

GENERAL DIRECTOR OF ENVIRONMENTAL PROTECTION

Warsaw, February 1, 2024

DOOŚ-WDŚZOO.420.23.2023.AKA.23

## RESOLUTION

The General Director for Environmental Protection, after considering the application of BWRX-300 Stawy Monowskie sp. z o. o. of April 28, 2023, to determine the scope of the report on the environmental impact of the project, pursuant to Art. 68 section 2 and art. 69 section 3 of the Act of October 3, 2008 on the provision of information on the environment and its protection, public participation in environmental protection and on environmental impact assessments (Journal of Laws of 2023, item 1094, as amended), hereinafter referred to as the EIA. : :

**I. Specifies the scope of the environmental impact report for the project involving "Construction and operation of a small modular nuclear power plant with a total capacity of up to 1,300 MWe using the BWRX-300 technology in the location of Stawy Monowskie, Oświęcim Commune" in accordance with Art. 66 uooś.**

**II. Indicates:**

**1. Types of variants requiring investigation:**

- a) due to the source of water used for the cooling system of a nuclear power plant:
  - cooling with water from the Dwory canal;
  - cooling with purified sewage from sewage treatment plants;
- b) due to the technical solutions of the closed cooling system:
  - cooling system using natural draft cooling towers (cooling tower);
  - cooling system using forced air cooling towers (fan cooling tower).

**2. The scope and detail of the required data to characterize the project, types of impacts and environmental elements requiring detailed analysis:**

2.1. Description of the planned project:

- 2.1.1. Detailed description and characteristics of buildings and installations covered by the application for issuing a decision on environmental conditions, constituting the infrastructure necessary for the service referred to in Art. 2 point 1b of the Act of June 29, 2011 on the preparation and implementation of investments in nuclear energy facilities and accompanying investments (Journal of Laws of 2021, item

1484, as amended), hereinafter referred to as referred to in the Regulation of the Council of Ministers of September 10, 2019 on projects that may have a significant impact on the environment (Journal of Laws of 2019, item 1839, as amended), hereinafter referred to as the the above regulation and an assessment of the expected significant environmental impacts.

2.1.2. Information on the use of water resources should include:

- a) take into account the characteristics of the availability of water resources that will be the basis for supplying the planned project with water, in particular the cooling system, demonstrating that they will be sufficient for the operation of the project, taking into account information on the current use of water (including shipping and hydropower), and presenting information on projected changes in the volume of these water resources, taking into account analyzes of ongoing climate change, including long-term droughts;
- b) demonstrate that the selected water sources will ensure its availability during the operation of the project in various meteorological conditions.

2.1.3. When describing the risk of serious accidents or natural and construction disasters, the flood risk analysis should include, among others: effects of potential disasters of the Kaskady Soła water reservoirs (Tresna, Porąbka and Czaniec), the Goczalkowice reservoir on the Vistula and the Dzieńkowice reservoir on Przemsza.

2.1.4. The report should include a description of the operation of emergency systems, including those related to the meltdown of the reactor core, and a description of the reactor protection systems, safety systems and solutions dedicated to extended design conditions, taking into account the operational reliability of passive safety solutions.

2.2. The description of the natural elements of the environment included in the scope of the expected impact of the planned project on the environment should include, among others: detailed analysis:

- a) natural habitats and plant and animal species listed in Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (OJ EU L 206, 22/07/1992, p. 7) ;
- b) birds listed in Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (OJ EU L 020, 26/01/2010, p. 7);

- c) plants, animals and fungi protected under the Act of 16 April 2004 on Nature Protection (Journal of Laws of 2023, item 1336, as amended), hereinafter referred to as the Act of 16 April 2004 on Nature Protection;
- d) rare and endangered plants, animals and fungi (included in the "red books" and on national and regional "red lists");
- e) abundance and distribution of invasive alien species;
- f) species composition, numbers and places of occurrence of animals in particular phenological periods and development stages, including information on functional habitats (e.g. places of breeding, spawning, feeding, wintering, shelters, roosting places, migration corridors), and information on the method and intensity of use of the area and space by fauna;
- g) area and state of preservation of natural habitats and other plant communities;
- h) the state of conservation of populations and habitats of plant and animal species, distinguishing between: species listed in Directive 92/43/EEC, Directive 2009/147/EC and others;
- i) taxonomic composition, abundance and biomass of phyto- and zooplankton and phyto- and zoobenthos, taking into account the seasonal variability of phytoplankton and zooplankton;
- j) species composition, abundance, age structure, distribution and density of ichthyofauna, including fish larvae and fry;
- k) biodiversity in terms of species, habitats and ecosystems;
- l) plant, fungi and animal protection zones.

2.3. The description of the expected significant impacts of the planned project on the environment should include, among others: detailed analysis:

- a) impacts on the inventoried elements of the biotic environment resulting from:
  - changes in hydrogeological and hydromorphological conditions;
  - physical effects of the implementation of the project, such as: clearing, destruction, transformation, fragmentation or isolation of natural habitats and plant and animal habitats;
  - impact on ecological structures and processes that determine the proper functioning of natural habitats and plant and animal populations;

- projected changes in population parameters of inventoried fauna species (e.g. impact on numbers as a result of increased mortality, change in density, structure);
  - creating a barrier to the migration and dispersion of organisms, limiting the area of their occurrence;
  - impact on breeding sites, feeding grounds, resting places, migration routes (continuity and functioning of international, national, regional and local corridors);
  - impact on biodiversity;
  - the impact of increased anthropopressure;
  - the impact of light pollution;
- b) impacts on forms of nature protection, in particular on Natura 2000 areas and the continuity of ecological corridors connecting them, taking into account the provisions resulting from protection plans or plans of protective tasks;
- c) threats related to the appearance and spread of invasive alien species;
- d) impacts on the receiving ecosystem resulting from the introduction of sewage and rainwater and meltwater caused by, among others:
- extraction and disturbance of bottom sediments, increase in the concentration of suspended matter in water;
  - emission of substances and energy into water and changes in water quality;
  - occurrence of an emergency (including uncontrolled leakage of radioactive substances);
  - fish and other organisms entering the cooling system;
  - changes in the species composition, range of occurrence, abundance and biomass of fauna and flora.

2.4. Description of the aquatic environment and description of the expected significant impacts of the planned project on surface and underground waters, including water bodies and the possibility of achieving the environmental objectives referred to in Art. 56, art. 57, art. 59 and art. 61 of the Act of July 20, 2017 - Water Law (Journal of Laws of 2023, item 1478, as amended), hereinafter referred to as:

2.4.1. The description of the status of surface water bodies, hereinafter referred to as bodies of surface water, should specify the values of individual quality indicators included in the hydromorphological,

biological and physicochemical elements classifying the status/ecological potential of the water body, as well as the chemical elements qualifying the chemical status of the body affected by the impacts resulting from the implementation and operation. ventures.

2.4.2. The description of the status of groundwater bodies, hereinafter referred to as groundwater bodies, should specify the values of individual quality indicators included in the elements qualifying the physicochemical status, chemical status and quantitative status of water bodies affected by the impacts resulting from the implementation and operation of the project.

2.4.3. The expected changes in the values of quality indicators referred to in points 2.4.1 and 2.4.2 should be described in connection with the impacts resulting from the implementation and operation of the project, their impact on individual quality elements and the condition of the Water Pools and Pools, as well as on the possibility of achieving the set targets. environmental goals for them.

2.5. A description of the radiological state of the environment and a description of the expected significant radiological impact of the project, including emergency situations, should include:

- a) description of the radiative state of the environment (background) for the region where the project is located, based on at least 12 months of pre-implementation monitoring, taking into account:
  - concentrations of radioisotopes in atmospheric aerosols;
  - total activity of alpha and beta radioactive isotopes in the air;
  - the power of the spatial dose equivalent  $H^*(10)$  in air at a height of 1 m above the earth's surface;
  - concentrations of radioactive isotopes (including those of anthropogenic origin) in environmental components sampled and representative of the location region (including bioindicators), in particular in soil, groundwater and surface water;
  - the health status of residents, including the spatial variations in the occurrence of diseases that may result from exposure to ionizing radiation (in particular cancer);
  - concentration of radioactive isotopes in food produced, collected and representative for the region of location, including in particular: plant products (fruits, vegetables and cereals), animal products (meat, eggs and milk), drinking water and grass (fresh feed);

- b) analysis of the radiological impact of the project in the event of normal operation of a nuclear power plant, taking into account the expected amounts of releases of radioactive isotopes into the atmosphere (in particular: H-3, C-14 and halides - all important from the point of view of exposure to radioactive isotopes of iodine, noble gases and aerosols), as well as to waters (in particular: H-3), including:
- assessment of total annual effective doses from individual exposure routes for various age groups, resulting from the assumed annual release rates of radioisotopes;
  - assessment of the annual dose absorbed to the thyroid gland for various age groups, resulting from the assumed annual release rates of radioactive isotopes of iodine into the environment;
  - assessment of the possibility of accumulation of radioactive substances in environmental components, including flora, fauna and human organisms;
- c) analysis of the radiological impact of the project in emergency situations, taking into account the expected release rates of radioactive isotopes into the atmosphere and water, in particular: H-3, Cs-134, Cs-137, Sr-90 and I-131 (particle, aerosol, gaseous fractions) , together with an assessment of the level of radioactive contamination and effective doses for members of the general population, taking into account the provisions on avoiding early and large releases of radioactive substances and the values of intervention levels for individual types of intervention activities and the criteria for canceling these activities, including:
- impact on people and the environment (radiological effects) in the event of emergency conditions, for the sequence of design failure and severe accident limit due to radiative impact, included in the extended design conditions, and also postulated for the purposes of emergency preparations - determined in accordance with the applicable regulations in this regard Polish regulations and taking into account relevant international requirements and recommendations, along with the dispersion of radioactive isotopes in the aquatic environment and atmosphere and providing the assumed probability of occurrence of individual types of accidents;
  - the expected scope of the emergency planning zone in which the introduction of intervention measures is considered in the event of failures falling into the category of extended design conditions;

- presentation of source elements for defined categories of states of nuclear facilities;
- d) in relation to point b and c, the methods and calculation codes used, as well as the input parameters used in the calculation of pollutant dispersion (amount and composition of released radioactive isotopes, height and duration of release, meteorological data), should be provided, together with the justification for their selection;
- e) the expected scope of the planned limited use area around the nuclear power plant, including the area referred to in Art. 36f section 2 point 1 of the Act of November 29, 2000 - Atomic Law (Journal of Laws of 2023, item 1173, as amended); the area should also be presented in cartographic form;
- f) results of probabilistic safety analyzes for the considered type of reactor - data on the frequency of core damage and the frequency of large or early releases of radioactive substances, including in the context of internal and external events taking into account the location near industrial plants;
- g) description of external natural and anthropogenic events, along with the methodology for determining significant events that may pose a threat to the safety of a nuclear power plant, in particular regarding:
  - seismic phenomena, taking into account the results of current observations;
  - extreme weather events and their effects (e.g. freezing, droughts and other difficulties in cooling water intake, floods, storms, windstorms, snowstorms);
  - possible failures or explosions in neighboring industrial or military facilities and resulting from transport;
- h) description of the considered combinations of external events;
- i) description of internal events that may pose a threat to the safety of the nuclear power plant;
- j) information on planned organizational and technical solutions dedicated to limiting and mitigating the effects of severe accidents, including strategies for maintaining the integrity of the containment;
- k) information on planned organizational and technical solutions for the effective management of the facility's life cycle and aging in the context of long-term operation of a nuclear power plant as an important element of nuclear safety.

- 2.6. The description of the expected significant impacts of the planned project on tangible assets should include:
- a) analysis of the impact of water intake from the Dwory canal on the level and fluctuations of the water table in the canal, taking into account the need to maintain the required water level at the lower sill of the lock. The analysis should also include the impact of meteorological conditions (especially in summer) on the availability of water in the canal and the impact of water abstraction on maintaining the intact flow below the outlet of the lower navigation canal;
  - b) analysis of the impact of the planned project in the implementation and operation phase on the stability and tightness of the embankments of the Dwory canal, the Macocha stream and the Vistula.
- 2.7. The description of the expected significant impacts of the planned project on the climate and the description of resistance to climate change should present the climate change scenarios adopted for analysis over the period of operation of the power plant (approx. 60 years).
- 2.8. In terms of socio-economic conditions, the report should include:
- a) description of the current socio-economic conditions occurring within the project's impact area, including:
    - number of inhabitants (permanent and temporary) and their distribution, demographic structure of the population, location closest to the buildings in relation to the power plant,
    - a forecast of changes in population and spatial development for the area under consideration throughout the entire period of the existence of the nuclear facility until its decommissioning,
    - analysis of the scope of the location of large industrial facilities important from the point of view of evacuation,
    - analysis of the scope of the location of public utility facilities of hospitals, clinics, kindergartens, schools, detention centers and prisons, important from the point of view of evacuation,
    - methods of using water resources (e.g. water supply to the population and industry, agriculture, fishing, tourism, recreation, shipping, etc.),
    - the health status of the population in terms of the occurrence of diseases that may result from exposure to ionizing radiation, in particular cancer;



- b) information on the forecast number of permanent and temporary employees employed during the implementation of the project (including an indication of variability over time);
- c) analysis of the impact of the project in each phase of implementation on socio-economic conditions, with particular emphasis on the impact on the quality and living conditions of people.

**3. Scope and methods of research:**

- 3.1. The description of the natural elements of the environment included in the scope of the expected impact of the planned project on the environment should be prepared based on the current results of the natural inventory referred to in Art. 66 section 1 point 2a of the Act.
- 3.2. The natural inventory should be carried out taking into account the following guidelines:
  - a) the spatial scope of the nature inventory should cover the area of impact of the project, taking into account areas where accumulation of impacts with other projects may occur;
  - b) research should be carried out at times optimal for particular types of natural habitats and species of flora, fungi and lichens;
  - c) the fauna inventory should be conducted for a period of not less than 12 months, while the duration of the research, the frequency of inspections and their dates should be adapted to the biology and ecology of the species/group of species under study, taking into account the varied activity of animals in subsequent phenological periods.
- 3.3. When assessing the state of conservation of natural habitats and populations of plant and animal species listed in Directive 92/43/EEC, the parameters specified in the Regulation of the Minister of the Environment of February 17, 2010 on the preparation of a draft plan of conservation tasks for a Natura 2000 site (Journal of Laws) should be taken into account. No. 34, item 186) and indicators used as part of state environmental monitoring carried out by the Chief Inspectorate of Environmental Protection.

**Justification**

On May 4, 2023, the General Directorate for Environmental Protection received an application BWRX-300 Stawy Monowskie sp. z o. o. of April 28, 2023 for the issuance of a decision on environmental conditions for the project consisting in "Construction and operation of a small modular nuclear power plant with a total capacity of up to 1,300 MWe using the BWRX-300 technology in the location Stawy Monowskie, Commune City of

Oświęcim” and determining the scope of the report on the environmental impact of the project.

**GDOŚ determined and weighed the following.**

The planned investment project (project) involves the implementation of an investment in the construction of a nuclear energy facility referred to in Art. 2 point 1a of the Act, and covers the construction of a nuclear power plant, which is a project that may always have a significant impact on the environment referred to in § 2 section 1 point 4 of the development agreement, and the infrastructure necessary for operation, including installations classified as projects that may have a significant impact on the environment, and therefore, pursuant to Art. 71 section 2 of the Environmental Protection Act requires obtaining a decision on environmental conditions.

Nuclear power plant, in accordance with Art. 3 point 6f of the Act of November 29, 2000 - Atomic Law (Journal of Laws of 2023, item 1173, as amended), hereinafter referred to as *pa*, is a facility used to generate electricity or heat from nuclear fuel for the purposes of other than research. However, in accordance with Art. 2 point 2 of the Act, a nuclear power plant is a nuclear energy facility and together with infrastructure necessary for the service referred to in Art. 2 point 1b of this Act, constitutes an investment in the construction of a nuclear energy facility. The authority competent to issue a decision on environmental conditions for the above-mentioned project, in accordance with Art. 75 section 1 point 1a of the Environmental Protection Act is GDOŚ, which is the same as stipulated in Art. 69 section 3 of the Environmental Protection Act, GDOŚ is competent to issue a decision specifying the scope of the report on the environmental impact of the project.

The planned project involves the construction and operation of a nuclear power plant including up to four modular nuclear reactors using the BWRX-300 technology with a total gross electrical power not exceeding 1,300 MWe. Each block will contain a control room building and an engine room building with a turbine and generator. The scope of the project also includes auxiliary buildings, including a spent nuclear fuel storage facility, a radioactive waste storage facility, office buildings and a workshop, as well as the necessary technical infrastructure, including a water intake, pumping station, water pipelines to supplement the power plant's cooling circuit, cooling system infrastructure (cold towers). fans or chimneys), an electrical switchboard and a direct line to industrial plants of the Synthos Group. The nuclear power plant will produce electricity or electricity and heat.

The place of implementation of the project is located in the Lesser Poland Voivodeship, Oświęcim County, the city of Oświęcim and the rural commune of Oświęcim. Part of the project, including power units with an electrical switchboard, auxiliary buildings and the necessary technical infrastructure, will be located within the city limits of Oświęcim,

in the registration plot no. 1325/3, Monowice district, and part of the registration plot no. 1354/3, Monowice district, located north of the industrial waste landfill. The project will be implemented in an area with a total area of approximately 136 ha, of which the area intended for the development of the power plant will be approximately 70 ha. The project implementation site is located in the easternmost part of the industrial complex, which includes, among others: chemical plants from the Synthos Group, the Municipal-Industrial Wastewater Treatment Plant and aggregate exploitation areas. The area intended for the development of the power plant is covered with poor grass and reed vegetation, and in its north-western part there is an anthropogenic basin filled with water.

The project implementation site is bordered by:

- from the north - the Dwory canal and the Vistula river valley, between which there are buildings, including residential houses,
- from the eastern side - the Macocha River, and directly behind its bed the Natura 2000 area Dolina Dolnej Skawa PLB120005,
- from the south - an industrial waste landfill, behind which there is a railway siding of the Włosienica terminal,
- from the west - buildings of the Municipal-Industrial Wastewater Treatment Plant and a settling tank used by a utilization company and a municipal waste landfill.

The investor's preferred source of water to supplement the power plant's cooling circuit is the Dwory Canal, located approximately 100 m north of the planned power plant. Water will be supplied to the power plant using pumps and pipelines. The pipelines will be located in a designated infrastructure corridor, approximately 100 m wide. The second potential source is treated sewage from the Municipal-Industrial Wastewater Treatment Plant adjacent to the planned project. The pipelines will be located in a designated infrastructure corridor approximately 200 m wide.

The light boiling water reactor (BWR) is a reactor moderated and cooled with water circulating in one circuit - the water converted into steam in the reactor is directed directly to the turbine driving the generator, and then cooled and condensed returns to the reactor. Ensuring the safe operation of the BWRX-300 reactor is based on the use of passive systems whose functioning is based on natural physical phenomena (convection, gravity). The operation of these systems is not dependent on actions taken by the operator, nor are they dependent on the availability of external power. Passive systems enable effective cooling of the reactor core during normal operation, as well as in the event of a severe accident. The system also works in the event of a power outage. The reactor building is equipped with safety systems to protect against the potential effects of a reactor failure. The spent fuel pool is located at ground level in the reactor building and has a capacity sufficient for eight years of spent fuel and full core unloading.

In the course of the GDOŚ proceedings, in letters dated June 16, 2023, reference number: DOOŚ-WDŚZOO.420.23.2023.AKA.5-7, submitted a request to the President of the National Atomic Energy Agency, hereinafter referred to as the President of PAA, the Director of the Regional Water Management Board in Kraków of the State Water Holding Polish Waters, hereinafter referred to as the Director of RZGW in Kraków, the Małopolska State Provincial Sanitary Inspector, hereinafter referred to as MPWIS, and in a letter of July 20, 2023, reference number: WDŚZOO.420.23.2023.AKA.10, to the Minister of Climate and Environment, hereinafter referred to as MKiŚ, for an opinion regarding the scope of the report on the environmental impact of the project. In response to the above statements, GDOŚ received the following opinions:

- 1) the President of the PAA of July 3, 2023, reference number: DBJ.4902.16.2023.1;
- 2) Director of RZGW in Kraków of July 6, 2023, reference number: KR.RZŚ.4901.41.2023.BG;
- 3) MPWIS of July 3, 2023, reference number: NS.9022.7.17.2023;
- 4) MKiŚ of August 3, 2023, reference number: DIŚ-III.415.23.2023.

Indicated by the above-mentioned authorities, the scope of the report largely results directly from Art. 66 of the Act, which means that the applicant is obliged to include it in the report regardless of the position of the authority determining the scope of the report. GDOŚ, defining the scope of the report, taking into account, among others, position of the cooperating bodies, indicated that the report should be consistent with the content of the cited provision (point I of the decision). Therefore, GDOŚ did not consider it justified to depart from the requirements regarding the content of the report referred to in Art. 66 section 1 point 4, 13, 15 and 16 of the Act. Moreover, when determining the scope of the report, GDOŚ specified in the operative part of this provision the scope and detail of the required data to characterize the project, types of impacts and environmental elements requiring detailed analysis, also indicated by the President of the PAA and the Director of RZGW in Kraków. However, MKiŚ and MPWIS did not indicate such scope and detail.

On July 31, 2023, GDOŚ received an application from the Federal Ministry of Climate Protection, Environment, Energy, Mobility, Innovation and Technology in Austria pursuant to Art. 3 section 7 of the Convention on Environmental Impact Assessment in a Transboundary Context, drawn up in Espoo on February 25, 1991 (Journal of Laws No. 96, item 1110) and Art. 7 of Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment (OJ EUL 26, 28/01/2012, p. 1), hereinafter referred to as the EIA Directive, to provide official notification of the possible significant transboundary impact of the project on the environment. Moreover, taking into account the distance of the project from the borders of the Czech Republic and the Slovak Republic of approximately 50 km, GDOŚ

determined that it is justified for the project to conduct proceedings on the transboundary impact of the project on the environment originating from the territory of the Republic of Poland with the participation of the Czech Republic and the Slovak Republic.

In connection with the above, GDOŚ issued a decision of August 29, 2023, reference number: DOOŚ-WDŚZOO.420.23.2023.AKA.11, on the need to conduct proceedings regarding the transboundary environmental impact of the project in question and obliged the applicant to prepare in English: information card of the project, hereinafter referred to as: kip, application for issuing a decision on environmental conditions and determining the scope of the report on the impact of the project on the environment, and those parts of the report on the environmental impact of the project that will enable the countries on whose territory the planned project may have an impact to assess the possible significant cross-border impact of the project on the environment.

Moreover, information on the initiation of proceedings for issuing a decision on environmental conditions was sent electronically to other countries neighboring Poland, i.e. the Federal Republic of Germany, the Republic of Lithuania, Ukraine and the Republic of Belarus. In response, the Federal Republic of Germany and the Republic of Belarus joined the proceedings.

Then GDOŚ, pismami of: September 18, 2023, reference number: DOOŚ-TSOOŚ.440.5.2023.ZM.1, October 19, 2023, reference number: DOOŚ-TSOOŚ.440.5.2023.ZM.2, and January 12, 2024, mark: DOOŚ-TSOOŚ.440.5.2023.4, based on Article. 109 section 1 of the Act, notified the Republic of Austria, the Czech Republic, the Slovak Republic, the Federal Republic of Germany and the Republic of Belarus about the possible transboundary impact on the environment and provided the necessary documentation.

The Republic of Austria (Federal Ministry of Climate Protection, Environment, Energy, Mobility, Innovation and Technology), in a letter dated October 25, 2023, presented the conclusions of the kip analysis and recommendations for the scope of the report. In its position, the Austrian side raised the following issues:

- the lack of indication of the location variant of the project was questioned;
- the report should explain whether/or how the use of the power plant only as a source of electricity and electricity and heat has an impact on the choice of location for the project, and if the power plant is to produce only electricity, it should be explained why an alternative location was not considered, and if the use of thermal energy is not envisaged, the issue of alternative locations should be discussed again;
- in the case of using heat from a nuclear power plant, the issue of reserve power should be discussed (location, fuel, storage, cable routing);
- the location of the reactors should be marked on the map;

- the choice of location should be presented based on Polish regulations and in accordance with the "IAEA SSR1 Site Evaluation for Nuclear Installations" document;
- indicated that the BWRX-300 reactor is not a proven technology and its use in the considered location requires a verifiable analysis and documentation that the installations have been designed for a future new threat situation resulting from changes in economic activities and interactions between nuclear facilities and facilities industrial in the location in question;
- it was raised that the issuance of permits for the BWRX-300 reactor has not been completed in any country, therefore the report for the investment in question should be submitted only after the procedures for issuing permits provided for in the nuclear law for other nuclear power plants of this type have been completed and at least one of the requested reactors has been built and experience has been obtained operational scope of this first installation of this type;
- it was indicated that the report's description of the project should include:
  - description and confirmation that separate, redundant and independent nuclear power plant shutdown systems exist and a description of their compliance with regulatory requirements,
  - *a description of components shared by multiple security levels and multiple levels in a multi-level security concept,*
  - description of how to conduct safety analyzes in accordance with the regulations,
  - if present, a description of active redundancy mechanisms in relation to passive systems in the event of their failure,
  - description of passive systems that require power for activation;
  - detailed description of the insulating condenser system and associated pools, analysis of heat exchangers in the pool for leaks and the impact of these leaks on the water chemistry in the primary system,
  - presenting the implementation of a load shed or increase that is beyond the scope of the standard BWRX design,
  - general description of aging management and maintenance concepts and details in relation to structure, system and components (SSC),
  - description and characteristics of the planned GNF2 fuel, discussion of the possibility of using fault-tolerant fuel (ATF) in the future,
  - a description of the necessary modifications that must be made in order to use mixed plutonium-uranium fuel (MOX),
  - description of the dismantling plan;
- the report should indicate how the decision on environmental conditions is taken into

- account when issuing investment decisions and how the administrative bodies participating in the investment process take into account the conditions of the decision and the findings of the report, and how they are obliged to implement them;
- Due to the location of the project in the vicinity of industrial plants, the report should indicate how the administrative authorities responsible for implementing Directive 2012/18/EU of the European Parliament and of the Council of 4 July 2012 on the control of major-accident hazards related to dangerous substances, amending, and subsequently repealing Council Directive 96/82/EC (OJ EU L 197, 24/07/2012, p. 1), hereinafter referred to as Directive Seveso, participate in the proceedings for issuing a decision on environmental conditions;
  - the report should describe the environment of the planned investment, with particular emphasis on other types of industrial activity;
  - the report should present an analysis of the cumulative impact of the planned nuclear power plant and industrial plants located in its vicinity during normal operation and in emergency situations;
  - the report should specify the hazard zone observed in failure conditions (failures in one or more industrial facilities or in one or more reactors) for each industrial facility located near the power plant, taking into account emissions from the analyzed industrial facilities;
  - scenarios should be presented in the report further development of the industrial area in the vicinity of the planned project, in particular plants covered by the Seveso Directive, any changes in the scope of economic activities in the vicinity of the project and assess potential future threats to the nuclear power plant;
  - risk analysis for the planned power plant should be carried out based on the safety standards "Threats related to external man-made events in the assessment of the location of nuclear installations IAEA No. SSG-79";
  - the analysis of major accidents should take into account:
    - presentation, description and context: DBA design failure, DBC design condition and extended DEC-A/B design condition,
    - analysis and technical measures aimed at limiting the effects of a major accident,
    - description of the procedure in the event of a core meltdown accident and the principle of operation of the strategy for retaining the molten core in the reactor vessel, including the availability of water supply systems to cool the vessel from the outside,
    - description of procedures in the event of hydrogen accumulation during a

- breakdown,
- description of the containment ventilation system with appropriate filters,
- all events resulting from natural environmental conditions that may pose a threat to the safety of the power plant, man-made events that threaten the safety of the facility and which may occur as a result of economic activities carried out in the vicinity of the planned power plant,
- situations related to hostilities,
- activities to control and track the component production process;
- a detailed and comprehensive description of the core inventory, the postulated failure sequences and frequencies, and the energy released in connection with the postulated failures, in particular in the context of transboundary impacts,
- a summary of radionuclides released during postulated accident sequences, in particular in the context of transboundary impacts;
- the report should demonstrate how the planned nuclear power plant can be integrated into a load-following energy system (with a greater share of renewable energy sources) and how and under what framework conditions it is possible to operate the analyzed nuclear power plant in such a system, components related to safety (including aging and wear phenomena);
- the analysis of the impact on climate change should also take into account the extent to which extreme weather events occur may contribute to the occurrence of accidents both in the planned nuclear power plant and industrial plants located in its vicinity;
- the report should present the procedure for issuing permits provided for in nuclear law, which are to be carried out after assessing the environmental impact of the project,
- the report should discuss how national and international regulations and recommendations are implemented, e.g. from the International Atomic Energy Agency (IAEA), the Western European Nuclear Regulators Association (WENRA) safety reference levels, the World Association of Nuclear Power Plant Operators (WANO) and the European Atomic Energy Community (Euratom) ;
- the report should describe what radioactive releases may occur during the operation and failure of the power plant and what measures will be applied to minimize this impact;
- the report should indicate the amount of waste generated during the current operation of the power plant and the concept of storing spent nuclear fuel at the power plant in an amount exceeding the volume of storage pools;



- the report should present how the operator ensures nuclear safety, in particular: how to develop human resources, management systems, quality assurance, education and training programs.

The Republic of Belarus (Ministry of Natural Resources and Environmental Protection of the Republic of Belarus) in a letter dated October 31, 2023, raised the following issues:

- the report should present data on the composition of radioactive isotopes and the volume of emissions and releases into the environment resulting from the operation of the planned nuclear power plant, including in the event of emergency situations, taking into account cross-border impact;
- in the report it should be indicated how radiation monitoring will be carried out at the locations of the planned nuclear reactors;
- information regarding the parameters of nuclear fuel in the form of GNF2 fuel rods intended for use in the planned power plant was questioned;
- the lack of information on the certification (licensing) of the BWRX-300 nuclear reactor design was pointed out;
- the use of a direct-flow cooling system was questioned, stating that it was not beneficial for environmental reasons, because in such a system the cooling water containing radioactive substances would be discharged directly to an external source. In the opinion of the Belarusian side, the preferred variants of application are closed-flow water systems that use an evaporative cooling tower to dissipate the necessary heat;
- a request was made to provide a link to technical documents on the ranges of large emergency releases justifying the extremely low probability of such a release in the case of the BWRX-300 reactor, which has an occurrence of less than 1 in 100,000,000 years;
- it was pointed out that there was no analysis of the negative consequences for the nuclear power plant as a result of extreme rainfall (flooding risk) with a probability of 0.01%, therefore the report should justify the lack of risk of flooding, taking into account extreme rainfall with a probability of 0.01%;
- the report should present an analysis of serious accidents and actions intended to mitigate their effects, including: ensuring hydrogen safety, reactor core cooling systems in the event of major accidents, neutralization of radioactive iodine and radioactive gases released during accidents;
- the report should present information on the possibility of serious failures occurring simultaneously in several power units;

- the report should provide information on the safe reactor shutdown technology used in the BWRX-300 project, how the subcritical state of the reactor is achieved in the event of loss of external power, if the absorbing rods are driven by a pump system;
- the report should indicate how the spent nuclear fuel tank will be powered in the event of a leak from the tank and loss of power;
- the report should provide information on current plans for the construction and commencement of operation of a new low- and medium-level radioactive waste repository and provide estimated amounts of radioactive waste from the operation and decommissioning of small modular nuclear power plants that are planned to be placed in the new waste repository;
- the report should present data and calculations regarding seismicity and seismic impacts in the area of the planned project, taking into account seismic and tectonic models, along with the characteristics of possible earthquake zones;
- the Belarusian side requested the presentation *assessment of the degree of magnitude of seismic impacts on the territory of the Republic of Poland from strong, deep earthquakes in the seismic zone in the Vrancea Mountains in the Eastern Carpathians*.

The Slovak Republic (Slovak Ministry of the Environment) in a letter dated November 8, 2023, indicated that the report should:

- analyze possible impacts from the perspective of their potential consequences and indicate measures related to their elimination in the event of emergency situations (e.g. in terms of radiation-related effects in the event of an accident), in the case of radiation risks related to the operation of SMRs (e.g. transport of radioactive materials), in the event of a risk of a possible terrorist attack and in the event of a risk of other human activity (e.g. plane crash, explosion, fire);
- an analysis of the impact of the spread of pollutants and an assessment of their impact on the environment as well as the design of protective measures in the event of a risk of an industrial accident and a construction disaster of a nuclear power plant should be taken into account;
- present an analysis of expected radiation doses for residents of neighboring countries;
- provide the means of transport by which nuclear fuel will be delivered to the nuclear power plant, and if the transport will take place through Slovakia, an assessment of the risks associated with the transport of nuclear material also through its territory should be made;

- indicate what measures will be taken to ensure the appropriate amount of water required for the cooling system;
- present measures to minimize the negative impact on natural mineral springs used for medicinal purposes and plants bottling natural mineral water located in Slovakia at a distance of approximately 200 km from the project implementation site;
- present actions to ensure that the status of water bodies will not deteriorate, which is indirectly related to the transboundary impact on the territory of the Slovak Republic;
- conduct detailed analyzes regarding the location of the planned power plant near hard coal and methane deposits;
- present an analysis of the cumulative impact of the installation for storing spent nuclear fuel and processing radioactive waste with industrial plants located in the vicinity of the planned project.

In addition, the Slovak Republic requested consideration of the application of the technical inspection criteria set out in Commission Delegated Regulation (EU) 2022/1214 of 9 March 2022 amending Delegated Regulation (EU) 2021/2139 as regards economic activities in certain energy sectors and the Delegated Regulation (EU) 2021/2178 as regards the public disclosure of specific information in relation to those economic activities - text with EEA relevance (OJ EU L 188, 15/07/2022, p. 1), in particular such as:

- effective implementation of the nuclear security goal, including the application of the principle of defense in depth and an effective security culture,
- introducing requirements for the radioactive waste management fund and the nuclear decommissioning fund (which can be combined),
- a documented plan containing detailed steps for the commissioning of a high-level waste storage facility by 2050, included in the national program under Directive 2011/70/Euratom,
- demonstrating the availability of resources corresponding to the estimated costs of dealing with radioactive waste and decommissioning at the end of the expected life of the nuclear power plant,
- use of accident resistant fuel (ATF).

The Federal Republic of Germany (Saxon Ministry of Energy, Climate Protection, Environment and Agriculture) in a letter of October 19, 2023, indicated that the report should:

- justify the choice of SMR reactor technology, indicating the selection criteria and alternative solutions;

- describe the effects of external events (e.g. flood, extreme drought, plane crash, cyber attack) on the reactor, its safety systems, the fuel element storage facility and the low- and intermediate-level radioactive waste storage facility;
- indicate how to proceed in the event of a possible loss of coolant, especially in the event of leakage outside the reactor containment with simultaneous failure of the shut-off valves;
- describe safety measures against core meltdown due to external events or internal incidents and failures;
- provide detailed explanations of the operating principle, effectiveness, reliability and limitations of the safety systems, in particular with regard to the simultaneous participation of several reactor modules;
- provide data on the amount and type of radioactive substances expected to be released under various scenarios;
- carry out modeling of various scenarios of the impact of the release of radioactive substances on the population in neighboring countries, assuming different weather conditions;
- provide basic information about the planned transport routes (in particular, whether they run through German territory) and means of transport;
- provide information on whether, and if so how, transport of radioactive waste will take place or whether cross-border transports are planned, for example for conditioning purposes.

The Czech Republic (Ministry of the Environment of the Czech Republic), by letter of December 8, 2023, raised the following issues:

- the report should indicate how the BWRX-300 reactor will meet safety standards and virtually eliminate large and early release of radioactive substances as a result of an accident;
- the report should analyze what threats may occur due to the location of the power plant in the floodplain of two rivers and on a hard coal deposit where mining activities are carried out, and what actions should be taken to reduce the risk of failure resulting from the location of the power plant in these areas;
- the report should estimate the risk of a potential methane leak from the ground in this location;
- attention was drawn to the need to inform about the results of analyzes of maximum doses from external radiation on the common border with Poland, in relation to the dose of natural background radiation in Poland;

- the need to consider building infrastructure for transmitting electricity via an underground cable line was indicated;
- the report should analyze the risk of radionuclide leakage resulting from the accident and the impact on the population and environment of the Czech Republic;
- the report should include an analysis of the occurrence of emergency situations and their impact on the Czech Republic, especially in relation to the current war situation and the risk of military attack;
- the report should describe what plans will be implemented and what preparations will be made for major accidents and how the public will be involved in emergency preparedness;
- the report should describe what the extent of radiation contamination will be in the event of a major accident with the release of radioactive substances, how high the risk of threat to the territory of the Czech Republic is;
- it should be explained why, when building up to 4 nuclear units with a capacity of 300 MWe each, the total electric power of the power plant should be 1,300 MWe;
- the impact of discharging large amounts of heated water from the cooling system on the ecosystems of the Czech environment should be described;
- the cumulative impact of the proposed power plant and its neighboring industrial plants, in particular the Synthos chemical plant, should be assessed;
- the report should indicate what the actual consumption of cooling water and its availability will be in a given area, taking into account climate change, and assess the issue of sufficient supply of cooling water;
- how the discharge of cooling waters will affect the level of tritium, other substances and the temperature of the receiving waters;
- the report should analyze the impact on protected animal species, including birds, with particular emphasis on the impact on the objects of protection Natura 2000 area Dolina Dolnej Skawa PLB120005;
- it should be assessed how noise, water intake for cooling purposes and discharge of heated water will affect the natural environment;
- actions to minimize the negative impact of the construction phase on the natural environment should be presented;
- the report should indicate the type and amount of expected radioactive waste generated during the operation and decommissioning of the power plant;
- the report should include an assessment of how spent nuclear fuel is handled, stored, and its impact on the environment and public health. This analysis should also include the construction of a radioactive waste repository; the Czech side rejects the

argument that, according to Polish legislation, the construction of a landfill is a separate project and therefore the landfill will not be analyzed as part of the proceedings.

The Lithuanian side (Ministry of the Environment of the Republic of Lithuania), in a letter dated October 27, 2023, informed that due to the distance between the site of the planned project and the border of the Republic of Lithuania, which is over 300 km, there is no likelihood of significant negative transboundary impact, therefore Lithuania is not requesting a transboundary environmental impact procedure.

Ukraine left the information provided unanswered, which was considered a lack of interest in participating in the proceedings.

Pursuant to Art. 111 section 1 uoos. comments and applications regarding kip submitted by a country participating in the proceedings on transboundary environmental impact are considered when issuing the decisions referred to in Art. 63 section 1 and art. 69 section 3 of this Act. Therefore, the above implies the obligation to consider comments and conclusions when issuing a decision specifying the scope of the report on the environmental impact of a project, but only regarding kip. This confirms the position of the doctrine: The commented provision imposes on the public administration bodies conducting proceedings in the case the obligation to issue the decision indicated in Art. 104. At the same time, it specifies the consequences of the state's participation in cross-border proceedings. This country may submit comments on the project information sheet, and may also submit comments and proposals as a result of consultations. The former are considered when issuing a decision, and the latter - when issuing a decision (B. Rakoczy, Act on providing information on the environment and its protection, public participation in environmental protection and on environmental impact assessments. Commentary, LexisNexis 2010). The comments and conclusions submitted by the Republic of Austria, the Czech Republic, the Slovak Republic, the Federal Republic of Germany and the Republic of Belarus do not generally concern kip, but they refer to the scope of the report on the environmental impact of the project and to issues going beyond the content of the report. Nevertheless, GDOŚ referred to these comments and conclusions later in the decision.

On November 20, 2023, twenty-three environmental organizations from Belgium, Austria, Germany, Hungary, Estonia, Sweden, the Netherlands, Denmark, Spain, Bulgaria, Finland and the United States of America submitted comments via e-mail on the cross-border environmental impact assessment procedure.

It should be explained here that the Act of June 14, 1960 - Code of Administrative Procedure (Journal of Laws of 2023, item 775, as amended), hereinafter referred to as the Code of Administrative Procedure, indicates the methods of submitting applications to the

administrative body. Pursuant to Art. 63 § 1 of the Code of Administrative Procedure, applications must be submitted in writing, by fax or orally into the minutes. Applications recorded in electronic form should be submitted to the address for electronic delivery or via an account in the IT system of a public administration body. However, unless separate regulations provide otherwise, applications submitted to the e-mail address of a public administration body will not be considered. Therefore, the letter of environmental organizations of November 20, 2023 was left unconsidered.

However, in the Polish legal system, at the stage of determining the scope of the report, public participation in the proceedings is not carried out. Public participation is carried out after the investor submits a report on the environmental impact of the project. Therefore, public participation in the proceedings in question will be ensured at a later stage of the proceedings, before issuing a decision on environmental conditions, about which GDOŚ will inform the public in accordance with Art. 33 uooś.

Regardless of the above, some of the comments submitted by environmental organizations require clarification, such as: strategic environmental impact assessment of the general plan for the construction and operation of SMR reactors; review of the Polish Energy Policy until 2040 and the Polish Nuclear Energy Program along with their strategic environmental impact assessment; explanations of the Polish government regarding the choice of reactor type; analysis of alternative options for electricity supply; estimation of CO<sub>2</sub> emissions of the nuclear fuel cycle from uranium mining through its enrichment to the production of nuclear fuel; expected dates of delays in the construction of a nuclear power plant and sources of electricity supply in this situation; providing evidence that the BWRX-300 reactor meets nuclear safety requirements; indicating in the report what legal regulations in the field of nuclear energy should be implemented in Poland and how the nuclear regulatory authority will ensure supervision over the planned nuclear power plant and presenting in the report evidence of the competence and training of the nuclear power plant operator go beyond the scope of the administrative procedure the subject of which is the issuance of a decision on environmental conditions and concern economic and political issues or are regulated by international nuclear law.

The issues raised by environmental organizations regarding: major accidents, radioactive waste management, cumulative impact on nearby facilities, translation of documentation regarding the environmental impact assessment of the project and conducting consultations as part of cross-border proceedings result directly from the provisions of the Environmental Protection Act.

Referring to comments related to nuclear safety and radiological protection of the country, it should be clarified that these issues fall within the competence of the President

of the National Atomic Energy Agency, who analyzes them in the procedure for issuing a permit for the construction of a nuclear facility.

Article 66 section 1 point 1 of the Act. indicates in detail what elements should be included in the description of the planned project. A detailed characterization of the project is necessary to conduct a comprehensive analysis of the project's environmental impact. Therefore, GDOŚ, in point II.2.1.1 of the decision, obliged the investor to present a detailed description and characteristics of the buildings and installations covered by the application for issuing a decision on environmental conditions, constituting the infrastructure necessary for the service referred to in Art. 2 point 1b of the ooej, which may constitute the projects referred to in the ooej. This description should enable the qualification of buildings and installations based on the above regulation, as well as the assessment of their expected significant impact on the environment.

The cited provision and the requirements imposed in the operative part of the decision regarding the description of the project also exhaust the demands of exposed countries and oblige the investor to present such issues as: technology and technical data of the planned power plant, systems and structural elements or equipment important for the safety of the nuclear facility, as well as the nuclear fuel used .

Referring to the comments of vulnerable countries regarding the choice of technology for the planned nuclear power plant, GDOŚ explains that during the proceedings related to the issuance of a decision on environmental conditions, the authority does not assess the appropriateness of the technology chosen by the investor in which it plans to implement the project, nor the validity of its implementation. The public administration body is bound by the investor's application, which means that it is obliged to assess the parameters of the project, including the type of selected technology and the proposed technical solutions indicated in the application and the project plan. This position is supported by the jurisprudence of administrative courts - the Provincial Administrative Court in Warsaw in the judgment of October 15, 2021, ref. no. file: IV SA/Wa 1309/21, indicated: The public administration body evaluates the report in formal and substantive terms, but always in relation to the investment implementation concept adopted by the Investor, which is not subject to verification, as the body is bound by the application for issuing a decision on environmental conditions for a specific project. The role of the authority deciding on environmental conditions is to assess the admissibility of the investment covered by the application in terms of environmental requirements and conditions. This authority determines the conditions for the use of environmental resources for the investment specified in the application, the scope of which is decided by the applicant. He/she submits his/her own assessment in the field of environmental protection of the investment specified in the application and covered by the documentation attached to the application, based on



the results of the report on the environmental impact of the project, prepared for investments with specific technical parameters. In accordance with the principle of legalism, the authority acts within the limits of the investor's application.

In this decision, GDOŚ did not take into account the suggestions of vulnerable countries regarding aspects of managing the aging of the facility. It should be emphasized here that issues related to the aging of a facility constitute specialized analyzes carried out as part of a safety analysis, going beyond the scope of the environmental impact assessment of the project, and their implementation is required by law - § 2 section 3 point 4 of the Regulation of the Council of Ministers of August 31, 2012 on the scope and method of conducting safety analyzes carried out before applying for a permit to build a nuclear facility, and the scope of the preliminary safety report for a nuclear facility (Journal of Laws of 2012 . item 1043) at the stage of obtaining a permit for the construction of a nuclear facility.

GDOŚ found the proposal submitted in the cross-border proceedings to submit the report only after this to be unfounded completion of the procedures for issuing permits provided for in nuclear law and construction of at least one nuclear power plant of this type. Neither the provisions of international law, including the EIA Directive, nor the EIA Directive. they do not condition the issuance of a decision on environmental conditions on the obligation to operate a given type of project in another country. Moreover, the provisions of the Environmental Protection Act. impose an obligation on the investor to submit a report within three years from the date of suspension of the proceedings after the issuance of the decision specifying the scope of the report, and failure to submit the report within this period results in the request to initiate proceedings for issuing a decision on environmental conditions being considered withdrawn. It should also be noted, as indicated in the kip, that the BWRX-300 reactor utilizes the design and licensing bases of the company's prior design GE-Hitachi Nuclear Energy Americas LLC – a 1520 MWe ESBWR reactor that has undergone the licensing process in the United States of America (page 38). Moreover, on page 37 of the kip it is indicated that: So far, during the more than 60-year history of the development of BWR reactors, 113 boiling water reactors have been built and put into operation around the world, and two ABWR reactors are currently under construction. Currently, there are 48 BWR reactors in operation around the world. The largest concentration of boiling reactors takes place in the USA, where 31 of the 93 reactors currently in operation are BWR units. Outside the USA, this technology is used, among others, in Sweden, Finland, Spain, Switzerland, Japan and Taiwan. Adopting the approach of the Republic of Austria, the lack of functioning of a specific type of technology in one country automatically results in the inability to launch it in each of the other countries, thus it would not be possible to implement new projects, which would inhibit the development of innovative technologies, including in the field of energy.

GDOŚ also did not take into account the suggestions made in the cross-border proceedings regarding the method of integrating the planned power plant with the load-following energy system (with a greater share of renewable energy sources) and the discussion in the report of how to implement national and international safety regulations and recommendations, considering that this goes beyond the scope of the environmental impact assessment of the project and the procedure for issuing a decision on environmental conditions. The scope of the proceedings to determine the environmental conditions for the project in question covers the implementation of a specific investment and does not concern issues at the level of state policy.

The kip indicates two possible elements of the project: technical variants of the cooling system and variants of the number of nuclear units.

At the current stage of the investment implementation, two technical solutions for a closed cooling system are being considered: natural draft cooling towers (chimney cooling tower) and forced air draft cooling towers (fan cooling tower).

Based on preliminary location analyses, the investor concluded that it is not possible to use an open cooling system in the planned location due to limited access to water resources. The data from the BWRX-300 technology supplier presented in kip indicate that the water demand for an open system is estimated at approx. 50,000-90,000 m<sup>3</sup>/h, while the water demand for one nuclear unit in a closed system is on average approx. 800 m<sup>3</sup>/h, and in extreme situations (summer period) it may reach approx. 1200 m<sup>3</sup>/h.

As potential variants, the investor considers the construction and operation of 2, 3 or 4 nuclear units using the BWRX-300 technology.

To ensure the possibility of a full assessment of the impact of a given project on the environment, the report should present a description of the analyzed variants, determine and compare their expected impact on the environment and justify the variant proposed by the applicant (art. 66 section 1 point 5, 6, 6a and 7 uoś.). The description of the variants must be accurate and at the same time explain all aspects of the project and its impact on the environment.

Reactor cooling systems are installations that generate significant environmental impacts of the planned project. Due to the technology planned to be used and the location of the project, it is necessary to present in the report details regarding the technical solutions of the cooling system: due to the source of water used for the cooling system of the nuclear power plant (cooling with water from the Dwory canal and cooling with purified sewage from the sewage treatment plant) and due to the technical solutions of a closed cooling system (cooling system using natural draft cooling towers - cooling tower and cooling system using forced air cooling towers - fan cooling tower). For this reason, GDOŚ in point II.1 of the decision indicated the types of variants that require examination.

Referring to the issue of the location variant of the project, first of all it should be noted that neither the provisions of the EIA Directive nor the provisions of the Environmental Protection Act. do not impose a mandatory obligation to describe the location variant in the report on the environmental impact of the project. Pursuant to Art. 66 section 1 point 15 of the Act. in connection with art. 15 section 1 of the Act of July 13, 2023 amending the Act on providing information on the environment and its protection, public participation in environmental protection and on environmental impact assessments and certain other acts (Journal of Laws, item 1890), hereinafter amended, the report should contain a description of the variants taking into account the specific features of the project or its impact, including: a) the variant proposed by the applicant and a rational alternative variant, b) the rational variant most beneficial for the environment - along with a justification for their selection. In contrast, Annex IV to the EIA Directive specifies that the report must include: A description of reasonable alternatives (for example relating to project design, technology, location, size and scale) considered by the developer that are relevant to the proposed project and its characteristics, and providing the main reasons for choosing a given option, along with a comparison of the environmental impact. The location variant is mentioned as one of the examples of rational alternative variants of the project.

Moreover, it is important that the investor assumes the production of electricity and heat as one of the objectives of the project. The generated electricity will be able to power, among others: industrial plants from the Synthos Group located near the planned power plant, while the heat can be used in the plants' production processes or power the local heating network (see page 19 of the kip). For this reason, it is unjustified to describe the location variant as a rational alternative in the report, because, in the opinion of GDOŚ, the rationality of such a variant is questionable.

When talking about a rational variant, one should take into account a reasonable, well-thought-out, well-planned variant that produces good results and is based on logical reasoning (see <http://sjp.pwn.pl/szuki/racjonalny>). Therefore, a rational alternative variant should be feasible in technical, technological, economic and legal terms, and should enable achieving the assumed objectives of the planned investment. The implementation of the analyzed project in another location may be significantly difficult for technical reasons, and may also make it impossible to achieve the assumed economic goals, because transmitting heat energy through a heating network involves losses, which - among others - due to the need to use high-performance insulating materials - increases investment costs and thus reduces the profitability of the investment. Additionally, these costs are increased by the construction of an additional heating network and the possible purchase of land for the location of the project. Moreover, proposing a different location for the project, in the situation of having free land located in the immediate vicinity of the recipient of the

electricity and heat produced in the power plant, undermines the location variant as reasonable and well-thought-out.

However, the location variant cannot be ruled out in advance as a rational alternative if the purpose of the project is solely to generate electricity. In such a situation, the investor may also describe such a variant in the report, regardless of the content of point II.1 of the provision.

It should be emphasized that the wording of point II.1 of the decision does not exclude the possibility of describing in the report on the environmental impact of the project additional variants of the project, both a rational alternative variant and the rational variant most beneficial for the environment, if during the preparation of the report it turns out to be justified from the point of view of environmental impact assessment of the project.

One of the most specific and important impacts of the planned nuclear power plant is the radiological impact (resulting from the presence of ionizing radiation), because its normal operation (operation) involves the emission of radioactive substances into the atmosphere and water environment, the levels of which will have to meet applicable standards. Polish regulations do not specify a limit on the effective annual dose for members of the general population from the radiation exposure of a nuclear power plant. However, the dose in operational conditions at the border of the restricted use area around the nuclear power plant is 0.3 mSv/year (Article 36f(2)(1a)). In turn, the latest edition of the requirements of European energy companies provides a dose limit of 0.3 mSv/year for the entire nuclear power plant ("European performance requirements for LWR nuclear power plants, version E, volume 1: Main principles and objectives, Chapter 4: Key issues regarding EUR", December 2016). In order to determine the expected impact of such an impact on the environment, it is necessary to provide information on the initial state of the radiation situation (background) of the location region. The spatial scope of the location region is defined in § 1 point 3 regulation of the Council of Ministers of August 10, 2012 on the detailed scope of assessment of the area intended for the location of a nuclear facility, cases excluding the possibility of recognizing the area as meeting the requirements for the location of a nuclear facility and on the requirements for the location report for a nuclear facility (Journal of Laws of 2012, item 1025), hereinafter referred to as rtloj, and is 30 km from the boundaries of the planned location of the nuclear facility. Pursuant to § 3 section 1 in connection with § 2 point 10 of this regulation, the distribution of radioisotope concentrations in the ground, surface waters, underground waters and the atmosphere as well as the analysis of the distribution of ionizing radiation dose rates as at the date of the site assessment are considered within the range appropriate for their assessment in the selected area, no less than the location region. It is important to determine the reference level for values characterizing the radiological parameters of the environment (including

doses, dose rates, concentrations of radioactive substances in various components of the environment), in order to enable the presentation of projected impacts in the report and, subsequently, to assess the actual impact of the facility on the environment, as recommended International Atomic Energy Agency (IAEA) (e.g. "IAEA Safety Guide No. RS-G-1.8 on Environmental and Source Monitoring for Radiation Protection Purposes", "IAEA Safety Standards Series No. WS-G-2.3 on the Regulatory Control of Radioactive Discharges into the Environment. Safety Guide") and from international practice. The basic values characterizing the radiological parameters of the environment that should be measured in the context of assessing the radiation situation in the country are included in the Regulation of the Council of Ministers of December 17, 2002 on stations for the early detection of radioactive contamination and facilities carrying out measurements of radioactive contamination (Journal of Laws of 2002, No. 239, item 2030) and concern such environmental components as, among others: soil, surface water, drinking water, atmospheric aerosols, milk and other food products.

In point II.2.5. provisions of the General Directorate for Environmental Protection obliged the investor to conduct a detailed analysis of the radiological impact, including emergency situations. Taking into account the specificity, location and scale of the project, GDOŚ indicated in point II.2.5 letter and the provisions include elements that should be included in the description of the radiation state of the environment (background). In addition to the environmental components indicated in the above-mentioned regulation, it is justified to determine the concentration radioactive isotopes in environmental components sampled and representative of the location region, such as bioindicators or groundwater. In the opinion of GDOŚ, in the case of the construction of a nuclear power plant, it is necessary to provide the radiation background covering the full spectrum of environmental elements covered by the scope of the expected impact of the planned project, in accordance with the requirement of Art. 66 section 1 point 2 of the Act. Indicated in point II.2.5(a). and indicators characterizing the radiation background of the environment also result from international practice (e.g. document IAEA "Managing Environmental Impact Assessment for Construction and Operation in New Nuclear Power Programs." GDOŚ set the deadline for pre-implementation radiological monitoring to be at least 12 months to take into account seasonal phenological changes. Preparation of a detailed description of the radiation status of the environment in the above-mentioned area. time will also allow for capturing trends in changes in radiological parameters for the region where the project is located.

In point II.2.5 letter b of the GDOŚ decision obliged the investor to present a radiation impact analysis, taking into account two basic ways of releasing radionuclides - into the air (through the reactor's ventilation chimney) and into waters (discharge of sewage to the

receiver). GDOŚ indicated typical radioactive isotopes released during the normal operation of a nuclear power plant, which should be included in the above-mentioned. analysis, and also obliged to assess the effects of their release in the form of annual doses (total annual effective doses from individual exposure routes and thyroid doses) for different age groups, resulting from the assumed annual releases of radioactive isotopes into the environment. The operation of a nuclear facility will involve the release of radioactive substances into various components of the environment (including directly into the air, surface waters and indirectly into groundwater, soil, food, etc.).

The analysis of the total annual effective doses from individual exposure routes and the annual thyroid dose for various age groups, indicated in the decision, resulting from the assumed annual release rates of radioactive isotopes (including iodine) into the environment, enables the assessment of the exposure of workers and members of the general population in in this respect (compliance with the limit doses of ionizing radiation) pursuant to the provisions of the Regulation of the Council of Ministers of August 11, 2021 on indicators allowing for the determination of ionizing radiation doses used when assessing exposure to ionizing radiation (Journal of Laws of 2021, item 1657) . The radioactive isotopes listed in the decision and indicated for analysis during normal operation of the power plant cover the entire range of possible releases of radioactive substances into the atmosphere in various forms (aerosols, gases) and into waters (in particular, the H3 content in water is an indicator of the volume of releases into the aquatic environment). Radioactive iodine isotopes (especially the I131 isotope) require special attention due to their potential negative effects on the human body.

When analyzing releases, accident cases should also be taken into account and their effects assessed, as well as oplot the potential exposure of individuals and populations.GDOŚ imposed an obligation to include in the report all isotopes that may be released during a disaster (point II.2.5(c) of the decision). The mentioned isotopes, i.e.: H-3, Cs-134, Cs-137, Sr-90, I131 (particle, aerosol, gaseous fractions), have the greatest impact on the potential total effective dose received by the population as a result of the accident, due to their half-life and the effects of their impact on the human body and the environment. Assessment of the level of radioactive contamination and doses during a disastercausing the release of radioactive substances into the environmentallows, among others, to provide data necessary in the process of analyzing the advisability of carrying out intervention activities aimed at protecting the population and introducing restrictions on the production and consumption of contaminated food and drinking water in accordance with the Regulation of the Council of Ministers of April 27, 2004 on the value of intervention levels for individual types of intervention activities and criteria for canceling these actions (Journal of Laws of 2004, No.

98, item 987). GDOŚ obliged to provide in the report the expected sizes of zones where the introduction of intervention measures in the event of emergency situations is considered.

Moreover, in relation to point II.2.5 letter bi II.2.5 lit. c the investor is obliged to providing the methods and calculation codes used, as well as the input parameters used in the calculations of pollutant dispersion (amount and composition of released radioactive isotopes, amount and duration of release, meteorological data), along with a justification for their selection (point II.2.5 letter d provisions).

GDOŚ also included a requirement to present the expected scope of the limited use area in the report. The requirement to designate such an area around a nuclear facility in accordance with the principles specified in the item results from art. 36f section 1 pa A restricted use area is created if the environmental impact assessment of the project shows that despite the use of available technical, technological and organizational solutions, environmental quality standards cannot be met outside the facility.

GDOŚ points out that the above requirement implies the need to attach to the report a copy of a cadastral map certified by the competent authority with the marked course of the boundaries of the area where it is necessary to create a limited use area, in accordance with Art. 66 section 4 uooś.

The provision of Art. 66 section 1 point 1 letter g uooś. requires that the description of the project include the risk of serious accidents or natural and construction disasters assessed on the basis of scientific knowledge, taking into account the substances and technologies used, including the risk related to climate change. However, in accordance with Art. 66 section 1 point 6 of the Act. the report should include a description of the expected environmental impact of the analyzed variants, including in the event of a serious industrial accident and a natural and construction disaster, also in a cross-border context. The above-mentioned provisions oblige the investor to include in the report a number of information requested by exposed countries.

In their positions, the exposed countries emphasize that the most important element in the cross-border environmental impact assessment procedure is the analysis of potential events and accidents in the planned nuclear power plant, arguing for the possibility of the release and spread of radionuclides in the atmosphere in the event of a severe accident over long distances, covering the areas of these countries. . In their positions, they pay particular attention to a detailed analysis of the project's safety issues, the effects of failure and measures to minimize emissions. GDOŚ shares the view contained in the cross-border comments that the report should present analyzes related to nuclear safety, therefore in point II.2.1.4 of the resolution it imposed an obligation to describe the functioning of emergency systems, including those related to the meltdown of the reactor core, and a description of the security systems reactor, safety systems and solutions dedicated to

extended design conditions, taking into account the operational reliability of passive safety solutions.

Another element requiring a detailed analysis of the radiological impact in the context of emergency situations is a safety analysis for the type of reactor under consideration, taking into account data on the frequency of core damage and the frequency of large or early releases of radioactive substances, including in the context of internal and external events taking into account the location near plants. industrial (point II.2.5(f) of the provisions).

The report should also present a description of internal and external events (including the methodology for determining significant events) that may constitute a safety threat to the nuclear power plant, which was also the request of the exposed countries (point II.2.5(g) of the resolution). The report must also indicate organizational and technical solutions dedicated to limiting and mitigating the effects of severe accidents, including strategies for maintaining the integrity of the containment (point II.2.5(j) of the resolution).

Issues of impacts resulting from accidents should be presented in the context of the latest reference documents.

Additionally, it should be noted that nuclear safety issues related to the planned project will be the subject of appropriate, detailed analyzes in the proceedings for issuing a permit for the construction of a nuclear facility conducted by the President of the PAA (Article 36d of the PA). Elements of this procedure include, among others: location report, which is subject to the assessment of the above-mentioned organ. The requirements regarding the scope of the report are specified in § 6 of the RTL

However, the Regulation of the Council of Ministers of August 31, 2012 on nuclear safety and radiological protection requirements to be taken into account by the design of a nuclear facility (Journal of Laws of 2012, item 1048) specifies the nuclear safety and radiological protection requirements to be taken into account design of a nuclear facility, taking into account the need to ensure nuclear safety, radiological protection, physical protection and safeguards of nuclear materials during the commissioning, operation and decommissioning of a nuclear facility and the possibility of conducting efficient emergency proceedings in the event of a radiation emergency, and also taking into account the issued issues in this regard recommendations of the International Atomic Energy Agency (IAEA) and the Association of Western European Nuclear Regulators.

Pursuant to Art. 86l pa, emergency planning zones are defined around the power plant in accordance with the principles specified in the Act. This is the area around a nuclear facility in which the necessary intervention activities are planned and prepared to be taken in the event of a failure of this facility causing or likely to cause a radiation hazard outside the nuclear facility, in order to avoid or significantly reduce the radiological effects of the



accident on the health of people with general population. This is an area for which a detailed emergency action plan is developed. The planned safety measures include ways of notifying residents about the threat, preparing emergency medical personnel, assessing the scale of the threat and how to limit it, as well as protection against contamination and dosimetric control. However, the report should indicate whether it is necessary for the planned project to establish a limited use area referred to in the Act, as described in the earlier part of the decision.

The definition of danger zones around industrial plants adjacent to the planned power plant in the event of a failure of these facilities or nuclear reactors, proposed by vulnerable countries, is beyond the scope of the proceedings in question.

Pursuant to Art. 77 section 2 point 2 pa, there is an obligation for the PAA President to provide, through national contact points, to the International Atomic Energy Agency (IAEA), the European Commission and contact points of other countries and international organizations notifications about, among others, radiation events occurring in the territory of the Republic of Poland. Due to the existence of legal procedures regulating the notification of exposed countries about radiation emergencies, GDOŚ did not take into account the comments in this respect submitted in the cross-border proceedings.

As a result of the implementation of the project, the following will be generated: From radioactive waste (low-, medium- and high-level) as well as spent nuclear fuel. According to the information contained in kip, after processing, the waste will be stored in a radioactive waste warehouse and then collected by the State public utility company Radioactive Waste Utilization Plant, hereinafter referred to as ZUOP. The ZUOP, in accordance with the Act, was established to carry out activities in the field of management of radioactive waste and spent nuclear fuel, and, above all, to ensure the permanent storage of waste and spent fuel. According to the kip, nuclear fuel will be stored in the reactor pool for approximately 8 years, then it will be transferred to the spent nuclear fuel storage facility, where it will be stored until it is transferred to a deep radioactive waste repository.

Contrary to the claims of the exposed countries, the construction of radioactive waste repositories does not fall within the scope of the application under consideration and is a separate project (§ 2(1)(41) of the RoOS), for which construction plans and guidelines are specified in the National Plan for Management of Radioactive Waste and Spent Nuclear Fuel. The current National Plan for Management of Radioactive Waste and Spent Nuclear Fuel was adopted by Resolution No. 195 of the Council of Ministers of October 16, 2015 on the "National Plan for Management of Radioactive Waste and Spent Nuclear Fuel" (MP, item 1092) and Resolution No. 154 of the Council of Ministers of October 21, 2020 on updating the "National Plan for Management of Radioactive Waste and Spent Nuclear Fuel" (MP, item 1070), hereinafter referred to as Plan. In the Plan, in point 4.4.3 entitled "Resolution

regarding the final management of high-level waste and spent nuclear fuel" states that: The NPP operator is responsible for the storage of spent nuclear fuel and must ensure the possibility of storing spent nuclear fuel from the entire period of operation of the nuclear power plant. After several dozen years of storage and after the SGOP [Deep Repository for Radioactive Waste] is launched, this fuel will be able to be transferred for storage. Therefore, it should be assumed that it will be necessary to store spent fuel for many years on a temporary basis at the nuclear power plant, which will be deposited in a deep radioactive waste repository after its construction.

In accordance with the provisions of the Plan, work is underway to select the location, build and operate a new surface radioactive waste repository for low- and intermediate-level waste, and work is underway to identify the optimal location for a deep repository. The Ministry of Climate and Environment, ZUOP and the Polish Geological Institute - National Research Institute are responsible for this process.

The comments of exposed countries also included the need to present in the report the amount of radioactive waste generated, including spent nuclear fuel, and the methods of waste management. This obligation results directly from Art. 66 section 1 uoś. In the operative part of the decision, GDOŚ did not indicate issues in the field of waste management requiring special analysis. However, the issue of transporting this waste through the territory of other countries is beyond the scope of the proceedings in question.

Pursuant to Art. 66 section 1 point 1 letter c uoś. the report should include the expected types and amounts of emissions, including waste, resulting from the implementation and operation phase or use of the planned project, while in accordance with Art. 66 section 1 point 6 of the Act. the report should specify the expected impacts of the analyzed variants on the environment. In turn, from Art. 66 section 1 point 9 of the Act. there is an obligation to describe the expected ones in the report activities aimed at avoiding, preventing, limiting or compensating for negative environmental impacts. The above-mentioned provisions also refer to issues related to the management of radioactive waste and spent nuclear fuel.

It should also be noted that the management of radioactive waste and spent nuclear fuel is regulated by the Act and the implementing provisions of this Act, including: Regulation of the Council of Ministers of December 14, 2015 on radioactive waste and spent nuclear fuel (Journal of Laws of 2015, item 1320), hereinafter referred to as crude oil. The Atomic Law regulates, among others, definitions of radioactive waste, categories of radioactive waste, principles of radioactive waste management (activities related to the processing, movement, storage or disposal of radioactive waste), liability for generated radioactive waste, management of spent nuclear fuel, as well as transport of radioactive waste and spent nuclear fuel.

Referring to the demands to indicate how the transport of radioactive materials will be carried out, including transport routes outside Poland, it should be explained that the transport of dangerous goods and loads is strictly defined in legal regulations. In the Polish legal system, the transport of dangerous goods in the field of domestic and international road, rail and inland navigation is regulated by the Act of August 19, 2011 on the transport of dangerous goods (Journal of Laws 2022, item 2147, as amended), and in unregulated matters this Act applies accordingly to the transport of dangerous goods, including means of transport and transport equipment: Contract European Convention concerning the international carriage of dangerous goods by road (ADR), done at Geneva on 30 September 1957; Statute for the international carriage of dangerous goods by rail (RID), constituting Annex C to the Convention concerning international carriage by rail (COTIF), done at Bern on 9 May 1980, and Contract European Agreement on the international transport of dangerous goods by inland waterways (ADN), concluded in Geneva on May 26, 2000. However, in the field of transport by air, the Act of August 5, 2022 on the transport of dangerous goods by air (Journal of Laws of 2022) applies r. item 1715) and regulations on the transport of hazardous materials in international air transport (IATA-DGR). In turn, the regulations regarding the safe transport of dangerous goods by sea are regulated by the IMDG Code issued by the International Maritime Organization. Requirements for the transport of nuclear materials, sources of ionizing radiation, radioactive waste and spent nuclear fuel are also formulated in Chapter 8 pa.

Detailed conditions for qualifying radioactive waste into categories and subcategories as well as detailed conditions for storing radioactive waste or spent nuclear fuel are indicated in the

Referring to the suggestions of exposed countries, GDOŚ explains that in accordance with Art. 38d pa and the Regulation of the Council of Ministers of October 10, 2012 on the amount of payment to cover the costs of final management of spent nuclear fuel and radioactive waste and to cover the costs of decommissioning a nuclear power plant carried out by an organizational unit that has received a permit to operate a nuclear power plant (Journal of Laws .U., item 1213), an organizational unit that has received a permit to operate a nuclear power plant is obliged to make payments (for each MWh of electricity produced) to a special fund intended to cover the costs related to financing the final management of spent nuclear fuel and radioactive waste. and the costs of decommissioning a nuclear power plant.

In their positions, the exposed countries indicated the need to assess the threats to the operation of a nuclear power plant related to seismic and tectonic conditions and the threats resulting from the location of the project near coal and methane deposits occurring as an accompanying mineral where mining activities are carried out.

In the operative part of the decision, GDOŚ did not indicate issues in the field of geological conditions requiring special analysis, because the obligation to describe all components of the environment, including the abiotic one, such as raw material deposits, seismic and tectonical conditions (66 section 1 point 2 of the Environmental Protection Act), description of the impact on them (Article 66(1)(6) of the Environmental Protection Act), as well as the definition of the expected onesactions aimed at avoiding, preventing, limiting or compensating the identified negative environmental impacts (art. 66 section 1 point 9 of the Act) are imposed by the provisions of the Act.

Regardless of the above, GDOŚ explains that pursuant to Art. 35b section 2 point 1 PA, before selecting the location of a nuclear facility, the investor conducts research and measurements of the area, and on their basis, an assessment of the area intended for the location of the nuclear facility. This assessment covers, among others: seismic, tectonic and geological-engineering conditions. However, in accordance with Art. 35b section 3 of this Act, based on the assessment of the area intended for the location of a nuclear facility, the investor prepares a location report and submits it to the President of the PAA.

Requirements for the location of a nuclear facility are regulated in the RTLOj. § 2 point 1 of the cited regulation specifies the detailed scope of the assessment of the area intended for the location of a nuclear facility in the field of seismic and tectonics.

The location report is assessed by the PAA President during the proceedings for issuing a permit for the construction of a nuclear facility. Therefore, a detailed analysis of the assessment of the area intended for the location of a nuclear facility will take place at the stage of obtaining a permit for the construction of a nuclear facility.

The provision of Art. 66 section 1 point 2 letter b uoóś. imposes on the investor an obligation to describe the natural elements of the environment included in the scope of the expected impact of the planned project on the environment, including the hydromorphological, physicochemical, biological and chemical properties of water, and Art. 66 section 1 point 1 letter and of this Act requires that the description of the project include the conditions of land use in the implementation and operation or use phase, including in relation to the conditions resulting from the location of the investment in flood plains and the resulting flood risk. However, under Art. 66 section 1 point 1 section 6 and 6a uoóś. there is a need to specify in the report the expected impact of the planned project on the aquatic environment.

However, bearing in mind that surface and groundwater will be a component of the environment subject to particularly significant impacts of the planned project, including: due to the need to provide a significant amount of water for cooling the power plant, GDOŚ in point II.2.4. of the provisions, he considered it justified to indicate surface and groundwater, including water bodies, and the possibility of achieving the environmental objectives

referred to in Art. as an element requiring detailed analysis. 56, art. 57, art. 59 and art. 61  
pw

An issue of great interest to the exposed countries and the Director of RZGW in Kraków was to demonstrate that sufficient water resources would be available needed for the operation of the planned power plant. GDOŚ, after analyzing the kip, available hydrological data and forecasted climate changes, shares the view that the report should contain a detailed analysis in this respect, therefore in point II.2.1.2 of the decision of GDOŚ obliged the investor to analyze the availability of water resources that will be the basis for supplying the planned investment into water, taking into account various meteorological conditions, projected changes in the volume of these water resources and ongoing climate changes.

In point II.2.6 letter and the provisions of GDOŚ, based on the opinion of the Director of RZGW in Krakow and the information indicated in the kip that the preferred source of water for the needs of supplementing the cooling circuit of the power plant is the Dwory canal, imposed on the investor the obligation to analyze the impact of water abstraction from the Dwory canal on the level and fluctuations of the water table in canal, taking into account the need to maintain the required water level at the lower sill of the lock. It was indicated that this analysis should include, among others: the impact of meteorological conditions on the availability of water in the canal and the impact of water abstraction on maintaining the intact flow below the outlet of the lower navigation canal. In turn, in point II.2.1.3 of the provisions of GDOŚ found it justified to oblige the investor, in accordance with the opinion of the Director of RZGW in Kraków, to take into account in the flood risk analysis the effects of potential disasters of the Kaskady Soła water reservoirs (Tresna, Porąbka and Czaniec), the Gopałkowice reservoir on the Vistula and the Dzieńkowice reservoir on Przemsza. .

In his opinion, the Director of RZGW in Kraków indicated that the reactor building with a diameter of approx. 40 m will be placed in a vertical trench with a depth of approx. 36 m below ground level, and the place of implementation of the project is located at a distance of less than 50 m from the foot of the Macocha stream embankment and in the nearest point, approximately 60 m from the Dwory and Wisły canals, where it is prohibited to perform works or activities that affect the tightness or stability of the flood embankments. Taking into account the above conditions, GDOŚ in point II.2.6 letter b of the resolution imposed an obligation to analyze the impact of the planned project in the implementation and operation phase on the stability and tightness of the embankments of the Dwory Canal, the Macocha Stream and the Vistula.

The indicated requirements are consistent with the demands of exposed countries regarding the impact on the aquatic environment.

In the case of investments in the energy industry, it is particularly important to include the impact of the project on the climate and climate change in the report. This obligation results directly from art. 66 section 1 point 1 letter g and point 6 u o o s . , according to which the report should specify the expected impact of the analyzed variants on the environment, including in the event of a serious industrial accident and a natural and construction disaster, on the climate, including greenhouse gas emissions and impacts significant from the point of view of adaptation to climate change , as well as possible cross-border environmental impacts. The point indicated covers issues raised by vulnerable countries regarding climate change.

When presenting an analysis of the project's impact on climate change, it is necessary to provide the adopted climate change scenarios over the period of operation of the power plant (approx. 60 years) as basic data for this long-term analysis (point II.2.7 of the resolution).

In point II.2.2 of the decision of the General Directorate for Environmental Protection, he formulated the requirements regarding the scope of information that should be included in the description of the natural elements of the environment covered by the scope of the expected impact of the planned project on the environment, and also specified the level of their detail. The report on the environmental impact of the project is to include a detailed analysis of the occurrence of natural habitats and plant communities, as well as species of animals, plants, macroscopic fungi and lichens protected under European law (Directive 92/43/EEC and Directive 2009/147/EC), as well as also covered by national protection under the Nature Protection Act. Additionally, rare and endangered species listed in the Polish Red Data Book of Plants and the Polish Red Data Book of Animals (Institute of Nature Conservation of the Polish Academy of Sciences) as well as species included on national and regional "red lists" should also be recognized. The inventory should enable the preparation of a list of natural habitats and other plant communities, as well as plant species, macroscopic fungi and lichens, the sites of which are located in the area of the planned project and within its impact range. It should be emphasized that the description of natural conditions is the starting point for analyzes of the impact of the project on individual components of the environment, therefore it must be reliable and prepared in accordance with the guidelines presented in the operative part of the decision. The above-mentioned analyzes should take into account the current area and condition of natural habitats as well as the status of populations and habitats of fauna and flora species. When assessing the state of conservation of natural habitats and populations of plant and animal species listed in Directive 92/43/EEC, it is advisable to take into account the parameters specified in the Regulation of the Minister of the Environment of February 17, 2010 on the preparation of a draft plan of conservation tasks for a Natura 2000 site ( Journal of Laws No. 34, item 186)

and indicators used as part of state environmental monitoring carried out by the Chief Inspectorate of Environmental Protection (point II.3.3 of the resolution). The conservation status of the populations of other animal, plant and fungi species should be determined by comparing the obtained indicators with data available for other species occurrence areas in the country, their habitat requirements, based on literature data and unpublished data. Moreover, it is justified to indicate the most valuable patches of natural habitats in the area covered by the inventory. With regard to fauna, as part of a natural inventory, it is necessary to know its species composition and abundance, as well as collect data on the distribution and density of animals. Moreover, in order to properly assess the impact of the project on the natural environment, the value of the affected areas for a given species/group of species should be examined by determining, among others, the intensity and manner of their use of the inventoried space (resting, breeding, wintering, feeding, sleeping places). Examining the characteristics of the local and regional movement patterns of animals will allow the identification of their migration corridors. In the decision, GDOŚ also imposed an obligation to include in the report individual stages of animal development, which is important due to the fact that they use different types of environments (e.g. amphibians go through the initial stages of development in the aquatic environment, and after the completion of larval development and metamorphosis, most species lead a terrestrial life).

In accordance with point II.3.1 of the provision, the source of information regarding natural conditions should be current data obtained during field research. Additional sources of information on the initial state of the environment may include, among others: literature data and data obtained from relevant offices, provided that they should be verified for validity and adequacy. The purpose of the natural inventory carried out for the implementation of the project in question should be to determine the current species composition and places of occurrence of representatives of individual species, as well as to determine the functions that the areas within the range of its impact fulfill for the given species.

In accordance with point II.3.2 lit. and the natural inventory should also cover areas where there may be cumulation of impacts with other projects, primarily accompanying investments referred to in Art. 2 point 1 of the Act on Environmental Protection, GDOŚ also drew attention to the need to conduct an inventory of natural habitats and species of plants, macroscopic fungi and lichens at optimal times, i.e. covering the period of the growing season in which finding and identifying these elements in the field will be possible and most effective. . In the case of fauna, GDOŚ imposed an obligation to conduct research for a period of not less than 12 months, assuming that the inventory methodology should be adapted to the biology and ecology of the species/group of species under study, taking into account the varied activity of animals in subsequent phenological periods. The research

should cover the full cycle of activity of individual species or groups of animals, which will allow determining the nature of the occurrence of a given species in the analyzed area, its number, etc.

The field research methodology should be developed based on good practices, methodological guides, guidelines and standards (including methodological guides and guidelines issued by the Chief Inspectorate of Environmental Protection). In order to obtain reliable data and enable their verification, it is necessary to provide detailed information about the natural environment inventory methods used in the report. Water environment research and laboratory analyzes should be carried out in accordance with the methodologies used in water monitoring carried out under 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 (Journal of Laws EU L 327 of 22/12/2000, page 1), hereinafter referred to as the Water Framework Directive. Application of the above-mentioned the methodologist will ensure the appropriate quality of measurements and research as well as the reliability of the data obtained on their basis.

According to the information provided in the kip (chapter 4.2.2), as part of the implementation of the project, it will be necessary to build infrastructure related to water abstraction to supplement the cooling water circuit. Currently, the preferred water source is the Dwory navigable canal, located approximately 100 m north of the planned project. Water consumption in the amounts indicated in the kip may have an impact, among others: to changes in the size and dynamics of water flow in the canal. Additionally, in chap. 11.2.3 kip presents information on the emission of rainwater and meltwater as well as technological sewage into the ground and water environment. Therefore, the report should analyze the threats to the water environment related to the operation of water abstraction installations and the impact resulting from the emission of substances and changes in water quality caused by the discharge of sewage from the technological process (including chemical treatment of these waters with anti-scaling agents, anti-corrosion agents), biocides, etc.), as well as other sewage and rainwater and meltwater. The above analyzes should use data obtained during field research on the taxonomic composition, abundance and biomass of phytoplankton, taxonomic composition and abundance of macrophytes, phytobenthos and benthic macroinvertebrates. Additionally, it is necessary to take into account the taxonomic composition, abundance and age structure of ichthyofauna. Condition of the above-mentioned water quality elements as a biological indicator is taken into account when assessing the state and ecological potential of waters, in accordance with the requirements of the Water Framework Directive. It is important to present in the report an analysis of possible changes in the species composition, range of occurrence, abundance and biomass of the fauna and flora of the receiver, resulting from the implementation of the



project. It is also necessary to address the risk of fish and other organisms entering the cooling system. Moreover, the report should take into account the impact of the power plant on the receiving ecosystem, both under normal operation conditions and in the event of emergency situations.

The issue of impact on water resources is particularly important from the point of view of the operation of nearby fish ponds, in particular Stawy Monowskie. The complex of these ponds is located within the Dolina Dolnej Skawa special protection area PLB120005, only approx. 100 m east of the project site. This area is home to one of the few breeding sites of the Ferruginous Warbler *Aythya nyroca* in Poland. There is also a very large population of the common tern, *Sterna hirundo*, the white-whiskered tern, *Chlidonias hybrida*, and the night heron, *Nycticorax nycticorax*. The protected areas of the discussed area also include the little bittern *Ixobrychus minutus*, the great crested grebe *Podiceps cristatus*, the common teal *Anas querquedula*, the little grebe *Tachybaptus ruficollis*, the red-necked grebe *Podiceps grisegena*, the long-crested grebe *Podiceps nigricollis*, the greylag grebe *Anser anser*, the gadwall *Anas strepera*, the red-necked grebe *Netta rufina*, and the grebe *A. ythya ferina*, *Aythya* blueberry *fuligula*, Little Moor Gallinule *Gallinula chloropus*, White-headed Gull *Larus cachinnans*, Black-headed Gull *Larus melanocephalus*, Black-headed Black-headed *Larus ridibundus*, Ringed Plover *Charadrius dubius*, Kingfisher *Alcedo atthis*, Bluethroat *Luscinia svecica*, Redshank *Tringa totanus*.

It should be noted that breeding ponds located in the Dolina Dolnej Skawa Natura 2000 area also play a very important role not only during the breeding season, but also during spring and autumn migration. They are a stop on the migration route of thousands of birds, which use the rich food base offered by water reservoirs and fragments of natural river valleys. These conditions provide a convenient resting place for many species, especially antlers, waders and herons. The herds found here are the largest in size recorded in Małopolska.

Therefore, the report should present a detailed analysis of the impact of the construction and operation of the planned project on the above-mentioned. protected area and the functioning of fish ponds. It should be clarified whether possible drainage of the area during construction works and water abstraction for the operation of the power plant cooling system may impede pond management and prevent maintaining the appropriate water level in ponds, necessary to preserve bird habitats. A long-term significant decrease in the water level results in excessive development of emergent vegetation and a disappearance of the water table. Drained ponds are overgrown with woody vegetation (especially willow and alder). In the case of species such as the little ringed plover and the redshank, this may lead to the loss of nesting sites and the disappearance of bird feeding grounds, which are extensive muddy surfaces temporarily created when the pond is emptied

of water as part of fishing activities. In the case of birds nesting on islands (e.g. common terns and little terns), the lack of water or its very low level makes these places available to land predators that threaten the breeding sites.

Additionally, it should be indicated that significant impact factors of the project will be the presence of people, artificial lighting and noise generated by machines and vehicles used during construction works. They may scare birds, which in the case of individuals stopping at ponds during autumn migration contributes to the breakup of migrating flocks. However, disturbing birds during the breeding season may lead to the loss of broods. Part of the area affected by noise may be avoided by birds, which will temporarily reduce the area of habitat available for avifauna. When analyzing the impact of the planned project on avifauna, the cumulative impact of accompanying investments, such as power lines distributing power from the power plant, should also be taken into account.

The need to examine the impact of the planned project on Natura 2000 areas and other forms of nature protection referred to in Art. 6 of the Act (taking into account also the issue of species protection), was specified in point II.2.3 lit. b provisions. GDOŚ also pointed out that during analyzes attention should be paid to the integrity and coherence of the Natura 2000 network, as well as to the continuity of ecological corridors. Analyzes should be carried out taking into account the provisions included in the protection plans or protection task plans for these areas.

In addition to the Natura 2000 area discussed above, there are other protected areas in the vicinity of the area where the project is to be implemented. These are the Natura 2000 special bird protection areas Dolina Dolna Soła PLB120004 (at a distance of approx. 2.3 km), Stawy w Brzeszcze PLB120009 (at a distance of approx. 10.2 km), as well as the special habitat protection area Natura 2000 Dolna Soła PLH120083 ( approx. 8.5 km away). Moreover, the Lower Soła Valley Nature and Landscape Complex is located approx. 6.7 km away, and the Tenczyński Landscape Park buffer zone is located approx. 1.83 km away. In the vicinity of the planned project there are also 4 reserves: Bukowica, Lipowiec, Przeciszów and Żaki. The last of the mentioned reserves is located approximately 0.9 km from the project site. The object of protection of the Żaki reserve is a natural oak-hornbeam forest complex with a predominance of old linden trees. Together with the nearby Przeciszów reserve, they are one of the last fragments of the oak-hornbeam forest in this part of the Vistula valley. The report must present the results of analyzes regarding the impact of the construction and operation of the planned project on the groundwater level in and in the vicinity of the reserve. Lowering the level of groundwater in the long term may lead to the transformation of natural habitats located within the boundaries of the reserve.

Taking into account the specificity of the project, in point II.2.3 letter ai lit. c of the provisions of GDOŚ indicated possible factors of impact on the natural environment, which

should be given special attention in the report. It is necessary to examine all impacts on fauna and flora, as well as on ecological structures and processes that determine the proper functioning of natural habitats and plant and animal populations. The above analyzes should take into account physical (removal of vegetation cover and soil, transformation or destruction of habitats, creation of a barrier to the migration and dispersion of organisms, etc.), chemical and biological (e.g. increased pressure from invasive alien species, changes in the population, such as reduction in population, change in density, etc.) effects of the construction of the planned project. It is particularly important to examine the impact on places of key importance from the point of view of the functioning of animal populations, such as places of reproduction, resting, feeding, and migration routes. When determining the significance of the impact on individual environmental components, it is necessary to take into account trends in changes in the environment, the sensitivity of a given species/habitat to negative impacts, as well as trends in changes in the population size of species that may be affected by the planned project. The decision of GDOŚ also included a requirement to present a description of the expected impact of the project on biodiversity and to take into account the factor of increased anthropopressure and light pollution in the analyses.

In point II.2.3 letter c of the provisions of GDOŚ also drew attention to the need to address the threat related to the appearance and spread of invasive alien species of fauna and flora within the meaning of the Act of August 11, 2021 on alien species (Journal of Laws of 2023, item 1589, as amended). The description of the environment should therefore also include information on the number and distribution of invasive alien species obtained during field research. Based on these data and data collected as part of environmental monitoring, it should be analyzed whether the planned investment will contribute to the intensification of pressure related to the presence of the above-mentioned. species.

The results of the natural inventory (including the location of habitat patches, species locations, migration routes) and a description of the impact of the planned project on the natural environment should be presented in cartographic attachments at an appropriate scale, enabling proper presentation of the collected data. The attachments should also include the location of individual variants of the project and the accompanying infrastructure.

The cumulative impact of the planned nuclear power plant and industrial plants located in its vicinity during normal operation and in emergency situations was of great interest to countries exposed to the cross-border procedure.

Pursuant to Art. 66 section 1 point 3b and point 8 of the Environmental Protection Act, the report should include, among others: a description of the expected significant cumulative impacts of the planned project on the environment and information on

connections with other projects, in particular the cumulative impacts of projects being implemented, completed or planned for which a decision on environmental conditions has been issued, located in the area where the project is planned to be implemented, and in the area of impact of the project or whose impacts fall within the area of impact of the planned project - to the extent that their impacts may lead to cumulative impacts with the planned project.

In the operative part of the decision, GDOŚ did not indicate issues requiring detailed analyzes in terms of cumulative impact, because the cited provision meets the expectations expressed in the cross-border proceedings.

At the same time, GDOŚ indicates that it is unjustified to present in the report scenarios of further development of the industrial area in the vicinity of the planned project, any changes in the scope of economic activity in its vicinity and an assessment of potential future threats to the nuclear power plant resulting from these changes. The report can assess the cumulative impact only for projects that are planned and information about them is available. The analysis of the potential future economic and spatial development of the area goes beyond the scope of the environmental impact assessment of the project.

The implementation of the project will have a significant impact on local and regional socio-economic conditions, hence in point II.2.8 of the provisions, requirements in this regard were formulated.

Experience from the implementation of nuclear power plants around the world shows that this type of project and the large number of employees required for its implementation justify the need to present in the report how it will affect, among others, on the number of inhabitants, population status and spatial development of the areas surrounding the planned power plant. The effects of the influx of a large number of employees and their families for a long period of time related to the implementation of the project should be presented, in the context of the required expansion of infrastructure and the service sector (e.g. accommodation, services - including health care, culture, recreation, trade, transport, education, etc.). .

The analysis of socio-economic conditions should also take into account the impact of the project implementation on the quality and living conditions of people (including changes and restrictions in the use of real estate, traffic intensity and safety, tourism and recreation) and on the social and living conditions of employees and their families, also taking into account issues arising from the multicultural employment structure.

GDOŚ also obliged the GDOŚ to present the health status of residents in the report, together with the spatial differentiation of the occurrence of diseases that may result from exposure to ionizing radiation (in particular cancer diseases), in order to determine the initial state in this respect.

An important aspect of the analysis is also the location of industrial facilities and public utility facilities important from the point of view of evacuation.

GDOŚ would like to emphasize that in accordance with the Environmental Protection Act, the report is to be a set of information specifying all aspects related to the environmental effects of the implementation of the project and the impact on the health and living conditions of people, material goods, monuments and the interaction between these elements, taking into account the location, design, technological, technical and organizational solutions adopted by the investor, as indicated in art. 66 section 1 point 6 and 8 of the Act. The report should include direct, indirect, secondary, cumulative, short-, medium- and long-term, permanent and temporary impacts occurring at the stages of implementation, operation and liquidation of the project. These regulations oblige the investor to refer to all potential threats related to the implementation of the project, as well as to indicate what environmental protection standards apply in this respect and whether the planned project falls within their framework. In turn, Art. 66 section 1 point 9 of the Act. imposes on the investor the obligation to describe in the report the expected actions aimed at avoiding, preventing, limiting or compensating the identified negative environmental impacts.

If the project may have a cross-border impact on the environment, all key elements of the report should also take into account the impact of the planned project outside the territory of the Republic of Poland, as explicitly indicated in Art. 66 section 3 uoś.

Therefore, if a negative cross-border impact is found, e.g. on natural mineral springs located in Slovakia, the report will present adequate ways to prevent and reduce this impact.

Referring to the procedural issues raised by vulnerable countries related to the issuance of permits for nuclear power plants and the participation of administrative authorities in them, GDOŚ presents the following explanations.

In the Polish legal system, in the investment process of construction and operation of a nuclear power plant, it is required to obtain a number of permits and permits that condition the possibility of operating the power plant, these are:

- main decision, (issued by the Ministry of Environmental Protection),
- decision on environmental conditions (issued by GDOŚ),
- decision on determining the location (issued by the local voivode),
- permission for preparatory work (issued by the local voivode),
- construction permit (issued by the PAA President),
- commissioning permit (issued by the PAA President),
- occupancy permit (issued by the locally competent provincial building supervision inspector),

- building permit (issued by the local voivode),
- operating permit (issued by the PAA President),
- license for energy production (issued by the President of the Energy Regulatory Office).

Pursuant to Art. 86 uoó. the decision on environmental conditions is binding on the authority issuing decisions specifying the conditions of use of the environment, to the extent to which the environmental decision is to be taken into account when issuing them, and on the authorities issuing the decision granting permission to implement the investment, including: decision on determining the location of the investment in the construction of a nuclear energy facility and accompanying investments, and a permit for the construction of a nuclear facility.

The legal consequence of such a solution is that the authorities issuing decisions, before issuing which it is necessary to obtain a decision on environmental conditions, are fully bound by the provisions resulting from the decision on environmental conditions. This means that the authority issuing such a decision cannot omit any obligations and rights arising from the decision on environmental conditions, because it is a preliminary decision in relation to the future permit for the implementation of a specific project.

Referring to the request of the exposed countries, GDOŚ explains that the bodies responsible for the implementation and execution of the Seveso Directive are the bodies of the Environmental Protection Inspection. Uoó. it literally indicates which reviewing and consenting bodies are involved in the proceedings for issuing a decision on environmental conditions, which do not include the bodies of the Environmental Protection Inspection. In the proceedings in question, it is required to obtain the following positions: the President of the PAA in the field of nuclear safety and radiological protection, the Director of RZGW in Kraków - the authority competent to issue a water law assessment, MPWIS - the authority competent in the field of radiation hygiene and the Minister of Climate and Environment - the authority competent to issue an integrated permit, if required.

Information about the opinions and arrangements obtained is presented in the earlier part of this decision.

Pursuant to Art. 69 section 1 uoó. When submitting an application for a decision on environmental conditions for projects that may always have a significant impact on the environment, the applicant may, instead of submitting a report on the environmental impact of the project, submit an information card for the project along with an application to determine the scope of the report. And pursuant to Art. 69 section 3 uoó. the authority determines the scope of the report by way of a decision. In this case, the provisions of Art. 68 of this Act. Pursuant to art. 68 section 2 uoó. the authority, when determining the scope of the report, may - taking into account the location, nature and scale of the project's impact

on the environment - waive from the requirements regarding the content of the report referred to in Art. 66 section 1 points 4, 13, 15 and 16; indicate: the types of alternative variants requiring examination, the scope and detail of the required data to characterize the project, the types of impacts and environmental elements requiring detailed analysis, and the scope and methods of research.

After analyzing the reports and opinions of cooperating bodies, and taking into account the location, nature and scale of the expected impact of the project, GDOŚ imposed on BWRX-300 Stawy Monowskie sp. z o. o. the obligation to prepare a full report, i.e. in accordance with Art. 66 of the Act, at the same time pointing out, pursuant to Art. 68 section 2 point 2 letter beat uooś. the scope and detail of the required data to characterize the project, types of impacts and environmental elements requiring detailed analysis, and the scope and methods of research. GDOŚ did not consider it appropriate to waive any of the requirements specified in Art. 66 section 1 uooś. in relation to the planned project.

Therefore, GDOŚ ruled as in the operative part.

### **Instruction**

There is no right to appeal or appeal against this decision to the provincial administrative court. Pursuant to Art. 142 in connection with Art. 127 § 3 of the Code of Administrative Procedure, this decision may be challenged in a request for reconsideration of the case.

### **They receive:**

1. BWRX-300 Stawy Monowskie sp. z o. o. based in Warsaw, Al. Jana Pawła II 22, 00-133 Warszawa
2. other parties to the proceedings pursuant to Art. 49 § 1 of the Code of Administrative Procedure in connection with Art. 74 section 3 uooś. and art. 15 section 1 uzuooś.

### **For the attention of:**

1. Regional Director of Environmental Protection in Krakow
2. Minister of Climate and Environment
3. President of the National Atomic Energy Agency
4. Director of the Regional Water Management Board in Krakow, State Water Management Authority Polish Waters
5. Małopolska State Provincial Sanitary Inspector