Expert Council
on Energy Security and Climate

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Recommendations of the Expert Council on Energy Security and Climate on key actions in the field of climate and energy policy for the new Polish government

Energy Council - who are we?

The Expert Council on Energy Security and Climate is composed of people with rich and diverse experience in energy and the economy, industry, and international affairs. The goal of the Expert Council is to support decision-making processes in areas crucial to improving Poland's energy security and climate protection. The Council operates on a non-profit basis and does not promote any specific technologies or companies. For more information, see: https://rada-energetyczna.pl/en

1. Basic principles of energy-transition management

Given the dynamically changing external environment and parliamentary elections, redefining and organising the basic principles of managing the energy and climate policy area in Poland should be a priority for the future government.

It is important to obtain **cross-party consensus for the following basic assumptions** of Polish energy policy:

- It is essential to adopt the perspective that **the energy and climate transition should serve to strengthen the country's economic competitiveness** and that it is correlated not only with the interests of the energy sector but also primarily with the interests of consumers, both households and businesses. It should also be associated with building the necessary competences in the labour market for the development of modern industry and with the development and implementation of innovation, as well as ensuring energy security and the continuity of supplies to consumers.

- The need to decarbonise the energy industry also stems from the need for independence from fuel imports—the drive to be self-sufficient in meeting Europe's energy needs in the decades ahead in a situation of dwindling own fossil-fuel resources. This refers to Poland in particular.

- To make good use of the opportunities arising from the energy transition, it is necessary to correctly identify the main trends reflected in analyses by the International Energy Agency or the European Commission, among others. These are primarily **electrification and integration of sectors (so-called *sector coupling*) which previously relied on fossil fuels**, i.e., heating and cooling, transportation, or industrial processes.

- The need for the energy transition is driven by a number of factors, including primarily the ageing population and grid infrastructure, the need to curb energy price increases in the Polish economy, the legitimacy of the minimisation of the environmental and climate impacts of energy usage and the progress of technology. Also key is the need to ensure industrial competitiveness and independence from fossil-fuel imports.

- **Rapid emissivity decline and resolving the expected generation capacity deficit are essential for the country's security. The transition is also important for strengthening the competitiveness of the economy**, ensuring its attractiveness to investors and the availability of electricity at an affordable price. The scale of the transformation is enormous and entails the need for gigantic investments that must be financed not only by the state but also by the involvement of both private and international capital.

- It will be important to develop knowledge and competence and **to ensure the significant participation of Polish companies in the supply chain of equipment and services for low-emission investments**.

- The role of coal in the national power industry is gradually coming to an end, and **preparations should be made to close the vast majority of coal generation plants by the 2030s at the latest, along with the development of a strategy for mining areas**. At the same time, a plan to build new capacity that will ensure security of supply by the indicated time is crucial.

- The basic principle in the power industry should be market rules: **free price formation in the wholesale and retail electricity markets and price signals** for flexibility. Regulatory oversight should be strengthened to prevent manipulation. Price signals should stimulate the necessary investments in the energy sector, in accordance with a rational Energy Policy of Poland. This is the way to minimise investment costs, increase competition, and involve many players. **Deviations from market rules should be temporary in nature and used in exceptional cases. Their introduction must be subject to predetermined, transparent, and objective indicators of the existence of a crisis in energy and fuel prices**.

- As the situation in energy markets slowly calms down (after the COVID-19 pandemic and Russia's attack on Ukraine), **confidence in the legislative process should be restored**. It is necessary to **improve the transparency and quality of lawmaking**. Dialogue with market participants and public consultations should **take into account the interests of all players and customers.** Regulations should result from long-term strategies and be created in advance. This applies not only to the energy sector, but to the entire functioning of the state.

- The government should pursue **a transparent, objective, and consistent information policy**, publishing key data, communicating challenges as well as presenting solutions. Coherent communication will help public acceptance of the solutions introduced and accelerate their implementation. **Cyclical reports and cross-party consultations on climate and energy policy** should be initiated—given the transition's long timeframe beyond one or two terms of government—and open up public discussion at a technical rather than a political level.

- **The scope of centralisation of the Polish energy sector should be reviewed in** favour of a clear division of tasks among key players and strengthening of responsibility for their implementation in terms of regulation, transmission, trading, and corporate governance.

- It is necessary to urgently develop and present **a business model for nuclear power** development and transparent cost-benefit analysis. This is essential to ensure consensus on the implementation of the nuclear power development programme. A priority issue for the new government will also be developing a model for supporting nuclear power development in Poland and its effective notification to the European Commission.

2. Structural package

The government currently lacks professional tools to manage the energy transition due to several factors:

- Lack of a coherent, long-term strategy of action, which translates into a lack of cooperation between responsible institutions,
- Insufficient analytical resources,
- Human resources in public administration are inadequate to the scale of the challenge and are subject to market competition between salaries in the sphere of the budget and competitive wages in areas of the economy related to the energy transition,
- Strong politicisation and implementation of the energy strategy in isolation from regulatory and market trends.

An energy transition that guarantees security of energy supply must be a priority for the future government. Therefore, we propose to:

- Include in the future prime minister's exposé a strategy of action for the energy transition as the most important task of the new government,
- Appoint a minister in charge of the energy transition and select for this position a person capable of building alliances and substantively prepared,
- Strengthening the staff of the administration and the Centre for Climate and Energy Analysis (hereinafter: "CAKE").

Below is a list of the most important actions to be taken by the new government.

2.1 Priority actions for the new energy transition minister

The new energy transition minister should first address the most pressing issues, including a

- **Definition of strategic climate and energy policy goals**

by adopting updated and consistent documents, for example, "Poland's Energy Policy until 2040", hereinafter: "PEP 2040"), the "National Energy and Climate Plan" (hereinafter: "NECP"), the "Long-term Strategy for CO_2 reduction", and the "Strategy for the Heat Sector".

Strategic documents are essential for maintaining energy security. **The new PEP 2040 should be adopted as soon as possible, in view of the need to determine the strategic technological directions and pace of the energy transition. In tandem with the "Long-Term Strategy for CO_2 reduction" (by 2050), PEP 2040 is a key to mobilising low-carbon investments, which are currently too few in relation to the needs.** In addition, Poland is required to submit to the European Commission its final NECP by June 2024.

The draft update of the PEP 2040 presented by the Ministry of Climate and Environment for pre-consultation in June this year provides a good basis for updating the NECP. The adopted

direction of a faster energy transition will allow Poland to reduce the net deficit in the demand for CO_2 emission allowances compared to the size of the national auction pool. This is extremely important from the point of view of the cost-benefit calculus of the EU climate policy for the Polish economy.

It will also be necessary to **develop, adopt, and publish a Long-Term Strategy for reducing CO_2 emissions as soon as possible**—the deadline for meeting this commitment was January 1, 2020.

Urgent action is required in the district heating sector to adapt regulations to the challenges of the EU's "Fit for 55" package, which should be indicated in the new Heat Strategy.

- **Separation of coal assets from utilities in compliance with EU state aid and competition rules**

Given the level of progress on the separation of coal assets, the Expert Council supports the continuation of the process, provided that the manner, costs, and benefits of the new entity's operation are clarified. The key will be to ensure the formation of competitive energy prices in the market after the transaction.

The current state of uncertainty about the future of coal assets is having a negative impact on the security of Poland's energy supply. Companies with a State Treasury stake do not take decisions to modernise the existing coal-fired generation fleet, including 200 MW-class units in view of the perspective of its separation, which is constantly being delayed. Generation adequacy has a worsening outlook every year. This is particularly challenging given the continuing uncertainty and risks present on the EU gas and electricity markets.
In doing so, it is extremely important to clearly define the timeframe for the operation of coal-fired power plants, as well as to develop objective and transparent mechanisms for the "release" of connection capacity after shutdowns. In this context it is also fundamental to plan the construction of capacity to replace coal units and coordinate over time the replacement of the capacity being set aside with new generating units and energy storage. It is important that these plans be realistic in terms of time and finances.

- **Establishment of an Energy Transition Fund**

In order to accelerate the transition of Poland's energy sector, it is a priority to establish an Energy Transition Fund by amending the law on the greenhouse gas emissions trading system. **The fund should be an important instrument to support the energy transition in power and heat sectors, and to be fed with at least 40% of the allowances auctioned in the Polish national pool** (annually until 2030). The concept of it emerged in 2019 when the Polish government abandoned the option of extending a derogation for power generators from purchasing 100% of CO_2 emission allowances in the fourth settlement period of the EU ETS, instead declaring the creation of the Fund from 2021. It was to be an instrument to drive the energy transition by accelerating the investment in new low-carbon capacity.
Meanwhile, the draft amendment to the law introducing the Fund has been frozen for a year and a half, and funds from the auction of allowances are mainly going to compensate consumers for energy prices, instead of supporting the transition in the first place.

Recommendation 1: Give absolute primacy in the future government to the energy transition and define its model with the implementation of the most urgent actions to be taken by the new energy transition minister.

2.2 Support for the development of public administration personnel in the field of energy

Pressing problems for the public administration include **staff shortages, constant rotation, and scarcity in analytical background**. This creates a pathological system of basing regulations and strategic decisions on a game of business and political interests. **A significant part of the problem are the low salaries and high demand for energy transition expertise from the market.**

Key decisions regarding the directions of development of Poland's energy sector are worth many billions of zlotys, and **it is necessary to ensure that the staff is competent and motivated to take responsibility for them through adequate salary increases.**

This becomes all the more urgent in view of the upcoming Polish Presidency of the Council of the EU in the first half of 2025 and the upcoming intensified challenges in the area of implementing the goals of the European Green Deal and the new term of the European Commission after the elections in the EU.

Recommendation 2: Strengthen the government's personnel in the area of the energy transition and have adequately prepared staff for the Polish Presidency of the EU Council.

2.3 Strengthen the Climate and Energy Analysis Centre

In an era of mounting needs, opportunities/challenges, and commitments for Poland in the area of the energy transition, it is essential to have a substantively strong governmental think tank to support policy decisions on the direction and pace of the energy transition, one that is taking into account the quantitative costs and benefits for the Polish economy. Such a centre should perform analytical functions, plan ways to cost-effectively implement public policy, monitor processes, and make data available in an accessible way. It should also actively support communication and public education, public consultation processes, and dialogue, including with business partners.

Such a think tank should be developed on the basis of the already functioning Centre for Climate and Energy Analysis (CAKE). **The centre should be strengthened in terms of personnel and budget** to carry out ongoing analyses related to the development paths of the national energy mix and the transformation of the national energy and related economic sectors.

CAKE's work should be funded by the government, but remain as independent as possible from political influence, which would allow the centre to conduct research aimed at providing reliable information and analysis for climate and energy decision-making. The results of CAKE's analytical work should support the Ministry of Energy and Climate Transition and other institutions.

Recommendation 3: Strengthen the analytical background of the administration—human and financial support for the Centre for Climate and Energy Analysis. Improve the quality of decision-making in Poland's energy transition.

3. Renewable energy package

3.1 Removing barriers to RES development—accelerating the energy transition

RES power generation technologies have the lowest LCOE (levelised cost of electricity generation), and investment processes are faster compared to other energy sources. The development of RES makes it possible to reduce wholesale energy prices and imports of fossil fuels. Prosumer energy based on RES allows decentralisation of power generation and the emergence of new market players.

At least 50% of Poland's net electricity demand in 2030 should come from renewable sources. In reality, it could be much more. The new target for RES development should be reflected in the PEP2040 and updated NECP. To close the generation gap expected in the mid-2020s, it is important not only to develop but also to integrate zero-carbon sources into the system. To realise the full potential of RES, **existing regulatory barriers need to be unblocked**, **grids modernised**, and **flexibility mechanisms implemented**—both on the supply and demand sides.

The currently **limited potential for rapid development of RES in the power sector** in Poland lies, among other things, in **refusals to issue connection conditions for new capacity**, as we discuss in more detail below, in the Network Package. The **auction schedule should also be updated**, and **much more ambitious targets should be set for the development of RES capacity in the coming years**, in order to mobilise companies to develop projects and compete as much as possible.

It is necessary to use the potential of district heating to support the operation of the power system, resulting from the necessary transformation of the sector in accordance with the EU's "Fit for 55" package.

Municipalities with planning and spatial development responsibilities will play an important role in the context of energy infrastructure evolution. Adoption of appropriate land-use plans can significantly accelerate the development of renewable energy projects. Therefore, it is important to enable the widest possible participation of municipalities as partners in this process.

3.1.1 Maximise the potential of onshore wind farms

The goal set in government documents of developing this technology in Poland is indeed underestimated, despite having the lowest averaged costs of electricity generation. **Just under 14 GW of onshore wind capacity by 2030** and **20 GW in 2040 in the draft PEP 2040 update does not, in the Council's view, lives up to the actual development potential of this technology**. To fully achieve the potential of onshore wind farms in Poland, it will be necessary to further increase the flexibility of the power system—the construction of peak sources, energy storage, and the development of DSR. It will also be necessary to develop electrolysers that will manage surplus electricity, providing emissions-free hydrogen for industries that cannot be economically electrified. It is also important to include district heating in the balancing of the power system.

It is necessary to **continue the rapid liberalisation of the distance law from the current rule of 700 m to 500 m distance from buildings** in accordance with the earlier consensus developed in public consultations. Ambiens experts estimate that the required additional distance of 200 m reduces the area available for onshore wind farm development by as much as 44% across the country.

Recommendation 4: Increase the development potential of onshore wind farms by 2030 and 2040. Further liberalisation of the distance law. Revision of spatial planning rules.

3.1.2 Optimise the use of offshore wind energy potential

The priority task in the area of offshore wind farms is to make sure that the locations allocated to investors so far for the construction of new capacity will be (a total of about 18 GW by 2040), realised as soon as possible.

However, according to the Polish Wind Energy Association's analyses, **the real potential for the development of offshore wind farms in Poland is up to 33 GW by 2040**. To fully exploit this potential and maintain investor interest throughout the supply chain, it is necessary to:

- Set a target size for this sector beyond 2040,
- Commence work on amending the Land Use Plan of Poland Marine Areas,
- Simplify and accelerate procedures related to the implementation of individual stages of investment in offshore wind farms, which requires, among other things, strengthening staff of the relevant administrative bodies,
- Engage in work at the EU level and between the Baltic Sea countries on the development of hybrid cross-border connections (connecting offshore wind farms to two or more countries),
- Identify realistic supply and demand targets as well as actions for development
  Of the potential of the hydrogen economy.

It will also be crucial to effectively increase the national competence and competitiveness of production of components for the construction of offshore wind farms (so-called "local content"), which will be important in the face of increasing global competition in the market

for suppliers to offshore wind farms. The scale of investment associated with the development of this sector of the energy industry is very large, and the participation of domestic industry in its construction cannot be severely limited.

Recommendation 5: Increase the use of the potential of offshore wind farms in Poland and their role in decarbonising other sectors of the economy. Maximise the participation of domestic companies in the construction and operation of future offshore wind farms.

3.1.3 Development of prosumer and community power generation

Prosumer energy in Poland is developing rapidly—it is necessary to adequately capture it in the future strategic framework. The number of prosumer installations increased more than 20-fold between 2018 and 2023, from 0.3 GW to 9.3 GW.

It is necessary to set specific goals for its development, identify key supporting regulations, and include prosumers (both individual and collective) through participation in power system balancing in a way that allows their further development.

To implement these, it is reasonable to create incentive mechanisms to guarantee the progress of electrification of other sectors of the economy, including transport or individual and district heating in a way that benefits the electricity system by:

- **modification of the support system and tariffs** to promote electrification and flexibility to a greater extent,
- **targeting prosumer behaviour for daily balancing** (through special flexible tariffs for heat pumps, hot water storage, electric chargers and prosumer photovoltaics, among others, inducing incentives to maximise self-consumption),
- **develop support for building/organising energy communities** that increase the local use of energy produced by prosumers (aggregation of services/consumption, local trading) and increase individual benefits (no shutdowns, daily shift, etc.).

3.1.4 Facilitate the development of RES for industrial consumers

Particularly in the case of industrial consumers, the emissivity of the energy consumed is beginning to play an increasingly important role in the transition. From the point of view of a modern economy, providing access to energy with a zero or minimal carbon footprint is becoming a determinant of an enterprise's competitiveness, attraction of new investments, and maintaining its position in supply chains. Poland's energy mix is one of the most carbon-intensive in the EU, which is a major burden for companies operating in international supply chains. The development of industrial energy for self-production is a rational direction of RES development, as business has adequate capital, access to professional knowledge and awareness of the need to reduce the carbon footprint. Energy-intensive consumers also depend on affordable and predictable energy prices.

In this regard, we recommend setting goals for the development of RES in the energy industry in dialogue with representatives of major energy-intensive industries so as to facilitate grid operators' planning and reducing direct line costs (through tariff regulation), simplify land-use planning rules, and more specifically:

- **Provide for RES installations on industrial and post-industrial sites in development plans**, which will speed up the process of building new capacity,
- Include in the connection conditions the method of energy consumption,
- Allow municipalities to **prepare zones dedicated to RES**, as a result of the new EU directive on renewable energy sources.

A relatively simple and quick solution is to create the opportunity for industry to invest in its own sources, including by **speeding up permitting procedures**. The Council recommends considering the creation—as recommended by the European Commission—of **the mechanism of government guarantees for the conclusion of PPAs ("power purchase agreements")**, including for projects with a direct line connecting RES generating facilities with industrial customers. In addition, in line with European trends, **it is important to take steps to allow small and medium-sized customers to enter into PPAs as well as enterprises**.

There should also be **more support for Polish energy-intensive consumers** who face continued high prices for electricity and natural gas. **The current government support mechanism in the amount of PLN 5 billion is inadequate to meet the needs of the domestic industry**. It is necessary to propose system mechanisms for maintaining energy-intensive industry in Poland—in compliance with EU state aid rules—in the context of the pressure exerted not only by the energy crisis but also by competition from other global economies such as the United States and China. It is urgently required to create facilities for industry to use low-cost energy and for the creation of an ambitious energy efficiency and industrial decarbonisation programme, which will sustainably reduce costs in the long term.

Recommendation 6: Modify the support system for prosumer energy and energy-intensive consumers. Revise permitting and connection issues for new capacity; promote the development of PPAs, including for SMEs. Increase industry support from rising fuel and energy costs.

4. Package for heating and energy efficiency

Heating costs are becoming a huge challenge. Poland needs, first of all, comprehensive policies to support energy efficiency in buildings. **Also important are new efficiency financing models and the development of norms and standards** that will prevent poor quality thermal upgrades.

It is becoming important to reduce the role of gas in Polish heating and district heating - as it is largely an imported resource for which other sectors of the economy are competing. In this context, it **is important to electrify heating and develop district heating systems** that will cooperate with the NPS and help balance it.

The attractiveness of the white certificate system should be increased in a way that will significantly increase the ambition of investments in energy efficiency.

4.1 Transition of district heating

A priority step for the new government in this area is to develop and adopt a strategy for the district heating sector and define a path for decarbonising this segment.

The economic state of the district heating industry **urgently requires a change in regulatory mechanisms for the way heat prices are set and the financing of district heating modernisation**. Ensuring the ability of district heating entities to obtaining debt financing will enable the required investments in the area of heat generation and supply.

The future rationality of heat supply depends on the appropriate synergy of its various forms. From an administrative point of view, the key to success in this area will be to establish sound heat supply planning principles.

4.2 Transformation of heating in individual buildings

The priority is to align the heating strategy with the regulations of the "Fit for 55" package, including the new buildings directive. The transformation of the individual building sector is a process spread over many years, which must be well designed so as not to lead to a to waste of resources and loss of assumed benefits.

As a first step, the **Long-Term Strategy for Building Renovation, adopted in February 2022,** should be **amended and its goals aligned with the increased requirements of the Buildings Directive**, as well as the mechanisms for its implementation revised. This should be accompanied by a broad and consistent information campaign highlighting the benefits to recipients and informing about support programmes for vulnerable consumers. Electrification of district heating should be a priority, but it must be combined with systemic measures, such as improving energy efficiency and including this sector in the balancing of the power system. The role of gas in individual heating must be gradually reduced.

Recommendation 7: Accelerate energy efficiency improvements in buildings. Strategy for heating and district heating. Revision of the pricing mechanism for heating. Electrification of heating.

5. Package for power grids

Distribution and transmission networks are key to Poland's energy transition.
One of the main current problems are refusals to connect new RES-based generation capacity to the grid. The scale of refusals and estimates of capital expenditures (in old, unwired, unintelligent networks) show that this is the weak link. According to Energy Regulatory Office data, DSOs refused to issue connection conditions in 2022 for RES projects with a total installed capacity of about 51 GW (about 7,000 refusals).

In order to change the situation, it is necessary to **increase the transparency of the procedure of applications for connection conditions** not only at the level of the TSO but also at the level of the DSOs by:

a) **Publishing information on available connection capacities and submitted connection requests**,
b) Provision of a waiting list of applications for spare connection capacity along with their prioritisation,
c) **Publishing expert reports on the basis of which connection refusals were granted**,
d) **A thorough review of the network infrastructure** so that any refusals to connect new installations are based on real threats to network operation rather than theoretical overloads identified in spread analyses that do not affect system security,
e) **Streamlining the project queue** for applications for grid connection conditions by a statutory solution to the problem of unrealised projects,
f) **Consideration of DSR mechanisms in minimising network expansion costs** and problems with maintaining voltage levels.

The implementation of financial support to DSOs for reducing the percentage of refusals to connect RES to the grid, as planned, could also be considered at a later stage in the National Recovery Plan.

In parallel, it will be necessary to accelerate the pace of modernisation and construction of new transmission and distribution networks to enable the integration of new low-carbon capacity into the power system. In the draft PEP 2040 update, the Ministry of Climate and Environment estimates the scale of the necessary expenditures reaching up to PLN 500 billion by 2040. **Funds for investments should come, to the maximum extent possible**, from the **available EU funds for this purpose and from the revenues from the auctioning of CO_2 emission allowances**, possibly minimising the burden on end-users in Poland by raising the transmission tariff.

Recommendation 8: Amend regulations to enable a reduction in the number of refusals for grid connection requests. Increase investment in grid modernisation and development and maximise the use of available EU funds.

6. Consumer and energy market package

6.1 Removal of energy price caps on the wholesale market

Recently, there have been a number of domestic interventions in the Polish electricity and heat markets aimed at limiting prices. In the case of electricity, wholesale prices have been limited to the variable costs of conventional power plants, while in the case of renewable energy sources to the reference price level in auctions.

Current national legislation imposing price caps on generators should be eliminated at the end of 2023. The need to move away from such interventions is pointed out by, among others, the European Commission in its latest recommendations, and the market situation is also stabilising by the recent deep drop in natural gas prices and the subsequent reduction in electricity prices in the EU and Poland.

The possible introduction of energy price caps in future should only be considered on an emergency basis and according to strictly defined criteria, during crisis periods associated with extremely high energy prices. Otherwise, it will limit investment in new capacity. Energy-price crisis periods triggering price caps should be regulatorily defined and limited in time, i.e., to a maximum of one year.

An example of a solution could be a mechanism for temporary automatic freezing of prices in the wholesale market *(relief valve)* triggered in the event of a renewed price crisis, as advocated by the European Parliament in its position on the draft EU Electricity Market Regulation.

Recommendation 9: Abolish price caps for power generators in the wholesale market from 2024, and keep such an option only in an emergency situation involving extremely high energy prices.

6.2 Introduce a mechanism for market pricing of an operating reserve in the balancing market

The introduction of a mechanism for market pricing of the operating reserve (so-called *scarcity pricing*) was one of the conditions Poland agreed to in exchange for Brussels' approval of the introduction of a capacity market in the country.

Such a mechanism allowing generators to **adequately compensate for capacity availability in times of high energy demand** and increasing the revenues of generators in the market will strengthen the impetus for investment in new generating capacity and help ensure adequate capacity reserves in an era of increasing share of renewable (weather-dependent) sources in the system. The mechanism should have been implemented as early as 2021, but it has not been implemented to date.

Recommendation 10: Introduce a mechanism for market pricing of an operating reserve in the balancing market in early 2024.

6.3 Restoration of the obligation of generators to trade on a power exchange

In order to restore competition in the domestic electricity market, it is necessary to return to the obligation to trade on a power exchange, even more so if the concept of separating coal assets is realized. In such a scenario, NABE's share of domestic power generation will be leading (about 50% in the power generation segment), and the entity will have a dominant position in the market.

Therefore, **generation assets spun off from the companies should have a 100% obligation to trade electricity on the exchange restored**.

Recommendation 11: Restore the obligation for coal generators separated from state-owned companies to trade on a power exchange.

6.4 Provide price signals for energy savings

Maintaining the energy price freeze for end-users or increasing caps on electricity consumption covered by the freeze (from 2 to 3 MWh per year) are contrary to the urgent need to save electricity, increase energy efficiency, and decarbonise the country's energy mix. It **is therefore necessary to move away from freezing energy prices for all households**.

Support in the form of price freezes, as a rule **should be used only in price crises and should be oriented towards less-affluent households** so that other consumers have an incentive for energy savings. The definition of a crisis period in terms of the level of energy prices that would initiate such regulations should coincide with the definition regarding the possibility of emergency price caps for infra-marginal installations.

Government should be able to apply tariffs to households and SMEs set below production costs only in crisis periods, such as situations of sharp increases in fuel or energy prices. Tariffs set in this way should have a defined duration and a limit on energy consumption, maintaining incentives for energy efficiency.

6.5 Support low-income households and SMEs sensitive to energy prices

The return to market principles can be gradual, with shields for selected groups of consumers. **As an alternative to tariffs, we propose an energy voucher for selected groups of consumers**—low-income households and SMEs—for which the price of electricity or heat plays an important role.

6.6 Create markets for flexibility services

The lack of flexible service markets in Poland is one of the most important systemic gaps in the energy transition, as **it prevents the implementation of scenarios that include flexibility as an alternative to centralised, dispatchable generation units**, the creation/restoration of which is subject to high risks.

The power system already has to be flexible. What is happening more and more often in the Polish system is that when demand is low and production from RES is high, **renewable sources are shut down by the transmission system operator**.

The system operator needs dynamic development of energy storage, pumped storage and DSR, but these are not being developed at a sufficient size. The **development of energy storage in Poland requires an additional support mechanism outside the power market to accelerate this technology**, such as the creation of a dedicated programme adequately rewarding flexibility in the system and supporting investment inputs from the Modernisation Fund. Continued market incentives are also important to the active participation of storage in the system.

It is necessary to accelerate measures to allow customers to take advantage of their potential in flexibility mechanisms by **allowing their full participation in short-term markets and flexibility mechanisms**. In particular, the long-awaited **changes regarding independent aggregators under the amendments to the Energy Law and the aggregation of balancing services by System Service Providers under the balancing market reform are being delayed**. There is also a lack of mechanisms to effectively support construction of energy storage facilities at consumers, more efficient for a cost-optimisation electricity system (reducing the impact of bottlenecks in the power grid and grid losses). The use of these mechanisms is key to fully unlocking the potential of RES and reducing the necessary investment in generation resources and power grids.

It is necessary to create a market for flexibility services that will allow the power system to evolve in an economically reasonable and transparent manner. Very important in this regard will be storage facilities for network level and district heating. The flexibility market should be created by Polskie Sieci Elektroenergetyczne (TSO) and include system services, including in particular frequency regulation services, which will enable commercial investments in the construction of battery energy storage facilities.

Recommendation 12: Modify national legislation to unfreeze energy prices for households with an income criterion. Propose an energy voucher for vulnerable consumers and the most vulnerable SMEs. Establish services to improve the flexibility of the NPS.

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