES installations with a certain power threshold. An obligated seller is an entity that has to buy and account for electricity from renewable energy sources. The list of obliged sellers is published annually by the President of the Energy Regulatory Office.

In connection with the amendment of *the provisions of Commission Regulation (EU) 2023/1315 of 23 June 2023 amending Regulation (EU) No 651/2014 declaring certain categories of aid compatible with the internal market in application of* Articles 107 and 108 of the Treaty and Regulation (EU) 2022/2473, the Act of 27 November 2024 *amending the Renewable Energy Sources Act and certain other acts (Journal of Laws*

2024, item 1847) lowered the installed capacity threshold for the installation covered by this mechanism from 400 kW (applicable in 2025) to 200 kW from 1 January 2026.

PROVIDING AUTHOR
Minister for Climate

COOPERATING ENTITIES
President of ERO

Action } 5. y Financial Instrument - 0ZE Certificate of Origin System

Renewable energy producers who started their installations before 1 July 2016 are entitled to receive support in the form of so-called certificates, i.e. *property rights* to certificates of origin of electricity from RES. Certificates are created as a result of registration of these certificates in the register kept by the Polish Power Exchange. Certificates are also traded on the Polish Power Exchange, where they are purchased by customers and energy companies legally obliged to redeem certificates of origin for RES. The amount of the obligation is determined by regulation of the minister responsible for energy in relation to energy consumed for own use or sold to final customers. Support in the form of certificates is granted to manufacturers for a maximum period of 15 years, not longer than until 30 June 2031.

PROVIDING AUTHOR
Minister for Climate

COOPERATING ENTITIES
President of ERO

Action } 6. InstrumenI: Finance y - auction syster ri oz E

The auction system is a key element in supporting the development of renewable energy sources in Poland. In accordance with the new guidelines of the European Union contained in the Net-Zero Industry Act and on the basis of the Act of 27 November 2024 *amending the Renewable Energy Sources Act and certain other acts (Journal of Laws* 2024, item 1847) from 1 January 2026, non-price criteria will also be required to be included in RES auctions. It is also necessary to increase the importance of the stability of the energy system in the auction system by such actions as taking into account energy storage technologies, greater responsiveness of RES installations to price signals or shaping network parameters. The maximum possible use of connection power should also be sought. This approach will maximize the efficiency of investments and the effective operation of the national electricity network. Preference for auctions aimed at hybrid systems (hybrid RES installations, RES installations connected to warehouses and other solutions) does not exclude at the same time conducting RES auctions in accordance with the existing rules. Traditional auctions should continue as a complement to auctions for more developed solutions.

PROVIDING AUTHOR
Minister for Climate

COOPERATING ENTITIES
President of ERO
Administrator of Rozliczeń S.A.

Action j 7. Instrumen t finances - Contracts for difference on generation) e electricity in offshore wind farms

The measure consists in supporting electricity generators in offshore wind farms.
It will give them the right to cover the negative balance of the price of electricity generated.

This means covering the difference between the market price of energy and the price allowing generators to cover the costs of offshore electricity generation.

The support scheme for offshore wind installations is based on the concept of a bilateral contract for difference. Electricity generators in offshore wind farms that will be admitted to the support scheme will be entitled to cover the negative balance. The amount of support granted is determined as the product of the planned installed capacity of an offshore wind farm and 100,000 hours. This solution allows for optimal distribution of support over the period in which it will be provided, i.e. for a maximum of 25 years. Support shall be granted through auctions. Auctions for offshore wind energy with a total installation capacity not exceeding 12 GW are planned for 2027, 2029 and 2031 (in 2025, the auction took place on On the 17th of December, let's make it okay. 3.4 GW of capacity in offshore projects). Auctions in the following years will be carried out depending on the progress of technology development.

PROVIDING AUTHOR

Minister for Climate

COOPERATING ENTITIES

President of ERO
Administrator of Rozliczeń S.A.

Action } 8. Development support package for offshore wind energy

The activity consists in providing solutions aimed at achieving effective and sustainable development of offshore wind energy in Poland. This includes regulatory frameworks, human resources training, awareness-raising, building a national supply chain of materials and services, and issuing permits and arrangements, including environmental ones.

The package assumes the effective conduct of auctions for offshore wind farm investments and the continuation of the improvement of the process of construction of offshore wind farms in Poland by improving the efficiency and flexibility of procedures related to the construction and operation of these investments. Activities will also include the implementation of the requirements stemming from the EU Net-Zero Industry Act, so as to increase the role of Polish companies in the construction and operation of offshore wind farms through their active participation in the supply chain of materials and services (the so-called *local content)*- from the production of components to assembly, service and innovative technological solutions - while avoiding an excessive burden on final customers.

PROVIDING AUTHOR

Minister for Climate

COOPERATING ENTITIES

Minister for Economic Affairs
Minister for Energy
Minister for Maritime Affairs
Minister for Fisheries
Minister for National Defence
Minister for Internal Affairs

Action j 9. Accelerated development of onshore wind energy

Wind energy is the cheapest source of energy in Poland. Its development, after years of stagnation, is crucial for diversifying the energy system, providing cheap and secure energy and increasing the country's resilience by building a distributed energy system. Administrative, infrastructure and legislative reforms can accelerate the development of the sector, benefiting the economy and citizens.

It is also necessary to promote the hybridisation of wind farms through their integration with energy storage and other RES technologies and the development of *a cable pooling* system. This will increase the flexibility of the electricity system.

It is necessary to conduct nationwide educational campaigns against disinformation. Cooperation between media, non-governmental organizations and local governments will enable reliable information on investments in renewable energy.

In addition, the development of Polish technologies in the RES sector should be supported through national research and development programmes, financing research on modern wind turbines, energy storage systems and intelligent power grids. The development of domestic production of components for wind energy will increase the participation of Polish companies in the transformation process, which will contribute to the development of the economy.

PROVIDING AUTHOR

Minister for Climate

COOPERATING ENTITIES

Minister for Economic Affairs
Minister for Energy

Action } 10. Accelerated development of photovoltaics

The development of large-scale photovoltaics is extremely important for the energy transition. In order to fully exploit the potential of solar energy, it is necessary to eliminate a number of administrative and legal barriers, as well as to modernise the grid and implement flexibility mechanisms to optimise the use of available connection capacities.

A key step is the wider use of the mechanism of sharing the connection (cable pooling) on existing connections, which will allow the expansion of already functioning photovoltaic installations with electricity storage and other RES installations. This approach will allow for a more efficient use of available grid infrastructure, optimisation of energy production and storage, as well as increased flexibility of the electricity system.

Extensive efforts are also needed to simplify, make more flexible and streamline the investment process. It is necessary to introduce guidelines harmonising the application of the law by administrative authorities, state legal entities and network operators throughout the country. In order to adapt to market and technological changes, investors should have greater opportunities to optimise projects during the investment process.

The location of photovoltaic installations in post-industrial areas, fish ponds, industrial reservoirs and other similar areas significantly transformed by humans should be made more widely possible.

PROVIDING AUTHOR

Minister for Climate

COOPERATING ENTITIES

Minister for Agriculture
Minister for Regional Development
Minister for Energy

Action j 11. Financial instrument - system of feed-in tariffs and surcharges to oE>n market rch

The support scheme for small RES installations is based on *feed-in tariffs* (FIT) and *feed-in premium* (FIP) subsidies. Both systems are currently designed for electricity generation in biogas, biomass and water installations. In the FIP system, support is also granted to installations producing biomethane with an equivalent capacity of up to 1 MW_{el}, provided that biomethane is introduced into the gas network.

PROVIDING AUTHOR
Minister for Climate

COOPERATING ENTITIES
President of ERO
Administrator of Rozliczeń S.A.

Action } 12. Biomethane and biogas market development support package

The package consists of the following elements:

1. **Activation of the operating support mechanism in the form of auctions for biomethane** produced in installations with a net biomethane production capacity above 20 GWh per year for chemical energy of fuel (equivalent to installed capacity above 1 MW $_{el}$).

2. According to the new regulations, from 1 January 2026 (Net-Zero Industry Act and amendment of the RES Act) it is required to include non-price **criteria in auctions.** It is recommended that for new biomethane production installations account be taken of the requirement that the installation be hydrogen-free and that emissions of biomethane into the atmosphere be minimised. The recommendations also apply to biogas and agricultural biogas.

3. It is recommended that, in the following years, on the basis of the conclusions of the first auctions and observations of the development **of the biomethane market, flexibility should be introduced as regards the formation of auction baskets in relation to the scale of installations.** The auction system should also aim to cover biomethane supplied to the national gas network by means other than a direct connection of the installation to the gas network.

4. Creation of solutions aimed at effective cooperation of transmission and distribution pipeline operators with biomethane producers. In particular:

a) ensuring continuous transmission capacity for biomethane installations connected to the gas network,

b) reviewing the obligations for transparent shaping of development plans (OSPg) and implementing decommissioning plans (OSDg) for gas networks, taking into account the obligations to consult all relevant stakeholders, including the inclusion of planned investments in biomethane generation infrastructure in the operator's plans, in order to implement an effective and efficient connection and operation of the biomethane plant.

5. Directional measures taken by DSOs to investigate the possibility of introducing biomethane into the network that does not meet the standards for combustion heat, provided that the other required quality parameters are met.

6. It is recommended to activate **mechanisms stimulating demand** for biomethane in sectors and applications where its use has the greatest added value for the economy and will allow to minimize in the long term state support.

7. Strengthening **the cooperation of investors with municipal authorities in the selection of locations**, including biomethane investments in the general plans drawn up by municipalities. Conducting a nationwide educational campaign increasing public acceptance for investments in the production of biogas, agricultural biogas and biomethane.

CONTRACTING AUTHORITY **COOPERATING ENTITIES**

Minister for Climate
Affairs

Minister for the Economy of Energy
Resources
Minister for Agriculture
TSO
OSD

Action j 13. Ensuring the possibility of functioning of renewables acceleration areas (OPRO)

The action consists in particular in the implementation of regulations and legal frameworks for the designation of areas of accelerated development of RES (OPRO). These areas are to be demarcated on surfaces and areas that raise no environmental concerns, so that the time to issue permits for RES projects needed to start the investment is to be significantly reduced (not to exceed 12 months, except for offshore wind farms, for which it is to be 24 months).

To this end, it is necessary to conduct a dialogue with key stakeholders of the process, such as local government units, voivodship boards and central administration. This cooperation will allow to designate as many areas of accelerated RES development as possible, which will increase the investment potential and contribute to the dynamic energy transformation of the country.

PROVIDING AUTHOR

Minister for Climate

COOPERATING ENTITIES

Minister for Economic Affairs
General Director of Environmental Protection

Action j 14. Financial Instrument y - Priority Programme of the National Fund for Environmental Protection and Water Management - "My Current"

The action has so far consisted in co-financing the construction of photovoltaic micro-installations, energy storage facilities or heat storage facilities. In the future, efforts will be made to modify the scheme in order to increase self-consumption of the energy produced by the prosumer and to enable the prosumer to participate as actively as possible in the market through demand-side response tools. The effects of the programme should also be strengthened, for example, by increasing funding for the construction of energy storage facilities with management systems, *vehicle to grid* (V2G) chargers and energy management systems (including dynamic price agreements and multi-zone tariffs).

PROVIDING AUTHOR

Minister for Climate

COOPERATING ENTITIES

Minister for Energy
Minister for Economic Affairs
President of ERO
NFOŚiGW

Action } 15. the Financial Instrument y - Priority Programme of the National Fund for Environmental Protection and Water Management - "Energia Plus"

The program includes co-financing of various types of projects in the field of reducing the negative impact on the environment resulting, for example, in improving air quality, reducing the consumption of primary raw materials, improving energy efficiency. The beneficiaries of the scheme are entities engaged in an economic activity.

PROVIDING AUTHOR
Minister for Climate

COOPERATING ENTITIES
Minister for Energy of the National Fund for Environmental Protection and Water Management

Action 16. Financial instrument

y - Priority Programme of the National Fund for Environmental Protection and Water Management - "Polska Geotermiia Plus"

The programme includes financial support for investments consisting in the construction, modernisation or extension of an existing heat/heat/geothermal plant/existing heat generation sources, including the execution of another geothermal production well or absorbent well. In addition, it is possible to support technical treatments in existing geothermal extraction and injection holes, as well as reconstruction of a hole other than drilled for geothermal purposes, in which thermal water inflows occurred. As geothermal in Poland has limited development opportunities and geothermal projects are unpredictable, there is a high risk of non-compliance with project commitments. The following principles should be implemented in the programme:

- before launching the project, an analysis of the profitability of the investment must be carried out, indicating that the price of heat will be competitive on the market,
- milestones should be introduced in which the first one is to confirm the technological parameters of the source and its value must not exceed the investment value specified for the network concerned.

PROVIDING AUTHOR
Minister for Climate

COOPERATING ENTITIES
Minister for Energy
Minister for the Environment
NFOŚiGW

Action } 17. Development and markets U electrical energy storagesEjj and flat storages

The development of the electricity and heat storage market is crucial for the energy transition and the decarbonisation of electricity, heating and heating.

Electricity storage facilities are used, among others, to improve the stability and reliability of the operation of transmission and distribution systems, to equalize the electrical load of the system by improving the utilisation rate of installed capacity of RES generation units and mitigating negative phenomena related to variable generation from RES, to support the balancing market, to increase the reliability of power supply, to optimize the operation of prosumer installations, as well as to optimize investments in network infrastructure.

In order to perform these functions, it is necessary to develop installations of different scales, different technologies, dedicated to different users of the system. Among the technologies used in Poland, electrochemical batteries dominate - the largest in number and pumped storage power plants - which account for the largest share in the installed storage capacity, reaching 85%. However, the number of energy storage technologies available and still being developed around the world is much higher. Also in Poland, the development potential should be mobilised in order to ensure our competitiveness on global markets and to make the national economy as independent as possible from the need to reach for devices or components originating from outside the European Union.

Accelerating the deployment of energy storage technologies can be achieved through coordinated actions addressing technological, financial and administrative barriers. Interdisciplinary, inter-ministerial and cross-sectoral cooperation is needed. Actions should focus on the following priorities:

- **Widening dynamic price contracts –** creating conditions for profitable electricity and heat storage contributing, among others, to improving the efficiency of the electricity network operation,
- Launching programmes to support investments – co-financing the development of warehouses electricity and heat,
- Creation of research and development (R&D) programmes – support for the development of systems

storage of electricity and heat, their components and active materials based on readily available raw materials,

• **Increasing public awareness through educational and information activities demonstrating** the benefits of energy storage, such as: lower electricity bills, optimal use of renewable energy, greater independence and energy security,

• **Launching an information campaign** – countering disinformation and raising awareness of energy storage;

• **Pursuing the implementation of certification and approval of energy storage systems and technologies** – when designing support programmes for storage facilities, it is advisable to promote high-quality solutions with a particular focus on cybersecurity issues. Undertake inter-ministerial work on the scope and conditions of certification and approval – the Minister for the Economy plays a leading role in cooperation with the following ministers and the Central Office of Measures.

CONTRACTING AUTHORITY	COOPERATING ENTITIES
Minister for Energy 0 -0 Minister for Economic Affairs (within the scope of Minister for Economic Affairs, type-approval) Minister for Information Technology	Minister for Climate Affairs President of the Central Office of Measures

Action } 18. Citizen development! and community :i energeticclfi (OSI E)

The development of civic social energy is a key element of Poland's energy transformation. Local energy generation systems, based on renewable sources, can form the foundation of a modern, distributed and flexible power system. The development of OSE will contribute to increasing energy independence, reducing energy costs for citizens and businesses, and improving system security by decentralising production. Moreover, the development of these solutions will increase public acceptance of renewable energy sources, including onshore wind energy, as it will allow local communities and companies to use their own energy sources, which will translate into direct economic benefits for residents and the companies in which they work.

The action assumes the development of **citizen energy communities (CECs),** which will allow local communities and industry to produce energy, inter alia, for their own needs, using the existing electricity grid and direct lines. In the future, the development of OSE should be monitored and facilities and improvements should be made to:

1. **Access for all operators to the existing electricity network at** low and medium voltage levels and for customers connected to that network, on a simplified basis, provided that intra-area balancing is ensured and grid constraints are taken into account. It is permissible to upgrade/extend the network on commercial terms (see point 4). The price of access should correspond to the actual cost of maintaining the network made available, with an additional margin. Access to the network should be implemented in distribution nodes on the basis of transparency.

2. **Rights to connect RES generation capacity to distribution nodes at** low and medium voltage level, provided that balancing within areas is ensured and network constraints are taken into account, at cost conditions analogous to the first point.

3. **Transmission rights between distribution nodes , which are located on the road between the nodes indicated in points 1 and 2, provided that intra-area** balancing is ensured and network constraints are taken into account, Transmission should be carried out on the same cost basis as access to the network.

4. In the absence of adequate connection or transmission capacity and thus the need to expand the nodes or network elements, the costs of expansion should be borne by the entity notifying the desire to connect. The scope of these investments should be agreed through technical dialogue. At the same time, these fees must be determined on market terms, including the possibility of implementing the investment through external entities, selected in an open tender procedure.

The creation of local energy generation and consumption systems will reduce energy costs for final customers,

increase energy security by decentralising the system and reduce the need for costly investments in the expansion of transmission networks. Moreover, the active participation of local communities in the production and use of renewable energy will increase the acceptance of RES technologies, especially onshore wind farms, which will become part of the local power system. Thanks to this, residents and businesses will be able to use the energy generated for their needs, which will translate into real savings and stability of supply.

	CONTRACTING AUTHORITY	COOPERATING ENTITIES
A-A	Minister for Climate Affairs	Minister for Energy Minister for Regional Development OSD President of ERO

Action } 19. Development and improvement of the functioning of energy cooperatives: znych

Energy cooperatives can play a key role in the energy transition, while supporting local energy security and RES development. However, their functioning is hindered by legal and administrative barriers or restrictions resulting from the rules of operation of distribution networks. It is necessary to continuously monitor the functioning of energy cooperatives in order to identify all existing barriers and identify ways to eliminate or reduce them.

Local governments have doubts about organizing annual tenders for the purchase of energy by local governments, even if they have their own energy cooperative. Consideration should be given to the possibility of local government units purchasing energy from another member of the same energy cooperative without the need to launch tenders, which could ensure the financial stability of local government and cooperatives, as well as on a non-discriminatory basis other forms of energy communities.

In the long term, the area of activity of energy cooperatives should depend on the topography of the network so that they perform a supporting function in the national electricity system.

	CONTRACTING AUTHORITY	COOPERATING ENTITIES

Minister for Climate Affairs

Minister for Energy
Minister for Regional Development
Minister for Rural Development
OSD
President of ERO

Action and 20. Development and Cluster \/Energy

Energy clusters are a platform for cooperation between local entities, including companies, educational institutions, residents, as well as local government units (JST). Their common goal is to promote and develop clean, local renewable energy, increase energy self-sufficiency of regions and reduce energy costs for local communities.

JSTs, thanks to the possibility of initiating and coordinating energy activities at local level, are crucial for the development of energy clusters. As part of the action, analyses will be carried out to identify possible legal solutions that will improve the operation of energy clusters and define a business model based on the function that clusters can perform in the distribution system, e.g. by providing a local balancing service.

As part of the planned action, studies will be carried out on the future of the support mechanism for energy clusters, in particular at legislative level. The aim of these analyses will be to identify instruments that can increase the efficiency, stability and scale of energy clusters as one of the key elements in the development of distributed energy.

Work on legislation on energy clusters should also include creating incentives for their activation in the energy market as actors with real possibilities to balance and stabilise the electricity system.

Minister for Energy

PROVIDING AUTHOR

Minister for Climate

COOPERATING ENTITIES

Minister for Regional Development
OSD
President of ERO

Action and 21. Implementation of nuclear energy

The activity is specified in detail in *the Polish Nuclear Energy Programme* (PPEJ) and assumes the construction and commissioning of two nuclear power plants with a total installed capacity of approx. 6 to OK. 9 GW e based on proven large-scale generation III(+) nuclear reactors and creating the conditions for further development of nuclear energy.

The next stage of strengthening the potential of nuclear energy in Poland can be considered, among others, the commercialization of new models of nuclear reactors, including the first models belonging to the category of so-called small modular reactors. An element of the discussion on their implementation should be the development of an optimal model of project support, while maintaining equal treatment of investors and technological neutrality, aimed at streamlining investment decisions. Nuclear energy, including SMR, can be used to fill the gap after the stable capacity of conventional sources, including filling staffing gaps in regions strongly experienced by the energy transition. The creation of conditions for the implementation of new reactor technologies should be carried out in accordance with the principle of technological neutrality and the highest standards of nuclear safety.

The effective implementation of nuclear energy also requires a number of accompanying actions. In particular, activities related to the construction of staff and competences for the nuclear program will be implemented among all stakeholders of the program, conducting research and

development in the field of nuclear energy technology (with particular emphasis on the necessary multidisciplinary research), strengthening the regional potential, creating the nuclear technology value and supply chain taking into account the national potential, strengthening the national potential in raising the indicator of the so-called. "local content", ensuring proper management of radioactive waste (both from nuclear energy and other activities using radioactive sources), awareness-raising and public communication, as well as regular review and update of the necessary regulations. These activities are detailed in the PINC.

CONTRACTING AUTHORITY
Minister for the Economy of Energy Resources

COOPERATING ENTITIES
Minister for Energy
Minister for Climate Affairs

Action 22. Financial instrument y - NFOŚiG \ programme / "Electroenergetyka - Intelligent energy infrastructure"

The action includes the development of infrastructure enabling communication of all parties to the electricity distribution process through the installation of remote reading meters (VOCs, the so-called smart meters) together with IT and management infrastructure at final customers. This solution should contribute to optimizing the operation of the network, faster handling of electricity market processes and enabling the implementation of DSR mechanisms. *Demand Side Response*). The action aims to develop energy infrastructure, with a particular focus on its digitalisation. A key element is not only the remote reading of energy consumption, but also the implementation at local level of flexibility mechanisms addressing in real time or close to real-time the problem of the negative effects of the application of restrictions for network reasons. The program is designed to provide financial support for the implementation of the statutory schedule for the installation of remote reading meters at least 80% of final recipients in 2028.

RULE OF THE MINISTER FOR
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COOPERATING ENTITIES
Minister for Information Technology
Minister for Climate Affairs
NFOŚiGW

Action j 23. Measures to increase the power system's flexicurity with regard to di c) the generation of enei rgii from renewable energy sources and to adapt ido anticipatedcl hi zmicin KSE

The action consists in providing appropriate legal solutions and developing the concept of mechanisms for market integration of RES in connection with the challenges of increasing production and installed capacity in the PPS, including market services provided by RES, taking into account the location of RES in the network, cooperation of RES with warehouses and services affecting the balancing of the electricity system and the conditions for the operation of the electricity network.

RULE OF THE MINISTER FOR

COOPERATING ENTITIES
Minister for Climate

Affairs

Action and 24. Intelligent EnenJia Management

The measure includes the development of infrastructure enabling effective exchange of information between electricity market participants through the creation of a central energy market information system and the installation of remote reading meters (so-called smart meters) with IT and management infrastructure at final customers.

The central energy market information system (CSIRE) set up and supervised by the energy market information operator (OIRE) will enable distribution and transmission system operators (OSDe and TSOs), electricity sellers and balance responsible entities to start exchanging data, among others to settle for the sale of energy and its supply or change the electricity seller.

Thanks to the introduction of CSIRE, final customers, including prosumers, will gain, among other things, free access to data on their own energy consumption points, including metering data. The benefits for PPS and electricity system operators include improving the efficiency of the use of PPS resources by, among others, better matching energy consumption with its production, in particular from RES, integrating retail market processes and system markets using measurement data available in CSIRE, improving the quality of measurement data through the use of uniform quality standards and benchmarks, the possibility of using a uniform standard of aggregated measurement data to fulfil statutory obligations. CSIRE will also allow access to selected aggregated data for the development of new services, analytical and research work and journalistic studies. CSIRE will operate on the basis of the highest standards of data access and energy management in smart energy infrastructure as set out in the OIRE Transmission Network Operation and Traffic Manual (IRiESP-OIRE).

The deployment of *remote reading meters is an essential element to unlock the full potential of smart electricity management.* Article 11t of the Energy Law Act sets out the following timetable for the installation of VOCs:

- 2027 – at least 65% of final customers,
- 2028 – at least 80% of final recipients.

Through the interface to the home network infrastructure system, it is possible to access metering data from smart meters in real or near real time. VOCs are also necessary for customers who want to use dynamic price contracts, as well as to provide flexibility services for PPS. The uptake of VOCs will contribute to an increase in the number of customers actively participating in the electricity market.

As part of the action, the removal of legal obstacles will play an important role, including, among others, updating *the Regulation of the Minister for Climate and the Environment of 22 March 2022 on the measurement system* in order to correct the provisions verified by the practice of its application, as well as introducing changes enabling the optimization of processes, introducing modifications resulting from technological development and the availability of higher-end devices and related to the launch of CSIRE.

Information campaigns will also be needed to explain to energy market users the principles of smart energy management and to encourage consumers to switch from the passive use of electricity to the role of active participants in the electricity system.

RULE OF THE MINISTER FOR

COOPERATING ENTITIES

Minister for Climate Affairs
TSO
OSD

Action and 25. Development and modernisation of electricity transmission and distribution networks

The measure includes support at national level in the preparation and implementation of investments in the expansion and modernisation of electricity networks. Network investments are supported both through financial support (e.g. cohesion policy, RRP, Modernisation Fund, CEF) and regulatory solutions. The development of the network should take into account, inter alia, the following priorities:

1. Accelerating the energy transition and increasing the security of electricity supply by increasing the number of facilities that can be connected to the electricity grid. The electricity grid should be expanded in such a way as to enable and facilitate the connection of new installations, in particular RES installations and energy storage facilities. The further development of the grid should be pursued, in particular in areas with favourable conditions for the development of RES – including onshore wind farms and PV installations.

2. The expansion of the network should also take into account the expansion and construction of connections to electrified district heating systems, with a view to the system integration of electricity and district heating.

The aim should also be to work towards the development of a platform providing transparent access to information on connection capacities in individual network nodes. Major operators should set up publicly available information platforms on which information will be published and regularly updated on, inter alia, available connection capacities, requests for connection conditions submitted, the status of the examination of an application, rejected connection requests or the criteria used to calculate the capacity of the network available for new connections. In addition, electricity system operators will be required to create the possibility to submit connection requests and monitor their status in a fully electronic process.

CONTRACTING AUTHORITY

Minister for State Assets, Government Plenipotentiary for Strategic Energy Infrastructure

COOPERATING ENTITIES

President of ERO
Minister for Energy
Minister for Climate Affairs
OSD
TSO

Action } 26. Enhancing the efficiency of the use of central < that of free upra\vnień to reduce emissions and greenhouse gasescl 1i in district heating!

The action will consist in changing the regulations in the area of the principle of shaping tariffs for the sale of heat, so that they take into account the accounting of funds from free CO_2 emission allowances and determining the conditions for the use of funds generated as a result of free allocation of allowances to finance investments.

RULE OF THE MINISTER FOR

COOPERATING ENTITIES

President of ERO
Minister for Climate Affairs

Action j 27. Financial Instrument y - Transform Programme : ji District Heating System

The programme will build new and transform existing district heating systems based mostly on fossil fuels into systems where at least 50%, and in the future

75%, of the energy will come from renewable energy sources and electricity from the electricity grid. The action assumes that district heating systems should be upgraded towards electrification and integration into the electricity grid. A key aspect of the system's functioning will be energy storage, ensuring flexible cooperation with the network.

Ultimately, the aim should be to ensure two-way integration of the district heating system with the electricity system (the so-called *sector coupling*). This means that during periods of excess electricity, the district heating system should consume and store this energy. However, in periods of electricity scarcity, the district heating system should be able to supply electricity produced in the cogeneration system, while storing the resulting heat.

The measure includes support for both centralised systems where heat is supplied from a single main source and distributed systems where electrified nodes produce heat at multiple network points or directly at final customers. It is also possible to finance hybrid solutions combining both models.

Funding will support solutions active in network nodes, such as large-scale heat pumps, large-scale electric boilers, large-capacity heat storage facilities, solar collectors, renewable electricity generation capacity and peak sources based on natural gas or biomethane/hydrogen in cogeneration. The digitisation of the network should also be supported in order to achieve the best possible control and optimisation of work. It will also finance end-user solutions such as heat pumps, local heat storage facilities, RES installations, heat distribution systems in buildings and control systems. Other elements of the upgrade of the network or of the customer systems may also be supported in order to achieve the best possible network performance in terms of decarbonisation or cost optimisation.

Support shall also cover other necessary elements of network operation, including connections and systems enabling integration with electricity grids. It is also possible to upgrade the transmission network, but to a limited extent and only to the necessary needs. The aim should be to gradually reduce the parameters of the network, i.e. to strive for low-temperature networks that also enable heat transfer by objects with predominant heat gains. Under the above-mentioned new financial instrument, funding for the development of biomass-based systems in the commercial energy sector may be limited in connection with ensuring the supply of solid biomass for the woodworking market (in accordance with the cascading principle). This is important in the context of possible restrictions on the availability of domestic sustainable biomass and the potential dependence of the district heating sector on imports of solid biomass.

The support system can be implemented by capacity categories of district heating systems, e.g. below 10 MW, from 10 to 100 MW and above 100 MW, which will allow for more effective adaptation of activities to local needs.

RULE OF THE
MINISTER FOR

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COOPERATING ENTITIES
Minister for Climate Affairs
NFOŚiGW

Action and 28. Power to Heal technology development: and heat storage in Polsc e

The development of the heat pump market is crucial for the energy transition, the improvement of air quality and the decarbonisation of heating, ventilation and air conditioning systems. In order to accelerate their uptake, coordinated action should be taken to address technological, financial and administrative barriers, in particular:

- Investment and operating costs should be reduced by introducing dynamic price contracts with an additional premium where heat pumps are used as the main source of

heating or cooling and where heat pumps are used as a second source of heat or cold where the main source is more efficient. Extensive thermo-modernisation of buildings is also essential – a key element in reducing operating costs;

- Administrative procedures should be simplified by digitising grant award processes, as well as introducing uniform guidelines for the installation and operation of heat pumps. It is also necessary to provide a nationwide information campaign that will eliminate disinformation and provide consumers with reliable data on the benefits of using heat pumps,
- It is necessary to increase the number of qualified installers by extending training programmes and certification schemes. Preferential conditions should be created for manufacturing companies to develop domestic component production and reduce import dependency,
- In order to allow for the full integration of heat pumps into the electricity system, it is necessary to modernise the grid and implement flexibility mechanisms to optimise the use of renewable energy. The development of large heat pumps in district heating and industry should also be supported.

Taking these measures will accelerate the development of the heat pump market, increase its availability and competitiveness, ensuring its key role in the energy transition and reducing emissions in the heating sector.

RULE OF THE MINISTER FOR

COOPERATING ENTITIES

Minister for Construction, Planning and zoning and housing President of ERO

Actions 29. Development, market of domestic technologies and solutions supporting1 electrification of district heating;3 and technoloc jii emission-free 1ych

The development of the market for domestic technologies such as electric boilers, heat storage, solar collectors and others is an important element in the transformation of the district heating sector towards reducing the costs of heat production and increasing the flexibility of the electricity system. To accelerate their deployment in district heating, coordinated action is needed to address technological, financial and administrative barriers, in particular:

- Preferential conditions should be created for domestic producers of technologies supporting the electrification of district heating by, inter alia: rewarding local components in investment support schemes, facilitating access to finance for companies developing the above-mentioned technologies,
- Simplify administrative procedures for investments in the above-mentioned technologies, including speeding up the process of obtaining connection conditions and simplifying environmental requirements for zero-emission installations.

Taking these actions will accelerate the development of the market for technologies conducive to the integration of the heating and electricity sector, increase their availability and competitiveness, and support domestic industry. The use of heat storage technologies cooperating with various sources can reduce heat prices in the system heating and heating sector.

RULE OF THE MINISTER FOR

COOPERATING ENTITIES

Minister for Construction, Planning and Land Use and Housing Minister for Climate

Action and 30. Acceleration of 2| investment process in district heating systemo> /vym

Accelerating the investment process in district heating is key to achieving the objectives of the energy transition. The implementation of investments in low- and zero-emission sources, network modernisation and heat storage systems requires the removal of procedural, financial and organisational barriers. In order to speed up the investment process, the following actions should be taken:

- Simplifying administrative procedures and shortening the path of obtaining construction permits, environmental permits for new generation sources and district heating networks,
- Strengthening the role of local governments in planning district heating investments - implementation of the obligation to create local district heating transformation plans with clearly defined investment priorities,
- Facilitation for projects supporting the coupling sector - support for projects integrating heating with RES, the power sector and local energy storage.

CONTRACTING AUTHORITY

Minister for Energy
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COOPERATING ENTITIES

Minister for Construction, Planning and zoning and housing
Minister for Climate Affairs

Action 2 31. Support for high-efficiency cogeneration icja

The action aims to increase the share of high-efficiency cogeneration (CHP) in the national energy and heat mix in order to improve energy efficiency, reduce greenhouse gas emissions and increase energy security through combined heat and power generation. To this end, the following measures should be taken:

- Developing a new support model for high-efficiency cogeneration providing stable conditions for investment through a market-specific cogeneration premium scheme and targeting low-carbon projects based on gas, biomethane, biomass and hydrogen;
- Development of cogeneration as part of the transformation of district heating systems towards efficient district heating systems. The support will be focused on the integration of CHP with heat storage, RES-heat installations and intelligent heat management systems.

RULE OF THE MINISTER FOR

COOPERATING ENTITIES

President of ERO

Action } 32. Financial instrument y - Priority Programme of the National Fund for Environmental Protection and Water Management (NFOŚiGW) - "Making thermal waters available in Poland

The assumption of the program is to support the performance of geological works and works related to the exploration and recognition of thermal water deposits for their availability for heating purposes. The beneficiaries of the programme are local government units and their associations. In the case of this programme, emphasis was placed on co-financing projects located in the most prospective areas in terms of geothermal conditions.

PROVIDING AUTHOR

Minister for Climate

COOPERATING ENTITIES

Minister for the Environment
NFOŚiGW

Action 33.)'s Finance Plan for Heat Transformation!wa

Transformation of district heating is a huge organizational and financial challenge, which is why it requires support. In order to respond to this call, a support plan for district heating will be developed, which should be based on effective financial assembly, enabling the implementation of modernisation and investment projects in the district heating sector. The plan should provide comprehensive financial support, combining grants and loans implemented by different institutions under a single support programme.

The financing of heating transformation projects should be coordinated and based on cooperation between different institutions, and not implemented in detached programmes. Individual entities, such as the National Fund for Environmental Protection and Water Management (NFOŚiGW), Bank Gospodarstwa Krajowego (Bank Gospodarstwa Krajowego), commercial banks and funds, should operate as part of a common strategy, covering different stages and forms of support.

Such a financial assembly model will allow for effective support for the heating sector, enabling the infrastructure to be modernised in accordance with the activities described in the NECP, while maintaining the financial stability of enterprises.

RULE OF THE MINISTER FOR

COOPERATING ENTITIES

Minister for Climate Affairs

NFOŚiGW

Transport

Action 34. Intelligent Transport Systems (II rs)

The action covers the provision of services related to different modes of transport and traffic management, allowing better information to different users and ensuring safer, more coordinated and ‘smarter’ use of transport networks. The system should enable active traffic management and effectively provide the necessary information for both infrastructure managers and vehicle users to move in the shortest possible time and by the shortest route. The system should also ensure that the data and information generated for its construction as well as by its operation provide a source for multimodal travel support services.

CONTRACTING AUTHORITY

Minister for Transport

COOPERATING ENTITIES

Minister for Regional Development.

Action and 35. Enhanced'E>cohesion and support)//a standai r du roads krajov ych

The action consists in the creation of a coherent network of national roads ensuring the efficient operation of road passenger and freight transport. In particular, the completion of the TEN-T network will allow the deployment of recharging stations on the road network. The measure, in particular the construction of a new route outside the city and/or dense housing development, will also allow transit traffic to depart from cities, optimise traffic flow – which will improve fuel and emission efficiency and give JTS greater opportunities to pursue a sustainable local transport policy.

CONTRACTING AUTHORITY

Minister for Transport

COOPERATING ENTITIES

Minister for Regional Development.

Action } 36. Financial Instrument y - Fundus: From: development of bus transport<ch
the Uźś character J

The action includes financial support for local government units which organise public transport in the performance of their own tasks in the field of public service bus transport, excluding public transport. The subsidy is granted in the form of a subsidy to the deficit amount of a single communication line.

Good collective transport means not only better energy efficiency and lower energy consumption, but also the elimination of the widespread transport exclusion in Poland. A number of barriers such as high ticket prices, lack of connections or connections that are too scarce or at inadequate times, lack of coherence of transport networks and coordination of timetables require the development and implementation of appropriate solutions.

CONTRACTING AUTHORITY

Minister for Transport

COOPERATING ENTITIES

Action 37. Development of urban transport networks fch

The action consists in the creation of a coherent urban road network, ensuring the efficient operation of road, rail and active mobility in cities and functional urban areas. The network should build on the adopted *Sustainable Urban Mobility Plan*, required for the urban nodes listed in Annex II of *Regulation (EU) 2024/1679 of the EP and of the Council of 13 June 2024 on Union guidelines for the development of the trans-European transport network* . In the case of cities that are not urban nodes, the basis for the elaboration may be another strategy document in the field of urban transport planning, which should include a plan for the sustainable development of public collective transport (complying with the requirements of the Public Transport Act).

The development of sustainable transport in cities clashes with infrastructure optimized for passenger cars, which are the least energy efficient means of transport (in a number of ways that also negatively affect the urban fabric). Roads should be developed in such a way as to ensure the development of collective transport based on rail transport and low-emission bus transport. In this regard, access infrastructure to connecting points and Park and Ride infrastructure should be developed. Those networks and connecting points should be equipped with ITS and C-ITS (cooperative intelligent transport systems) infrastructure and services, enabling priority to

be given to public transport and providing dynamic information for drivers and passengers. Traffic management centres should cooperate with public transport management systems, other road managers and local dynamic maps for hubs.

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CONTRACTING AUTHORITY

Minister for Transport

COOPERATING ENTITIES

Minister for Regional Development

Action } 38. Development of zero-emission public transport in cities

The action consists in supporting sustainable urban mobility, including through co-financing of projects aimed at reducing the level of emissions from public transport. This includes replacing rolling stock with zero-emission rolling stock, building, rebuilding and upgrading infrastructure for urban transport, and digitising the urban mobility system. These programmes will be implemented by the National Fund for Environmental Protection and Water Management and the Centre for EU Transport Projects.

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PROVIDING AUTHOR

Minister for Climate

COOPERATING ENTITIES

Minister for Transport
Minister for Regional Development
Minister for Energy
the Centre for EU Transport Projects
NFOŚiGW

Action and 39. Creation of clean zones; J about transport

The action consists in identifying areas in cities where the traffic of emission vehicles is limited. In the case of cities with more than 100,000 inhabitants, where the NO_2 emission standards in the air are exceeded, the creation of zones is mandatory.

Charges should be introduced for entry into the zone, relatively high for high-emission vehicles, lower for low-emission vehicles and vehicles with a lower weight. A system should be sought whereby charges are calculated automatically through a monitoring system that allows the identification of unauthorised vehicles circulating in the zone and effective enforcement. Proceeds from this source should be used to co-finance public transport in the city, including the possibility of providing residents with free public transport.

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RULE OF THE MINISTER FOR

COOPERATING ENTITIES

Minister for Climate, Minister for Transport

Action 40. Instrument] / financial support for electromobilists

The action includes a number of financial support programmes for the development of electromobility, in particular a co-financing programme for the purchase and leasing of passenger cars, the aim of which is to support the purchase or leasing of electric vehicles by the widest possible range of recipients.

Bearing in mind the need to transform the road haulage sector, in order to maintain the competitive position of Polish entrepreneurs on the European market, support will be provided

vehicles of category N2, N3, construction of high-power charging infrastructure and connection electricity necessary to ensure the power supply of recharging pools.

RULE OF THE MINISTER FOR

COOPERATING ENTITIES

Minister for Transport
Minister for Climate Affairs
NFOŚiGW

Action } 41. Instrument]/ non-financial support:ia electromobility

In order to address barriers related to the development of electromobility, the ongoing activities should be continued and further initiatives should be taken:

1. In order to overcome the barrier of a high purchase price for a *battery electric vehicle* (BEV):
a. maintaining excise duty exemptions for electric passenger cars (BEVs) for passenger cars with internal combustion engines,
b. maintenance of preferential depreciation arrangements for BEVs in relation to ICE vehicles,
c. adoption of new fiscal policy instruments, including dedicated solutions for companies (reliefs, preferential tax and fee rates),
d. maintaining the existing privileges – free parking in paid parking zones, the possibility of using bus lanes,
2. In order to overcome the barrier of lack of charging infrastructure, the need to purchase a charger, fear of battery exhaustion, fear of slow charging, fear of queues:
a. *in multi-family and non-residential buildings:*
• installation of recharging points in new buildings and buildings undergoing major renovations (residential, non-residential, public buildings),

• procedural facilitation for the installation of recharging points in residential buildings.

b. *in public charging infrastructure:*

• installation of recharging points in public buildings, service points and office buildings,

• development of a network of high-power recharging pools along major national roads and motorways,

• enabling and popularizing the installation of charging points near the streets (posts, lanterns),

• easy and friendly service – places adapted to the needs of persons with disabilities, *ad hoc* card/proximity payments, transparent, pricing policy, online station information, enabling e-roaming.

3. In order to overcome the barrier of high electricity price in chargers:
a. maintaining an e-tariff for operators of recharging points,
b. implementation and dissemination of the transport credit system,
c. implementation of solutions enabling smart and bi-directional charging.

4. To overcome the barrier of disinformation and the existence of myths:
a. educational campaigns promoting electromobility,
b. clear communication of long-term transport policy objectives and a stable and predictable legal framework.

CONTRACTING AUTHORITY

COOPERATING ENTITIES

Minister for Transport
Minister for Climate Affairs
Minister for Planning and Development
Spatial and Housing
Minister for Public Finances

Action } 42. Modernization3 tabon Li and railway infrastructure \irej and the expansion of the locust and regional infrastructure ry railway \ rej, as well as the construction9and new railway lines

The actions aim at supporting investments in the area of modernization of railway infrastructure, modernization of rolling stock for passenger and freight transport, modernization of railway stations. In addition, investment will be supported in the further development of the railway network, the construction of new railway lines, point investments, such as the construction of new stops, passes or railway connections, as well as the implementation of rail traffic management systems. Interconnection and access infrastructure and Park and Ride solutions should also be developed, and location, availability, timetables and driving conditions data, including dynamic data, should be made available through *the National Access Point for Dynamic Passenger Information services .*

CONTRACTING AUTHORITY

COOPERATING ENTITIES

Minister for Regional Development

Action } 43. Development of intermodal transport and JO

The objective of the action is to develop intermodal transport by shifting heavy goods transport from road (TIR) to rail, which will increase transport efficiency, reduce the negative impact of road transport on the environment and significantly reduce CO2 emissions.

Intermodal terminals outside the terminals of state-owned railway companies are mainly private investments. They develop taking into account convenient conditions for the transport of goods in individual locations of the country, including sea terminals or, for example, seaports. Suchy Port Małaszewicze on the New Silk Road.

Terminals receive financial support for the expansion of linear and point infrastructure in programmes with EU support such as the Connecting Europe Facility 2021-2027 (CEF2), European Funds for Infrastructure, Climate, Environment 2021-2027 (FEnIKS), the National Recovery and Resilience Plan (NRRP 2024-2026).

The digitalisation of intermodal transport in Poland aims to harmonise the transposition *of Regulation (EU) 2020/1056 of the European Parliament and of the Council of 15 July 2020 on electronic freight transport information (eFTI).* These platforms are also mentioned in the work on the revision *of the draft EP and Council Directive amending Directive 92/106/EEC* (combined transport) concerning in particular intermodal transport. In particular, eFTI digital platforms will allow real-time monitoring of intermodal transport on different modes of transport on an ongoing basis and can be used to qualify such transport for possible support measures.

In parallel, a wide information and promotion campaign should be carried out, highlighting the advantages and benefits of using intermodal transport, including the possibility of drivers working only on sections of the so-called. ‘last mile’.

The action also requires intensive research and development in the field of, for example, the development and implementation of a standard for special railway wagons, which will allow fast, autonomous loading and unloading of semi-trailers of tractor units or entire sets without the need to use adapted transhipment stations. It is also necessary to develop other innovative technologies that will effectively support the development of intermodal transport.

CONTRACTING AUTHORITY

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Minister for Transport

COOPERATING ENTITIES

Action } 44. Development of electrification :jji road* c:h freight transport) fch (TSL industry)

The *transport, forwarding and logistics* (TSL) sector accounts for 6% of Poland's GDP and nearly one million jobs. The Polish TSL industry is not only one of the key elements of the Polish economy, but also the foundation of European supply chains, providing as much as 20% of all logistics services in the European Union. Its decarbonisation, with the transition to zero-emission vehicles, is a critically important process that requires support to ensure that it remains competitive. Given that the electrification of heavy goods transport globally and in Europe is at an early stage but is developing rapidly, action needs to be taken in order of problem areas:

1. Cost structure beneficial for electric trucks:

a. Increased differentiation of the electronic toll rate depending on the level of CO2 emissions and pollutants generated by the heavy-duty vehicle, which should lead to further systematic modernisation of fleets, including their electrification,

b. Application of a preferential electronic toll rate for heavy-duty electric vehicles as less polluting than emission vehicles.

2. Infrastructure development:

a. Perpetual entitlement for electric vehicles used for *last-mile* distribution to use bus lanes in cities,

b. Introducing facilitations for obtaining approvals for the construction of recharging points within existing transhipment terminals and storage facilities and streamlining the process of obtaining conditions for connection to the grid for RES installations,

c. Greater diversification of forms of support in terms of co-financing for the construction of charging infrastructure dedicated to heavy-duty vehicles,

d. Obligation for investors to equip facilities with electric vehicle charging infrastructure, installation of RES sources and energy storage of all newly constructed logistics facilities (within a shorter time horizon) and to upgrade existing ones (within a longer time horizon).

3. Preferences for the most innovative companies:

a. Creation of a system in which owners of electric vehicles could obtain preferential rates for compulsory fleet insurance,

b. Securing by the State Treasury of financial instruments dedicated to financial institutions exclusively for products financing the replacement of the combustion fleet with electricity with a preference for SMEs,

c. Setting up a CO2 emission allowance exchange dedicated to the transport sector, which will enable pioneers to sell surplus allowances at market prices – and finance further investments.

4. Availability:

a. Educational campaign for companies from the TSL sector on the benefits of implementing low-emission solutions,

b. Support for small and medium-sized companies in the implementation of solutions in the field of ESG reporting, CO_2 emission monitoring, etc.,

c. Creation of a compendium of knowledge for the TSL industry as well as supplementing the driver training programme with reliable information on electromobility (including the available possibilities of optimising the cost of using electricity to charge electric vehicles in private installations, i.e. e-tariff, dynamic price agreement, RES installation, power storage, information that in the case of driving a passenger vehicle "in the city" in 99% of cases it is enough to charge from a private source, information that the range also depends on the weight of the load carried, etc.).

RULE OF THE

MINISTER FOR

COOPERATING ENTITIES

Minister for Transport
Minister for Climate Affairs
Minister for Public Finances

Action 45. Ensuring availability of c:i alternative fuels in maritime ports

The measure includes the expansion of alternative fuels infrastructure for the bunkering of ships with liquefied natural gas and the supply of electricity to ships in Polish ports on the TEN-T network. LNG can also be delivered to ships by means of tanks – the AFIR Regulation does not require the construction of a permanent infrastructure in this respect.

CONTRACTING AUTHORITY

Minister for Maritime Affairs

COOPERATING ENTITIES

Minister for Climate Affairs
Minister for Transport
Minister for the Economy of Energy Resources

Action j 46. Implementation of innovative technologies in the management of seagoing vessels

The action includes the use of advanced navigation systems, marine environment monitoring, ship control automation and the use of satellite data and sensors to optimize routes and avoid collisions. It is also the development of maritime communication and the integration of technologies to increase the efficiency and safety of shipping. The action is aimed at optimising maritime transport, in particular energy savings. The scheme should take into account transport preferences for zero-emission ships.

CONTRACTING AUTHORITY

Minister for Maritime Affairs

COOPERATING ENTITIES

Minister for Climate, Minister for Transport

Action j 47. Transformation of craft in inland waterway transport □tej i eżrzej eżnej

As part of the action, support is planned at the research, investment and implementation stage in the following areas:

1. Increase the use of innovative and low-carbon technologies in inland navigation. This area will support activities involving the replacement of propulsion units in the existing fleet meeting the emission limits and the promotion of the

use of alternative fuels as well as the construction of innovative ships adapted to the current navigation conditions equipped with low-emission propulsion systems. Financial support and promotion may be provided through the Inland Navigation Fund.

2. Implementation of electric propulsion in inland and coastal navigation. While electrification of deep-sea shipping based on batteries is not yet possible, electrification of short-distance shipping, both inland and coastal, is already starting and it is worthwhile for Polish shipyards to actively participate in this process. The Polish state will support research and investment in this area, stimulating them both through financial support and procurement.

CONTRACTING AUTHORITY

Minister for Inland Waterway Transport

COOPERATING ENTITIES

Minister for Maritime Affairs
Minister for Climate Affairs
Minister for Transport
Minister for Energy

Action } 48. Improvement of airport infrastructure and/or operational efficiency of air transport by |O

The action aims to adapt airport infrastructure to handle the increasing number of passengers and air operations and to improve the connectivity of regional airports with the road and rail transport network and to systematically upgrade the airport's vehicle fleet with vehicles powered by electricity and other alternative fuels such as hydrogen. In addition, the action includes optimising air corridors, increasing airspace capacity as well as increasing taxiway capacity.

CONTRACTING AUTHORITY

Minister for Transport

COOPERATING ENTITIES

Minister for Climate, Minister for Energy

Action } 49. Implementation of innovativecl f and solved3 ń in air traffic :ym

The aim of the action is to implement a modern air traffic management system (ATM). *Air Traffic Management*), which allows to increase the capacity of airspace managed within the ATM system, improve safety indicators or reduce the negative impact of aviation on the environment by optimizing routes. The result of such optimisation will be a reduction in noise and emissions of CO2 and other harmful substances into the atmosphere resulting from the combustion of fuel.

CONTRACTING AUTHORITY

Minister for Transport

COOPERATING ENTITIES

Minister for Climate Affairs

Action } 50. Decarbonisation of aviation in compliance; With ie with EU priorities

The action aims to continue the implementation of EU policies to achieve climate neutrality for civil aviation in the 2050 perspective (the so-called Climate Change Action Plan). LTAG (long-term *global aspirational goal).* These policies are set out in the different elements of the *Fit for 55* legislative package and take into account solutions such as the obligation to supply and use sustainable aviation fuels SAF (under the ReFuelEU Aviation Regulation), the provision of

electricity and air conditioning to stationary aircraft at the airport (under the AFIR Regulation and the TEN-T Regulation) and the reduction of free emission allowances under the ETS for aviation, which has been linked to the Carbon Offsetting and Reduction Scheme for International Aviation – CORSIA. This mechanism uses market-based environmental policy instruments to offset CO2 emissions. It obliges aircraft operators to purchase carbon credits from the CO2 market.

CONTRACTING AUTHORITY

Minister for Transport

COOPERATING ENTITIES

Minister for Climate, Minister for Energy

Action } 51. Construction support; /' innovative monoshE;k transports;/ ch propelled by hydrogen and derivative ii

The aim of the action is to financially support the development, construction and implementation of innovative transport units powered by hydrogen and derivatives, including both research and development of modern propulsion technologies, as well as investments in production infrastructure, storage tanks and distributors. The aim of the support is to enable vehicle manufacturers and transport operators to test and commercialise modern solutions that will contribute to reducing emissions in hard-to-decarbonise modes of transport, including the maritime and aviation sectors (eSAF).

PROVIDING AUTHOR

Minister for Climate

COOPERATING ENTITIES

Minister for Transport
Minister for Maritime Affairs

Action j 52. Increased'Es requirements in scope>emissions)vehicles

The action consists in applying the classification of Euro standards setting emission limit values for cars and light commercial vehicles, lorries, buses and scooters and motorcycles, in line with successively tightened requirements at EU level. This also includes compliance by vehicle manufacturers with EU CO2 emission standards for both light and heavy-duty road vehicles.

In addition, it is planned to implement legal solutions enabling the effective elimination from road traffic, by authorized services, of vehicles with damaged or manipulated exhaust aftertreatment systems of propulsion units in vehicles used in road transport and vehicles with removed diesel particulate filters (DPF).

CONTRACTING AUTHORITY

Minister for Transport

COOPERATING ENTITIES

Minister for Climate Affairs

Action j 53. Issuance fee

The issue fee is an obligation for producers and importers of motor fuels to pay PLN 80/1000 l, entities making an intra-Community acquisition within the meaning of the provisions on excise duty introducing motor fuels into the domestic market in the amount of PLN 80/1000 l (pursuant

to the Environmental Protection Law Act (Journal of Laws No. Journal of Laws of 2025, item 647, as amended). 95% of the emission fee is the revenue of the National Fund for Environmental Protection and Water Management, and the remaining 5% of this fee is the Fund for the development of public bus transport.

CONTRACTING AUTHORITY
Minister for Public Finances

COOPERATING ENTITIES
Minister for the Economy of Energy Resources
Minister for Transport

Action } 54. Development of alternative fuel infrastructure records /ch

The action consists in the development of a register containing information on the coordinates of publicly accessible natural gas, hydrogen and recharging stations, current prices of alternative fuels and the availability of recharging points installed in publicly accessible recharging stations.

RULE OF THE MINISTER FOR

COOPERATING ENTITIES
Minister for Transport
Minister for Climate Affairs
Minister for Information Technology

Industry

Action } 55. Update of the Polish Strategy Wodorov vej

The aim of the action is to update *the Polish Hydrogen Strategy .* In particular, the document should address challenges such as the identification of national production potential for renewable hydrogen, including non-biological origin and low-carbon hydrogen, in relation to the specificities of the operation of the electricity system with a high share of RES, the construction of transmission infrastructure and the potential import of renewable hydrogen of non-biological origin or its derivatives (green ammonia). The document should also indicate the strengths of Poland that should be developed and identify threats that should be mitigated.

PROVIDING AUTHOR
Minister for Climate

COOPERATING ENTITIES
Minister for the Economy of Energy Resources

Action j 56. y Financial Instrument - Supported [3 1] CJI Transforms in Industry

The support is to provide financial assistance in an agreed form that will support the production of renewable hydrogen at an early stage of technology development, until economies of scale are achieved and prices are brought down to a market competitive level (including with fossil fuel-based carriers). The support will aim to reduce the difference between the price of renewable hydrogen and fossil-based hydrogen produced with greenhouse gas emissions. The support aims to enable renewable hydrogen to compete in the hydrogen market.

The mechanism is intended to facilitate the replacement of fossil-based hydrogen currently predominantly used in the industry with renewable hydrogen. Support will be provided for entrepreneurs ensuring the implementation of mandatory climate targets for Poland, resulting from EU and national regulations. Support may also take into account the use of carbon capture and storage or utilisation technologies that reduce life cycle greenhouse gas emissions by at least 70% compared to the fossil fuel comparator. The financial support instrument should not be the only instrument to stimulate market development.

PROVIDING AUTHOR
Minister for Climate

COOPERATING ENTITIES
Minister for Economic Affairs

Action } 57. Construction support; /' generating capacity (dlo production wateri : renewable iru (in origin 3 non-biological JO) and low-carbongO

The action aims to start the process of building low-carbon, renewable and renewable non-biological hydrogen capacity in Poland. The activity of public institutions should focus on supporting the construction of generation capacity, storage and transmission infrastructure, which will affect the launch of the first investments in production capacity. The development of this sector requires adequate regulatory, financial and technological support to effectively integrate the production of low-carbon and renewable hydrogen into the transport infrastructure and industries that have the highest demand for its use, **in particular** as regards renewable hydrogen of non-biological origin.

PROVIDING AUTHOR
Minister for Climate

COOPERATING ENTITIES
Minister for Economic Affairs
Minister for Public Finances

Action } 58. Analysis of the need for the construction and use of infrastructure for the import of ammonilate or hydrogenU , in the construction of a maritime port terminal for the transhipment of an an noniak or hydrogen

In connection with the growing demand for renewable hydrogen and renewable ammonia and the need to achieve the objectives of RED III, it is required to develop an analysis that will determine the demand for imports of these raw materials, indicate the solutions and transport routes to be used, as well as ways of supplying raw materials to current and future industrial customers.

The analysis should take into account the national demand for RFNBO hydrogen necessary to achieve the objectives of the RED III Directive, the conditions resulting from the EU climate policy, the location of industrial plants covered by these objectives and new plants requiring RFNBO hydrogen supply, as well as existing and planned infrastructure - including port infrastructure - together with an assessment of the possibility of its use, expansion and construction. An important element is also taking into account the planned European hydrogen corridors, such as the Nordic-Baltic Hydrogen Backbone Corridor and the potential of building dedicated transmission networks. The document should include ways to move from current transport methods, based on means other than pipelines, to the use of hydrogen networks, both before and after their deployment. The scope of the analysis will include

quantitative and qualitative data on imports of renewable hydrogen and renewable ammonia enabling the achievement of RED III objectives and further steps in the decarbonisation of industry in line with EU and Polish objectives.

The analysis should also take into account the number, proposed locations and role of infrastructure needed to support imports of renewable hydrogen and renewable ammonia, including port terminals, assessing the potential for expansion of existing facilities and the construction of new ones. In addition, it should address the use of means of transporting hydrogen to its customers until hydrogen corridors and networks are in place. An important element will also be the indication of the estimated costs of implementing individual elements of the investment enabling the achievement of the RED III objectives and climate objectives in the import part.

PROVIDING AUTHOR

Minister for Climate

COOPERATING ENTITIES

Minister for the Economy of Energy Resources
Minister for Maritime Affairs
Minister for Transport

Action 59. Activities supporting commercial projects l [:cs and ccu

The action includes the preparation of a proposal for a financial support instrument and a list of actions, including regulatory ones, aimed at supporting the wider use of CCS technologies. *Carbon Capture and Storage (CCU) and Carbon Capture and Storage* (CCU). *Carbon Capture and Utilization*) reducing CO2 emissions in processes where other decarbonization pathways are not efficient or implementable. The objective of the instrument is to create actions related to:

- Construction of strategic infrastructure for transport and storage of CO_2 (gas pipelines, landfill network in Poland),
- Accelerating legislative activities that will allow the commencement of geological research on the search for and recognition of underground CO_2 storage complexes in Poland (onshore),
- Initiation of the construction of industrial clusters for the above-mentioned development of infrastructure enabling transport to storage sites, including the designation of entities responsible for CO2 transport networks,
- Conducting research and development works and pilot projects,
- Launch of a nationwide public campaign on activities related to the development of CCS technology, aimed at increasing public awareness of the safety of CO2 storage on land.

PROVIDING AUTHOR

Minister for Climate

COOPERATING ENTITIES

Minister for the Environment
Minister for Economic Affairs

Action } 60. Actions to support the decarbonisation of energy-intensive industries

The measure concerns support (including financial support) for energy-intensive industries covered by the EU GHG Emissions Trading System (EU ETS) in the process of increasing competitiveness and the energy transition. The activities of public institutions should focus on supporting actions ensuring:

- improving the energy efficiency of production processes,
- increasing the share of renewable energy sources in industry,
- construction of own RES sources supported by energy storage,
- modernisation, including digitalisation, of industrial processes,
- electrification and deployment of low-carbon hydrogen and use of low-carbon fuels,
- implementation of technologies enabling the reduction of both energy and process emissions, including CCS technologies,
- implementation of solutions minimizing the generation of waste and the consumption of raw materials in accordance with the principles of the GOZ,
- conducting research and development, pilot projects and creating innovations.

Support for energy-intensive industries aims to increase access to cheap and clean energy, electrify and decarbonise industrial processes and develop new solutions to ensure the competitiveness of Polish products. Due to the complexity of production processes in energy-intensive industries, support should be tailored to the needs of individual sectors.

CONTRACTING AUTHORITY

Minister for Economic Affairs

COOPERATING ENTITIES

Minister for Climate Affairs
Minister for Public Finances
Minister for Regional Development

Action } 61. Actions to support the competitiveness and decarbonisation of the cement industry

The aim of the action is to support innovative technologies and investments contributing to the modernisation of production processes and the reduction of CO2 emissions in the cement production process, while increasing the competitiveness of the sector. Support should be targeted at actions concerning the development of innovative cements, binders and mineral additives for reduced carbon footprint concrete, carbon capture, storage and utilisation (CCUS) technologies, as well as the optimisation of production processes towards increased energy efficiency.

An important solution to decarbonise and avoid EU ETS fees is CCS technology, which should be developed by 2030. In order to ensure the competitiveness of the industry, imports of cement from countries where it is produced with a higher carbon footprint than in Poland should be reduced. It is also important to ensure access to low-cost electricity from RES and to analyse the possibility of revising industrial tariffs and surcharges. Also noteworthy is the Green Public Procurement mechanism, which should give priority to the purchase of low-carbon products. It is recommended to develop a detailed strategy in the field of ensuring the competitiveness and decarbonization of the cement industry together with representatives of the industry.

CONTRACTING AUTHORITY

Minister for Economic Affairs

COOPERATING ENTITIES

Minister for Climate, Minister for the Environment

Action and 62. Actions ni ai rzei : with the support of:ia the competitiveness and decarbonisation of the chemical industry

The aim of the action is to support innovative technological solutions and investments enabling the reduction of greenhouse gas emissions. Support should cover the development and deployment of low-carbon production processes and the use of low-carbon and renewable hydrogen and carbon capture, storage and utilisation (CCUS) technologies. *Carbon Capture, Utilization and Storage*). It is crucial to increase the energy efficiency of chemical plants by modernizing installations and integrating with RES. Initiatives should support research into new sustainable raw materials and provide incentives for companies investing in the circular economy. In order to ensure the competitiveness of the industry, it is necessary to limit the import of chemical industry products from countries where it is produced with a higher carbon footprint than in Poland. It is also important to ensure access to cheap electricity from renewable energy sources and to examine the possibility of revising industrial tariffs and surcharges and developing infrastructure for the import of hydrogen and derived fuels, including terminals, warehouses and pipelines.

Decarbonisation efforts should support the development of generation capacities for low-carbon and renewable hydrogen production, taking into account the specificities of demand (fixed profile, low storage capacity) and the production potential in a volatile energy market, taking into account the specific rules for the production of renewable fuels of non-biological origin (RFNBOs) set out in EU Delegated Regulations. It is recommended to develop a detailed strategy in the field of ensuring the competitiveness and decarbonization of the chemical industry together with representatives of the industry.

CONTRACTING AUTHORITY

Minister for Economic Affairs

COOPERATING ENTITIES

Minister for Climate, Minister for the Environment

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Action and 63. Actions and measures to support competition and decay in the steel industryge) and coke ovensgO

The aim of the action is to support the transformation of the steel industry from production based on blast furnaces and traditional coke to low- and zero-emission models, using scrap, hydrogen, electricity and alternative carbon reducers towards technologies compatible with climate objectives. The transition should be based on national raw materials, energy and technology resources, take into account the efficient production of coke from domestic coking coals and ensure that the sector remains competitive. Key areas of support should include the development and implementation of steel production methods, such as electric arc furnace (EAF) based metallurgy. *Electric Arc Furnace*) powered as much as possible by renewable energy, including industry-generated and low-carbon and renewable hydrogen (DRI). *Direct Reduced Iron*). Support should also cover the modernisation of production processes to improve energy efficiency and reduce emissions. Actions should also provide funding for research into new metal alloys and the circularity of raw materials, as well as scrap metal processing technologies. It is recommended to develop, together with representatives of the industry, a transformation model in the form of a decarbonization roadmap - constituting the decision-making basis, based on forecasts of energy and hydrogen demand, processes of modernization of metallurgical furnaces, balance of scrap and input materials and transformation of coking industry taking into account the social dimension of changes, including the protection of industrial competences.

CONTRACTING AUTHORITY
Minister for the Economy of Energy Resources

COOPERATING ENTITIES
Minister for Climate, Minister for Economic Affairs, President of the Energy Regulatory Office

Action 64. Actions No 3 to support the competitiveness and decarbonisation of industries

The aim of the action is to support the transformation of industries not included in the actions: Action 61. Actions to support the competitiveness and decarbonisation of the cement industry, Measure 62. Actions to support the competitiveness and decarbonisation of the chemical industry, Action 63. Actions to support the competitiveness and decarbonisation of the steel and coke industry, including the sectors of technical gases, non-ferrous metals, paper, glass, limestone, greenhouse, agricultural processing, printing and other industries. Key areas of support concern the development of production with a reduced carbon footprint, the modernisation of production processes, the integration of renewable energy sources into the energy infrastructure of plants and the reduction of energy consumption.

Support should focus, inter alia, on the replacement of fossil fuel stoves and boilers with modern electrical or hybrid equipment, the use of renewable heat sources (including in the processing industry and greenhouses), as well as the replacement of natural gas with biomethane and low-carbon or renewable hydrogen.

An important element of the support will be the development and implementation of CO2 capture, storage and use technologies (CCUS) in these industries. It is necessary to establish an appropriate legal and regulatory framework, to determine the available locations for underground storage of CO_2, to allow storage of CO_2 on land, to designate transmission operators and to create dedicated financial instruments.

Actions should also include the promotion of the use of raw materials and circular economy (CEE) models, notably through the implementation of advanced recycling methods, the efficient management of by-products and organic waste, and the minimisation of the use of natural resources. Exports of raw materials enabling local emission reductions should also be limited.

A key element of the process is conducting intensive research and development, focused on the creation of new technologies and the implementation of pilot projects demonstrating the practical application of the developed solutions. Particularly for the greenhouse and agricultural industries, the focus should be on improving energy efficiency and saving other resources such as water. Research and development should lead to the implementation of technologies that significantly reduce the demand for energy and natural resources in production processes.

An important aspect of the transformation is the protection of the domestic market against imports of products manufactured in countries where production emissions are higher than in Poland, which will protect the competitiveness of domestic producers. In particular, in the context of strategic food security, it is necessary to prevent the import of cheaper agricultural products, such as greenhouse vegetables, from countries that do not bear the costs of climate policy.

Ensuring access to cheap and stable renewable electricity and exploring options for revising industrial tariffs and surcharges are key to the success of the transition.

CONTRACTING AUTHORITY
Minister for Economic Affairs

COOPERATING ENTITIES
Minister for Climate, Minister for the Environment

Agriculture

Action and 65. Supporting the use of green sources: energy and efficiency improvement :ii energy on farms in łach CAP

Action consisting in supporting investments related to climate protection undertaken by farms through the construction of agricultural biogas plants up to 50 kW and the installation of photovoltaic modules up to 50 kW, as well as co-financing for systems improving the energy efficiency of farm buildings used for agricultural production, such as the construction, reconstruction or purchase of heat recovery systems, roof glazing, LED lighting, as well as thermal modernisation of farm buildings used for agricultural production. The action aims to strengthen adaptation to climate change and reduce emissions on farms.

CONTRACTING AUTHORITY
Minister for Agriculture

COOPERATING ENTITIES
Minister for Climate Affairs

Action j 66. Applied) 3 [1] (environmental) conditionality and \ MPR

Conditionality is a set of rules consisting of GAEC (Good Agricultural Conditions) standards. *Good Agricultural and Environmental Condition of Land*), compatible with environmental protection and statutory management requirements (SMRs). Statutory Management Requirements), which a farmer must comply with on his holding in order to receive full CAP support. It is also the basis for determining the requirements for additionally paid, voluntary actions taken by the farmer.

For the purpose of reducing GHG emissions and increasing removals and reducing emissions in the LULUCF sector in agriculture, standards are currently the most important:

- GAEC 1 - Maintenance of permanent grassland (PGU) based on the share of PGU in the agricultural area at national level
- GAEC 2 - Protection of peatlands and wetlands;
- GAEC 6 – minimum soil cover requirement for the most sensitive periods and
- GAEC 3 - ban on the burning of agricultural land.

The regime of conditionality under the EU rules currently in force (2025) may change in the future. Poland will apply the relevant EU legislation by modifying the requirements for agriculture taking into account the specificities of the sector and the identified national needs.

CONTRACTING AUTHORITY
Minister for Agriculture

COOPERATING ENTITIES
Minister for Climate, Minister for the Environment

Action 67. Applicable* a‘ eco-schemes under the CAP

Eco-schemes are a group of interventions under Pillar I of the CAP promoting agricultural practices beneficial for the environment, climate and animal welfare. These are annual, voluntary and additionally paid practices, adapted to national conditions and needs, for the protection of soil, water, climate, animal welfare and biodiversity resources in agricultural production. The payment is granted to an area or to animals (for the intervention of the eco-scheme ‘Animal welfare’).

Eco-schemes are currently the most important for reducing greenhouse gas emissions in agriculture: ‘Carbon farming and nutrient management’ and ‘Integrated plant production’. Part of the ‘Carbon farming and nutrient management’ eco-scheme practices also pursues the objective of reducing air, soil and water pollution and increasing removals and reducing emissions in the LULUCF sector.

The ‘Carbon farming and nutrient management’ eco-scheme implements practices:

1. Extensive use of RUPD with stocking density – promotion of extensive use of RUPD with adequate stocking density
2. Winter catch crops or catch crops – protecting the soil from erosion and increasing the organic carbon content.
3. Developing and complying with a fertilisation plan, baseline option and liming option – promoting the use of rational fertilisation based on the results of soil analysis and action to improve soil response.
4. Diversified crop structure – improving soil quality, restoring organic matter content and encouraging the abandonment of monocultures on agricultural land.
5. Mixing manure on arable land within 12 hours of its application – reducing ammonia emissions improving the wealth and physical properties of soils.
6. Use of liquid natural fertilisers by methods other than splashing – reducing emissions of nitrogen compounds and favouring better use of fertiliser components.
7. Simplified tillage systems – the uptake of conservation soil tillage systems, without ploughing contributing to the reduction of organic matter losses in soils.
8. Mixing straw with soil – action to increase carbon retention in soils and increase soil fertility.

Actions for the use of rational agrotechnics, conducive to reducing greenhouse gas emissions and increasing soil carbon content, which are important for maintaining soil fertility and at the same time conducive to mitigation and adaptation to climate change, will be maintained and developed on a scale depending, inter alia, on the shape and budget of the future CAP.

CONTRACTING AUTHORITY
Minister for Agriculture

COOPERATING ENTITIES
Minister for Climate, Minister for the Environment

Action and 68. O-environment 3-climateE! V *and* the WF framework

Agri-environment-climate interventions under the CAP Strategic Plan 2023-2027 and the Agri-environment-climate measure under the RDP (Rural Development Programme) 2014-2020 (continuation of selected packages until March 2027) consist in the use of payments compensating for additional costs incurred and income foregone for farmers who voluntarily use production methods conducive to preserving biodiversity, the landscape and environmental resources, primarily soil and water. Key practices promoted under agri-environment-climate payments include: extensification of agricultural use of meadows and pastures (including in Natura 2000 areas), preservation of old traditional orchards, protection of plant and animal genetic resources and protection of biodiversity on arable land. All these practices have a positive effect on the climate. As a rule, the payment is granted to the area.

Agri-environment-climate measures depend on the future EU and national legislation, shape and budget of the future CAP post-2027. Poland will apply the relevant EU legislation by modifying the measures for agriculture taking into account the specificities of the sector and the identified national needs.

CONTRACTING AUTHORITY

Minister for Agriculture

COOPERATING ENTITIES

Minister for Climate, Minister for the Environment

Action } 69. Agricultural/organic support under the CAP

A farm management and food production system, combining best environmental and climate practices, a high degree of biodiversity, the protection of natural resources and the application of high animal welfare and production standards. The action shall support voluntary commitments by farmers who undertake to maintain or switch to organic farming practices and methods as defined in Union and national legislation.

The following crop groups are currently supported under the intervention: agricultural, vegetable, herbal, primary orchard, berry, extensive orchard, fodder and permanent grassland. Payment refers to the area. In addition, a premium is applied to farms with sustainable crop-animal production, i.e. animals with a stocking density of between 0.3 LSU/ha and 1.5 LSU/ha of all agricultural land on the farm.

The support measure for organic farming will be modified depending on future EU and national legislation. Poland will apply the relevant EU legislation by modifying the measures for agriculture taking into account the specificities of the sector and the identified national needs.

CONTRACTING AUTHORITY

Minister for Agriculture

COOPERATING ENTITIES

Minister for Climate, Minister for the Environment

Action } 70. } Forestry and Forestry Interventions /76 under VYPR

Group of interventions under Pillar II of the CAP that can receive support for: afforestation of agricultural land, creation of field trees, establishment of agroforestry systems and enhancement of biodiversity of private forests. At the same time, the CAP grants aid for the continuation of afforestation commitments undertaken under the Rural Development Plan 2004-2006 and the Rural Development Programme (RDP) 2007-2013 and 2014-2020. Forestry and tree-based

activities contribute to carbon sequestration and thus to climate change mitigation. They also have a beneficial effect on soils and water conditions by, inter alia, preventing erosion and increasing retention in rural areas. They also play important roles in protecting biodiversity and enriching the landscape. They are an important element in counteracting the effects of drought, reducing water losses from the soil and contributing to the reduction of surface run-off.

The forest and tree intervention measure will be modified depending on future EU and national legislation. Poland will apply the relevant EU legislation by modifying the measures for agriculture taking into account the specificities of the sector and the identified national needs.

CONTRACTING AUTHORITY

Minister for Agriculture

COOPERATING ENTITIES

Minister for the Environment
Minister for Climate Affairs

Action 71. Support for development of agricultural biogas plant xh

The action consists in ensuring the conditions for the start-up of agricultural biogas plants by private entities, including, among others: preparation of regulations, development of human resources, financial instruments, awareness-raising, issuing environmental consents.

PROVIDING AUTHOR

Minister for Climate

COOPERATING ENTITIES

Minister for Agriculture

Action } 72. Financial Instrument y - NFOŚiG \ f / "Energy for w; s i"

The programme includes support for investments in the construction of: hydropower plants, installations for the production of energy from agricultural biogas under high-efficiency cogeneration conditions and energy storage facilities. Beneficiaries can be energy cooperatives and their business members, as well as farmers.

CONTRACTING AUTHORITY

NFOŚiGW

COOPERATING ENTITIES

Minister for Agriculture Minister for Climate

Action } 73. Reduced*E! food waste

The action is to support solutions to reduce food waste at every stage of the food production chain, thereby reducing the impact of food production on emissions, as the production and storage of each batch of food entails currently defined GHG emissions. Both legislative and educational measures will be implemented, in particular:

1. Act of 19 July 2019 on counteracting food waste (Journal of Laws No. Journal of Laws 2020, item 1645) will be amended to clarify ambiguities regarding the definition of food waste and the possibility of donating food to charity,
2. Awareness-raising and education campaigns on food waste reduction options will be carried out, including on wise purchasing planning and proper food storage.

CONTRACTING AUTHORITY

Minister for Agriculture

COOPERATING ENTITIES

Minister for Climate Affairs

Action } 74. Shaping the ecological attitudes of future farmers and food producers.

Agriculture aimed at ensuring food security, supplied with energy from RES produced in rural areas should simultaneously implement climate change adaptation and mitigation practices. Such an approach will not only increase the resilience of the agricultural sector, but will also work synergistically to combat climate change. It will increase the competitiveness of Polish agriculture by reducing the carbon footprint of food and other agricultural products.

The action consists in verifying the curricula of pupils and students in terms of introducing solutions in farming, breeding and processing aimed at protecting the climate and adapting to its changes, while ensuring the protection of biodiversity and ecosystem services and the production of high-quality food. In order for this content to reach future farmers and food producers, it is important to focus on the above-mentioned issues in the academic, secondary, postgraduate and adaptive training of teachers of agricultural subjects.

CONTRACTING AUTHORITY

Minister for Agriculture

COOPERATING ENTITIES

Minister for Climate Affairs

Action } 75. Introduction of dc) conditions for the development of certification of carbon removals and reduction of emissions from soils used for agriculture

The action consists in creating conditions for the development of carbon farming, including conducting analyses on certified carbon credits in agriculture. The results of this work will allow to assess whether and to what extent it is possible to prepare appropriate solutions leading to the smooth functioning of certification schemes. This will allow farmers to earn additional income from the sale of certified removal or emission reduction units, which could incentivise a wider uptake of carbon farming practices. These practices enhance carbon sequestration in agricultural soils and biomass and contribute to the reduction of greenhouse gas emissions from soils (e.g. nitrous oxide emissions from fertilisation).

CONTRACTING AUTHORITY

Minister for Agriculture

COOPERATING ENTITIES

Minister for Climate Affairs

Action and 76. Rationalisation of fertilisation

The rationalisation of fertilisation mainly covers the following areas: nitrate programme, prohibition of urea in granular form excluding urea in granular form containing a urease inhibitor or a biodegradable envelope and activities related to soil reagent regulation (liming treatments). These measures are implemented on the basis of legal regulations (the Water Law165 Act and regulations issued on the basis of Article 106 of that Act (the so-called nitrate programme), the Fertilizers and Fertilizers Act166).

Currently, due to the observed weather anomalies, it is important to adapt the rules within the legal requirements to the changing climate and food needs of plants. In the area of fertilization, this area mainly includes the dates of application of fertilizers, fertilization doses and fertilization techniques. Maintaining production capacity, necessary for food security while taking care of the environment, requires ensuring, among others, the profitability of production, care for soil fertility and space for agricultural production.

Water Law 165 *Act of 20 July 2017 (Journal of Laws of 2017, No. Journal of Laws of 2025, item 960, as amended)*
166 *Fertilisers and Fertilisation Act of 10 July 2007 (Journal of Laws 2024, item 105)*

1. *Nitrates programme*

The Minister responsible for water management was required by the Water Law Act of 20 July 2017 to draw up an action programme whose primary objective is to reduce water pollution caused by nitrates from agricultural sources, inter alia, by fertilising agricultural land with nitrogen-containing fertilisers and to prevent further such pollution. Therefore, in 2017, the first *Action Programme to reduce water pollution by nitrates from agricultural sources and to prevent further pollution (the so-called Nitrates Action Programme)* was adopted. Nitrates programme), which was under review. A new, updated Programme is currently in force and entered into force in February 2023. The key actions identified in the Programme are:

- setting conditions for the agricultural use of nitrogen fertilisers near waters, in steep gradients, as well as on frozen, water-flooded or snow-covered soils;
- introducing deadlines for the agricultural use of fertilisers;
- determination of storage conditions for natural fertilisers and leachate management;
- determining the method of calculating the annual dose of natural fertilisers containing not more than 170 kg N/ha;
- introducing an obligation to develop a nitrogen fertilisation plan for individual plants.

Changes introduced, in particular concerning:

a. Application of a flexible spring fertilization date;
b. Updating the production rates of natural fertilisers and their nitrogen content;
c. The method of calculating the maximum doses of nitrogen fertilizers;
d. Addition of fertilising equivalents for wastewater for agricultural use and municipal sewage sludge.

All holdings must comply with the rules on:

a. An acceptable dose of natural fertilisers of not more than 170 kg nitrogen in the pure component per hectare of agricultural area per year;
b. Mandatory distances from water bodies;
c. Fertilisation dates;
d. Storage of natural fertilisers;
e. Keeping documentation related to the implementation of the Programme of Action.

On the other hand, medium and large farms have additional obligations, such as keeping records of agrotechnical treatments related to nitrogen fertilization or developing a nitrogen fertilization plan.

2. *Prohibition of the use of urea in granular form without urease inhibitor or without biodegradable coating*

In 2020, an amendment to the Fertilisers and Fertilisation Act and the State Plant Health and Seed Inspection Act167 banned the use of urea in granulated form without a urease inhibitor or without a biodegradable coating. The ban has been in force since 1 August 2021. This solution contributes to increasing the efficiency of fertilisation and air protection.

3. *Soil reagent regulation activities*

The treatment of soil liming is an important factor shaping the quality and safety of the natural environment against the background of specific soil and climate conditions. In 2019-2023, the National Fund for Environmental Protection and Water Management (NFOŚiGW) ran a 'National programme for the environmental regeneration of soils through liming', the aim of which was to support the regeneration of acidified soils as a result of anthropogenic factors. Subsidies for soil liming were of great interest to farmers. This translated not only into the number of applications submitted, but also into an increase in the consumption of calcium fertilizers. Support for soil deacidification in Poland continues with the eco-scheme 'Carbon farming and nutrient management', implemented under the 2023-2027 CAP SP, which includes, inter alia, the practice 'Developing and complying with a liming fertiliser plan'. The aim of the practice is to prevent soil acidification.

Measures to rationalise the use of fertilisers will be continued and developed. In addition to the above activities,

167 *Act of 7 May 2020 amending the Fertilisers and Fertilisation Act and the Act on the State Plant Health and Seed Inspection Service (Journal of Laws, item. 1069).*

implemented on the basis of legal regulations, the following **dissemination activities will be developed:**

1. *Dissemination of fertilization planning tools, e.g. INTER-NAW.*

   INTER-NAW is a free interactive system for supporting agrochemical decisions. It is used to develop a comprehensive fertilization plan for nitrogen, phosphorus, potassium, magnesium, microelements and soil liming. Doses of mineral fertilizers are calculated in accordance with the principles of sustainable fertilization, i.e. taking into account the nutritional requirements of crops and the availability of nutrients from other sources (natural, organic fertilizers, crop residues, etc.).

   It is available to all interested farmers. The farmer can use INTER-NAW independently, generating the necessary data (dose, fertilization plan, balance N) or with the participation of an advisor.

   INTER-NAW complies with the provisions of the Nitrates Programme and can therefore make it easier for farmers to use the generated documents in the control and payment institutions.

   The INTER-NAW programme is available in a mobile version for download on the website of the National Chemical and Agricultural Station in Warsaw (link).

2. From *encouraging the study of soils and the composition of natural fertilizers*

   Soil physico-chemical and chemical tests are used to determine the doses of minerals in the cultivation of plants on the farm. They are an important element in making agrotechnical decisions, mainly related to the regulation of soil reaction and providing the necessary macro- and micronutrients to plants in field crops, on POPs and in horticultural crops. They are an element of sustainable fertilizer management and optimization of fertilizer consumption. Agrochemical services for agriculture, i.e. from sampling, organization of agrochemical tests to sharing research results and advice on fertilization, are carried out in Poland by Regional Chemical and Agricultural Stations. In the Stations you can perform studies of soils, plants, fertilizers (including natural fertilizers), crop support agents, digestate and fertilizer products.

3. *Encourage farmers to fertilise precisely*.

   Precision agriculture is the adjustment of the dates and doses of fertilizer and water sowing to the needs of cultivated plants, soil conditions and the course of the weather on the basis of, for example, spatial maps and measurements. A typical element of it is the use of the soil abundance map in the NPK and the adjustment of fertilizer doses to it. It is usually based on static data, e.g. zoning by remote sensing supported by laboratory measurements of soil abundance performed once a year.

   Precision fertilization is an effective way to reduce nutrient/food losses, including nitrogen. It involves the use of different doses of fertilizers within one field. In precision fertilization, special devices are used that analyze the nutritional status of plants on an ongoing basis and allow you to adjust the fertilizer dose to the demand for, for example, nitrogen.

   Precise fertilization ensures better levelling of the crop and promotes higher yields of arable crops. Precise fertilization reduces fertilizer consumption and emissions of e.g. nitrogen to the environment.

4. *Encouraging the processing of natural fertilisers*.

   The reuse of nutrients from natural fertilizers is important to ensure food security. The recovery of nitrogen from natural fertilisers as part of their management systems would allow progress towards a circular economy.

   RENURE (Reuters) REcovered Nitrogen from manURE) – a new group of fertilisers proposed by the European Commission, containing nitrogen fully or partially obtained from animal fertiliser during its processing. The recovered nitrogen can be used to replace part of the current production of synthetic mineral fertilizers, which would significantly reduce CO2 emissions associated specifically with the production of mineral nitrogen fertilizers.

5. *Provision of training on rational fertilisation by the competent advisory bodies.*

   In accordance with the provisions of the Act on Agricultural Advisory Units,168 voivodeship agricultural

168 *Agricultural Advisory Units Act of 22 October 2004 (Journal of Laws 2024, item 76)*

advisory centres, as part of their tasks in the field of agricultural advisory services, provide training for farmers and other residents of rural areas, including on the recommendations contained in the set of recommendations of good agricultural practice.

The set of recommendations for good agricultural practice is a set of agricultural practices prepared in connection with the requirements of Article 103 of the Water Act for voluntary application, containing, inter alia, guidance on the rational use of fertilisers or the environmentally safe storage of natural fertilisers.

6. *Development of research on the use of drones in fertilisation .*

The main objective of using agricultural drones is to increase the efficiency and effectiveness of the means of production used, including fertilisers. Their use is a way to more

accurately, more precisely monitor the condition of crops and make decisions based on detailed data.

The use of drones in crop cultivation is of great importance for agriculture. Thanks to them, the farm can reduce the costs of cultivation while increasing the yield, and thus also profit. Drones are gaining popularity with the development of precision agriculture, especially as a device for providing information on the condition of crops, thanks to flights with multispectral cameras mounted on them. This is of great importance in the context of reducing fertilizer consumption, which is possible thanks to the Variable Dose (VD) technology. VRA, *variable rate application*). It uses research to assess soil abundance in cultivation sites using remote sensing methods, i.e. measurements of light reflected from plants. On their basis, it is possible to assess the size of biomass, the condition of crops or the forecast of yields.

CONTRACTING AUTHORITY

Minister for Agriculture

COOPERATING ENTITIES

Minister for the Environment
Minister for Climate Affairs

Forestry, LULUCF

Action and 77. Prepared) 3 [1] \ A/ water management plan^ in la; sach

The action involves shaping the ecological, productive and social functions of the forest at forest district level by: preserving natural water conditions necessary for the development of a potential forest complex (water conditions regulation), increasing water resources (retention projects and slowing down the outflow of water from the catchment), which significantly improves forest production conditions, biodiversity and promotes the adaptation of the forest to the projected climate change. It also helps to mitigate the impact of extreme weather events, i.e. droughts and floods on forests.

The proposed action includes the following sub-measures:

1. Preparation of water management plans for priority forest areas from the point of view of restoration of natural habitats dependent on forest waters – by 2030 and all forests in Poland by 2035.

2. Creation of regulations requiring the analysis and preparation of a Water Resources Management Plan (hereinafter: PGZW) based on:

a) an analysis of the area requiring the development of RBMPs in forests,

b) anticipated changes in forest management in accordance with the forest management plan and other plans, including for protected areas,

c) the projected risks of climate change,

d) planned human activities that may have an impact on water resources.

e) PGZW in forests should be compulsorily drawn up on the scale of the river basin and/or hydrologically dependent basin and linked to the objectives and actions provided for in the regional or river basin management plans.

3. Inclusion of PGZW findings in forests in forest management plans and other plans, including for protected areas for each of the 429 forest districts in Poland – as part of the ongoing update of forest management plans and other plans, at the latest from 2027.

4. Review and possible amendment of the regulation on good forestry practices and internal documents of the State Forests (e.g. Forest Management Manual, Forest Breeding Rules) in order to fully integrate with the requirements of EU law and contemporary results of scientific research and experience of practice in the field of protection of water resources in forests - in the period up to 2027 and periodically every 5 years.

5. Development of standards for forest management in protective forests, on State-owned land managed by the State Forests – by the end of 2026.

6. Implementation of the monitoring system and ongoing monitoring of hydrological phenomena in forests, related to the national monitoring of surface and groundwater, as a tool supporting decision-making in the field of water management in the forest.

7. Audit of the effects of the implemented water resource management measures in forests – in the period 2035 and periodically every 5 years, together with the obligation to update in order to optimise the RBMPs.

CONTRACTING AUTHORITY

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COOPERATING ENTITIES Minister for Water Management PGL State Forests

} Action 78. Defined* 3 [1] objectives> / and share of sustainable forest management

This means that forest management plans and simplified forest management plans must be drawn up in such a way that the overarching objective is to improve the sustainability and stability of the forest, including through adaptation to climate change. In areas where conditions allow, forest resources and their contribution to the global carbon balance will be strengthened to ensure the desired quantity and quality of forest resources over the medium to long term. The desired level of forest stock should be pursued for economic, environmental and social reasons and the specific objectives of increasing forest cover towards at least the EU average and ultimately above it by 2040.

The proposed action includes the following sub-measures:

1. Identification and designation of the ecological grate of forests of all forms of ownership, based on forests with a leading nature protection function (nature protection forms, natural habitats, proceedings resulting from nature protection regulations).

2. Identification and designation of forests with threatened stability – economic distribution of forests, distinguishing the holding of unstable forests, together with an assessment of the stability of each stand.

3. In areas not highlighted above, planning the division into forests with a leading social and economic function.

4. A review of the legislation should be carried out and an adequate legal framework should be created to include in forest management plans and simplified forest management plans issues related to strengthening the natural and social functions of forests as well as climate change, in particular those related to strengthening the stability, resilience and adaptation of forests to climate change. The new structure of the plans is to include elements related to the sustainability of the forest as an ecosystem, the performance of environmental functions and the storage of carbon in forest ecosystems. It will be necessary to include in the action plans related to the adaptation of forests to climate change, in particular through tasks related to the restoration of water resources, exclusion from forest use on marsh habitats and along watercourses, or modifications of existing forest management practices towards closer-to-nature forestry in order to create stable and more climate-resilient stands.

5. The rules should be amended to ensure that the actions included in forest management plans and simplified forest management plans are verified and corrected by environmental protection authorities and other authorities competent in specialised areas in which the forest management plan interferes, for the period up to 2026.

6. In addition, existing legislation needs to be amended to ensure access to justice in matters relating to the establishment of FMPs (possibility to challenge them in court) and to ensure a greater impact on the actions included in forest management plans by the competent environmental authorities.

CONTRACTING AUTHORITY

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Minister for the Environment

COOPERATING ENTITIES

PGL State Forests

Action and 79. Forestry seed management* a‘

The aim of the action is to expand the ranges of the best tree populations from regions of origin with high adaptability to changing environmental conditions and thus increase tree survival in a changing climate. The key to the selection of tree populations should be not only the productivity of the stand, but also the ability to adapt to climate change.

CONTRACTING AUTHORITY

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COOPERATING ENTITIES

PGL State Forests, Seed Office the Forest District

Action and 80. Increased* E* absorptions and storage)ia CO_2 in lasacl ll

The proposed action includes the following sub-measures:

a) **Strengthening the natural and social functions of forests** that are most important from the point of view of biodiversity protection and high potential for permanent carbon storage in forest ecosystems on State Treasury land managed by PGL Lasy Państwowe, in accordance with the directional objectives set out in the framework of the National Council on Forests, on the below-determined percentage of forest area in State Forests.

Specification	2024	2025	2026	2027	2028	2029	2030
Forests with a leading natural and social function	8%	12%	16%	20%	20%	20%	20%
of which: strictly protected forests within the meaning of *the EU Biodiversity Strategy for 2030*	b.d.	9%	10%	11%	12%	13%	14%

b) **Introduce a legal framework allowing for the permanent strengthening of the natural and social functions** of 20% of forest areas, **including the exclusion of part of forests from the logging function, in particular high nature value forests and high potential for permanent carbon storage in forest ecosystems, including areas selected under the National Forestry Council, in the period up to 2027.**

c) **Gradually reduce the level of logging** in naturally valuable forests with high CO2 storage potential, including by excluding part of forests from the logging function, taking into account the removal potential and carbon storage capacity of forest ecosystems and alignment with national and EU obligations, including those under Regulation (EU) 2018/841, by 2030 at the latest.

d) Pending the establishment of a legal framework for the permanent strengthening of the natural and social functions **of forests, temporary exclusion or reduction of the logging function for selected forest areas – priority natural forests and old-growth forests,** due, inter alia, to the fact that they store the largest amounts of carbon per unit area. These areas should be subject to priority monitoring and protection, with the possibility of later adjusting the scope of modifications or abandonment in terms of logging.

e) **Evolution of forest practices in** other forest areas, with an emphasis on forest soil protection and sheathing. Significantly increase the scale of natural renewals. Significant reduction of clear-cuts and soil tillage, including their elimination (except in justified cases) in forests with a dominant social and natural functions. Elimination of deep ploughing and striving

to limit ploughing in area-based forms of nature protection. Intensification of activities to counteract soil erosion, including through the introduction of anti-erosion buildings and optimisation of the network of trails in forests.

The implementation of any action in the forestry sector should be based on regular monitoring of the state of forests and updating of data on their role in the removal of CO_2. A balance must be struck between climate change mitigation, climate change adaptation, productive function and societal expectations of forests. Actions that could lead to the destabilisation of forest ecosystems should also be avoided. A balanced approach is advisable, taking into account the need to reconstruct forests and increase their resilience to the effects of climate change.

	CONTRACTING AUTHORITY	**COOPERATING ENTITIES**
/ v 0-0	Minister for the Environment	Minister for Climate Affairs PGL State Forests

Action and 81. Certification and hand< s4 IDO $_2$ units in sector E; the Forestry M

The action will actively participate in the voluntary market for CO2 trading through the use of the certification framework contained in the *EP and Council Regulation on the establishment of a Union certification framework for permanent carbon removals, carbon intensive techniques and carbon storage in products of 27 November 2024.* The action will cover, inter alia: the introduction of certification mechanisms for $CO2_{removals,}$ the development of carbon-intensive techniques in forest management, support for the storage of CO2 in wood products, the inclusion of soil carbon sequestration methods and the integration of activities into the EU Emissions Trading System. Under the new EU regulations on the certification of carbon removals, appropriate legal and operational mechanisms will have to be put in place. This system allows the sale of certified CO2 removal units, which can generate significant revenues for the forestry sector and the national economy.

	CONTRACTING AUTHORITY	**COOPERATING ENTITIES**
/ % 0-0	Minister for the Environment	Minister for Climate Affairs PGL State Forests

Action and 82. Combating forest decay

The action, implemented by the Ministry of the Environment, responsible for forest policy in cooperation with the State Forests Authority, consists in counteracting forest stand dying processes in Poland and mitigation actions with a view to 2030, as well as preventing or minimizing the negative effects of climate change, including, above all, preventing large-scale forest deaths. The assumptions prepared in 2022 need to be adapted to contemporary scientific research results and experience of practice in protecting forests from the effects of climate change and adapting these areas to changing climatic and hydrological conditions.

The action includes the following sub-measures:

1. Review by the end of 2026 and update of the "Comprehensive Programme for Combating Forest Dieback in Poland" based on the latest knowledge and good experience on adaptation of forests to climate change. The overarching objective of the programme should be to improve the ecosystem-based condition of forests.
2. Implementation of actions resulting from the comprehensive programme indicated above to protect forest resources from decay and improve the condition of forest ecosystems – in the period up to 2030, with a revision of the effects in 2035.

CONTRACTING AUTHORITY

Minister for the Environment

COOPERATING ENTITIES

Minister for Climate Affairs
PGL State Forests

Action } 83. Specified) =s directional zadai 1i of ochi rony firefighting OW€jj forest

The activity consists in defining guidelines in the field of fire protection, analysis of the state of fire hazard in the past period and analysis and assessment of the current state of forest fire protection (including assessment of current and foreseeable threats in changing conditions of forest connection with the socio-economic environment). This makes it possible to prevent forest fires and, consequently, to combat CO2 emissions from forests. Firefighting activities. In commercial forests, they will take greater account than hitherto of the need to protect and restore water retention in forests.

The following sub-measures shall be designated:

- Focusing fire protection in forests on preventive measures, including, among others, increasing water retention in forests and developing the use of modern methods of forest fire detection - in the period up to 2030.
- Optimization of the fire access network in order to provide transport of forest areas for fire extinguishing activities. Reduce the expansion of forest road networks, other than fire access, and increase the supervision of their use by by bystanders, including the reduction of entries into forests by motor vehicles and the removal of unnecessary forest roads, in the period up to 2030.
- Development of special fire regulations for national parks and nature reserves - in the period up to 2027.

CONTRACTING AUTHORITY

Minister for the Environment

COOPERATING ENTITIES

PGL State Forests

Action and 84. Restoration and behaviour of wetlands, wetlands *and* wetlands

Poland is among the top 10 global emitters of CO2 from degraded peatlands. The amount of greenhouse gas emissions from the oxidation of dehydrated organic soils is comparable to all other emissions from the agricultural sector. Reversing this trend requires strengthening the protection and restoration of peatlands, including those that are farmed or recorded as agricultural land, but only on the basis of incentives and subsidies. Knowledge of the state of these ecosystems is incomplete and there is a lack of systemic and coordinated action to protect and restore them. At the same time, it is necessary to improve the condition and restoration of non-peat wetlands and rivers – to improve water retention in the landscape (as an action of adaptation to climate change) and as an action to hydrologically support peatland restoration projects.

The action shall include the following sub-measures:

1. Perform a full peatland inventory and a detailed estimate of the carbon stock, the hydration status and the state of the soil formation processes – peat accumulation/decession stage, as well as the current vegetation and uses.
2. Development of restoration plans for peatlands and restoration of peatland habitats in the State Forests Board and other State Treasury institutions in the period from 2028 to the end of 2030.
3. Introduce a ban on peat extraction and digging of water reservoirs on undrained peatlands until 2030 and significantly reduce the total extraction and use of peat, by supporting the production and use of substrates alternative to peat.

For agricultural peatlands:

4. Develop incentives for farmers to take voluntary measures to restore and protect peatlands, including by properly moistening and stabilising water levels, including abandoning the creation of new drainage systems and dredging overgrown ditches on peatlands that are protected natural habitats.
5. Voluntary purchase of the most valuable peatlands for nature conservation purposes by the state or public benefit organizations.

For rivers and floodplains, the action shall include the following priorities:

6. Widespread restoration of wet buffer zones, implementation of river restoration projects, restoration of floodplains to rivers as a tool to improve flood safety.
7. Revision of the catalogue of maintenance works on rivers to ensure the effectiveness of flood and anti-drying works and revision of restoration activities. Repurchases of riverside areas to the State Treasury to create swamp buffer strips and ensure normal over-the-counter flows.

CONTRACTING AUTHORITY

Minister for the Environment

COOPERATING ENTITIES

PGL State Forests
Minister for Agriculture
Minister for Water Management
PGW Wody Polskie

Action j 85. Development and small ji retention of water ji and retention of landscape ej

The creation of water storage conditions and the prevention and reduction of the effects of extreme weather events can be achieved through spontaneous natural processes or as a result of technical actions taken by land and water managers. Legal changes are needed

to introduce higher standards for the protection of water resources and water-dependent habitats and the development of small-scale retention programmes based mainly on non-invasive measures to support soil retention. Attention should be paid to the reconstruction and maintenance of water drainage facilities in order to regulate water relations, and in particular to enable water retention. Entities obliged to retain water in the landscape and the actions assigned to them are indicated in Annex 4 to *the Plan to counteract the effects of drought ,* set out in the *Regulation of the Minister for Infrastructure of 15 July 2021 adopting the Plan to counteract the effects of drought (Journal of Laws 2021, No. U. item 1615).*

The action covers, in particular, projects of State Forests consisting in increasing the retention capacity of forests by performing water retention works, consisting primarily in the construction and reconstruction of small water reservoirs, restoring wetlands and floodplains, as well as limiting and slowing down water run-off (small retention in lowland and mountain areas). Actions taken should strengthen forest resilience and respond to the challenges of climate change adaptation. Creating conditions for water storage will translate into preventing, counteracting and mitigating the effects of climate change risks, in particular: droughts, forest fires, heavy precipitation and surface run-off.

The following sub-measures will be implemented:

1. Protection of water resources in forests by: a. exclusion from the use of forests on marsh habitats and forests on natural habitats along natural watercourses and around natural water bodies in a buffer of at least 30 meters, b. prohibition of clearing and nesting logging outside natural habitats along natural watercourses and around natural water bodies in a buffer of at least 30 meters, c. introduction of forest management standards against forest drainage as a priority in forest districts classified in category I of fire risk – in the period until 2027, and in other forest districts in the period until 2030.

2. Restoration of water resources in forests through technical water retention measures (restoration of wetlands and floodplains, including maintenance of beavers (if they do not pose a significant threat from the point of view of public safety), in accordance with the provisions of the forest water management plans – from 2030.

In mountain areas, activities related to the prevention of soil water erosion associated with rainwater runoff will be carried out.

CONTRACTING AUTHORITY

Minister for the Environment

COOPERATING ENTITIES

PGL State Forests Minister for Water Management

Action } 86. Cascading principle □) utilization of bioma isy

The aim of the action is to ensure optimal use of biomass - in accordance with the Regulation of the Minister of Climate and Environment of 30 May 2025 on detailed qualitative and dimensional characteristics of energy wood (Journal of Laws of 2025, item 746) - as a raw material, in particular in high value-added solutions for the economy and the transition to a sustainable and circular bioeconomy.

The action includes the following sub-measures:

1. Include in business practices the principle of cascading use of woody biomass, taking into account:

• the use of whole wood raw material in high value-added applications, in particular as a priority for the material production of the wood processing industry and the lack of use of whole wood in the energy sector,

• the use of those types of wood raw material that have a reduced technical and performance value and meet the definition of energy wood.

2. Conducting analyses in the field of gradual abandonment of the use of forest biomass for energy production in the professional energy sector - preparation of an appropriate road map for energy and heating. This measure fits in with the prospective potential of biomass of agricultural origin and the projected increase in the share of other renewable energy sources, such as the sun and wind in the national energy system, the development of electrification of heating, as well as the development of the bioeconomy as a sector strengthening the competitiveness of the Polish economy.

3. Monitoring and verification of the type of biomass used economically.

4. Implementation and enforcement of the obligation to make information available and annually updated to consumers on the websites of operators, suppliers or relevant competent authorities concerning geographical origin and type of raw materials intended

per biofuel, bioliquid and biomass fuel per fuel supplier. The information on the type of raw materials shall be sufficiently detailed and shall include a breakdown into at least the following categories:

i) primary woody biomass by wood sorting,

ii) by-products of the wood industry,

iii) post-consumer wood,

iv) agricultural waste biomass,

v) intentional energy crops,

vi) types of solid biomass.

5. Introduction of an electronic system for recording wood flows from a domestic source or from the moment of entry of imported biomass into the country in order to facilitate compliance with the obligations set out in point 1) above and the implementation in Poland of the provisions of Regulation (EU) 2023/1115 of the European Parliament and of the Council (the so-called Regulation (EU) 2023/1115). EU Deforestation Regulation).

6. Increase recovery and recycling of post-consumer wood. The aim of the action is to exploit the potential of post-consumer wood in Poland and to direct as much of it as possible to material production in order to ensure a sufficient supply of raw material for the wood industry in the face of restrictions on wood harvesting.

CONTRACTING AUTHORITY

COOPERATING ENTITIES

Minister for Climate Affairs
PGL State Forests

Action 87. Developing a bioeconomy strategy and

The action consists in the development and adoption of a national strategy for the bioeconomy. Due to the importance of the agricultural, forestry and aquaculture sectors in Poland and all sectors of the economy and industry using biological resources, a strategic and integrated approach to the development of the bioeconomy is necessary. The bioeconomy will become one of the pillars of sustainable development, combining technological innovation, efficient and responsible use of biological resources and

care for the natural environment. Particular emphasis will be placed on the valorisation of biomass, taking into account its full potential in different value chains, in line with the principles of cascading use of biological raw materials – prioritising higher value-added objectives (e.g. food, feed, pharmaceuticals) before biomass is used for energy purposes. In the long term, Poland may become a leader in Central and Eastern Europe in terms of: (1) efficient and sustainable use of biomass, (2) development of the circular economy, (3) implementation of innovative technologies based on biological processes on an industrial scale. The bioeconomy will also play an important social role, contributing to the development of jobs in rural and peripheral regions, strengthening local value chains and involving citizens in transition processes. It will also support food and energy security by using local, renewable resources in a sustainable way. Due to its interdisciplinary nature and wide scope of impact, the strategy needs to be developed as a joint inter-ministerial document, involving different ministries, public institutions, academia, associations or HUBs, industry and civil society.

CONTRACTING AUTHORITY

COOPERATING ENTITIES

Minister for Climate, Minister for the Economy, Minister for Agriculture

Action 88. Development of the Bgo National Forest Programme

The action consists in the development of the National Forest Programme, which will constitute a comprehensive, long-term strategy for the development and transformation of forestry, based strictly on EU law, including the latest available data and scientific knowledge. The programme will cover the period up to 2050 with specific objectives for 2030 and 2035. It will take into account the multidimensionality of wood resource management in the context of nature conservation needs, climate change adaptation, carbon sequestration, material and energy use of wood, and social functions of forests. It will take into account the need to balance the various functions performed by Polish forests. In particular, the Programme will set out long-term (with a 2030, 2035 and 2050 perspective) objectives and actions addressing in an equivalent manner:

a. ensuring the durability of forests, including prevention of fires and large-scale forest stand dying - without increasing wood harvesting and without expanding the road network, especially in forests of natural value,
b. adaptation of forests to climate change and the contribution of forests to climate change adaptation, including regulation of water relations,
c. ensuring carbon storage by stands and CO2 removals by forests, in particular with regard to the achievement of the target set for Poland in the LULUCF Regulation, d. strengthening the social and natural functions of forests and nature restoration in forests, in particular the Programme will take into account the need to achieve the nature restoration objectives in forests set out in *Regulation (EU) 2024/1991 on nature restoration*,
e. ensuring a sufficient quantity of raw material for the domestic wood processing industry in the context of the reduction of harvesting in forests resulting from points c and d, including through the effective implementation of the principle of cascading use of wood,
f. the just transition of regions dependent on logging and wood industry production, whose economic situation will change as a result of the exclusion of certain forest areas from forest management.

CONTRACTING AUTHORITY
Minister for the Environment

COOPERATING ENTITIES Minister for **Climate, Minister for Water Management, PGL Lasy Państwowe**

Environment-wide measures

Action } 89. Development and implementation of the National) Reconstruction Plan B

The deteriorating state of the environment, manifested by the progressive degradation of ecosystems, loss of habitats and the decline of biodiversity, calls for decisive action. Nature restoration is key to tackling the effects of climate change, such as droughts, floods and loss of soil fertility. Well-preserved and well-functioning ecosystems are a cornerstone of food security, public health protection and economic stability. Of particular importance is the restoration of biodiversity, which improves the stability and ability of ecosystems to regenerate in changing conditions, supports natural processes such as pollination, water purification or nutrient cycling, and provides a basis for biomedical and biotechnological innovation.

The action consists in elaborating by 1 September 2026 and starting the implementation of the National Nature Restoration *Plan, as required by the EP and Council Regulation (EU) 2024/1991 on Nature Restoration* Law. The plan must include clearly defined objectives, a timetable for implementation and specific measures to restore degraded ecosystems, improve the condition of natural habitats and increase biodiversity on the national territory.

The implementation of the National Plan requires a detailed inventory of the state of the environment, the identification of priority areas of action and the establishment of financing mechanisms and a system for monitoring progress. It is necessary to fully involve all key stakeholders, including public administration, local governments, NGOs, the agricultural and forestry sector and local communities. The action aims to restore ecological integrity and ensure the sustainability of ecosystem services, essential for the life and well-being of current and future generations.

COOPERATING ENTITIES

CONTRACTING AUTHORITY
Minister for the Environment

Minister for Energy
Minister for Climate Affairs
Minister for Agriculture
Minister for Water Management
Minister for Maritime Affairs Minister for Regional Development Minister for Construction, Spatial Planning and Planning and Housing
Minister for National Defence

Action and 90. Bringing 2 [1] quality:and water to stai riu good and ban clzo dobn =>go, in accordance with the Water Framework Directive

The action consists in restoring rivers and other surface waters to good or very good condition, in accordance with the objectives of the so-called National Water Framework. The Water Framework Directive.

1. Adoption of III update of river basin management plans.
2. Strengthening the implementation of the so-called wastewater directive, in order to reduce the introduction of insufficiently treated wastewater into waters.
3. Strengthen the implementation of the Nitrates Directive to reduce water pollution by nitrates from agricultural sources.

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CONTRACTING AUTHORITY

Minister for Water Management

COOPERATING ENTITIES

Minister for Climate Affairs
Minister for the Environment
Minister for Agriculture
Minister for Health
CIEP
Provincial Inspectorates for Environmental Protection
GIS

Action 2 91. Ensuring Li gets clean drinking water

The action consists in the full implementation into the legal order *of Directive (EU) 2020/2184 of the European Parliament and of the Council on risk management in access to drinking water :*

1. Ensure the implementation of Directive (EU) 2020/2184 of the EP and of the Council on the quality of water intended for human consumption into the national legal system (for the implementation of the laws, regulations and administrative provisions necessary to comply with Articles 1 to 18, Article 23 and Annexes I to V of the Directive into the national legal system (for the implementation of the laws, regulations and administrative provisions necessary to comply with Articles 1 to 18, Article 23 and Annexes I to V).

2. Introduce a risk-based approach to water safety covering supply systems and water supply areas as well as internal water supply systems, with a particular focus on priority facilities. Carrying out for the first time a risk assessment and risk management in the areas of supplying the intake of water intended for human consumption.

3. Develop a national action plan to reduce leakages – if the threshold for water leakages set by the European Commission in the delegated act is exceeded. Carrying out risk assessment and risk management in the supply system for the first time.

4. Transmission to the European Commission of a national action plan setting out a package of measures to be applied to reduce the volume of leakages (concerns the case when the volume of water leakages exceeds the threshold set out in the delegated act).

5. Introduce an obligation to identify persons with no or limited access to water intended for human consumption, assess possibilities to improve access to water and take measures to improve access by competent authorities.

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CONTRACTING AUTHORITY

Minister for Water Management

COOPERATING ENTITIES

Minister for Economic Affairs
Minister for European Affairs

Action and 92. Instrument: finances
y - Priority Programme of the National Fund for Environmental Protection and Water Management - 'My Water'

The action consists in supporting solutions enabling the retention and use of rainwater, including those flowing from roofs, and meltwater on the property. The program provides funding, among others, for the installation of above-ground and underground tanks, rain gardens, absorbent moulds, pumps, filters and irrigation systems.

The programme should be developed to support also systems for the purification of rainwater for living purposes, such as washing or washing, as well as installations for the reuse of grey water for flushing toilets and systems for its treatment and retention (distribution) on the property. Such solutions create a closed water cycle and increase the retention of precipitation directly at the place where it occurs.

PROVIDING AUTHOR

Minister for Climate

COOPERATING ENTITIES

Minister for the Environment
NFOŚiGW

Action } 93. Support for the development of 4j water management IO - sewage

In 2024, Directive (EU) 2024/3019 of the EP and of the Council of 27 November 2024 on urban waste water treatment was adopted. The recast Directive lays down rules on the collection, treatment and discharge of urban wastewater in order to protect the environment and human health, while progressively reducing greenhouse gas emissions to a level that ensures sustainability and improves the energy balance of urban wastewater collection and treatment activities.

The action will consist in applying to the Managing Authorities of EU programmes and institutions financing environmental protection and water management for financial support for the development of wastewater management in Poland.

CONTRACTING AUTHORITY

Minister for Water Management

COOPERATING ENTITIES

Minister for Climate Affairs
Minister for the Environment
Minister for Rural Development
Minister for Regional Development
Minister for Economic Affairs
NFOŚiGW
Marshal's Offices

Action } 94. Conducted)2' soil nnonitoring

The action consists in developing a new concept for soil health monitoring, which will cover soils used in different ways, i.e. agricultural, forest, built-up and located within communication and industrial infrastructure, in line with *the provisions of the EU Soil Strategy for 2030*. Benefits of healthy soils for people, food, nature and climate and the proposal for a Directive on Soil Monitoring and Resilience (Soil Monitoring Law (COM (2023) 416 final).

Poland, as an EU Member State, will implement the principles of soil monitoring in the manner described in the above document, including requirements for the determination of the number of monitoring points on land with different uses and the application of soil health assessment parameters. One indicator to be used is the monitoring of the loss of soil organic carbon, including organic and mineral soils, as defined in the 2006 IPCC Guidelines and 2013 Supplementary Materials. When defining soil units according to the principles set out in the proposal for a Soil Monitoring Directive, Poland should in particular take into account organic soils.

and to locate on these soils a statistically significant number of checkpoints that will ensure the control of their condition and allow the assessment of emissions.

CONTRACTING AUTHORITY

Minister for Climate

COOPERATING ENTITIES

Minister for Agriculture

Action 95. Identification of ii remediation of , sites where contamination occurs<sleep surface ii

The action aims at continuing to identify places where environmental degradation occurs through, inter alia, contamination of soil or land with hazardous substances in quantities posing a risk to human health or the state of the environment. As a first step, the pollution assessment will be carried out on sites where activities are currently taking place or have been carried out in the past that may have contributed to soil or land pollution. The list of such activities will also be subject to verification. If contamination is found, soil or soil remediation will be carried out.

1. Strengthen the legal and organisational framework for the identification and remediation of contaminated soil or land, in particular the development of procedures for analysing risks to human health or the state of the environment at pollution sites, and continue to keep electronic records of environmental damage to the earth's surface and historical pollution of the earth's surface.

2. Strengthen financial instruments for the identification and remediation of contaminated soil or land.

3. Search for and promote the best technologies related to soil or soil remediation, as well as the best technologies for the treatment of water contaminated by soil or soil pollution

CONTRACTING AUTHORITY

Minister for Climate Affairs

COOPERATING ENTITIES

Minister for Water Management

d-b

Action and 96. Identification and improvement of the environmental status of large-scale degraded tenmes

The aim of the action is to improve the environmental status of identified large-scale degraded land (WTZ) defined in the legislation as land of at least 10 ha where there is a landfill for historical industrial waste or a site for the collection of historical industrial waste, together with neighbouring areas where there is a significant risk to human health or the state of the environment due to emissions from that landfill or site. Recognised OCTs are explicitly mentioned in the regulations, and identification of previously unrecognised OCTs will be carried out.

1. Execution of a comprehensive assessment of the state of the environment and development of draft plans to improve the state of the environment on the identified OCTs.

2. Implementation of approved plans to improve the state of the environment on the identified OCTs.

3. Maintaining the identification of previously unrecognised OCTs, as well as the register of OCTs, both those identified and previously unrecognised in the form of a digital database, and periodically updating the data contained in the register of OCTs.

4. Analysis of the data collected in the summary extract from the OCT register in order to consider, taking into account the availability of financial resources, possible amendments to the provisions *of the Act of 16 June 2023 on large-scale degraded land,* hereinafter referred to as the OCT Act, including the inclusion of land of a different nature or area.

Strengthening the legal framework and financial instruments for improving the state of the environment in OCTs, including in the next stage strengthening the role of the national administration in the processes of improving the state of the environment in OCTs, and conducting an analysis of the possible need to amend the Act on OCTs in the above-mentioned scope and securing funds from EU funds.

PROVIDING AUTHOR

Minister for Climate, Minister for Environment

COOPERATING ENTITIES

NFOŚiGW, GIOŚ, GDOŚ

Action } 97. Limited*E; illegal; Jo moves waistbands and identifies and prevents the formation of places>c illegal ago depositing waistbands

The action aims to reduce international and domestic illegal shipments of waste, in particular hazardous waste. The action also aims to prevent the creation of sites for the illegal deposit of waste, including hazardous waste, to continue to identify them and to increase the capacity to dispose of such sites.

1. Strengthen the legal and administrative supervision of international and domestic shipments of waste, with a particular focus on shipments of hazardous waste, which will improve the detection of illegal shipments of waste.

2. Strengthen the legal framework to prevent illegal waste deposit sites, in particular those endangering human health and life and the environment. The action will increase control capabilities and clarify the responsibility of the producer of hazardous waste.

3. Conducting identification of places of illegal waste deposit, in particular places endangering human health and life and the environment, together with their inventory using IT tools enabling ongoing cooperation of services, supervision and monitoring of such places.

4. Strengthen financial instruments to prevent the creation of sites for the illegal deposit of waste and to assist in the removal of sites for the illegal deposit of waste that endanger human health and life and the environment.

CONTRACTING AUTHORITY

Minister for Climate Affairs
CIEP (for waste shipments)

COOPERATING ENTITIES

Minister for Public Finances

Action and 98. Preventing B processes of natural land degradation l wetlands for agricultural and forestry purposes 1

The action consists in improving legislative mechanisms to counteract changes in the use of agricultural and forest land for other purposes and strengthening existing mechanisms to protect natural land against degradation. Preventing degradation processes aims at preserving soils as much as possible to perform ecosystem functions and ensure food security, as well as maximising soil CO2 sequestration. Restoring the sustainable use of terrestrial ecosystems, combating desertification, actions to halt and reverse soil degradation, halting the loss of soil biodiversity will be promoted.

CONTRACTING AUTHORITY
Minister for the Environment

COOPERATING ENTITIES
Minister for Agriculture

Action B 99. Supporting remediation :jji degraded land f (:h and devastatedcl h

The action consists in providing various types of support in the event of the rehabilitation of degraded and devastated land. Remediation of degraded land is aimed at increasing their production potential. Remediation of devastated areas and their integration into the economic circuit is also an important activity, so as not to locate investments in "green" areas.

PROVIDING AUTHOR
Minister for Climate

COOPERATING ENTITIES
Minister for Agriculture Minister for the Environment

Action B 100. Financial Instrument y - Priority Programme of the National Fund for Environmental Protection and Water Management "Ochroin of the Earth's surface and"

The action consists in creating and maintaining financial mechanisms, the aim of which will be to support investments dedicated to the broadly understood protection of the earth's surface. In cases where the "polluter pays" principle cannot be applied, a financial instrument is necessary to safeguard the possibility of use in case of need for investment in this area.

PROVIDING AUTHOR
Minister for Climate

COOPERATING ENTITIES
NFOŚiGW

ActionB 101. Financial instrument y - Program; y' NFOŚiG \ / supporting adaptation to zrr lian climate

The action includes increasing the level of protection against the effects of climate change and natural hazards as well as major accidents, improving the removal of their effects and strengthening

selected elements of environmental management; diffusion of modern, efficient and effective solutions to improve the quality of life of residents and the resilience of cities to the effects of climate change, as well as to increase adaptation to climate change in rural areas.

PROVIDING AUTHOR
Minister for Climate

COOPERATING ENTITIES
NFOŚiGW

Action } 102. Limitations! utilization iia plasticc :h

In the face of the growing threat posed by the excessive presence of plastics in our lives and economies, it is essential to implement policies that limit their use. Plastics are extremely harmful to the environment – their microplastics are present today not only in aquatic and terrestrial ecosystems, but also end up in our food and organisms, accumulating in human bodies and causing long-term health consequences. Therefore, it is necessary to take measures that consistently lead to a reduction in the amount of plastics produced and used. Key actions in this regard are:

1. Reducing the use of single-use plastic products.

2. Increase the use of alternative materials that effectively replace plastic packaging and single-use plastic items.

3. Developing a circular economy that promotes intensive recycling of plastics and minimises waste by increasing the use of reusable packaging. It is necessary to pay attention to the recyclability of packaging by reducing the use of factors that limit full recycling such as plastic additives, binders, dyes. Action is needed to encourage manufacturers to use additives that do not block reprocessing.

4. Supporting the locality of supply chains – the place of use and management of plastics should not be distant from each other. The proximity between the place of use and the place of plastic processing allows the manufacturer to effectively recover the raw material and reuse it.

5. Support research (R&D) on the development of new, innovative materials and the development of recycling technologies that will enable the effective recovery of valuable raw materials.

Social education is also extremely important, increasing awareness of the risks arising from the excessive use of plastics and encouraging the change of consumption habits to greener ones.

The implementation of these solutions is not only crucial for the protection of the environment, but also brings economic and social benefits, contributing to sustainable development and improving the quality of life of future generations. This policy is also important to reduce CO_2, as non-recycled plastics are often used as fuel, leading to additional CO_2 emissions .

CONTRACTING AUTHORITY
Minister for the Environment

COOPERATING ENTITIES
Minister for Climate, Minister for the Economy

Action and 103. Economy 3l (3i Circular

The development of the circular economy (CEE) is one of the most important tools for reducing emissions, as closing material loops in the economy reduces energy-intensive extraction and processing of primary raw materials, reduces global resource transport, and avoids emissions related to landfilling and incineration of waste. Each tonne of material that remains in circulation means avoided emissions both at the extraction stage (e.g. iron ore, bauxite, fossil fuels) and in high temperature processes such as steel smelting, aluminium production or petrochemical cracking. In the construction, automotive and electronics sectors, extending product life, component reuse and material recycling significantly reduce the demand for cement, steel and plastics. By contrast, the reduction of waste sent to thermal treatment plants reduces emissions of $_2$ CO, nitrogen oxides and dust.

The action consists in implementing an integrated package of ecodesign initiatives that ensures the durability, reparability and recyclability of products; system support for repairs and re-use through a network of service points and re-use platforms; the introduction of deposit and return systems and the circulation of reusable packaging; extended producer responsibility, obliging manufacturers to finance and organise the collection and recycling of their products; investments in modern sorting plants and mechanical and chemical recycling installations guaranteeing high-quality secondary raw materials; developing industrial symbiosis in which the waste of one plant becomes the raw material for another; promoting sharing models such as car-, bike- and tool-sharing; large-scale educational programmes and public awareness-raising campaigns. Coordinated implementation of these initiatives will reduce the weight of waste going to landfill and incineration, reduce the demand for primary raw materials, reduce greenhouse gas emissions along the value chain and increase innovation and competitiveness of the economy.

CONTRACTING AUTHORITY

Minister for Economic Affairs

COOPERATING ENTITIES

Minister for the Environment Minister for Climate

Dimension 2
Efficiency: energetics

Action and 104. Roadmap for the dissemination of the ESCO model

A market plan and guidelines for the uptake of the ESCO formula should be established. *Energy Service Company*). The ESCO formula in Polish conditions can be a very good financial mechanism for the implementation of transformations, especially in the field of building modernization. The prepared plan and guidelines should include:

- Description of models for the implementation of the ESCO formula with an indication for which entities a given formula is the most appropriate,
- Identification of barriers and conditions that limit the dissemination of the ESCO formula,
- Recommendations for legal changes,
- Recommendations on support mechanisms,
- Recommendations for actions in the field of pilot programmes,
- Recommendations for promotional and educational activities.

PROVIDING AUTHOR

Minister for Climate

COOPERATING ENTITIES

Minister for Construction, Spatial Planning and Development and Housing
Minister for Regional Development

Action } 105. Introduction of requirements *and* scope for the use of salt energy :znej‡‡‡‡‡‡‡‡‡‡ in buildings

The measure consists in introducing requirements for equipping new buildings and buildings undergoing modernization with equipment or installations using solar energy to generate electricity or heat, if it is appropriate in terms of: technical, functional and economical - according to the following schedule:

- public utility buildings, collective residence buildings, outbuildings, with an area of more than 250 m^2 – from 31 December 2026,
- residential buildings – as of 31 December 2029.

In addition, new roofed car parks adjacent to the building should be equipped with devices or installations using solar energy to generate electricity or heat from 31 December 2029.

In addition, buildings in use shall be equipped with equipment or installations using solar energy to generate electricity or heat, where appropriate in terms of: technical, functional and economical - according to the following schedule:

public finance ‡‡‡‡‡‡‡‡‡‡ buildings with usable floor area:

above 2000 m² until 31 December 2027, above 750 m² until 31 December 2028,
oover 250 m² until 31 December 2030,

• non-residential buildings with an area of more than 500 m2 from 31 December 2027, where the building undergoes a major renovation or an activity requiring an administrative permit for the renovation of buildings, roof works or the installation of a technical building system.

Minister for Construction, Planning Minister for Economic Affairs and Spatial Planning and Minister for Housing Climate

CONTRACTING

COOPERATING ENTITIES

Action j 106. the Finance InstrumenI
y - Priority Programme of the National Fund for Environmental Protection and Water Management - 'My Heat'

The program consists in financial support for the development of individual heating and the development of prosumer energy in the area of air, water and ground heat pumps in new single-family residential buildings and in multi-family residential buildings and public buildings. The programme should be modified to include both the construction of new buildings and the extension or alteration or superstructure of existing buildings, provided that such extension or alteration or superstructure requires a building permit, or the cost of extension or alteration or superstructure exceeds 50% of the value of the building.

The programme should be developed towards:

• the digitalisation of the support delivery process. Digital handling and verification of applications should be achieved. To this end, it is necessary to digitalise the full application and payment path, create a central database and synchronise it with the Central Building Emission Register and the Central Register of Energy Performance of Buildings, and use the reference cost database. Digitization of the process will improve the operation of the program, reduce the processing time of applications, improve the transparency of the entire support system and provide additional protection against irregularities.
• phasing in and increasing energy storage, including through the use of heat storage.

PROVIDING AUTHOR

Minister for Climate

COOPERATING ENTITIES

Minister for Construction, Spatial Planning and Development and Housing
Minister for Energy
Minister for Information Technology
NFOŚiGW

Action } 107. Financial instrument
y - Priority Programme of the National Fund for Environmental Protection and Water Management - "Clean Air"

The program includes co-financing for the replacement of old and inefficient solid fuel heat sources in single-family buildings with modern RES sources and comprehensive thermomodernization of these buildings. The aim is to reduce emissions of dust and other pollutants into the atmosphere from existing single-family dwellings and to improve energy efficiency.

The programme should be developed towards:

- **Digitisation of the support delivery process**. Digital handling and verification of applications should be achieved. To this end, it is necessary to digitalise the full application and payment path, create a central Clean Air database and synchronise it with the Central Building Emission Register and the central register of energy performance of buildings, and use the reference cost database. Digitization of the process will improve the operation of the program, reduce the processing time of applications, improve the transparency of the entire support system and provide additional protection against irregularities.
- **Raise the expected final condition of the building** so that the demand for usable energy is as low as possible. The standard of the annual useful energy demand indicator (EU) should be pursued at the best possible level, thus significantly reducing energy consumption and improving the energy efficiency of buildings. Achieving this requires higher requirements for thermal insulation, widespread use of heat recovery ventilation and modern energy management systems.
- **Raising quality and environmental requirements for co-financed heating devices and** gradually increasing the share of electrification of heating systems and greater use of energy storage, including the use of heat storage. Only heating equipment produced in the European Union should be eligible for funding. For zones with exceedances of limit values for pollutants in ambient air, preference should be given to zero-emission solutions.
- **Introduction of an alternative to the retrofitting of buildings with very poor technical condition**. Modernization should be carried out primarily where it will bring the greatest energy and economic benefits. In the case of buildings in very poor technical condition, it may be more appropriate to support alternative solutions under other programmes, such as the construction of new buildings with high energy efficiency.

PROVIDING AUTHOR

Minister for Climate

COOPERATING ENTITIES

Minister for Construction, Spatial Planning and Development and Housing
Minister for Energy
Minister for Information Technology
NFOŚiGW

Action j 108. Financial instrument

y - Tax credit 3 for expenditure incurred on thermomodernisation of single-family housesc:h residential buildings 3iw (thermomodernisation credit)

The measure consists in the possibility of deducting expenditure incurred on thermomodernisation of single-family residential buildings in personal income tax. The mechanism targets owners and co-owners of single-family houses and complements the Clean Air solutions. Under Clean Air, support is targeted at income earners. The tax credit does not contain such limitations and facilitates the decision of individuals to improve the energy efficiency of residential buildings. It also includes a broader catalogue of eligible expenditure, including renewable energy sources, including photovoltaic panels and energy storage.

The thermomodernisation relief mechanism operating since 2019 should be analysed in terms of increasing the quality of the thermomodernisation investments carried out and enabling monitoring of their effects. These measures should be consistent with the rules provided for in programmes directly supporting the thermomodernisation and installation of renewable energy sources in single-family buildings, such as the Clean Air programme and the My Current programme, taking into account the specificity of the tax credit as a fiscal instrument operated by the tax administration.

The mechanism should develop towards enabling the monitoring of thermomodernisation works undertaken and installations of renewable energy sources in order to enable the assessment of their effects in the energy and climate context and the assessment of the efficiency of public spending.

CONTRACTING AUTHORITY
Minister for Construction, Spatial Planning and Development and Housing

COOPERATING ENTITIES
Minister for Public Finance, Minister for Climate

Action } 109. the Finance InstrumenI y - TERMO programme, support for \A/y energy efficiency ' /*/ multi-family buildings rch

The TERMO program - financed by the Thermomodernization and Renovation Fund located in Bank Gospodarstwa Krajowego - will be the basic instrument to support the energy transition in the multi-family buildings sector. Since 2023, the programme has also benefited from European funding under *the National Recovery and Resilience Plan* . Ultimately, the programme will undergo a modification related to the obligations under the EPBD. In particular:

- the support scheme, including the intensity of the support, will be linked to the energy class scheme. Preference will be given to moving to higher energy classes, indicating the minimum values to be achieved as a result of thermal modernisation works. This will force investors to use high parameters regarding insulation systems, replacement of window and door joinery, mechanization of ventilation systems with a preference for ventilation with heat and moisture recovery, use of energy management systems and wide use of RES installations,
- under the TERMO programme, it will be possible to obtain co-financing for part of the costs resulting from broadly understood thermomodernisation investments, including those related to the installation of renewable energy sources and energy storage, including heat storage,
- appropriate solutions will be applied for historic buildings, as well as for municipal buildings particularly exposed to the problem of energy poverty,
- the process of applying for support will be simplified and digitised, the requirement to prepare audits will be maintained and will be subject to detailed external verification. The audit will be prepared in an electronic version. At the same time, requirements will be formulated for persons who will be able to prepare audits.

CONTRACTING AUTHORITY
Minister for Construction, Spatial Planning and Development and Housing

COOPERATING ENTITIES
Minister for Climate Affairs
Minister for Public Finances
Bank Gospodarstwa Krajowego

Action j 110. Financial Instrument y - Priority Programme of the National Fund for Environmental Protection and Water Management - 'Modernisation of schools' [1]

A program has been launched including co-financing of comprehensive thermomodernization of schools and installation of modern RES sources. Modernization of educational institutions is a key element in improving energy efficiency, learning comfort and reducing pollutant emissions. Many schools in Poland are characterized by low thermal insulation, which results in high heating costs, excessive energy consumption and poor indoor air quality. Many studies point to significantly elevated CO_2 levels, even above 4000 ppm, which negatively affects the quality of science and

children's health. Funding under the programme includes comprehensive actions aimed at improving energy standards and creating healthy and comfortable learning conditions. Modernization includes the installation of modern heat sources, improvement of thermal insulation, installation of modern energy management systems and mandatory installation of ventilation with heat recovery. The key objective of the program is to adapt educational institutions to modern energy efficiency standards and improve air quality in school buildings.

The programme shall aim to:

- **Achieve a high energy standard for buildings** so that the demand for usable energy is as low as possible. The standard of the annual utility energy demand indicator should be pursued at the best possible level, which will significantly reduce energy consumption and improve the energy efficiency of buildings. Achieving this requires higher requirements for thermal insulation, widespread use of ventilation with heat and moisture recovery, solutions to support summer space cooling and efficient energy management. Adequate air quality in classrooms will create healthy learning environments.
- **Digitalisation of the support process**, including full digital handling and verification of applications, synchronisation of databases and integration with energy audits and the Central Building Emissions Database. This will streamline the process, reduce processing time and improve transparency.
- **Priority for the electrification of heating systems** based on heat pumps and heat storage. Traditional fuels should be replaced by modern heating technologies, which will increase energy efficiency and reduce pollutant emissions.

It is also recommended to consider extending the programme to include green - elements of blue infrastructure and educational - information activities supporting adaptation to climate change and reducing energy consumption, in particular in the context of building climate awareness among local authorities and bodies running educational institutions.

PROVIDING AUTHOR

Minister for Climate

COOPERATING ENTITIES

Minister for Construction, Spatial Planning and Development and Housing
Minister for Education
Minister for Information Technology
NFOŚiGW

Action } 111. the Finance Instrumenl

y - Priority Programme of the National Fund for Environmental Protection and Water Management - "Modernisation of public buildings

The programme includes funding for comprehensive thermomodernization of public buildings, such as hospitals, cultural houses, offices, libraries and other administrative facilities. The modernisation of these facilities is a key element in improving energy efficiency, user comfort and reducing pollutant emissions. Many buildings of this type in Poland are characterized by low thermal insulation, which results in high heating costs, excessive energy consumption and deteriorated indoor air quality. Funding under the programme includes comprehensive actions aimed at improving energy standards and creating healthy and comfortable conditions of use. Modernization includes the installation of modern heat sources, improvement of thermal insulation, installation of modern energy management systems and mandatory installation of ventilation with heat recovery. The key objective of the programme is to adapt public buildings to modern energy efficiency standards and to improve air quality in these facilities.

The programme shall aim to:

• **Achieve a high energy standard for buildings** so that the demand for usable energy is as low as possible. The standard of the annual useful energy demand indicator (EU) should be pursued at the best possible level, thus significantly reducing energy consumption and improving the energy efficiency of buildings. Achieving this requires higher requirements for thermal insulation, widespread use of ventilation with heat and moisture recovery, solutions to support summer space cooling and efficient energy management. Adequate air quality in public buildings will improve working conditions, health care and the availability of public services.
• **Digitisation of the support process**, including full digital handling and verification of applications, synchronisation of databases and mandatory performance of energy audit and integration with the central register of energy performance of buildings and the Central Building Emission Database. This will streamline the process, reduce processing time and improve transparency.
• **Priority for the electrification of heating systems** based on heat pumps and heat storage. Traditional fuels should be replaced by modern heating technologies, which will increase energy efficiency and reduce pollutant emissions.

PROVIDING AUTHOR
Minister for Climate

COOPERATING ENTITIES
Minister for Construction, Spatial Planning and Development and Housing
Minister for Information Technology
NFOŚiGW

Action } 112. Micro-enterprise support programme:stations - energy efficiency of buildings

The investment will target micro-enterprises and will support the renovation of buildings to increase their energy efficiency and the decarbonisation of heating and cooling of buildings used for business, including through the integration of renewable energy generation and storage in buildings.

The objective of the investment is to provide support to economically disadvantaged micro-enterprises. The investment will be directed to those who document significant expenses related to the costs of fossil fuels used to heat or cool buildings intended for business purposes in relation to the company's revenues.

The support will be of a financial nature and will be complementary to private funding. Investments in energy efficiency measures, as well as in renewable heating and cooling systems, such as heating or cooling through electric heat pumps, district heating and cooling, and participation in renewable energy communities, are an effective way to reduce reliance on fuel imports and reduce emissions. It is therefore appropriate to provide specific funding to support vulnerable micro-enterprises in their efforts to achieve the energy transition.

The investment will sustainably increase the resilience of micro-enterprises to the increase in fossil fuel costs and facilitate their operation, development and competitiveness in the market. This action will be important due to the strategic role of micro-enterprises in the Polish economy.

The investment will be implemented at the central level in cooperation with Bank Gospodarstwa Krajowego as the programme operator handling the process of selecting applications, granting and paying support.

CONTRACTING AUTHORITY
Minister for Construction, Spatial Planning and Development and Housing

COOPERATING ENTITIES
Minister for Climate Affairs
Minister for Public Finances
Bank Gospodarstwa Krajowego

Action } 113. Efficient energy and public sector: us

The action consists in disseminating good practices in the field of energy efficiency, reducing emissions of pollutants into the atmosphere by implementing investments consisting in comprehensive thermo-modernization of buildings in an exemplary way leading to energy efficiency and improving the energy efficiency of public buildings. The objective of the action is to achieve a minimum refurbishment of 3% per year of the total area of temperature-controlled, heated or cooled buildings owned by public bodies. At the same time, the aim of the action is to conduct modernization processes in such a way that modernized public buildings become a resource of good practices and models for the entire modernization process. In this context, specific guidelines should be prepared for the modernisation of public buildings, with the following priorities:

- Obtaining the highest energy efficiency and the highest possible energy class of buildings after modernization through the use of high-quality insulation systems, window and door joinery, mechanical ventilation systems, energy management systems and RES installations.
- Electrification of heating systems through the use of heat pumps and heat stores, replacing traditional fuels, which will increase energy efficiency and reduce pollutant emissions.
- Obtaining the highest possible indoor air quality thanks to the use of mechanical ventilation with heat and moisture recovery.
- Ensuring the highest possible level of self-consumption of energy through the use of photovoltaic (PV) installations and energy storage.
- Preventing, as far as possible, an increase in the required connection power for heating and cooling purposes (with the use of heat pumps and electric boilers thanks to appropriate heat storage facilities and reduced pump operating hours.
- Implementation of water saving and water recovery systems (including the use of rainwater) and the use of closed water circuits.
- Energy recovery from water and air.
- Maintaining adequate internal air humidity through moisture recovery in ventilation systems.
- The use of building automation for comprehensive management and optimization of work building.

CONTRACTING AUTHORITY
Minister for Construction, Spatial Planning and Development and Housing

Action j 114. Introduction of Ui models for the assessment ofei r t in tenders for the construction of public utility buildings c:h in vapour c:i ii o integral; dty ki ciszt life cycle (LCC)

COOPERATING ENTITIES
Minister for Climate Affairs

Technologies that reduce long-term costs, such as energy-efficient solutions, renewable energy sources and durable materials with low operating costs, should be promoted. In public contracts for the construction and modernisation of public buildings, such as

schools, kindergartens, offices or hospitals, it is recommended to use a cost criterion allowing the use of life-cycle costing (LCC) for the evaluation of tenders. *Life Cost Cycle*) in accordance with the Regulation of the Minister of Development and Technology of 23 November 2021 on the method of calculating the life-cycle costs of buildings and the manner of presenting information on these costs.

In order to encourage local governments to use the LCC method in public procurement, the Public Procurement Office, as part of its information and training activities, will promote material entitled: 'Application of the LCC-based cost criterion using the life-cycle costing method for buildings based on the provisions of the Minister for Development and Technology of 23 November 2021 *on the method for calculating the life-cycle costs of buildings and the way in which information on these costs is presented,* available on the Public Procurement Office's website at the following link: Publications from the ZZP area - Public Procurement Office - Portal Gov.pl.

This approach – the lowest price, calculated in particular as the cost of construction and use – guarantees the quality of the building, its high energy efficiency and the use of efficient heating and technical systems. This approach will also ensure resource efficiency, increase the durability of buildings and guarantee the comfort of their use, while reducing energy and maintenance expenditures. Moreover, these buildings will become a model for other investments, setting a new standard for quality, efficiency and long-term profitability in the construction sector.

CONTRACTING AUTHORITY
Minister for Construction, Spatial Planning and Development and Housing

COOPERATING ENTITIES
Minister for Climate Affairs

Action } 115. Implementing new energy standards for new buildings and buildings undergoing major) renovations

The action includes setting minimum energy performance requirements for new buildings and buildings undergoing major renovations in line with *EU Directive 2024/1275 on the energy performance of buildings* and progress in construction in a way that ensures a cost-optimal balance between the required inputs and energy costs saved during the life cycle of the building. The process of setting minimum energy performance requirements should also take into account the optimisation of buildings to realise their solar potential and the introduction of zero-emission standards. The setting of minimum requirements should be based on total primary energy, final energy and usable energy. The minimum energy performance requirements for buildings should be regularly reviewed in the light of technical progress.

CONTRACTING AUTHORITY
Minister for Construction, Spatial Planning and Development and Housing

COOPERATING ENTITIES
Minister for Climate Affairs

Action j 116. Energy assessment system for buildings □iw and technical systems for buildings

The system operates on the basis of energy performance certificates for buildings and protocols for the inspection of heating and air-conditioning systems in buildings. Documents are drawn up at various stages related to the construction, use, sale or rental of buildings. Thanks to them

it is possible to obtain knowledge about the energy efficiency of buildings, the use of renewable energy sources in buildings and the technical systems installed in them, as well as information on the possibilities of improving energy efficiency by a wide range of stakeholders in achieving energy savings in buildings. Thanks to the information contained in the certificate, the owner, tenant or occupant of the building can determine the indicative annual energy demand and thus the cost of living associated with energy consumption. This knowledge supports decision-making on energy efficiency improvement measures. The energy assessment system for buildings should be progressively developed by introducing solutions resulting in better quality and readability of documents and increasing the level of digitalisation by also integrating bases, including with CEEB. It is also advisable to develop the Central Register of Energy Performance of Buildings towards an expert system based on appropriate algorithms supporting substantively decisions on thermal modernisation investments of buildings to achieve the objectives of the EU climate policy.

CONTRACTING AUTHORITY
Minister for Construction, Spatial Planning and Development and Housing

COOPERATING ENTITIES
Minister for Public Finance, Minister for Climate

Action j 117. Efficiency c: energetics 1la in the construction community 1ij / m and both residential ri commune, taking into account potrz< =by groups of sensitivities vych

The objective of the action is to increase the energy efficiency of existing and new housing, with a focus on improving economic accessibility and adapting to the needs of socially vulnerable groups, including low-income households. This action is part of a broader strategy of integrating climate and energy policy with the state's social and housing policy. This makes it possible to reduce CO_2 emissions more efficiently and at the same time improve the quality of life of vulnerable groups. In view of the ageing population and the increasing number of people in need of support, it is necessary to implement programmes to support the comprehensive thermo-modernisation of existing residential buildings, taking into account their accessibility for the elderly and people with disabilities. In these activities, particular emphasis should be placed on enabling seniors to stay as long as possible in their existing places of residence by increasing thermal comfort, reducing the cost of living, providing adequate social services, but at the same time creating an alternative in the form of support for the construction of new senior buildings adapted to the needs of the elderly. In doing so, particular emphasis should be placed on supporting the construction of new residential buildings with increased thermal comfort and reduced maintenance costs.

This action should be implemented in coherence with other strategic documents, such as the National Recovery and Resilience Plan and the Social Climate Plan, ensuring complementarity of support and efficient use of available public resources.

At the same time, measures to improve the technical condition of existing residential buildings should include incentives to increase the accessibility of such buildings for the elderly and disabled, enabling them to live as long as possible in appropriate comfort (including thermal comfort) in existing places of residence.

CONTRACTING AUTHORITY
Minister for Construction, Spatial Planning and Development and Housing

COOPERATING ENTITIES
Minister for Social Security
Minister for Climate Affairs

Action and 118. y Financial Instrument - White Certificate System

The objective of the energy efficiency certificate scheme (white certificates scheme) is to ensure that the requirement under Article 8 of Directive 2023/1791 for final energy savings to be achieved by final customers is met. The system operates on the basis *of the Energy Efficiency Act of 20 May 2016*. Obliged entities shall fulfil the obligation to achieve energy savings by:

- implementation of projects aimed at improving energy efficiency at the final customer, as a result of which final energy savings are obtained, confirmed by an energy efficiency audit,
- obtaining and presenting energy efficiency certificates to the President of the Energy Regulatory Office for redemption,
- implementation of projects aimed at improving energy efficiency at the final customer as part of non-repayable co-financing programmes.

The energy efficiency certificates result in transferable property rights, which are exchange-traded goods, and therefore are traded on the Polish Power Exchange.

It is envisaged to modify the system of energy efficiency certificates, including in particular the improvement of the rules for the calculation of energy savings and the verification and control of energy savings achieved, including:

- establishing the profession of regulated energy efficiency auditor and thus shifting the burden of verification of audits from ERO to auditors, which will consequently not only improve the process of their verification, but also contribute to improving the quality of energy efficiency audits,
- digitalisation of the energy efficiency certification scheme.

PROVIDING AUTHOR Minister for Climate Affairs

COOPERATING ENTITIES
President of ERO

Dimension 3.
Energy security

Action } 119. Development ii implemented ie National Programs J Searched for 1 Critical Raw Materialscl 1

The action consists in verifying the ability to source critical and strategic raw materials necessary for the energy transition from national resources. This applies, among others, to lithium, nickel, cobalt and graphite, or other metals from the platinum group. The document is based on the so-called Critical *Raw Materials Act.*

CONTRACTING AUTHORITY

Minister for the Environment

COOPERATING ENTITIES

Minister for the Economy of Energy Resources
State Geological Institute - State
the Research Institute

Action j 120. Efficient management of raw materials important for the national and EU economy

Efficient and effective implementation *of the State's Raw Materials Policy 2050,* which aims to ensure the country's raw material security by, inter alia, ensuring access to raw materials important for the national and EU economy (including strategic and critical raw materials), exploring, identifying and documenting mineral deposits, supporting the development of the circular economy and developing international cooperation in the field of geology and mineral resources.

CONTRACTING AUTHORITY

Minister for the Environment

COOPERATING ENTITIES

Minister for Climate Affairs
Minister for the Economy of Raw Materials
energy
State Geological Institute - State
the Research Institute

Action j 121. Research Projects - Reduction of Li Methane from Poviat: With a ventilation in the process of transforming, ji coal mining jgo

Methane, in addition to the risk to operational safety and negative impact on the environment, is also an important source of energy, including liquid energy, that could be used in the mines or in their vicinity.

The project assumes, inter alia, the development of assumptions and guidelines for the utilization of methane from ventilation air (VAM) through the analysis and testing of air parameters from European coal mines,

a multi-criteria forecast of CH_4 emissions in the process of transformation of the coal mining sector, identification of limitations and determination of installation conditions for the reduction of VAM and analysis of the possibility of adapting available VAM solutions, selection of appropriate and development of dedicated technology for the utilization of ventilation methane on the basis of laboratory tests and economic analysis of its application, development of a model and simulation of the operation of the installation, and then testing the technology under the conditions of KD "Barbara", which will enable the creation of a concept for its application in coal mines.

In addition, an in-depth analysis of available technologies for methane uptake from the ventilation air of mines will be carried out.

CONTRACTING AUTHORITY

Minister for Energy

COOPERATING ENTITIES

Minister for State Assets

Action 122. Analysis of the possibility of implementing a stop-explosion system; atations

A legal, technical-organisational and economic analysis will be carried out of the possible possibility of implementing a system of halted exploitation, along with the identification of the deposit(s) and infrastructure that would potentially have to remain in case the course of the transformation diverges from the expected scenario or if a crisis situation occurs that threatens Poland's energy security. The assumption would be that the infrastructure would be as limited as possible, and the 'dormant' unit could only be used in an extraordinary situation. In view of the billions of costs incurred in making deposits available and the duration of such making available, avoiding the flooding and decommissioning of the entire infrastructure would make it possible to provide a kind of strategic reserve. The analysis could also cover the possibility of using the leftover infrastructure for other strategic purposes.

CONTRACTING AUTHORITY

Minister for Energy

COOPERATING ENTITIES

Minister for the Environment
Minister for State Assets

Action j 123. Updating the Polityl k and Raw Materials State

The action consists in updating the *State's Raw Materials Policy* document, the main objective of which is to ensure the security of the country's raw materials by securing current and future needs and constantly expanding the resource base of minerals for the production of raw materials (including energy and critical raw materials).

RULE OF THE MINISTER

FOR THE ENVIRONMENT

COOPERATING ENTITIES

Minister for the Economy of Energy Resources
Minister for State Assets
Minister for Construction, Spatial Planning and Planning and Housing
Minister for Energy
Minister for Public Finances

Minister for the Economy
Minister for Maritime Affairs
Minister responsible for Water Management
Minister for Climate
Minister responsible for national defence Minister responsible for education and upbringing Minister responsible for rural development Minister responsible for regional development Minister responsible for higher education and science
Minister responsible for internal affairs Minister responsible for health
Head of the Chancellery of the Prime Minister

Action 124. Cyclic update :j a preventive action plan:2:ych and ⅼ 3ila rw for | emergency and monitor! ing implementation of z<3 | dishes]launch of preventive actions

Action consisting in monitoring the progress in the implementation of key investments increasing the security of natural gas supply to domestic customers indicated in the preventive action plan and in the cyclical update of documents: the preventive action plan and the emergency plan.

CONTRACTING AUTHORITY
Minister for the Economy of Energy Resources

COOPERATING ENTITIES

Operation } 125. Maintaining efficient interconnections* of the interconnectors and LNG terminal in Świnoujście U

The action concerns taking comprehensive actions to ensure full and permanent functionality and efficiency of all existing cross-border connections and the LNG regasification terminal in Świnoujście, ensuring together the security of natural gas supply to domestic customers and the possibility of exporting surplus natural gas, also strengthening security of supply in regional terms. The action also consists in ensuring adequate physical and cybersecurity protection.

CONTRACTING AUTHORITY
Government Plenipotentiary for Strategic Affairs the Energy Infrastructure
Minister for the Economy of Raw Materials energy

COOPERATING ENTITIES

Action } 126. Construction of Li FSRU terminals in the Gulf of Gdańsk

The aim is to create an infrastructure that will enable the reception of liquefied natural gas (LNG) delivered by sea, its regasification and its introduction into the National Transmission System for natural gas. The program assumes the location of the FSRU (Floating FSRU) in the Gulf of Gdansk. *Floating Storage Regasification Unit*), i.e. a ship permanently moored, capable of landing, process storage and regasification of LNG, as well as providing ancillary services. The FSRU terminal will be

capable of receiving at least 6.1 billion m3 of natural gas per year. Technological start-up and commissioning of the Gdańsk terminal are planned at the turn of 2027 and 2028. The investment is being carried out with the support and use of European Union funds. Under the Connecting Europe Facility (CEF), the European Commission has awarded funding to the LNG Gdańsk project for preparatory work. The European Commission has also included the onshore pipelines planned for implementation under the FSRU in the loan part of the National Recovery and Resilience Plan (NRRP) in the REPowerEU chapter on the development of the infrastructure needed to meet the most urgent security of supply needs. The FSRU is divided into three main sub-projects: FSRU, offshore and offshore.

CONTRACTING AUTHORITY
Government Plenipotentiary for Strategic Affairs
Minister of Energy Infrastructure for the Management of Energy Resources

COOPERATING ENTITIES

Action } 127. Increased*capacity:ii and take-back capacity of the gas flake storage systemcl 1

The action consists in the implementation of infrastructure investments resulting in an increase in the capacity of the active gaseous fuel storage system and an increase in the maximum take-back capacity from storage facilities, which together will affect the stability of the system's operation, in particular in the winter season, and will provide the foundation for the proper further development of the gas market and commercial activity in this sector. A flexible storage system can also play a positive role in the development of the RES market, thanks to the possibility of storing biomethane in storage facilities.

CONTRACTING AUTHORITY
Minister for the Economy of Energy Resources

COOPERATING ENTITIES
Minister for the Environment

Action j 128. Expansion and modernisation of the gas system for transmission and distribution c) in line with the planned development ii and hc h update ami

The action is aimed at ensuring the proper development of the gas system, in a manner agreed with market participants and meeting their expectations. The implementation of the action will ensure a sense of functioning in a stable market, characterized by predictability in the development of infrastructure for the transport of gaseous fuels, which will facilitate decision-making on the appropriateness of using natural gas as a transitional fuel among current and future gaseous fuel customers. The expansion or modernisation of the gas system should be carried out taking into account plans to connect and receive gaseous fuel from the biomethane production installation.

CONTRACTING AUTHORITY
Minister for the Economy of Energy Resources
COOPERATING ENTITIES
Minister for Climate Affairs

President of ERO

Action and 129. Support dl< 3i implementation of the Nordic-Baltic 3i Hydrogen Corridor;jo and other infrastructure for the cross-border and domestic transport of Ui wateron

Poland will support a project to build a hydrogen transmission corridor through the Nordic countries and the Baltic Sea basin at governmental level. Support should consist of governmental (political) support for projects implementing Polish strategies in the field of hydrogen and energy, in EU and international fora, including undertaking the necessary talks with representatives of governments of countries involved in the implementation of projects of strategic importance for the decarbonisation of Poland. Support should also consist in providing government support for Polish projects or international projects in which Polish entrepreneurs participate, which implement Polish climate goals and policies in the field of hydrogen and energy, in applying for co-financing for their implementation from EU and foreign funds. The hydrogen corridor project will take into account the possibility of distributing hydrogen from the north to the south of Poland, due to the projected distribution of energy supply and demand with an increase in the projected capacity (especially offshore and onshore wind power plants and a nuclear power plant) in the north of Poland.

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PROVIDING AUTHOR
Minister for Climate

COOPERATING ENTITIES
Minister for the Economy of Energy Resources

Action } 130. Preparation of a 3 [1] action plan for large-scale hydrogen storage in kawernacl 1i Sollnyc :h

The aim of the action is to examine and assess in detail the technical and economic potential of hydrogen storage in salt caverns in Poland. The natural properties of salt caverns, such as their tightness, large volume and the ability to maintain high pressure, make them attractive objects for long-term storage of energy in the form of hydrogen. However, the current state of knowledge about the possibility of using this type of energy storage in the country remains limited.

The activity includes research work, including the use of existing knowledge in the field of the possibility of using geological structures in Poland for hydrogen storage in salt caverns and additional geological research. It is necessary to identify the location and achievable capacity of the caverns, and to identify the potential use in the context of the planned hydrogen corridors, hydrogen networks and other infrastructure, including port infrastructure allowing the import of hydrogen or ammonia. The analysis should take into account the use of caverns for hydrogen storage for both Polish and European needs. It is necessary to establish the possibility of using Polish caverns for hydrogen storage for transformational needs of both Poland and Europe. Salt caverns should form part of the emerging hydrogen ecosystem and take into account the technical conditions necessary for the safe storage of hydrogen, potentially technical, environmental and regulatory barriers. The analysis should also estimate the economic viability of the investment.

PROVIDING AUTHOR
Minister for Climate

COOPERATING ENTITIES
Minister for the Environment

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Action and 131. Ensuring well-functioning logistics of fuel supplies, supporting the development of transhipment, transmission and 3iwa gas infrastructure and didalans aiming at the extension of the NATO's Pipeline System (NATO's Pipeline System, the so-called Gas Pipeline System). NFS) to Year >ki

The measure consists in supporting investments as part of maintaining efficient logistics facilities with the systems of neighbouring countries (Germany, the Czech Republic, Slovakia, Ukraine, Lithuania) and maritime fuel terminals; ensuring the operation and development of transhipment capacity of marine fuel terminals (including LPG) in Szczecin, Świnoujście, Gdańsk and Gdynia, including the storage base in Dębogórze; expansion of the capacity of fuel bases, i.e. construction of new fuel tanks in storage bases, extension of the CEPS fuel pipeline system to Poland.

CONTRACTING AUTHORITY
Minister for the Economy of Energy Resources

COOPERATING ENTITIES

Action } 132. Monitoring of storage needs in terms of: E>ie crude oil and p<liquid plumcl 1

The action is implemented on the basis of a forecast prepared by the Government Agency for Strategic Reserves of the national demand for storage capacity for emergency and commercial stocks of fuels and oil for a period of 10 years, which is updated periodically every 2 years. The aim of the measure is to provide an appropriate basis for investor decisions, which is extremely important to ensure proper forecasting of the needs of the refining sector.

CONTRACTING AUTHORITY
Minister for the Economy of Energy Resources
COOPERATING ENTITIES

Action } 133. Support for investment and diversifying and increasing the supply of crude oil, v \ *and* tyr rt m.iri. increase the capacity of transhipment of Naftoilort and ensure a well-developed and efficient inland transmission infrastructure, including | 3Timilation=; performance and safety of the Ruro*:iągu Pomorskiegi 0

The action to ensure an uninterrupted supply of crude oil will be implemented through: ensuring the functioning and development of the transhipment capacity of Naftoport in Gdańsk, as well as ensuring a properly developed and efficient transmission infrastructure within the country, including optimizing the efficiency and safety of the Pomeranian Pipeline operation.

CONTRACTING AUTHORITY
Minister for the Economy of Energy Resources

COOPERATING ENTITIES

Action and 134. Prevention B and management constrained!3imi dosI:aw en Ejrgii Electric

The action consists in developing and updating national legal acts or applying EU acts relating to electricity supply disruptions, through the preparation of legal provisions, documents, plans and procedures to prevent, mitigate or allow efficient management in the event of a situation resulting in restrictions on the supply of electricity to customers or a situation of an electricity crisis. In addition, these activities will be supported by the preparation of a report on the results of the monitoring of the security of electricity supply.

RULE OF THE MINISTER FOR

COOPERATING ENTITIES

ActionB 135. Financial Instruments y - Market Power

Action aimed at ensuring Poland's energy security, as well as the continuity of electricity supply to all customers. It consists in ensuring that power suppliers can obtain contracts in competitive auctions in exchange for ensuring the availability of power and providing electricity in the event of a threat to the security of the energy system. It is a separate segment of the two-commodity electricity market (alongside the energy market).

RULE OF THE MINISTER FOR

COOPERATING ENTITIES

ActionB 136. Anti-blackout package

Action to develop and implement legislative solutions to make the electricity system more resilient to disruptions and enable a secure energy transition. A comprehensive package of amendments to the Acts will concern the following areas:

1. **Electricity system management :** strengthening incentives for market participants to better adapt electricity production to the current needs of the system, regulating obligations to notify work plans for grid-connected installations, increasing the number of entities that will be obliged to participate in the balancing market (by lowering the threshold for the size of obliged installations);

2. **Local content:** introducing regulations on the use of a specific share of ICT equipment and solutions produced locally in public procurement in the area of electricity;

3. **Cybersecurity:** introduction of certification requirements for devices connected to the network, the obligation to include large installations and entities managing them in constant cybersecurity supervision, minimizing the vulnerability of devices connected to the PPS to cyberattacks (security by design);

4. **Independence of operators:** strengthening the supervision of the Government Plenipotentiary for Foreign Affairs and Security Policy; Strategic Energy Infrastructure on the development of the national electricity grid and operator processes;

5. **Network connections**: design the connection process in such a way as to support the development of technologies consistent with the National Energy and Climate Plan and with the State's energy policy and the principle of efficient management of public funds;

6. **Prosumers:** ordering the rules for connecting prosumers to the network, providing operators with full knowledge of the work of prosumer installations and the possibility of managing them.

RULE OF THE MINISTER FOR ENERGY

COOPERATING ENTITIES
TSO

Action } 137. Modernisation3 and expansion of transmission lines within the PPS to enable and increase cross-border flows

It includes measures for the modernisation and expansion of the network supporting the increase of cross-border flows as part of the implementation of the investments included in the *Action Plan* developed under Regulation (EU) 2019/943, as well as the ongoing increase of transmission capacity by TSOs as part of the implementation of the linear trajectories included in that Plan. This includes improving the current transmission infrastructure, implementing advanced network monitoring and management technologies and creating new international connections.

CONTRACTING AUTHORITY
TSO
Strategic Envoy
the Energy Infrastructure

COOPERATING ENTITIES
Minister for Energy

Action and 138. Optimising ai the allocation of available cross-border and non-transmission capacitiescl h

This activity is related to increasing the availability of current cross-border links for cross-zonal trade by optimising the allocation of available cross-zonal capacity, including through the use of *the flow-based approach* (FBA). – monitoring the use of the day-ahead method and intraday marketing efforts.

CONTRACTING AUTHORITY
TSO
President of ERO

COOPERATING ENTITIES
Minister for Energy

Action and 139. Regional cooperation activities of the BEMIP Group concerning the implementation of the \ project *and* the synchronisation of the electricity systems of the Baltic States: 2: the Continental Europe System

It includes Poland's active participation in regional cooperation within the BEMIP Group. *Baltic Energy Market Interconnection Plan*, covers the Baltic and Baltic States, without Russia), at different levels,

for synchronisation of electricity systems (made on 9 February 2025 r.)
and to monitor safe operation and support TSOs' investment processes.

CONTRACTING AUTHORITY

Minister for Energy
Government Plenipotentiary for Strategic Affairs
the Energy Infrastructure

COOPERATING ENTITIES

President of ERO
TSO

Action 140. Activities in the field of integration of electricity market: electricity and electricity syster r IU frontal ukraim ' with the market enerc|ii IUE

It includes support to the political dialogue process with Ukraine and support at administrative and TSO level to further integrate Ukraine's energy system and market into the EU.

CONTRACTING AUTHORITY

Minister for Energy
Government Plenipotentiary for Strategic Affairs
the Energy Infrastructure

COOPERATING ENTITIES

TSO

Action j 141. Monitoring of the use of revenue from the TSO resulting xh from the allocation of interconnection capacity

Actions involving the publication of data on the use of revenues from network congestion and capacity allocation, including the use of *congestion rents*. This revenue is intended to finance the guarantee of the effective availability of allocated capacity and network investments in maintaining or increasing interconnection capacity.

CONTRACTING AUTHORITY

President of ERO
Government Plenipotentiary for Strategic Affairs
the Energy Infrastructure

COOPERATING ENTITIES

Minister for Energy

Action } 142. Monitoring the implementation of PCI projects in the field of electricity;mym and acquired) ='support for strategic) fch projects by;2: Introducing iic :h iria next letter PCI I

The action concerns the monitoring at national level of the implementation of projects included in the PCI list and support for projects candidate for subsequent PCI lists of strategic importance and in line with state policy. PCI projects are key infrastructure projects that aim to complete the European internal energy market and help achieve the EU's energy and climate policy objectives by benefiting from legal facilities and financial support.

CONTRACTING AUTHORITY

Minister for Energy
Government Plenipotentiary for Strategic Affairs
the Energy Infrastructure

COOPERATING ENTITIES

President of ERO
TSO

Action and 143. Activities related to the integration or a with popr<3iwy of the functioning of the market for electric eiriergia 'j

Activities related to the coordinated implementation by system operators of guidelines, principles and methodologies as acts of EU law on the technical aspects of energy system integration and their safe operation. Introduce solutions at the level of national legislation to this end.

DECISION AUTHORITY

Minister for Energy,
President of the Energy

COOPERATING ENTITIES

OSD
TSO

Action } 144. Strengthening cyber security in the en&lt sector; Brgia

The action consists of the development of a Sectoral Cybersecurity Team for the Energy Sector – CSIRT Energia (Computer Security Incident Response Team for the Energy Sector). *Computer Security Incident Response Team*). Its tasks will include, among others, receiving and supporting the handling of serious incidents, supporting operators of essential services in carrying out the obligations set out in the Act on the National Cybersecurity System, analysing serious incidents, searching for links between incidents and developing conclusions on incident handling, as well as cooperating with the relevant national level CSIRT on coordinating the handling of serious incidents. The catalogue of tasks of CSIRT Energia will be expanded after the entry into force of the draft act amending the act on the national cybersecurity system, which implements the NIS2 directive into Polish law.

Moreover, in order to strengthen cybersecurity in the energy sector, it is important to effectively implement the horizontal provisions resulting from the NIS2 Directive implemented into Polish law by amending the Act on the national cybersecurity system and the CER Directive on the resilience of critical entities. Compliance with the NIS2 Directive will require the extension of the scope and number of subsectors in the energy sector to include, inter alia, hydrogen and recharging point operators.

In addition, the appropriate implementation of sector-specific legislation, including the NCC S network code169 and the implementation of the tasks of the Competent Authority for Health and Safety at Work, should be ensured. The NCCS, through the minister responsible for energy, will also strengthen the cybersecurity of the energy sector.

Systematic action on cybersecurity, implemented in ICT systems, of components used in the energy sector is also extremely important. The competent authority and the sectoral cybersecurity team should, in cooperation with other entities of the national cybersecurity system, develop recommendations to strengthen cybersecurity, including, for example, the cybersecurity requirements to be met by devices and software used in modern energy sector systems. In particular, this would apply to new ICT/OT devices intended to become part of technological installations used in the sector.

In this context, attention should be paid to new smart technologies, new types of energy sources and the safe use of technologies using artificial intelligence algorithms.

Commission Delegated 169 Regulation (EU) 2024/1366 (full name in the *EU Regulation List* at the end of the document)

RULE OF THE MINISTER FOR

COOPERATING ENTITIES

Minister for Information Technology

Action 145. Strengthening cybersecurity in the waste management sector

The NIS2 Directive introduces new sectors where action will be needed to increase their level of cybersecurity. One such sector is waste management. The NIS2 Directive is implemented into Polish law as part of the draft act amending the Act on the national cybersecurity system, according to which the competent authority for cybersecurity for the waste management sector is the minister competent for climate, i.e. currently the Minister for Climate and the Environment. As a result, following the entry into force of the law implementing the NIS2 Directive, a number of actions will need to be taken to build an adequate level of cybersecurity for the sector. These include the identification of entities from the waste management sector, the establishment of a unit carrying out the tasks of the competent authority for cybersecurity for this sector, the implementation of appropriate supervisory mechanisms and situational awareness building.

The action will also consist in the development of a sectoral CSIRT for the waste management sector. The sectoral CSIRT will be set up within the structure of the Ministry of Climate and Environment. Its tasks will include, inter alia, receiving early warnings, incident reports, progress reports and final reports, receiving reports on potential cybersecurity threats, responding to incidents, collecting information on vulnerabilities and cyber threats, cooperating with a key entity and an important entity for the exchange of good practices, organising and participating in exercises, supporting training initiatives or cooperating with national-level and sectoral CSIRTs. These actions will be the same for the sectoral CSIRTs for the energy sector.

It should be remembered that these actions will be able to be implemented after the entry into force of the draft act amending the act on the national cybersecurity system, which implements the NIS2 directive into Polish law.

PROVIDING AUTHOR

Minister for Climate

COOPERATING ENTITIES

Minister for Information Technology

Dimension 4.
Intra-EU ryne c eneręlii and socialE> aspectly transformaicja

Action and 146. Ej umó)z/ with ceinii dynamie:

The development of a modern, flexible and efficient energy system requires the active involvement of end users. The widespread use of dynamic price contracts makes it possible to adapt energy consumption to real market conditions, which in the long term contributes to increasing energy efficiency and reducing system costs.

From the point of view of the energy transition and the economy, the implementation of dynamic price contracts in strategic terms brings a number of benefits:

- reducing the need for costly subsidies for support schemes for energy storage (electrical and thermal) and energy management systems (BEMS), as their cost-effectiveness will result from market mechanisms,
- increasing the cost-effectiveness of new wind and photovoltaic capacities, which is conducive to investments in these sources,
- development of the market for electric cars (charged at low hours) and associated infrastructure, including chargers and vehicle-to-grid (V2G) solutions,
- increasing the flexibility of the electricity system on the demand side (and supply for flex users and V2G users), which will reduce the need for costly grid expansion and enable the integration of more RES sources with low marginal costs, leading to a decrease in wholesale energy prices,
- reducing household bills, while consciously managing their own consumption of this energy,
- activation of end recipients.

The introduction of large-scale dynamic price contracts requires appropriate preparation – both regulatory, technological and social. It is therefore necessary to draw up a comprehensive plan for their dissemination. Taking into account the numerous benefits for the economy as indicated above, the plan should lead to a situation where dynamic price contracts are more widely used in the energy market. This plan should include a model that is both simple, financially attractive and safe for users.

The plan should include incentives to actively manage energy consumption through price transparency and the possibility for customers actively participating in the electricity market to achieve real savings compared to the use of fixed price contracts. In addition, the plan should include integrated education and information activities presenting consumers with the benefits of activation on the energy market, while educating on the characteristics and principles of the functioning of dynamic price contracts. The plan should also include the development of modern analytical tools and ease of use for end recipients. As a result, dynamic price contracts can become an effective mechanism for optimising the energy market and improving its stability in the future.

RULE OF THE MINISTER FOR

COOPERATING ENTITIES

President of ERO

Action j 147. National Contact Point for Renewable Sources ene *rgii

The action consists in the functioning of a point in the form of a website where the applicant will be able to find information on what administrative procedures are necessary for a given RES project and how they should be carried out. The National Renewable Energy Contact Point (RES NCP) is primarily aimed at facilitating access to information on investment processes and at relieving public administration bodies that provide substantive answers in this regard. The content on the RES NCP website is particularly useful for people or entities who want to become:

- renewable energy self-consumers, or
- renewable energy producers.

An additional aspect of the RES NCP is its educational value. The portal is also a source of knowledge about the functioning of renewable energy technologies and procedures related to the implementation of RES projects.

The RES NCP is the first point of contact where you can obtain information on the administrative procedures required for the implementation of RES projects and how they are carried out, e.g.:

- the conditions to be met in order to take part in the procedure in question,
- ways of dealing with the matter (letter or electronic),
- the time limit for settling the case,
- the authorities competent to deal with the case,
- chronological descriptions of the activities to be carried out by the applicant,
- descriptions of the activities carried out by the decision-making authority,
- the costs of the proceedings,
- the duration of the proceedings,
- the possibility of appealing against the decision.

The RES NCP also has a very important tool to be used by all users - a specially prepared contact form, thanks to which you can direct a specific inquiry regarding the investment process. Specialists will provide direct answers, and in the case of more detailed issues that fall outside the scope of the RES NCP, questions will be redirected to the relevant substantive body.

The RES NCP website will also contain general information on the functioning of renewable energy technologies. This will allow all interested parties to find information in one place not only about administrative procedures, but also in a wider scope related to RES.

PROVIDING AUTHOR

Minister for Climate

COOPERATING ENTITIES

Minister for Energy

Action and 148. Digitization and standardization of investment processes for 0-climate energy transformation

The energy transition includes not only the development of renewable energy sources (RES), but also the modernisation of heating, thermal modernisation of buildings, changes in transport, industry and agriculture, and adaptation of cities to climate change. In order to speed up and streamline this process, it is necessary to implement digital tools, standardise documentation and create systemic support for investors. Key actions include the digitisation of administrative processes, uniform procedures and documentation, the CWTE National Contact Point (see Action 141) and the investment monitoring system.

3. Digitization of investment processes

A central investment process platform should be designed and implemented to support the most relevant

investment processes in the energy transition. This should include an investment e-register, a digital workflow, the automation of permitting and integrated communication between investors, administration and contractors. Digitalisation will allow to shorten the time of implementation of investments, increase transparency and facilitate coordination of projects. In order to ensure rationality and optimal conduct of investments, it would also be advisable to create an information platform about available investment areas. Thanks to such actions, investors could more easily implement investments and locate them in more optimal places, e.g. closer to the energy connection infrastructure. The digitisation of investment processes should be carried out with particular attention to the provisions on the protection of personal data of the GDPR.

1. Standardisation of documentation and procedures

   In order to streamline investments, unified model contracts and administrative procedures should be implemented for RES projects, thermal renovation of buildings, zero-emission transport, low-emission heating and industry and agriculture. Unification of documentation will reduce bureaucracy, speed up decision-making processes and reduce the risk of legal disputes.

2. Support Centre for Energy Transition (CWTE)

   A key element in the coordination of the transition should be the creation of a nationwide CWTE, which will provide information on administrative procedures, technologies, available funds and investment partners. The CWTE should be structured with two support lines: general, including administrative and expert advice, with specialised advisers in the fields of energy, transport, heating, construction, industry and agriculture. Details of CWTE start-up are given in Action 149. Establishment of an Energy Transition Support Centre (CWTE). The CWTE should be integrated with the activities set out in points 1 and 2 above.

3. Investment monitoring and reporting

   In order to effectively manage the transition, a digital investment monitoring system should be put in place to track progress, timelines and outcomes. The system should aggregate data on ongoing projects, analyse risks and identify potential delays. Thanks to this, investments will be implemented more efficiently and their effectiveness will increase.

Taking these actions will allow effective management of the transition process, eliminating administrative barriers and accelerating the deployment of new technologies. Digitization, standardisation and effective coordination are key elements of an efficient and effective energy and climate transformation in Poland.

RULE OF THE MINISTER FOR

COOPERATING ENTITIES

Minister for Information Technology
Minister for Economic Affairs
Minister for Climate Affairs
Minister for the Economy of Raw Materials
energy
Minister for Construction, Spatial Planning and Development and Housing
Minister for Agriculture
Minister for Transport

Action } 149. Created*E; Support Centre for Energy Transition (CWTE)

The action consists in the creation of an Energy Transition Support Centre (CWTE), which will be a place for acquiring knowledge for entities involved in the transformation process. The CWTE will provide information on the required administrative procedures for energy and climate transition projects, including RES projects, and guidance on how to implement them. The CWTE is to be equipped with knowledge in the following fields:

1. Administrative and legal procedures for the transition;
2. Developed technological models that can be implemented in different conditions;
3. Available financial programmes and support models;
4. A list of relevant partners able to implement projects and procedures related to the technological, legal and financial transition;
5. The current state of implementation of transformation projects and information on new planned projects in all counties in Poland.

The knowledge presented should be supported by financial and technical analyses, which are a justification for the knowledge presented by CWTE.

Efficiently organized CWTE is the main element of the energy and climate transformation process. Each entity implementing projects in the field of climate and energy transition can consult its project on its relevance and good synchronisation of the project with other projects.

In its core competence, CWTE is an information and support centre for all entities that implement the energy and climate transition, in particular local government units, housing cooperatives, equipment suppliers, investors, financing entities and others. CWTE has full knowledge of the whole process. Can provide each actor with full knowledge and support in both general and specific terms on how the transformation process should look in each area of the process, i.e.: in the fields of electricity, heating, transport, transformation of buildings, agriculture and industry.

The CWTE structure should be structured in such a way as to have at least two lines of support: one responsible for general knowledge and the other with field specialists. In addition, CWTE should have dedicated staff for individual districts in Poland, so as to have a good knowledge of local conditions.

The CWTE should be equipped with appropriate support schemes, in particular an energy system simulator, which could be a planning tool for the energy transition at local level.

In addition, CWTE will create and maintain dedicated databases supporting investment processes, as well as an inventory of built and planned RES installations. All databases will be publicly available.

All the basic services outlined above will be provided free of charge by the CWTE as a public service. CWTE will also provide paid services, supporting commercial investments in the implementation of investment processes. For example, a heat company (PEC) planning to electrify a district heating system, a wind farm investor or a co-operative planning a thermal upgrade can contact CWTE to help prepare an investment plan. Subsequently, the CWTE will act as a 'one-stop shop' for the investor, intermediating in obtaining permits, co-financing, verification of the quality of works and other activities for which the investor will request support. These activities will be an additional source of revenue for CWTE, complementing public funds.

RULE OF THE MINISTER FOR

COOPERATING ENTITIES

Minister for Climate Affairs
Minister for Public Finances

Action j 150. Simulatoi r* of the Samor Energy System; anthrax

The energy and climate transformation of cities and municipalities requires an effective analytical tool that will allow local governments to plan the modernisation of energy systems in an economically and technologically optimal manner. The State should create and implement an **Energy System Simulator for Cities and Municipalities**, which will enable modelling of different decarbonisation scenarios, analysis of investment costs and identification of the most effective integrated activities in the field of energy, heating, transport and building infrastructure.

The system should play a key role in planning activities and help cities and municipalities to determine **the optimal order of transition,** taking into account both technological and financial aspects. On the basis of actual data, it should indicate which elements of retrofitting should be implemented first to achieve the highest cost and energy effect. Local governments will be able to analyse various transformation options, for example whether in the first stage they will focus on thermo-modernization of buildings, modernization of heating or investments in renewable energy sources. The system should analyze which technologies will work best in a given location, taking into account local resources, building characteristics and the needs of residents and enterprises.

The simulator should take into account the financial aspect and identify the most cost-effective investment delivery models, taking into account available support schemes, debt financing opportunities and tariff management models. Thanks to this, cities and municipalities will be able to adapt their investment plans to real budgetary possibilities and available sources of financing.

For the tool to work effectively, it needs to be integrated into the national strategy, access to up-to-date data where possible, and coordination of implementation at national level. The system should, as far as possible, be integrated into existing databases and registers on urban and municipal infrastructure, energy networks and energy consumption, and adapted to different local circumstances. It also needs to be integrated into **the Energy Transition Support Centre (CWTE),** which will act as an advisory and coordination centre. Integration with CWTE will allow for ongoing data synchronisation, access to expert analyses and better coordination of activities at local and national level. All implementation work should be carried out with particular attention to the provisions of personal data protection GDPR.

Local governments should be encouraged to use the simulator by linking its results to the process of allocating public funds for investments in energy modernisation and infrastructure. The creation of a national support centre will provide advice and training on the use of the tool and the implementation of recommended scenarios. The implementation of the simulator will allow for more effective management of the energy transition, optimisation of expenditure and increasing the effectiveness of decarbonisation activities in Polish cities and municipalities.

RULE OF THE MINISTER FOR

COOPERATING ENTITIES

Minister for Regional Development

Action j 151. Development of \ A/ and systems modelled iia

Currently, there are many institutions involved in modelling energy systems and the energy market. It is necessary to establish cooperation between centres in order to:

- Unification and standardization of databases, including, among others, technology prices, energy resources, boundary values and limits (e.g. maximum capacity of onshore wind turbines in Poland).
- Standardise methods and thus modelling results to ensure consistency of analysis and comparability of projections used in energy policy planning.
- Establish the principles of modelling of the entire energy system, including electricity, heating, transport, taking into account macroeconomic aspects and environmental impact, due to the increasing electrification and merging of sectors.

Funding should also be provided for the development and maintenance of modelling systems to enable advanced and coherent research and the development of analytical tools to support the energy transition.

RULE OF THE MINISTER FOR

COOPERATING ENTITIES

Minister for Information Technology
Minister for Climate Affairs
OSD
TSO

Action j 152. Development and implementation of PU anu Social 0-ClimategO

The Social Climate Plan (SCP) will serve as an implementation tool for the funds allocated to Poland from the Social Climate Fund to alleviate the increase in energy and transport poverty as a result of the entry into force of the EU ETS-2 system.

The PSK will include an investment component and direct payments. The proposed investments should target the following areas: replacement of heat sources, thermal modernisation and renovation of single-family residential buildings and those owned by micro-enterprises; creation of new social-municipal housing stock and assisted/training housing; the establishment of energy communities; renovation of buildings (social and/or communal dwellings) belonging to the municipal self-government; purchase of bus and rail rolling stock; construction, reconstruction of stops and railway stations with the construction of car parks; modernisation of passenger infrastructure for buses; access infrastructure to hubs; the organisation of public rail transport; cycling infrastructure; on-demand transport and measures related to direct income support for households (the so-called ‘shield mechanism’).

CONTRACTING AUTHORITY

Minister for Regional Development

COOPERATING ENTITIES

Minister for Energy
Minister for Climate Affairs
Minister for Transport
Minister for Construction, Planning and zoning and housing
Minister for Family, Labour and Social Policy of Provincial Governments

Action and 153. Reducing energy poverty oi once ochrc>na reflected □ircy sensitivities

Actions will focus on addressing the social phenomenon of energy poverty, in particular the following sub-measures:

1. Revision of the legal definition of energy poverty (Energy Law).
2. Diagnosis of energy poverty in Poland and implementation of its monitoring by state institutions, in close cooperation with the social side.
3. Preparation of the legal framework, administrative tools and financial instruments to support people affected by energy poverty, with a view to reducing it to at least the EU average by 2035 – deadline: 4 kw. 2027

Interventions will include the modification of existing or the introduction of new forms of support, in the area of social policy, as well as measures to increase the energy efficiency of buildings and educational initiatives aimed at supporting the most deprived customers and reducing energy poverty. Due to the strong link between energy poverty in Poland and securing heat supply for heating purposes at an acceptable cost, non-repayable co-financing programmes for thermomodernisation activities, installations of zero-emission energy and heat sources integrated with energy and heat storage will be crucial.

RULE OF THE MINISTER FOR

COOPERATING ENTITIES
Minister for Social Security
Minister for Senior Affairs
Minister for Regional Development
Minister for Construction, Planning zoning and housing
Minister for Climate Affairs

Action j 154. Statistical survey on 2 [1] fuel and energy consumption and households

The action consists in modifying the survey on fuel and energy consumption in households carried out so far by the Central Statistical Office in order to provide more useful and better quality data used to monitor the energy transition process, including, among others, energy poverty.

It is recommended that the Central Statistical Office consider the possibility of changing the frequency of the survey from a 3-year cycle to a 2-year or annual cycle, increasing the research sample and verifying the information collected, taking into account questions about renovation needs, investment plans, knowledge about support programs. In addition, in order to increase the efficiency of the collected data, it is recommended to integrate information from other studies and sources.

This should be done on the basis of the European Statistics Code of Practice.

CONTRACTING AUTHORITY
President of the Central

COOPERATING ENTITIES Minister for Energy

Action2 155. Actions ni 3i to combat poverty transportov rym in rariiaclli PSK

Actions consisting in improving the offer and functioning of public transport (road, rail) contributing to the prevention of aggravation of

the phenomenon of transport poverty. These actions will potentially target people or households most at risk of transport poverty, whether for economic reasons (demand side) or due to lack of access to public transport (supply side). The measures or investments implemented under the action will be implemented with the support of EU funds under the Social Climate Plan.

CONTRACTING AUTHORITY

Minister for Transport

COOPERATING ENTITIES

Minister for Climate Affairs
Minister for Energy
Minister for Regional Development

Action j 156. Providing support for coal regions fch

The actions concern support through, inter alia, training and retraining programmes, local development programmes, partnerships and cooperation. The action will be implemented using the available funds. The funds will be spent, among others, on activities related to mitigating the effects of the transformation of the fossil fuels and conventional energy industries. Regional funds can play an important role in the above-mentioned processes, ensuring the integration of programs, monitoring effects and cooperation with local governments, enterprises, labour market institutions, etc.

Specific elements of the action will be:

1. Creation of a system of investment incentives in extractive and carbon-intensive regions;
2. Mapping the needs of regions in terms of the availability and qualifications of staff in the energy and industry sectors in the context of investment and transformation projects,
3. Mapping the needs of vocational education and retraining,
4. Design and programming of vocational education and training courses,
5. Integration of training and recruitment activities between public institutions and business entities,
6. Educational and informational consulting and campaigns as well as support centers for employees in transformation and their families,
7. Preservation of the traditions and cultural heritage of extractive and industrial regions,
8. Education and information campaign on transition plans and practical dimensions and multi-level public consultation on the NECP 2030 and strategy papers on the energy transition.

CONTRACTING AUTHORITY

Minister for the Economy of Energy Resources
Minister for Regional Development

COOPERATING ENTITIES

Minister for Energy

Action j 157. Ensuring the development of coal regions

As a result of the climate and energy transition, coal-fired generation capacity and coal mines are being phased out, which in turn affects local jobs and communities. However, a well-carried out transformation can open up completely new opportunities for them. It should be stressed that these opportunities will benefit not only those present in the labour market, but also future generations, which is key to ensuring intergenerational fairness. The areas with the highest transition costs should be identified first. The criterion for selecting regions should be based on the current employment structure and reliance on extinguished conventional energy sources.

The implementation of effective measures requires close cooperation between the government, local governments, social organisations and the private sector. It is crucial not only to provide support for job-changers, but also to invest in alternative sources of employment and to create new economic prospects.

The following action plan is to be implemented in the regions identified so as to ensure their sustainable development and socio-economic stability:

Sub-measure A: Investments in the transformation process

The energy and climate transition means the construction of new RES generation capacity, thermal modernization of buildings, transformation of heating and many other activities. All these processes will create new jobs. In the following years and decades, Poland will implement a large transformation process, while conducting ambitious investments. It makes sense for these investments to take place as a priority in socially sensitive areas. Support programmes implemented by institutions such as the National Fund for Environmental Protection and Water Management (NFOŚiGW), the Polish Government or State Treasury companies should take into account the relevant priorities for projects in the areas indicated in the project selection criteria. This approach will not only create jobs, but will also train employees in new professions that will be able to work in different areas of the country. Particular attention should be paid to projects using the infrastructure of closed mines and post-mining areas, giving them new economic functions, e.g. through the adaptation of areas for energy and heat storage, the development of RES, low-emission heat production technologies, logistic and ICT centres and other innovative technologies. Implementation in this direction creates conditions for the full use of the existing technical, spatial and human potential, minimizing the negative effects of the decommissioning of mines and supporting the development of new industries consistent with the smart specializations of regions. The action should implement, inter alia:

1. Research projects to change technologies to zero-emission process and energy,
2. Research projects to change technologies to circular economy technologies,
3. Investment projects to design and implement new production processes,
4. Investment projects to modernise production facilities,
5. Investment projects for the installation of renewable energy sources, waste heat and energy efficiency.

Sub-measure B: Modernisation of existing industry

The areas in which conventional mines and power plants are located are at the same time highly industrialised regions in which heavy industry including metallurgy, metallurgy, chemical industry or machine manufacturing, armaments industry, automotive industry based on internal combustion engines and the transport industry play an important role. The modernization of this industry and its development is a factor mitigating parallel changes in extinguished mines and power plants. The modernisation should be carried out through the implementation of innovative technologies that will allow it to be transformed into a more efficient and, at the same time, internationally competitive sector. The transformation of heavy industry requires the introduction of modern solutions such as renewable energy, hydrogen, modern materials and recycling technologies, and the automation and digitalisation of production processes. Modernization processes and the creation of new technologies should be carried out in cooperation with organizations such as PFR, NCBR or PARP, as well as research and development centers and universities. The modernisation of existing coal-fired power plants and their conversion into gas blocks could also be considered. Using innovative technologies, such a process could extend the lifetime of existing generation capacity while mitigating the impact of changes in socially sensitive areas.

Sub-measure C: Building a new industry

In parallel with the modernisation of existing industry, it is essential to build from scratch a new industrial sector based on innovative technologies, which will become a pillar of sustainable economic development and competitiveness in the global market. Areas where conventional power plants are shut down and coal mining is reduced are

undoubtedly suitable for this due to developed infrastructure and well-qualified staff. A modern high-tech industry should focus on areas such as renewable energy production and storage, hydrogen technologies, advanced material engineering, green transport solutions, and automation and digitalisation of production processes. The development of this new industry should be supported by institutions such as PFR, NCBR or PARP, research and development centres and universities, which can play a key role in financing research, implementation and building an ecosystem of cooperation between business, science and public administration. Investing in the clean technologies of the future will allow not only the creation of new jobs, but also the economic development of regions undergoing the energy transition and building the long-term resilience of the economy to changing market and climate conditions. The action should implement projects such as:

1. Research projects to create new technologies, such as, for example, heat pumps, recuperators, energy storage or RES generation capacity,
2. Investment projects to design new production processes,
3. Investment projects for the construction of new production facilities,
4. Investment projects for the installation of renewable energy sources, waste heat and energy efficiency.

CONTRACTING AUTHORITY

Minister for the Economy of Energy Resources

COOPERATING ENTITIES

Minister for Regional Development
Minister for Energy
Minister for Climate Affairs
PFR
NCBR
PARP

Action } 158. Building Consciousness(:and in the Eiie of the Energy-Climate Transformation

Energy and climate transition area

These actions shall aim to:

1. Awareness-raising and awareness-raising on the benefits of decarbonisation
2. Building and maintaining a high level of public support for the activities contained in the document.

The energy and climate transition affects the entire economy and society. Actions will therefore target a wide range of target groups.

The transition is primarily changing the functioning of sectors such as energy, transport, heating, construction, industry and agriculture. It introduces a circular economy, changes the way resources are managed and the rules of functioning of cities and society, taking into account the need to adapt to climate change.

As part of the policy to prepare society for the energy and climate transition, the role of formal education will be strengthened, in particular through the systemic integration of climate, energy and environmental issues in the core curriculum at all stages of education.

Therefore, separate educational and promotional activities will be directed, among others, to:

1. educational establishments providing education in kindergartens, primary and secondary schools, including teachers and educators;
2. national and regional media;
3. local leaders and opinion leaders, those who shape the views of smaller communities;
4. online leaders (including social media);
5. economically active persons responsible for the functioning of households;
6. Entrepreneurs (from micro and small entrepreneurs to large businesses)
7. persons driving cars;

8. prosumers;
9. farmers;
10. residents of large and smaller urban centres;
11. residents of rural areas;
12. economically inactive people;
13. central and local government administration;
14. female and healthcare workers;
15. groups particularly vulnerable to disinformation.

Main implementation tools:

1. Activities enhancing social participation and involving local communities, including the organisation of a cycle of citizens' panels;
2. Formal and informal education – including training and competence building for educators, including educators;
3. Multi-stage educational and promotional campaigns increasing public awareness in this area and building support for change;
4. Actively counteract and monitor disinformation (prebunking, debunking, raising societal competences to detect and deal with disinformation or FIMI);
5. Demonstrate the benefits of the transition for society and the economy, encouraging active participation and realisation of the necessary changes.

The Threat of Disinformation

Disinformation is one of the biggest threats to the energy and climate transition. It undermines public confidence in the necessary changes, slows down political decisions and leads to the perpetuation of inefficient, costly solutions.

False information blocks investment, discourages innovation and reinforces fear of new technologies. They create social divides, hinder international cooperation and delay the implementation of the strategies needed to limit the impact of the climate crisis.

If disinformation is not effectively curbed, the transition process could be halted, leading to further reliance on fossil fuels, higher energy costs and aggravating the climate crisis.

The role of society and citizens' panels

Citizenship awareness and decisions of local communities (municipalities) on the energy transition can be shaped by actively involving the public in the process of change. Citizens' panels and hearings are an effective tool for social participation, enabling citizens to have a real impact on the direction of the transition. They increase acceptance of new solutions and reduce resistance to change. Through open debates and consultations, local authorities can make more informed decisions, taking into account both community needs and climate goals. The introduction of citizens' panels promotes transparency, strengthens social dialogue and allows building long-term, stable solutions in the field of local energy policy.

PROVIDING AUTHOR

Minister for Climate

COOPERATING ENTITIES

Minister for Energy
Minister for Economic Affairs
Minister for the Economy of Raw Materials
energy
Minister for Agriculture
Minister for Transport
Minister for Science and Higher Education
Minister for Education
Minister for Regional Development

Dimension 5■

Research, Innovation and Competitiveness

Action } 159. Gradual increase in outlays and optimisation of the management rie riie of R&D resources (R&D I in areaaclfi transforma(:ji lclo neutraIlneclimate economy and :nie

The action aims to increase and optimise the use of R&D expenditure on areas related to the energy and climate transition, including actions related to the European Green Deal, on clean energy, industrial and environmental technologies. The energy and climate transition is a process that changes the entire economy. Very significant changes will be made to: energy, transport, heating, construction, smuggling, agriculture, circular economy, resource management, how cities and society work. Therefore, a significant part of the funds for R&D in Poland should be directed to the development of new technologies in these areas. Support for research and innovation will contribute to increasing the share of Polish technological solutions in the transformation process, causing the development of the Polish economy and increasing the number of jobs in important sectors. At the same time, the effective implementation of these changes will require strengthening the capacity of academic centres as centres for knowledge creation and transfer and innovation. The energy transition has also been identified as one of the thematic areas defined by the Ministry of Science and Higher Education as part of the second edition of the priority programme 'Initiative of Excellence - Research University' for the years 2027-2032, which aims to increase the international importance of the activities of Polish universities, increase the quality of scientific activity and the level of education. Entities currently applying for the status of a research university are obliged, as part of the submitted documentation, to identify, among others, the so-called priority research areas (no more than six) with high development potential, in which they plan to intensify their scientific activities. Of the priority research areas identified by the entity, at least one should include the relevant from the point of view of national policy, as defined by the above-mentioned Act. Ministry, thematic areas, including the energy transition. The winners of the above-mentioned competition will receive funds in the amount of 10% of the increase in subsidies for a period of 6 years.

As part of the implementation of the action, a special Coordination Team should be established consisting of leading institutions responsible for the energy and climate transition and institutions financing the conduct of research and development activities. The Coordination Group should be composed of representatives of the bodies and institutions implementing this action.

The Coordination Team will set priorities in terms of financing research and implementation of new technologies necessary to build *local content* of the Polish industry for the energy and climate transformation process. Technologies of the transformation process should be understood as both new technologies, the creation or adaptation of which on the Polish market is necessary for the process of energy and climate transformation, as well as existing technologies that need to be modernized or adapted to the required changes. The area of Action should be understood broadly, i.e. new technologies necessary for the whole transformation process: energy, transport, heating, construction, industry, agriculture, circular economy, resource management, new way of functioning of cities and society, adaptation to climate change, etc. The work of the team should focus on identifying activities in the field of:

- Defining the necessary technologies for the transformation process and preparing potential support programmes,
- Defining the production facilities necessary for technology production and preparation Potential support programs.

The guidelines and recommendations for activities prepared by the Coordination Team will be forwarded to the institutions financing the conduct of research and development activities and, if possible, implemented by these institutions.

Sub-measures:

1. Establishment of the Coordination Group by the end of 2026
2. Gradual increase in R&D expenditures from 1% to 2.5% of GDP in the State Treasury budget, for the period up to 2030

RULE OF THE MINISTER FOR

COOPERATING ENTITIES

Minister for Climate Affairs
Minister for Science and Higher Education
Minister for Economic Affairs
Minister for Regional Development
Minister for the Economy of Raw Materials energy
Minister for Agriculture
Minister for Transport
NFOŚiGW
NCBR
PARP
PFR
NCN

Action } 160. Update of the Scientific Polytylkj Pańsh wa

As part of the update of the country's scientific policy, it is planned to update research priorities in the field of energy and climate taking into account current objectives and needs related to the transition to a climate-neutral economy, as defined both in national documents (including *Poland's Energy Policy)* and European strategies. For the purpose of updating the Scientific Policy, the State will be provided with guidelines and recommendations created by the Coordination Team specified in Measure 159 Gradual increase in outlays and optimal allocation of funds for R&D (research and development) in the areas of transformation to a climate-neutral economy.

CONTRACTING AUTHORITY

Minister for Science and Higher Education

COOPERATING ENTITIES

ministers responsible for each unit administration, including supervising research institutes

Action } 161. Pilotages and demonstration programmes of exemplary solutions; solutions for the 0-climate energy transition

The energy and climate transition covers all key sectors of the economy, affecting energy, transport, heating, construction, industry and agriculture. Its successful implementation requires the development and implementation of pilot and demonstration programmes that will enable solutions to be tested and optimised before they are widely disseminated. Such activities are an important element of investment risk reduction, allowing for verification of technologies and organizational models in real conditions.

Currently, Poland lacks fully modernized and exemplary solutions in key areas of transformation, which slows down the process of implementing changes and limits the possibility of copying proven models. Pilot and demonstration programmes should be implemented to test innovative solutions in practice, assess their effectiveness and identify implementation barriers. It is necessary to create model solutions that will serve as a reference point for further action and facilitate the wide application of best practices in the economy. Only through real implementation and making best practices available to the market will it be possible to accelerate the transition, reduce the costs of its implementation and ensure its effectiveness on a large scale. Projects must be documented and should be made available as open templates so that the market can copy and scale them on a large scale. Only in this way can real progress in the energy and climate transition be ensured and new economic models be effectively implemented in practice. Key pilot projects should include the modernisation of multi-family and school buildings, the implementation of a comprehensive civic energy system, the modernisation of the district heating plant, the development of electric vehicle charging infrastructure, the launch of green hydrogen production and the development of best practices for industry and agriculture. Their implementation will allow the development of standards that can be widely replicated, ensuring an effective and efficient transformation on the scale of the entire economy.

RULE OF THE

MINISTER FOR

COOPERATING ENTITIES

Minister for Science and Higher Education
Minister for Economic Affairs
Minister for Climate Affairs
Minister for the Economy of Raw Materials
energy
Minister for Construction, Planning
zoning and housing
Minister for Agriculture
Minister for Transport

Action } 162. Research and design)f scientific or; =Educational education in the area of rational and low-carbon agricultural production

This measure includes projects aimed, inter alia, at reducing emissions from the application of fertilisation on cropland, supporting other activities that have a positive impact on the management of cropland, pastures or grassland and improving livestock management, improving livestock manure management or improving the management of organic soils. Projects will be supported to identify emissions from different agricultural practices, assess the effectiveness of emission reduction measures and include these effects in national reports. Scientific research will provide new knowledge on the impact of different cultivation techniques on greenhouse gas emissions, enabling the implementation of farmer-friendly yet climate-efficient practices. Research and development projects aimed at the implementation of innovation in the form of demonstration or pilot projects will be supported.

CONTRACTING AUTHORITY

Minister for Agriculture

COOPERATING ENTITIES

Minister for Climate

Affairs

Action and 163. the Finance InstrumenI

y - Horizon t Europe

The aim of the action is to increase the share of Polish projects in obtaining funds from the Horizon Europe programme and subsequent EU framework programmes. This programme includes funding for research and innovation in, inter alia, climate-neutral technologies.

Promotion activities and the support system for research institutes, universities and enterprises should be strengthened in order to encourage more Polish institutions and companies to submit applications under Horizon Europe and the next EU framework programmes. Support should be particularly focused on technologies crucial for the energy and climate transition, both in terms of new green industry and modernization of existing industry in Poland, especially heavy industry. Effective promotion and advice and support for participation in the European partnerships of the programme can increase awareness of funding opportunities, as well as improve the quality of applications, which will translate into a higher percentage of allocated funds for Polish projects.

CONTRACTING AUTHORITY

Minister for Science and Higher Education

COOPERATING ENTITIES Minister

for Climate

Action j 164. Education and professional development ki aidr for the economy in the 10-climate transformation and energy sector

The action includes the introduction into the education system, at the request of ministers responsible, of new fields of education in the field of energy and climate transformation, and consequently the provision of qualified personnel for transformation. In addition, to change or complement qualifications, universities will offer short forms of education, such as courses, training and micro-credentials. Extra-curricular forms of education will also play an important role, including career counselling for adults, increasing the flexibility of offers, implementing modular training and increasing the prestige of units providing such education.

The transformation process covers the entire economy and society, in particular changes the way energy, transport, heating, construction, industry, agriculture function, builds a circular economy, changes the way resources are managed, changes the rules of functioning of cities and society, takes into account the need to adapt to climate change. As a result of such wide-ranging changes, new professions and jobs are created, which in turn make it necessary to adapt the education system.

Monitoring of labour market needs, in cooperation with the relevant Sectoral Labour Market Boards, will also be crucial to ensure the proper organisation of the labour market during the transition. Competences that are supervised by the Polish Agency for Enterprise Development.

CONTRACTING AUTHORITY

Minister for Education
Minister for Science and Higher Education

COOPERATING ENTITIES

Minister for Energy
Minister for Economic Affairs
Minister for Climate Affairs
Minister for the Economy of Raw Materials
energy
Minister for Agriculture
Minister for Transport

Action and 165. Prepared) 3 financial plan]l for actions proposed by:hwKPEiK

The energy and climate transition in Poland presented in the NECP is a huge financial challenge, it includes modernization of energy, heating, transport, industry, agriculture, thermomodernization of buildings, changes the way cities and society function. Some sectors, such as wind power, will grow on their own through market profitability, but others require public support, subsidies and risk-reduction mechanisms. In order for this process to be effective, it is necessary to create a comprehensive financing plan that will identify sources of capital, support mechanisms and rules for cooperation between public and private institutions.

It is crucial that the financing of transition projects is coordinated and based on cooperation between different institutions. The different actors should act as part of a common strategy, covering different stages and forms of support. For example, the National Fund for Environmental Protection and Water Management, Bank Gospodarstwa Krajowego, the Polish Development Fund, the National Centre for Research and Development, and other institutions should coordinate their activities and complement each other. The list of these entities should be broad and take into account available sources of funding.

It is also necessary to create risk-mitigating mechanisms to mobilise (low-risk) private capital. Such instruments should support investments in infrastructure modernisation, the development of new technologies and the decarbonisation of industry and transport. They should also be designed to ensure the stability and long-term security of investors, enabling even the most capital-intensive projects to be carried out.

An integrated approach to transition finance will allow for more efficient management of public funds, better use of private capital and more effective implementation of projects. Coordination of activities of financial institutions, precisely selected support mechanisms and digital tools for investment monitoring will increase the efficiency of the process and enable Poland to achieve ambitious energy and climate goals in a sustainable and economically optimal manner.

RULE OF THE

MINISTER FOR

COOPERATING ENTITIES

Minister for Climate Affairs
Minister for Public Finances
commercial banks
NFOŚiGW
BGK
PFR
NCBR and others

Action } 166. Reducing costs> fi/ environmental sects cira ICT

It is estimated that in the coming years the information and communication sector will gradually increase its resource intensity and negative impact on the environment, which will be a growing challenge for the state.
In this context, it is important to undertake a strategic intervention including:

- study and monitor the environmental impact of digital technologies to enable knowledge-based policy-making;
- opening data in the field of energy;
- building awareness and competences in society on sustainable digital transformation;
- setting energy efficiency standards for data centres;
- promoting the environmentally friendly design and use of digital solutions.

COOPERATING ENTITIES Minister for Information Technology Minister for Energy

PROVIDING AUTHOR

Minister for Climate

IV. Group) developed; and, implementation and monitoring of the NECPs

A) Proce!=; Preparation of the document

EU Regulation 2018/1999 *on the Governance of the Energy Union* required EU Member States to submit a draft NECP to the European Commission by the end of 2018 and then, following the Commission's recommendations, to submit a final version by the end of 2019. A new draft document and its final version should be prepared every 9 or 10 years, while an update is due after 4.5 or 5 years, unless the document does not need to be updated. In practice, therefore, the work on the national plan has a perspective of approx. It's a five-year-old. The scope of the national plans resulting from Annex I to Regulation 2018/1999 is very broad. In addition, it may be extended by new EU regulations – they may indicate that area-specific objectives or policies should be indicated in the NECP.

The National Energy and Climate Plan 2030 with a 2040 perspective is formally an update *of the National Energy and Climate Plan 2021-2030* adopted by the Polish Government in 2019. Given the scale of the changes, the new assessment of potential and challenges, the coverage of additional areas, the modification of the structure of the existing document and the inadequacy of 2021 in the name, the current version is actually a new document, which is why it has been given a new name.

The deadline for submitting the draft update of the NECP under EU Regulation 2018/1999 was 30 June 2023. The draft document was hampered by the political and economic situation created by international developments. The most important was Russia's aggression against Ukraine, which caused a deep energy crisis, disruptions in the energy market, disruptions in the energy raw materials market, resulting in fluctuations in the prices of raw materials and energy. Under such conditions, it is difficult to make long-term decisions. In addition, work on the draft NECP coincided with the drafting of *the Fit for 55 package,* which required EU Member States to include new objectives and issues in the NECP. Some of them were only approved in the second half of 2023 and even in 2024,170 after the deadline for submission of the draft updates of the national plans under Regulation 2018/1999. The adopted EU regulations concern completely new areas and required in-depth analysis (e.g. hydrogen economy). Some issues were challenging to implement in the forecasts due to technological uncertainty (e.g. the use of RFNBO), the need to adapt analytical models (e.g. in the area of storage) and the lack of a standardised statistical methodology (e.g. RES consumption in industry and construction). It was also difficult to obtain contractors for such a wide range of forecasts, which highlighted the need to expand the government's analytical facilities in the climate and energy area.

In November 2023, a *team for updating the 'National Energy and Climate Plan 2021-2030' and the 'Poland's Energy Policy until 2040' was established by order of the Minister for Climate and171 the Environment as a subsidiary body of the Ministry of Culture and National Heritage.* In addition to the formal dimension, the team worked largely on the basis of working cooperation.

On 29 February 2024, the Committee on European Affairs of the Council of Ministers (CEC) **adopted a draft version *of the draft National* Energy and Climate Plan 2030 with a 2040 perspective. The Minister for** Climate and the Environment was responsible for the coordination of the study. The document was only accompanied by a scenario of implemented policies and actions (WEM) for 2030 and an annex on energy efficiency improvement measures. On 1 March 2024 in accordance with the procedure, the draft document
submitted to the European Commission. Also in line with the rules, the EC issued recommendations to the document on 26 April 2024.

Subsequently, in-depth analytical and foresight work was carried out, with the involvement of industry experts, as part of the MKiŚ Team for the update of the NECP and the state energy policy. Some topics were also the subject of the work of the Economic Committee of the Council of Ministers (KERM), and then of the Government Work Programming Team,

170 E.g. *Directive 2023/1791 on energy efficiency* was approved in September 2023, *Directive 2023/2413 on the promotion of the use of energy from renewable sources* in October 2023, *Directive 2024/1275 on the energy performance of buildings* in April 2024.
171 Journal of Laws Ooh, ooh, ooh. Min. Klim. and Wednesday 2023, item 48.

ending with an entry in the List of legislative and programmatic works of the Council of Ministers.

A broad **dialogue with the public and stakeholders is an extremely important element in the process of drawing up the** national plans. The formal public consultation process took place between 11 October and 15 November 2024, and it was possible to comment on the EIA document between 5 and 18 February 2025. *More on the consultation process can be found later in this chapter.*

In July 2025, there were changes in the structure of government administration, as a result of which on On 24 July 2025, the Minister of Energy was appointed, who took over from the Minister of Climate and the Environment tasks related to the finalization of works on the aKPEiK project. In the Ministry of Energy, the overriding goal was to intensify work on the document, in order to finally submit it to the Commission, minimizing the resulting delay. However, this could not have taken place without the necessary adjustments, updates and consultations. At the beginning of August 2025, legal opinions were launched within the Joint Commission of Government and Local Government (KWRiST), the Social Dialogue Council (RDS) and the Public Benefit Activities Council (RDPP). In parallel, inter-ministerial consultations were held again.

As a result of the above-mentioned multi-stage consultations - forecasts were updated, activities were reviewed, the content of the existing chapters was supplemented, new ones were introduced. In parallel, the strategic environmental impact procedure was carried out, also on a cross-border basis.

In particular, following the consultation, the following changes were made:

÷ **Electricity .** The elements for capacity adequacy, system flexibility and the role of energy communities have been expanded, the use of the potential of wind and PV as well as the role of biomethane have been optimised, the importance of dispatchable capacity and nuclear power has been increased, system balancing at local level has been highlighted, the issues of dynamic price contracts in the market have been deepened.

÷ **Heat generation**. The areas of electrification, high-efficiency gas cogeneration and participation have been strengthened.

biomethane, the important transitional role of biomass has been taken into account, the integration of district heating systems into the electricity system has been strengthened (sector integration), the share of heat storage has been increased and the development of systemic changes in district heating towards decentralised systems has been planned.

÷ **Transport**. The role of electric transport in decarbonising and connecting sectors has been taken into account.

Activities developing energy efficiency in transport have been expanded, activities in the field of collective transport and the development of rail transport have been expanded. The development of electrification of transport has been expanded.

÷ **Thermomodernization of buildings.** Actions describing modernization processes in construction were developed and supplemented, indicating the direction of changes as electrification of domestic heating and energy storage, actions describing the development of databases in construction were introduced, the document was adapted to the needs of the EPBD and the draft national building renovation plan.

÷ **Industry.** Measures to reduce process emissions in industry have been developed for individual industries. Activities defining the directions of changes in individual industrial sectors have been prepared and expanded, including in the field of economy hydrogenization.

÷ **Agriculture. New measures** have been added to rationalise fertilisation, introduce a system for certifying CO2 removals and reducing soil emissions, reduce food waste, shape the ecological attitudes of future agricultural producers, support research and education on rational and environmentally friendly agricultural production.

÷ **Forestry.** The actions taken so far have been significantly detailed. The activities were extended to include aspects related to forest management established within the framework of the National Council on Forests. An action on increasing CO2 removals and storage in forests, an action on the development of the National Forest Programme and the certification and trade of CO2 units in the forestry sector has been added.

÷ **Cascading use of biomass (new chapter) and development of biomethane**. In view of the provisions of RED III and the need to respond to societal expectations on the optimal use of wood for industrial and energy purposes, a new

chapter on the cascading use of biomass has been added. Actions have been planned to support the development of the biomethane market and its role as an alternative to natural gas in the long term has been highlighted.

Social **aspects of transformation. Actions** have been introduced to influence the development of socially sensitive areas in terms of modernising existing industry and building new industry in these areas, coal regions have been clearly identified, carbon-intensive regions have been signalled, the directions of change and benefits have been broadened, energy and transport poverty in the context of ETS-2 have been better described.

÷ **Coal.** Energy coal is clearly separated from coking coal, the importance of
for the methane emissions industry.

÷ **Others.** Actions have also been introduced additional, allowing you to plan the process well
financial transformation and enabling better steering of the transformation process. Emphasis was placed on strengthening the competitiveness of the economy, increasing the share of local content in the energy transition and ensuring adequate staffing. In many places, an element of research and development necessary for the transformation process has also been introduced, and pilot programs demonstrating the appropriate directions of transformation have been introduced. In addition, some chapters were rebuilt and moved between dimensions.

÷ All **adopted indicators and targets are presented in the form of ranges of values, developed on the basis of both WEM and WAM scenarios**. Adopting a range approach will allow for flexibility in planning and take into account the volatility of macroeconomic, technological and geopolitical conditions that may affect the pace, direction and scale of the transition.

The updated version of the draft aKPEiK together with 7 annexes was presented and made public by the Minister of Energy on On 2 January 2026, the draft received a positive opinion from the Joint Committee of the Government and Local Government and on 4 February 2026 the approval of the Economic Committee of the Council of Ministers. After further agreement, the draft NECP was approved by the European Affairs Committee on 28 April 2026. The next step was the consideration of the draft by the Standing Committee of the Council of Ministers, which adopted the draft on 28 May 2026 and recommended its submission to the Council of Ministers.

Timeline of work on the NECPs

2023	Work on the draft update *of the National Energy and Climate Plan 2021-2030* Adoption *of the draft update of the National Energy and Climate Plan 2021-2030* (WEM scenario) by the European Affairs Committee
29.02.2024	Transmission of the draft NECP update to the European Commission
01.03.2024	European Commission's recommendations to the draft NECP
26.04.2024	Analytical and foresight work in two scenarios – WEM and WAM, including expert-level meetings to deepen analysis and a series of fact-finding meetings with different groups.
03-10.2024	Work to complement the draft NECP on the main document and annexes, including intra-governmental work in the framework of: • in-depth analyses with individual ministries, • *the MKiŚ Team for the update of the NECP and the state energy policy,* • Four meetings of the Economic Committee of the Council of Ministers, • the Government Work Programming Team, culminating in an entry in the List of Legislative and Programming Works of the RM (IC8)
	Public and inter-ministerial consultation of the NECP
11.10-15.11.2024 05-28.02.2025 11.2024-07.2025	Examination of the comments made during the consultation process; and carrying out a strategic environmental assessment. Deepening the analysis and implementation of the conclusions of the consultation process to the draft NECP, including the update of forecasts to the WEM and WAM scenarios. Completing the description of the strategy paper, reviewing the implementation activities, modifying them and developing the interventions.
	Opinion of the Joint Commission of the Government and Local Government, the Social Dialogue Council, the Public Benefit Activities Council. Resumption of inter-ministerial consultations.
08-12.2025	Analysis of inter-ministerial comments and industry opinions. Deepening of analyses and implementation of conclusions resulting from comments, including updating forecasts in the WAM scenario and environmental impact forecasts. Correction and completion of the draft NECP.
	Arrangements within government committees (SEK, KERM, SKRM); Adoption by the Council of Ministers
	Transmission of the NECP to the European Commission

B) Proce!=; consult:ji

01-06.2026 06.2026	The public consultation process starts well in advance of the submission of the draft document for comments and opinion in writing. Due to the delay in preparing the draft update of the NECP (in accordance with Article 14 of Regulation (EU) 2018/1999), the first version of the draft NECP included only the WEM scenario, based on existing sector-specific arrangements. Subsequently, the Ministry of Science and Higher Education and the external forecast contractor were supported analytically by various industry organizations in order to verify potentials and opportunities. During this time, a number of meetings were also held with various groups and

entities. Representatives of MKiŚ took part in thematic conferences on transformation, meetings with representatives of employees and employers, in parliamentary committees and subcommittees. The culmination of the pre-consultation process was a meeting held on 6 September 2024 with representatives of ca. 70 NGOs, including industry associations and trade unions. During the meeting, the preliminary results of forecasts for the WAM scenario and planned area policies were discussed.

The conclusions of the pre-consultation process were taken into account in the draft NECP submitted as part of the formal process of public consultations, opinions and inter-ministerial arrangements. Comments could be submitted between 11 October and 15 November 2024. A second round of consultations was held under the strategic environmental impact procedure from 5 to 28 February 2025. The previously available package of documents was then extended to include an environmental impact forecast to the NECP.

Consultations were held in accordance with Article 6 of the *Act of 6 December 2006 on the principles of development policy (Journal of Laws of 2006, No.* Journal of Laws 2024, item 324, 862), and the second round based on the *Act of 3 October 2008 on the provision of information on the environment and its protection, public participation in environmental protection and environmental impact assessments (Journal of Laws No. Journal of Laws 2024, item 1112, 1881, 1940),* which transposes *Directive (EU) 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment* (SEA Directive).

The invitation was addressed to a wide range of stakeholders from public administration bodies, local government units, business entities and industry organizations, non-governmental organizations, trade unions to the general public. The draft documents have been published on the website of the Ministry of Climate and Environment in the *section What we do*. It was also possible to consult documents in paper form. In both rounds of consultations, 128 stakeholders came forward and submitted more than 4000 comments.

Comments covered a wide range of issues – both the accelerated development of RES and the further use of fossil fuels. Some of the comments pointed to the excessively fast pace of the low-carbon energy transition, which will cause particularly large financial challenges and lead to a significant burden on the national economy and potential negative socio-economic consequences, especially in coal regions. Other comments, on the other hand, encouraged more ambitious or more radical solutions to accelerate the low-carbon ambition, pointing to the benefits of climate protection, improved quality of life and economic opportunities.

A large part of the comments were editorial. They concerned updating the data or asked for too detailed wording. Some results were also requested to be clarified or verified. The merits and the possibility of implementing some of the comments required the establishment of additional detailed issues or verification.

As a result of the consultation, analytical forecasts were revised in both WEM and WAM scenarios (Annexes 1 and 2) and the scope of activities in the strategic part of the document was updated and expanded. A thorough verification of the measures indicated in the NECP was carried out, while work was ongoing on updating the energy and climate forecasts. Particular attention was paid, among others, to measures in the area of thermomodernization and covering thermal needs in the economy, decarbonization of industry, agriculture, transport, increasing the use of the potential of renewable energy sources while maintaining power sufficiency so as not to aggravate energy poverty of society and strengthen the competitiveness of industry.

With regard to the environmental impact forecast, amendments or clarifications were requested, but also inaccuracies in the provisions on the state of the environment were noted. In the section on individual environmental impacts, doubts were expressed, among others, regarding the environmental impact assessment of Natura 2000 sites and transboundary activities for the proposed activities and the need to apply the precautionary principle in the assessments of the above-mentioned impacts. In addition, attention was paid to incorrect or incomplete impact assessment, the need to add further positive or negative impacts on individual elements of the environment or change the impact categories. It also called for non-infrastructural measures (e.g. air transport and agricultural measures) to be evaluated. Several entities pointed to the unreasonableness of including in individual environmental impacts the economic effects of the adoption of the NECP and recommended the inclusion in the forecast of further sectoral or environmental protection documents.

All comments and opinions received should be considered as contributing to the improvement and refinement of the draft NECP update. It should be emphasized that the vast majority of comments were of a more precise nature, not negating the priority development trajectories and indicated actions in this direction. Although some of the comments were not implemented in the document due to excessive detail, they allowed to build a broader analytical base of individual issues and constitute a field for further work. Comments submitted to the NECP during public consultations,

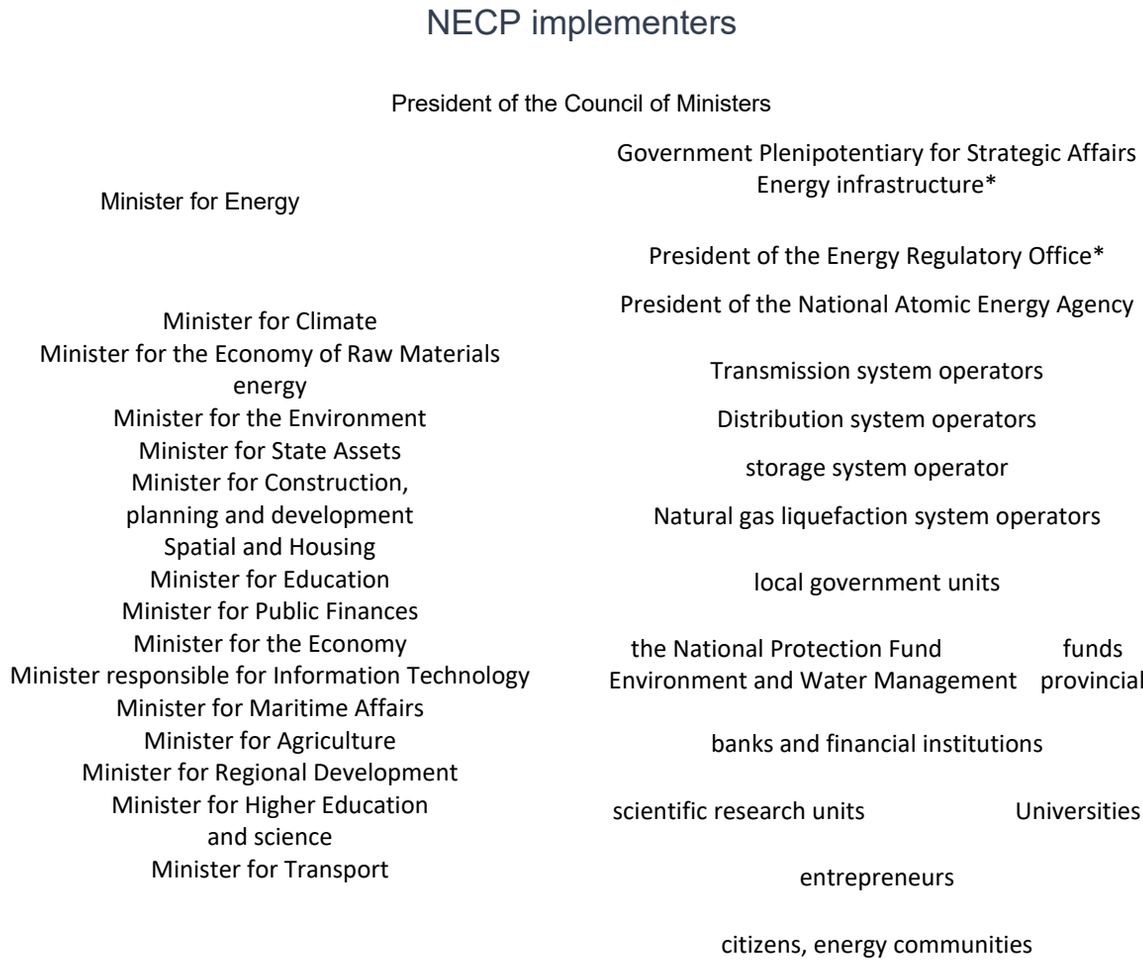
consultations and opinions were an important voice in the discussion on the directions of socio-economic development and the planned energy transformation of Poland.

C) Institutions involved in the development and implementationE> NECP

Article 15ab of the Energy Law indicates that the Minister for Energy, in cooperation with the **Minister for Climate, is responsible for the preparation of the integrated national energy and climate plan,** its update and the integrated national energy and climate progress report. Due to the cross-cutting nature of the document, the development of an integrated national plan requires support from other actors, in particular other ministers, authorities and bodies carrying out State tasks related to the NECP.

The implementation *of the National Energy and Climate Plan 2030 with an outlook to 2040 is the responsibility* of an even wider range of actors – government and local government authorities, government institutions, fuel and energy sector entities, as well as economic operators, fulfilling statutory obligations and implementing good practices in the field of energy use, combating climate change and adaptation. Entrepreneurs unrelated to the energy sector must also be involved in the implementation of the transition, as each activity is accompanied by greenhouse gas emissions, even within the carbon footprint. Involvement must also be on the part of citizens, who in practice will be the final beneficiaries of the ongoing energy and climate transition. Non-governmental organisations (NGOs) should play an important role in the implementation of the NECPs as full participants in the transition. These organisations should be, among others, partners in the processes of building citizens' awareness and social education on the energy and climate transition, entities supporting investment processes and providing reliable analyses, as well as participants in monitoring and evaluation of NECPs and others. Cooperation between state institutions and non-governmental organizations helps to build partnerships that strengthen the process of creating, implementing and monitoring policies. This allows government policies to be more inclusive and respond to real societal needs.

The entities particularly involved in the implementation of the NECPs are set out below. Although the Prime Minister has not been assigned specific tasks – as the head of the government's work, he represents it externally and ensures the implementation of government policy, as well as supervising local government and government administration. In the event of a possible amendment to the Act on departments of government administration, the competence of individual ministers may change.



D) Monitoring the implementation of aKPE JK

In accordance with Article 17 of Regulation 2018/1999 and Article 15ab of the Energy Law Act, integrated national energy and climate progress reports are to be reported on a 2-year cycle no later than 15 March of the reporting year concerned. The first implementation report of this document will be prepared in 2027. The structure, format and content of the national report are based on the requirements defined in Commission Implementing Regulation (EU) 2022/2299. In addition, in accordance with Art. 3 of Regulation (EU) 2018/1999, the report shall include the content of the report on greenhouse gas policies and measures and projections drawn up pursuant to Article 18 of that Regulation.

The integrated national energy and climate progress reports shall be prepared by the minister responsible for energy in cooperation with the minister responsible for climate; subsequently published in the form of a .xls file (reproducing the format from Regulation 2022/2299) on the website of the office serving the competent minister (currently on the website of the Ministry of

Energy). The report is transmitted to the European Commission via dedicated reporting platforms: **ReportENER**, supervised by the Directorate-General for Agriculture and Rural Development. Energy and **Reportnet3,** supervised by the European Environment Agency. The data transmitted via Reportnet3 is made publicly available, while the data transmitted to ReportENER is not of a public nature.

According to the information provided by the European Commission, changes are planned in the future both in the format of the integrated report and in the whole reporting process. These changes are due to the need to adapt the format to changing regulations and to improve the quality of the data provided.

Table 13 List of key performance indicators for NECPs

Lp.	Indicator name	Unit	2020 - value base	2027 - point reference	2030: value target
1	Total emission reductions (compared to 1990)	%	22,2	x	43,3 – 52,7
2	Reduction of non-ETS emissions (compared to 2005)	%	8,3 172	x	12 – 19,4
3	LULUCF	million tons. eq. CO2	23,3	x	28,8 - 46,5
4	Share of energy from RES in gross final energy consumption	%	16,1	24,1 - 24,6	30,0 - 32,0
5	Share of renewable energy in electricity	%	16,2	38,2 - 38,8	51,6 - 53,2
6	Share of renewable energy in heating and cooling	%	22,1	29,2 - 30,6	31,6 - 36,5
7	Share of renewable energy in transport	%	6,6	8,7 - 11,1	16,5
8	Primary energy consumption	Mtoe	96,9	88,3 - 90,1	80,7 - 84,9
9	Final energy consumption	Mtoe	71,1	68,3 - 69,3	64,4 - 66,8
10	Share of coal in electricity generation	%	68,8	36,7 - 38,1	22,9 - 28,9
11	Primary energy intensity of GDP	[toe/millionEUR'2024]	267	199 - 202	171 – 179
12	Final energy intensity of GDP	[toe/millionEUR'2024]	199	153 - 155	136 - 139
13	Energy independence	the Qualitative Meter	57,2 173	above the Union average	above the Union average
14	SAIDI	min/consignee	118,6	x	85,0
15	Number of energy communities	pcs.	66	x	1000

V. Cooperation;3 in the European regionB

The integrated national energy and climate plans (NECPs) are a compass for the country's energy transition, but the idea

172 The baseline value for 2021 is given in the table, as the methodology for calculating emission reductions in the non-ETS sector has changed since that year. Due to the specificities of the target, 2021 was adopted as a more representative year.
173 According to Eurostat data. The value for the EU as a whole was 42.5.

behind the NECPs is first and foremost to ensure that EU Member States' actions are consistent and effective **in achieving the Energy Union objectives.**

For this reason, cooperation between countries within the region is an important aspect of effectively achieving the objectives of the Energy Union. Member States cooperate in different fields and within different formulae.

An important area of regional cooperation related to the NECPs are the EU working groups attached to the Directors-General of the European Commission - Directorate-General for Regional Policy. Energy (*DG Energy),* Directorate-General for Agriculture and Rural Development Climate *Action (DG Climate Action), Directorate-General for Climate Action (DG Climate Action), Directorate-General for Climate Action (DG Climate Action), Directorate-General for Climate Action (DG Climate Action*), Directorate-General for Climate Action (DG Climate Action), Directorate Environment (DG *Environment*). The activities of the European *Network of Transmission System Operators for Electricity* (ENTSO-E) and the *European Network of Transmission System Operators for Gas* (ENTSO-G) should also be emphasised.

As part of the work on *the National Energy and Climate Plan 2030 with a view to 2040, Polish representatives* also participated in meetings aimed at exchanging experience and knowledge. During the period of preparation of the NECP, the following meetings were held: organised by Lithuania with the three Baltic States, organised by Latvia with the countries of the Baltic Sea Region, working meeting with the German administration. It also benefited from a meeting on the exchange of experience in foresight modelling for the development of NECPs organised by the International Atomic Energy Agency.

The following are key cooperation fora, or ones that are assessed as particularly interesting or forward-looking, outside the EC working groups.

Adaptation to climate change

- 100 climate-neutral and smart cities by 2030

***Countries/entities involved*:** 100 cities from all 27 EU Member States, plus 12 cities from countries associated or potentially associated to Horizon Europe (2021-2027) for research and innovation, including Polish cities: Warsaw, Kraków, Łódź, Wrocław and Rzeszów.

Description and expected effects: Cities participating in the Mission will develop Climate City Contracts, which will include an overall plan to achieve climate neutrality in all sectors, such as: energy, buildings, waste management and transport with related investment plans. Citizens, research organisations, businesses, investors and regional and national authorities will be involved in the process. The Mission's activities will aim at a significant reduction of greenhouse gas emissions.

Period of cooperation: 2021-2027

Quality of citnza

- Working Groups on Air Quality (in the framework of international cooperation)

Countries/entities involved: Germany, Czech Republic, Poland

Description and expected effects: The aim of the cooperation is to share knowledge in the field of air quality and monitoring, search for areas of joint action and issues related to transboundary air pollution. In addition, as part of this cooperation, Poland and the Czech Republic have concluded a special agreement on joint efforts to combat transboundary air pollution. Cooperation is permanent.

Technologies for the environment

- GreenEvo - Green Technology Accelerator

Countries/entities involved: potentially all EU Member States, Polish companies offering green technologies – winners of the *GreenEvo programme – Green Technologies Accelerator*, implemented by the Ministry of Science and Higher

Education in cooperation with Polish diplomatic missions around the world.

Description and expected effects: The GreenEvo project concerns waste management, water and wastewater management, renewable energy sources, energy savings, air protection, protection of biodiversity. GreenEvo aims to support the transfer of Polish, proven environmental technologies to foreign markets. The implementation of the project is an important tool supporting the process of shaping sustainable development in Poland and in the world. The technologies supported in the GreenEvo project are guaranteed quality, proven solutions, demonstrating a positive environmental effect. They are often a comprehensive response to specific environmental problems. They are competitive in relation to existing solutions, which is why they have a significant potential for expansion to developing countries struggling with problems in the area of environmental protection. The project stimulates the transition towards a circular economy, in particular by supporting and promoting eco-innovation and environmental technologies in all key areas of the economy.

GreenEvo mainly supports small and medium-sized entrepreneurs offering green technologies, who often do not have sufficient opportunities to develop their business outside Poland. The Ministry supports companies in the process of entering foreign markets, while promoting the idea of economic development with respect for the environment.

Period of cooperation: the current edition of the programme runs from 2024 to 2026

Energy security

- Energy cooperation within the Visegrad Group (V4)

Countries/entities involved: Czech Republic, Hungary, Poland, Slovakia

Description and expected effects: Cooperation within the Visegrad Group. As part of the North-South Gas Corridor project, gas interconnections were implemented: Poland-Slovakia and Slovakia-Hungary. All four countries of the group take a position of solidarity in relation to the use of nuclear energy and cooperate in the field of electricity. These actions are conducive to building energy security and independence of the V4 countries. Consistent definition of objectives and their implementation in solidarity are conducive to the creation of integration of the European Union and harmonization of its level of development.

- Formula of Peace

Countries/entities involved: Poland, Denmark, Norway, Ukraine, Canada, Republic of Korea, United Kingdom, UAS, Malaysia, Moldova, UAE, Qatar, Portugal, Italy, Croatia, France, Germany, Slovakia, Bulgaria Slovenia, Japan, Malaysia, Kuwait, Luxembourg, Lithuania, EC representatives, EU institutions and international organisations such as, IAEA, EEAS, IEA, Energy Community, ENTSO-E, UN.

Description and expected effects: Poland, together with Denmark, Norway and Ukraine, is co-chairing the implementation of point 3 of *the energy security* of the Formula of Peace, an initiative of the President of Ukraine. As part of the work of the working group, the so-called *Concept Note* on the actions that the international community can take to develop an energy resilience model as part of a common strategy to mitigate the risk of energy security disruptions, as well as the next steps to implement these actions. The three main pillars for achieving this objective are:

- ensuring the reliability of energy supply (short-term), including, inter alia, ongoing network repairs, optimisation of energy consumption, investments in the heating network, creation of new energy stocks;
- developing a long-term resilient energy system, including, but not limited to, the refurbishment of energy networks, decentralisation of energy production, integration into EU networks, investments in gas energy, increased energy efficiency, coal phase-out, energy self-sufficiency, energy transition and diversification of supply sources;
- promoting international energy security, including, inter alia, Ukraine's accession to international energy security conventions and agreements, the conclusion of energy alliances.

Energy infrastructure in

- BEMIP - The Baltic Energy Market Interconnection Plan

Countries/entities involved: Denmark, Germany, Estonia, Latvia, Lithuania, Poland, Finland and Sweden. Norway

participates as an observer

Description and expected effects: BEMIP is a group of representatives of various levels of government that supports the energy transition in the Baltic Sea Region and strives to achieve an open and integrated energy market among EU countries in the Baltic Sea Region. It is one of the oldest and most advanced forms of regional cooperation in the area of energy infrastructure. In the area of particular interest to BEMIP, the following efforts have been made in recent years to complete the synchronisation of the three Baltic States (Lithuania, Latvia, Estonia) with European networks, to increase transmission capacity in the remote Nordic area, to develop a regional decarbonised gas market, to work towards the decarbonisation of gas systems in the region and to make the best use of the region's energy efficiency and renewable energy potential, both onshore and offshore.

- electricity infrastructure – synchronising the three Baltic States with the Nordic system and continental Europe, increasing transmission capacity in the remote Nordic area,
- the development of RES – in recent times, particularly with regard to offshore wind energy,
- the decarbonisation of the gas sectors in the Baltic Sea Region and the implementation of hydrogen projects of common interest (PCIs).

Heat generators)

- Cross-border project United Heat

Countries/entities involved: Zgorzelec in Poland, Gorlitz in Germany

Description and expected effects: The implementation of the agreement concerning the two border towns of Poland and Germany has a small scale in national or regional terms, but it deserves to be noticed due to good practice. Cooperation between Poland and Germany takes place within the framework of a bilateral agreement in which they supported the Gorlitz-Zgorzelec cross-border project. SEC Zgorzelec and its partner Stadtwerke Goerlitz applied for EU funding for the construction of a new biomass heating plant, the installation of a solar installation for heating hot water, with heat storage.

The aim is to create a green, climate-neutral district heating network that will reduce GHG emissions and enable the transition away from coal in these companies from 2027.

Nuclear power

- International cooperation in the field of nuclear energy is carried out in the framework of a relatively large number of formulas, including in particular: the European Atomic Energy Community (Euratom), the International Atomic Energy Agency (IAEA), the Nuclear Energy Agency of the Organisation for Economic Cooperation and Development (NEA OECD), the Group of Heads of European Radiological Surveillance Authorities (HERCA), the Western European Nuclear Regulators Association (WENRA), the Council of the Baltic Sea States (RPMB), the European Association of Physical Protection Regulators (ENSRA), the European Society for the Research and Development of Nuclear Materials (ESARDA). Cooperation within these organisations is aimed at increasing competences and implementing good practices through the exchange of knowledge and experience.
- Due to the operation of nuclear power plants in close proximity to the Polish borders, as well as planned investments in Poland, cooperation with the nuclear supervision of neighbouring countries, implemented on the basis of intergovernmental agreements on early notification of a nuclear accident and cooperation in the field of nuclear safety and radiation protection, is crucial. For this reason, the State Atomic Energy Agency (PAA) has concluded agreements with all countries bordering Poland, as well as with Austria, Denmark and Norway.
- Within the framework of the European Union, Poland participates in the work of the Council Working Party on the Common Foreign and Security Policy. Nuclear, where legislative and non-legislative documents on the Euratom Community are discussed. Poland participates in the coalition of pro-nuclear states and holds positions supporting the development of nuclear energy in the EU, investment conditions in the sector and an increase in funds for nuclear research and development. Interventions in other Council working groups on issues relevant to the development of nuclear energy, such as environmental issues, are also monitored and if necessary.

List of EU regulations (and names^ (customs)

Council Directive 91/271/EEC - Council Directive 91/271/EEC of 21 May 1991 concerning urban waste-water treatment, link

Directive 2024/3019 so-called new waste water directive - Directive (EU) 2024/3019 of the European Parliament and of the Council of 12 December 2024 concerning urban waste water treatment, link

Directive 94/62/EC on packaging and packaging waste – Directive 94/62/EC of **the European Parliament and of the Council of 20 December 1994 on packaging and packaging waste,** link, will partially expire on 12 August 2026 due to the application of Regulation (EU) 2025/40 of the European Parliament and of the Council of 19 December 2024 on packaging and packaging waste, amending Regulation (EU) 2019/1020 and Directive (EU) 2019/904, and repealing Directive 94/62/EC, link

Directive 1999/31/EC on the landfill of waste**– Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste,** link

Directive 2000/53/EC on end-of-life vehicles – Directive 2000/53/EC of the European Parliament and of the Council of 18 September 2000 on end-of-life vehicles, link

Water Framework Directive – Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy, link

Directive 2004/107/EC on ambient air quality – Directive 2004/107/EC of the European Parliament and of the Council of 15 December 2004 relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air, link

Directive 2006/66/EU on batteries and accumulators and waste batteries – Directive 2006/66/EU of the European Parliament and of the Council of 6 September 2006 on batteries and accumulators and waste batteries and accumulators and repealing Directive 91/157/EEC, will partially expire on 18 August 2025 due to Regulation (EU) 2023/1542 of the European Parliament and of the Council of 12 July 2023 on batteries and waste batteries, amending Directive 2008/98/EC and Regulation (EU) 2019/1020, and repealing Directive 2006/66/EC, link

Waste Directive, WFD – Directive (EU) 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives, link

Ecodesign Directive – Directive (EU) 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products, link

WEEE Directive – Directive (EU) 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment, link

NEC Directive – Directive (EU) 2016/2284 of the European Parliament and of the Council of 14 December 2016 on the reduction of national emissions of certain atmospheric pollutants, amending Directive 2003/35/EC and repealing Directive 2001/81/EC, link

RED II – Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources, link

SML Directive - Directive (EU) 2025/2360 of the European Parliament and of the Council of 12 November 2025 on soil monitoring and resilience (Soil Monitoring Law), link

SUP Directive - Directive (EU) 2019/904 of the European Parliament and of the Council on the reduction of the impact of certain plastic products on the environment, link

Market Directive – Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU, link

CVD Directive – Directive (EU) 2019/1161 of the European Parliament and of the Council of 20 June 2019 amending Directive 2009/33/EC on the promotion of clean and energy-efficient road transport vehicles, link

Directive 2020/2184 – Directive (EU) 2020/2184 of the European Parliament and of the Council of 16 December

2020 on the quality of water intended for human consumption, link

NIS2 Directive – Directive (EU) 2022/2555 of the European Parliament and of the Council of 14 December 2022 on measures for a high common level of cybersecurity across the Union, amending Regulation (EU) No 910/2014 and Directive (EU) 2018/1972, and repealing Directive (EU) 2016/1148, link

Directive 2023/958 – Directive (EU) 2023/958 of the European Parliament and of the Council of 10 May 2023 amending Directive 2003/87/EC as regards aviation's contribution to the Union's economy-wide emission reduction target and the appropriate implementation of a global market-based measure, link

EU ETS Directive – Directive (EU) 2023/959 of the European Parliament and of the Council of 10 May 2023 amending Directive 2003/87/EC establishing a system for greenhouse gas emission allowance trading within the Union and Decision (EU) 2015/1814 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading system, link

EED – Directive (EU) 2023/1791 of the European Parliament and of the Council of 13 September 2023 on energy efficiency and amending Regulation (EU) 2023/955, link

RED III – Directive (EU) 2023/2413 of the European Parliament and of the Council of 18 October 2023 amending Directive (EU) 2018/2001, Regulation (EU) 2018/1999 and Directive 98/70/EC as regards the promotion of energy from renewable sources and repealing Council Directive (EU) 2015/652, link

Buildings Directive, EPBD – Directive (EU) 2024/1275 of the European Parliament and of the Council of 24 April 2024 on the energy performance of buildings, link

Directive 2024/1788 – Directive (EU) 2024/1788 of the European Parliament and of the Council on common rules for the internal markets in renewable gas, natural gas and hydrogen, link

Directive on ambient air quality and cleaner air for Europe – Directive 2024/2881 of the European Parliament and of the Council of 23 October 2024, link

CSRD Directive - Directive (EU) 2022/2464 of the European Parliament and of the Council of 14 December 2022 amending Regulation (EU) No 537/2014, Directive 2004/109/EC, Directive 2006/43/EC and Directive 2013/34/EU, as regards corporate sustainability reporting, link

Labelling Regulation - Regulation (EU) 2017/1369 of the European Parliament and of the Council of 4 July 2017 setting a framework for energy labelling and repealing Directive 2010/30/EU, link

LULUCF Regulation - Regulation (EU) 2018/841 of the European Parliament and of the Council of 30 May 2018 on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry in the 2030 climate and energy framework, and amending Regulation (EU) No 525/2013 and Decision No 529/2013/EU, link

Governance Regulation – Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action, amending Regulations (EC) No 663/2009 and (EC) No 715/2009 of the European Parliament and of the Council, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/119/EC and (EU) 2015/652 and repealing Regulation (EU) No 525/2013 of the European Parliament and of the Council, link

ALC Regulation - Commission Implementing Regulation (EU) 2019/1842 of 31 October 2019 laying down rules for the application of Directive 2003/87/EC of the European Parliament and of the Council as regards further arrangements for the adjustments to free allocation of emission allowances due to activity level changes, link

FAR Regulation - Commission Delegated Regulation (EU) 2019/331 of 19 December 2018 determining transitional Union-wide rules for harmonised free allocation of emission allowances pursuant to Article 10a of Directive 2003/87/EC of the European Parliament and of the Council, link

European Climate Law – Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999, link

Regulation 2022/869 – Regulation (EU) 2022/869 of the European Parliament and of the Council of 30 May 2022 on guidelines for trans-European energy infrastructure, amending Regulations (EC) No 715/2009, (EU) 2019/942 and (EU) 2019/943 and Directives 2009/73/EC and (EU) 2019/944, and repealing Regulation (EU) No 347/2013, link

Regulation 2022/2299 - Commission Implementing Regulation (EU) 2022/2299 of 15 November 2022 *laying down rules for the application of Regulation (EU) 2018/1999 of the European Parliament and of the Council as regards the structure, format, technical details and procedure of the integrated national progress reports,* link

LULUCF Regulation II – Regulation (EU) 2023/839 of the European Parliament and of the Council of 19 April 2023 amending Regulation (EU) 2018/841 as regards the scope, simplifying the reporting and compliance rules and setting out the targets of the Member States for 2030, and amending Regulation (EU) 2018/1999 as regards improving monitoring, reporting, tracking of progress and review, link

ESR - Effort Sharing - Regulation (EU) 2023/857 of the European Parliament and of the Council of 19 April 2023 amending Regulation (EU) 2018/842 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) 2018/1999, link

AFIR Regulation – Regulation (EU) 2023/1804 of the European Parliament and of the Council of 13 September 2023 on the deployment of alternative fuels infrastructure, and repealing Directive 2014/94/EU, link

Regulation on batteries and waste batteries – Regulation (EU) 2023/1542 of the European Parliament and of the Council of 12 July 2023 concerning batteries and waste batteries, amending Directive 2008/98/EC and Regulation (EU) 2019/1020 and repealing Directive 2006/66/EC (Text with EEA relevance), link

ReFuelEU Aviation Regulation - Regulation (EU) 2023/2405 of the European Parliament and of the Council of 18 October 2023 on ensuring a level playing field for sustainable air transport (ReFuelEU Aviation), link

FuelEU Maritime Regulation - Regulation (EU) 2023/1805 of the European Parliament and of the Council of 13 September 2023 on the use of renewable and low-carbon fuels in maritime transport, and amending Directive 2009/16/EC, link

SCF Regulation - Regulation (EU) 2023/955 of the European Parliament and of the Council of 10 May 2023 establishing a Social Climate Fund and amending Regulation (EU) 2021/1060, link

MRV Regulation - Regulation (EU) 2023/957 of the European Parliament and of the Council of 10 May 2023 amending Regulation (EU) 2015/757 in order to include maritime transport in the EU Emissions Trading System and to monitor, report and verify emissions of additional greenhouse gases and emissions from additional ship types, link

EU Critical Raw Materials Regulation – Regulation (EU) 2024/1252 of the European Parliament and of the Council of 11 April 2024 establishing a framework for ensuring a secure and sustainable supply of critical raw materials and amending Regulations (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1724 and (EU) 2019/1020, link

NCSS network code – Commission Delegated Regulation (EU) 2024/1366 of 11 March 2024 supplementing Regulation (EU) 2019/943 of the European Parliament and of the Council by establishing a network code on sectoral rules on cybersecurity aspects of cross-border electricity flows

TEN-T Regulation – Regulation (EU) 2024/1679 of the European Parliament and of the Council of 13 June 2024 on Union guidelines for the development of the trans-European transport network (TEN-T), link

Net Zero Industry Act, NZIA – Regulation (EU) 2024/1735 of the European Parliament and of the Council of 13 June 2024 on establishing a framework of measures for strengthening Europe's net-zero technology products manufacturing ecosystem, link

EU Methane Regulation - Regulation (EU) 2024/1787 of the European Parliament and of the Council of 13 June 2024 on methane emissions reduction in the energy sector and amending Regulation (EU) 2019/942, link

Regulation 2024/1789 – Regulation (EU) 2024/1789 of the European Parliament and of the Council of 13 June 2024 on the internal markets for renewable gas, natural gas and hydrogen, link **Regulation Nature Restoration Law, NRL** – Regulation (EU) 2024/1991 of the European Parliament and of the Council of 24 June 2024 on nature

restoration and amending Regulation (EU) 2022/869, link

Regulation on the certification framework for CO_2 removals – Regulation (EU) 2024/3012 of the European Parliament and of the Council of 27 November 2024 establishing a Union certification framework for permanent carbon removals, carbon farming and carbon storage in products, link

European Green Deal - Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – The European Green Deal (COM(2019) 640 final), link

Clean Industry Pact - Communication from the **Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - A Clean Industry Pact: Joint Competitiveness and Decarbonisation Action Plan' (COM/2025/85 final),** link

EU Competitiveness Compass - Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions EU Competitiveness Compass (COM/2025/30 final), link

Regulation 2017/1938 - Regulation (EU) 2017/1938 of the European Parliament and of the Council of 25 October 2017 concerning measures to safeguard security of gas supply and repealing Regulation (EU) No 994/2010, link

Market Regulation (or Regulation 2019/943) - Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity, link

List of abbreviations

aKPEiK – update *of the National Energy and Climate Plan 2021-2030*

BGK – Bank Gospodarstwa Krajowego

R&D – R&D activities

CBAM - EU Border Adjustment Mechanism

CCS – Carbon Capture and Storage Technology (CCS) *Carbon Capture and Storage*

CCU – Carbon Capture and Utilisation Technology (CCU) *Carbon Capture and Utilization*

CCUS – Carbon Capture, Storage and Use Technology (CCSU) *Carbon Capture, Utilization and Storage*

CEEB – Central Emission Register for Buildings

CEF – Connecting Europe Facility

CEPS – European Fuel Pipeline Network (EFN) *Central Europe Pipeline System*

CID – Clean Industrial Pact

CRChEB – Central Register of Energy Performance of Buildings

CRMA European Critical Raw Materials Act

CSIRE – Central Energy Market Information System

CSIRT Computer Security Incident Response Team (CSRT) *Computer Security Incident Response Team* (development depending on the subject, eg. CSIRT Energy)

CWTE – Energy Transition Support Centre (the entity does not exist at the time of adoption of the NECP, its creation is one of the planned activities)

DKR Good Agricultural Conditions (GAEC) *Good Agricultural and Environmental Condition*

DRI – direct iron reduction enabling the production of iron from iron ore using hydrogen, i.e. *Direct Reduced Iron*

DSR – Demand side *management, demand side response*

EU ETS – The European Greenhouse Gas Emissions Trading System (ETS) *European Union Emissions Trading System*

FEnIKS – European Funds for Infrastructure, Climate, Environment 2021-2027

FM – Modernisation Fund

FSRU – *floating storage regasification unit*

JTF – Just Transition Fund

GAEC Good Agricultural Conditions (GAEC) *Good Agricultural and Environmental Conditions*

CIEP – Chief Inspectorate for Environmental Protection

GHG – Greenhouse *gases*

GOZ – Circular economy

Gus – Central Statistical Office

IPCC– Intergovernmental Panel on Climate Change (IPCC) Climate Change (Climate Change) *Intergovernmental Panel on Climate Change*

JST– local government units

NECP– *National Climate Energy Plan 2030;* an integrated plan in the field of energy and climate – as the generic name of the document

RES NCP - National Contact Point for Renewable Energy

RRP– National Recovery and Resilience Plan

NRPB–National Building Renovation Plan

ESC–the National Electricity System

KwK–hard coal mine

LNG– *liquefied natural gas*

LULUCF–land use and land-use change and forestry *change, and forestry*

NCBR–National Centre for Research and Development

NCN–the National Science Centre

NCW–National Indicative Target (regards the share of RES in transport)

NFOŚiGW: National Fund for Environmental Protection and Water Management

NZIA–EU Net-Zero Industry Act

OIRE–Energy Market Information Operator

OSD–Distribution (electricity) system operators or gaseous)

OSDe–electricity distribution system operators

OSDg–gas distribution system operators

OSE–citizen energy communities

osmium–natural gas storage system operator

TSO–Transmission System Operator (Electricity or gaseous)

TSOe–electricity transmission system operator – PolishNetworks Elektroenergetyczne S.A. (PSE S.A.)

OSPg– Gas Transmission System Operator – Gas Transmission Operator GAZ-SYSTEM S.A.

RES–renewable energy sources

PARP–Polish Development Agency Entrepreneurship

EP–European Parliament

PFR–the Polish Development Fund S.A.

PGL LP– State Forest Holding State Forests

PPA– long-term *power purchase agreements*

PMG– Underground gas storage facilities

REPowerEU– Energy policy in national recovery and resilience plans

RARS – Government Agency for Strategic Reserves

RFNBO – renewable fuels of non-biological *origin (including renewable hydrogen of non-biological origin* 'RFNBO hydrogen')

SMR – *Small modular reactors*

SGT – Transit pipeline system

TCO – Total *cost of ownership*

TPST –Territorial Just Transition Plan

TSL – Transport, freight forwarding and logistics

EU – The European Union

ure – Energy Regulatory Office

OTSC – Large degraded land

ZG – Mining plant

ZPO – waste prevention

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[6] Regulation 2018/1999 uses the word *'measures'*. In the NECP, they have been replaced by the word 'actions', as the concept of 'measures' is ambiguous and may cause confusion.

[84] Article 4 of the EED.