

1. TOPIC 1

Enea Group plans to build gas-fired CCGT units in Koźienice. Numerous experts point out that gas-fired power plants of this type are already among the most expensive energy sources producing electricity 2-4 times more expensive than solar and wind power plants¹. Each of the gas-fired units planned in Poland, which already have guaranteed capacity contracts, is losing the price competition to solar and wind power. Moreover, the construction of gas-fired units planned for 30 years of operation is not compatible with the goal of achieving climate neutrality in the European Union by 2050. To attain it, it will be necessary to shut down the gas-fired units long before the return on investment is achieved. For projects currently planned in Poland, that is about 7 years of operation, which means the loss of much of the invested capital. Even after receiving generous support from the power market, these projects remain highly susceptible to losses in the event of relatively small fluctuations in the price of CO₂ emission allowances. A 25% increase in the CO₂ price will make the total net present value of a number of projects negative. For the above reasons, experts recommend that investors cancel new gas-fired projects in favor of taking advantage of investment opportunities arising in Poland's renewable energy sector.² Considering the above, I would like to receive answers to the following questions regarding the evaluation of the investment plans and the *Enea Group Development Strategy until 2030 with an outlook to 2040* in the context of the ongoing changes in the regulatory environment at the EU level and the new geopolitical situation caused by the open phase of Russian aggression against Ukraine initiated on 24 February 2022:

- Has the financing model for the construction of gas-fired units at the Koźienice Power Plant been drawn up or updated after 24 February 2022 to reflect the current economic, geopolitical and regulatory realities, including gas availability and prices? What are the results of this analysis?

Answer:

The financial model is updated on an ongoing basis and takes into account the reality after 24 February 2022. The final version of the model is drawn up based on the actual project implementation costs resulting from the most favorable final bid expected in September 2023. The results of currently performed analyses indicate a satisfactory level of profitability of the project.

¹ <https://dise.org.pl/raport-gaz-ziemny-geopolityka/>

² <https://carbontracker.org/reports/polands-energy-dilemma/>

- Has Enea Group conducted an assessment of the impact of the introduction of the Regulation of the European Parliament and of the Council on the reduction of methane emissions in the energy sector, the gas package, RePowerEU and the reform of the ETS and their impact on the operating costs of gas-fired power plants, gas prices and the cost of energy produced from gas on the strategy of expanding gas capacity? Has there been an analysis of the cost of energy produced by planned gas-fired power plants for end-users, taking into account the above factors for the 2030-2035-2040 horizon? If so - what are the results of this analysis? If not - why was it abandoned?

Answer:

No, because it is too early to evaluate it.

- What are the boundary conditions for profitability of the new gas-fired capacity planned by Enea Group? According to Enea, what market conditions must be met for the project to build new gas-fired units to be economically viable - the cost of capital, support from the power market (in what amount and for how long), different scenarios for the increase in the price of CO₂ emission allowances (what price will ensure the profitability of the investment)? Will the gas-fired units at the Kozienice Power Plant pay for themselves if the price of emission allowances is above EUR 100 per ton of CO₂ at the plant's assumed commissioning date?

Answer:

The current cost-effectiveness analysis is based on the WACC factor in place in the ENEA Group. Support from the Capacity Market is a prerequisite for maintaining the profitability of the investment. The cost-effectiveness of the investment depends not only on the price of CO₂ emission allowances, but mainly on the price of fuel, electricity, so the price paths of changes in these parameters over the expected operating period were taken into account when determining it, also taking into account a situation where the price of CO₂ emissions increases above EUR 100 per ton.

- Does the project require additional support mechanisms and if so, which ones and are they guaranteed?

Answer:

The project involves support in the form of a capacity market mechanism.

- Is the cost-effectiveness model for the planned gas-fired units based on the assumption of their baseload operation or on the assumption that they will be peak energy sources used for balancing the power system? How many hours

of operation of these units do they take into account? How many hours of operation constitutes the break-even point? How long return on investment time do the various models predict?

Answer:

There is no strict definition of a unit working as a baseload unit or and being a peak energy source for balancing the power system. The units planned for development will provide the ability to perform both functions in accordance with the current needs of the energy system. The units will be characterized by high flexibility of operation, which is particularly desirable for generating units playing a regulating and balancing role, providing the basis for further development of unstable sources of electricity generation using wind and solar. The expected number of working hours of each unit is 200,000 equivalent working hours.

Calculated on the basis of current financial analyses, the payback time depends on the actual nature of the units' load and occurs at a faster rate than the expected decommissioning date of these units.

- When does Enea Group plan to apply for an environmental decision for the gas plant in Świerże Górne, and what is the final planned capacity for the new plant?

Answer:

The application for an environmental decision is scheduled for 2024.

The capacity will be determined by the bidders in their final bids. The ongoing bidding process allows for two technology options for which the final capacity may differ. Regardless of the option, it will not be less than 1,821 MWe.

- Does Enea Group plan to put up the planned gas-fired capacity in the main auction covering the 2027 supply year, to be held on 15 December 2023? If so, what exact capacity does the company intend to put out? If not - when does it intend to put out gas-fired capacity and for which supply year?

Answer:

The plant is to participate in the capacity market auction to be held in December 2023 for the first phase of the project covering capacity obligations starting from 2028. For the second phase of the project, the plan is to participate in the auction in 2025.

2. **TOPIC 2 - The project involving the construction of CCGT power units in the Koźienice Power Plant is an element of the Enea Group Growth Strategy calling for 'Enea's Green Change' whereby climate neutrality is scheduled to be attained by the Group by 2050.**

Despite recent changes in the European Union's taxonomy, experts outside the gas lobby agree that fossil gas will no longer play a role in the transition as a transition fuel and is not considered as such. Stopping the global temperature rise at the critical level of 1.5 degrees C requires OECD countries - including Poland - to move away from burning fossil fuels in the electricity sector by 2035. Methane, which is its main component and at the same time one of the most harmful greenhouse gases for the climate, is responsible for the harmfulness of fossil gas. Anthropogenic methane emissions are responsible for about 30% of the increase in average global temperature since the pre-industrial era. **Methane from natural gas escapes unburned at every stage, from extraction, through the entire supply chain (i.e. the pipeline) to the point of consumption (power plant).** Although methane remains in the atmosphere for a shorter period of time than carbon dioxide, according to the Intergovernmental Panel on Climate Change (IPCC), methane warms the planet 86 times more than carbon dioxide due to its greater Global Warming Potential (GWP). There is strong evidence that **once the full life cycle is taken into account, fossil gas can have the same or even worse climate impacts than other fossil fuels. When methane emissions are more than ~3% across the supply chain, there is no climate benefit to using fossil gas compared to oil or coal.** A survey of 52 European gas companies has revealed that most companies are ignoring methane emissions in their supply chains and the industry is not able to provide sufficient transparency on the level and means of reducing emissions. Considering the above, please answer the following questions:

- How does Enea Group intend to achieve climate neutrality by 2050, given that the use of fossil gas entails emissions of methane, a greenhouse gas more than 80 times more potent than carbon dioxide, and its combustion causes CO₂ emissions?

Answer:

The international situation, not just politically but also economically contributed to strengthening and focusing ENEA Group's efforts in 2022 in pursuing climate neutrality targets. The Enea Group Development Strategy until 2030 with an outlook to 2040 is our principal frame of reference and it is well aligned with Poland's energy transition goals. Its execution will enable the Group to achieve

climate neutrality by 2050 while simultaneously constantly growing enterprise value. The targets laid down in the Strategy affirm that sustainability is reflected in practice in all of the Group's key business activities. The ENEA Group is focused on achieving our economic goals but this is done while respecting the environment and society. This business model is a source of benefit to ENEA's stakeholders in both of these areas. On top of the Strategy, the United Nations Sustainable Development Goals serve as a road sign. In connection with the profile of the Group's business we are making a particularly substantial contribution to Goals 7, 8 and 9 (Clean and accessible energy, Economic growth and good jobs and Innovation, industry and infrastructure). The ENEA Group is consistently developing its own renewable energy sources, including PV farms in Lików, Jastrowie and Lubno. At the same time the ENEA Group is running tens of projects that may significantly strengthen the potential of the Group's RES in the near future. In parallel, action is taken to perform the key task of the nation's power system involving the construction of offshore wind farms on the Baltic Sea. It is worth emphasizing that at the beginning of 2022, the Group launched a new cogeneration source in Piła, worth nearly PLN 50 million, based on three gas engines and solar collectors whose operation resulted in a significant reduction of coal consumption in the heating system. The construction of gas-fired units in the Koźienice Power Plant represents one of the ENEA Group's strategic investments in the process of its rational transition. This unit is slated to replace the existing coal-fired capacity. CCGT power units are a zero emission source of energy strengthening energy security and supporting the generation of energy from RES during the transition phase. Our state-of-the-art installations will be H2 Ready, which means that they will enable green hydrogen co-combustion. This is a forward-looking solution based on the use of green hydrogen as the ecological fuel of the future. It will make it possible to reduce our emission levels even further. Moreover, we at ENEA see the future of small and micro nuclear reactors that will operate in the base load of the power system.

- Does Enea Group include methane emissions in the total emissivity of the planned gas-fired power plant? If not - why not?
- Does Enea Group take into account methane emissions arising from the entire gas supply chain for the planned power plant? If not - why not?

Joint answer to the above two questions:

No, because we have to wait until the technological option (number of gas-fired units and their capacity) is selected.

- Does Enea Group have or is it developing a strategy to comply with the requirements of the Regulation of the European Parliament and of the Council on methane emissions reduction in the energy sector? If not - why not?

Answer:

The ENEA Group's Development Strategy is in keeping with the assumptions of Poland's energy transition, the guidelines for which are set in Poland's Energy Policy until 2040 prepared by the Ministry of Climate and Environment in line with the revised assumptions of the common climate and energy policy until 2030, contained in particular in the document entitled European Green Deal, setting the European Union the goal of achieving net zero emissions by 2050. The document additionally takes into account the objectives and findings stipulated in three sectoral arrangements, which were concluded in 2021 and are aimed to strengthen the national economic, environmental, technological, energy and social benefits from the development of the offshore wind power, hydrogen power and photovoltaic industries. The Russian Federation's aggression in Ukraine, which began in February 2022 and triggered, among other things, the formulation of the REPowerEU plan, has had a significant impact on the European and Polish energy transition. This and other changes in the ENEA Group's environment have had a significant impact on the Group's strategic goals and development directions. Accordingly, any potential update of the ENEA Group's Development Strategy will address the above issues accordingly.

- How does Enea Group intend to monitor and prevent methane emissions?

Answer:

The activities of Group companies are conducted in strict compliance with the accepted internal regulations, general provisions of law as well as the content of the necessary permits and administrative decisions, such as the right to release emissions into air, decisions on environmental conditions of a permit to carry out a project, or water permits. The ENEA Group monitors, among other things, greenhouse gas emissions, biogenic CO₂ emissions and CO₂ emissions from individual generating units of the ENEA Group.

- The Group's strategy is to use gas "as a low-carbon transition fuel" in the "initial phase of the road to climate neutrality." Does Enea Group have a strategy to move away from gas? Does Enea Group's investment plan set a date for the end of fossil gas generation and fossil gas-hydrogen blending?

Answer:

- *In the initial phase of its efforts aimed at reaching climate neutrality, the ENEA Group intends to use gas as a low-carbon transition fuel in order to maintain*

Poland's energy security. Investments in this area will be confined to the replacement of some generation capacities based on the existing infrastructure. Conventional low-carbon sources will stabilize the developing RES capacity. Since the units will have H₂ Ready technology, they will enable green hydrogen co-combustion, which will further reduce emissions.

- Given Enea Group's announcement that the construction of the gas-fired units will ensure "the extension of the operation of the Kozienice Power Plant beyond the horizon of the planned operation of the B11 coal-fired unit" - i.e. 2050 - what time horizon for the operation of the gas-fired power plants does the Group assume?

Answer:

The time horizon for the operation of the gas-fired units extends to the end of 2049.

- Has Enea Group adopted a date to move away from burning coal?

Answer:

The main assumption of the ENEA Group's reorganization is to allocate coal-fired power plants to the National Energy Security Agency (NABE), at the same time retaining district heating and cogeneration units in the Group's structure, which will be gradually replaced with gas fired units that are suited to be supplied with low- and zero-emission fuels in the future. The objectives of the transformation of the Polish power companies include, among other outcomes, the integration of the bituminous coal assets within a single entity, specifically PGE Górnictwo i Energetyka Konwencjonalna S.A., a subsidiary of PGE S.A., which will ultimately run its business under the name of NABE.

- Enea Group's strategy is to reduce the value of the CO₂ emission unit factor to 254 kg CO₂ per MWh in 2030, with the aim of achieving a value of 201 kg CO₂ per MWh by 2040 and achieving climate neutrality by 2050. Please provide projected absolute emission values in tons of CO₂ per annum for 2030, 2040 and 2050.

Answer:

The Company does not publish data in such format (in tons of CO₂/year). While preparing an update of the ENEA Group's Development Strategy, the reduction of CO₂ emission intensity was assumed, taking into account both the planned spin-off of selected bituminous coal based generation assets to NABE and the investments in new RES installations and combined cycle power units in Kozienice Power Plant.

3. **TOPIC 3 - The Group assures that the gas-fired units will be ready to co-fire hydrogen produced with renewable energy.** Considering the above, please answer the following questions:

- In what proportion will hydrogen be mixed with fossil gas? Please provide the percentages for fossil gas and hydrogen.

Answer:

The units will not limit the possibility of co-firing hydrogen. The only limitation may be the lack of availability of this fuel.

- What method will be used to produce the hydrogen utilized by Enea Group? If it is to be hydrogen produced by electrolysis of water - how will the electricity for this process be produced? If it is to come from renewable energy sources - what sources will they be?

Answer:

As part of the implementation of the ENEA Group Strategy, it is planned to verify the ENEA Group's participation in the development of hydrogen technologies for energy storage and development of battery and kinetic energy storage technologies for distributed renewable energy sources, which can play a key role in energy storage and balancing the capacity system with the growing share of renewable energy sources.

- Is Enea Group using or planning to use gray or blue hydrogen?

Answer:

As part of the implementation of the ENEA Group Strategy, it is planned to verify the ENEA Group's participation in the development of hydrogen technologies for energy storage and development of battery and kinetic energy storage technologies for distributed renewable energy sources, which can play a key role in energy storage and balancing the capacity system with the growing share of renewable energy sources. At the same time, ENEA constantly monitors relevant regulatory changes at the national and European levels and changing market trends in the energy industry, therefore each time the ENEA Group's Development Strategy is updated, all these aspects are taken into account in setting new strategic directions and goals.

- Is Enea Group using or planning to use green hydrogen produced through energy obtained by burning biomass?

Answer:

We are planning a project aiming to build a cogeneration system based on a gas engine that will use hydrogen, previously produced in an electrolyzer included in the plant, as fuel.

In addition, as part of the development of electromobility, in accordance with the assumptions from the ENEA Group's Development Strategy, the topic of green hydrogen is taken into consideration. The Group plans to implement innovative services for managing a network of distributed electric vehicle chargers and the use of electrified specialized vehicles in business operations in the ENEA Group's business areas. Increasing the share of electric transport in the Group's fleet will have a positive impact on the organization's image as a modern player and one that cares about ecology and the environment. In the long term, it will be possible to extend the initiative to specialty cars powered by green hydrogen.

- Does Enea Group include in the emissivity of hydrogen the emissivity of its production?

Answer:

Our decarbonization strategy is based on the Paris Agreement, which stipulates that the EU economy will be the first to become carbon neutral by 2050, which will make it possible to achieve the goal of limiting the global average temperature increase to no more than 1.5°C above pre-industrial levels. At the same time, ENEA constantly monitors relevant regulatory changes at the national and European levels and changing market trends in the energy industry, therefore each time the ENEA Group's Development Strategy is updated, all these aspects are taken into account in setting new strategic directions and goals. The topic of hydrogen is a developing one, which is why the ENEA Group is planning its involvement in hydrogen technologies.

- What will be the projected cost of generating electricity by co-firing hydrogen and gas?

Answer:

The cost of generating electricity by co-firing hydrogen and gas will depend on the price of hydrogen, as well as the hydrogen volume available.

- Given that hydrogen co-firing does not eliminate methane and CO₂ emissions associated with the use of fossil gas and only slightly reduces CO₂/MWh emissions - how does Enea Group intend to achieve climate neutrality of the planned gas-fired units?

Answer:

The ENEA Group is committed to minimizing CO₂ emissions throughout its value chain, with the goal of achieving climate neutrality in 2050. This way the organization is aligned with the European Union's climate objectives and social expectations. The main directions of ENEA Group's climate neutrality efforts

include, in addition to the transition away from the combustion of fossil fuels, the development of renewable energy sources and the improvement of energy efficiency. The decarbonization strategy is based on the Paris Agreement, which stipulates that the EU economy will be the first to become carbon neutral by 2050, which will make it possible to achieve the goal of limiting the global average temperature increase to no more than 1.5°C above pre-industrial levels. According to the definition of climate neutrality, it means a balance between CO₂ emissions and the absorption of CO₂ from the atmosphere into so-called carbon sinks, which consequently means that CO₂ emissions of selected generating units are allowed if their absorption will be ensured.

4. **TOPIC 4 - Every year millions of fish larvae and young fry die in the open system of the plant in Koźienice and Połaniec owned by the Group; a significant part of them are protected species, as confirmed by a number of studies.**³ Considering the above, please answer the following questions:

- Does Enea Group plan to use an existing open cooling system for the gas plant or build a new closed condenser cooling system?

Answer:

It is assumed that the current steam turbine condenser cooling system will be operated in the CCGT plant system.

- If it plans to use the existing open cooling system, how is Enea Group going to meet the standards for protecting river ecosystems, especially the protection and preservation of fish species under strict protection and protected by European law?
- If, in turn, it intends to build a plant using a closed cooling system, how much more expensive will it be compared to an open cooling system solution? Does Enea Group in its estimates even consider the likely financial penalties it would face for continuing to annihilate protected fish species in its plants?

Joint answer to the above two questions:

The research results cited in the question have not been officially confirmed. The analyses and verifications of the research reports, carried out in 2022 by an independent expert appointed by the Regional Director of Environmental Protection in Warsaw, did not confirm their conformity with the facts.

Changing the technology from coal to gas will significantly reduce the demand for cooling water, which will help reduce the impact on the water environment. ENEA Group companies commission studies to objectively assess the ichthyofauna species and counts, as well as their behavior.

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https://elektrowniakozienice.com/upload/filemanager/pracownia.org.pl/Dokumenty/Raport_Elektrownie_termiczne_ryby_18_06_2020.pdf
https://elektrowniakozienice.com/upload/filemanager/StopEK/Raport%20Ryby%202022/raport-2022_v16_150dpi-1.pdf

5. TOPIC 5 - Recently, there have been several disturbing events around the Kozenice Power Plant - units 1-11 and the Połaniec Power Plant.

- a) On 15 May 2023, the Minister of Climate and Environment annulled the decision of the Marshal of the Mazowieckie Voivodeship amending the integrated permit for the wastewater treatment plant at the Kozenice Power Plant.
- b) At the same time, since March 2021, an administrative proceeding is underway regarding environmental damage caused by the operation of the Kozenice power plant related to the fact that protected fish species are killed by the open cooling systems of units 1-10. The last report by environmental organizations on the issue was published in 2022.
- c) In addition, according to an amendment to the building permit dated 23 March 2022, January marked the deadline for the demolition of the sill on the Wisła in Świerże allowing water to be drawn for the power plant's cooling systems.
- d) At the same time, in May 2023, the Minister of Climate and Environment initiated proceedings to annul the 2021 decision of the Marshal of the Świętokrzyskie Voivodeship, which amended the integrated permit for the Połaniec Power Plant. Like the Kozenice power plant, representatives of ichthyofauna die in the plant.

All of these proceedings raise legitimate concerns that Enea Group is not complying with basic legal standards, let alone environmental standards. In this regard, please let provide the following information:

- Is Enea Group going to proceed with the demolition of the sill on the Wisła, and when, and why is it failing to meet the obligations set forth in the amendment to the building permit?

Answer:

The ENEA Group is taking steps to demolish the sill on the Wisła River within the timeframe and on the conditions specified in the administrative decision of the Voivode of Mazowieckie Voivodeship No. 221/SAAB/2022 dated 23 March 2022.

- Has Enea Group taken steps to reduce fish mortality caused by the Kozenice power plant in 2022, and what are they?

Answer:

The ENEA Group strictly complies with provisions of the Nature Conservation Act and other regulations and administrative decisions imposing on the Group obligations concerning protection of ecological processes and biodiversity. The resulting activities include, among others: continuous ecological supervision at

the site of the Kozenice Power Plant and in its vicinity, which enables, among other things, the protection of any confirmed sites of the species of plants, fungi and animals subject to species protection; long-term monitoring of the impact of wind power plants on bird and bat populations; and the construction of fish ladders on rivers – structures that allow fish to migrate freely.

- What minimization measures does Enea Group intend to take to at least reduce the number of legally protected fish species that die in the power plant's cooling systems? Such an action could undoubtedly involve reducing the power of the units during periods from mid-April to late July when fish larvae and young fry die in the power plant's systems.

Answer:

ENEA Wytwarzanie holds legally required decisions and environmental permits, including from the area of water and wastewater management. The Company operates in compliance with all the permissible values outlined therein. Safe and rational use of the resources of the Wisła River is possible thanks to the Company's use of modern water treatment technologies and treatment of discharged wastewater. The Kozenice Power Plant conducts continuous monitoring of the amount of water drawn and wastewater discharged. Continuous monitoring is also carried out on the discharge of cooling water in terms of its temperature. The IT tool used for this purpose fundamentally minimizes the risks associated with the need to meet the criterion parameters of the cooling water throughout the day, as by creating a complete information base on the operation of the system, it allows immediate and effective response and decision-making on corrective actions. If there is a risk of exceeding the permitted value, decisions are made to reduce the capacity (the capacity of the units in operation is reduced accordingly). The Company uses the Wisła River in a continuous and uniform manner, and does not have any wastewater retention reservoirs that would allow for additional, one-off discharge of increased pollution loads. Areas of critical management of petroleum substances (oil, mazut) are separated, without the possibility of discharging wastewater into the Wisła River.

Since 2020, on behalf of ENEA Wytwarzanie, research has been conducted by a leading Polish institute specializing in ichthyofauna research on the impact of the Kozenice Power Plant's open cooling system on the Wisła River ecosystem. Completion of the research is scheduled for December 2023. ENEA Elektrownia Połaniec operates with respect for the environment, using the best available techniques to reduce its environmental impact. This applies in particular to water resources and the ichthyofauna that form an inseparable part thereof. ENEA Elektrownia Połaniec is carrying out optional compensation

activities in consultation with the competent local structures of the Polish Angling Association, and is continuing research aimed at an independent assessment of the condition of the ichthyofauna of the Wisła River in the vicinity of the Połaniec Power Plant.

- Has Enea Group taken steps to reduce fish mortality caused by the Połaniec power plant in 2022, and what are they? What countermeasures does Enea Group intend to take to reduce the loss of protected species?

Answer:

The ENEA Group strictly complies with provisions of the Nature Conservation Act and other regulations and administrative decisions imposing on the Group obligations concerning protection of ecological processes and biodiversity. In 2022 ENEA Elektrownia Połaniec participated in the Wisła River restocking project.

- In this situation, wouldn't it make sense for the Group to change the way it generates energy toward technologies that are not water-intensive and do not interfere as drastically with the environment as the power units in Świerże Górne and Połaniec currently do? Production of renewable hydrogen, i.e. hydrogen produced solely from surplus green energy generated from solar and wind sources, seems more developmental than coal and gas.

Answer:

The overriding objective formulated in the ENEA Group's Development Strategy is the Green Change, understood as a sustainable transition of the Group, increasing its value, with the long-term goal of achieving climate neutrality by 2050. The key development directions include, among others: (i) Intensification of efforts towards access to green energy through the implementation of the ENEA Group's RES Portfolio, (ii) Involvement in offshore wind energy, (iii) Development of energy storage projects and provision of offshore services, (iv) Development of hybrid installations, (v) Development of new business lines, (vi) Development of a modern offer for prosumers, including cooperation with local governments and urban movements, as well as participation in the development and management of energy islands (energy clusters). It is assumed that the above will translate into an increase in installed RES capacity in the ENEA Group by 1,510 MW in 2030 and by 3,580 MW in 2040 (compared to 2020). It is assumed that the increase in the installed RES capacity will be achieved through acquisitions, the development of own projects (mostly in rural areas) and in collaboration with business partners.