



MINISTERUL MEDIULUI
ȘI SCHIMBARILOR CLIMATICE

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MINISTRY OF ENVIRONMENT AND CLIMATE CHANGE

Cabinet of the Minister

No: 1403 /A.K./09.05.2014

Ref: Romanian comments to the notification for investment proposal for "Lifetime Extension of Units 5 and 6 at Kozloduy NPP"

Dear Minister,

Following the Bulgarian letter dated 13th March 2014, and the attached notification of the proposed investment "*Lifetime Extension of Units 5 and 6 at Kozloduy NPP*", we would like to further develop our comments and proposals, which should be taken into account for the elaboration of the EIA Report (scope and content of the environmental impact study) of the mentioned project:

- Information regarding *sources, types and volumes of radioactive waste (RW)* resulted from the replacement, modernization and reconstruction of structures, systems and components (SSCs) during the preparation of the lifetime extension, as well as the waste generated by 30 years of Units 5 & 6 operation;
- Information regarding the technical capacity of the *treatment-conditioning* facility to operate during the entire extended life of Kozloduy Units 5&6 and also during the decommissioning stage of these reactors and information regarding refurbishing measures, if these are significant;
- Information regarding the final *disposal facility* for low and intermediate level waste. If the "National Repository for Low and Intermediate Level Radioactive Waste Disposal - NRRAW" is intended to be used, the information should address the following issues:
 - a. is the capacity of this facility big enough to accommodate the new volume of radioactive waste? If an extension of the capacity will be needed, please indicate cost estimation and the financial resources available.
 - b. if NRRAW will accommodate a higher volume of radioactive waste than initially designed, the radiological capacity/radionuclide inventory will also change; will the environmental impact study be up-dated?
 - c. what will be the impact on the duration of the RRAW operational stage?

Ms. Iskra Dimitrova MIHAYLOVA - KOPAROVA

Minister

MINISTRY OF ENVIRONMENT AND WATER, REPUBLIC OF BULGARIA

MINISTRY OF ENVIRONMENT AND CLIMATE CHANGE

- Information regarding the availability/technical capability of the facilities for the *interim storage* of the spent nuclear fuel and high level waste generated during the extended lifetime of Kozloduy Units 5&6 and also regarding the strategy for the *final disposal* of SNF and H LW;
- *Emergency* programmes related to the RW management facilities (especially to the spent fuel interim ponds);
- Measures for promptly and efficient information of the Romanian population and authorities regarding the results of radiological monitoring in the bordering area, during normal and abnormal NPP operation;
- During the past years, the Kozloduy NPP has been subject to debate within the international bodies in the field of ionizing radiation. A number of international evaluations have been made by experts. The major accident at the Fukushima has aroused a new awareness of the inherent risks of nuclear power production. Therefore, while a project of modernization and reconstruction of SSCs might be beneficial, a very thorough study is needed, as to the safety of expanding the lifetime of old type reactors beyond the designed lifetime. Pending the results and conclusion of such study, including the conclusion of international experts, and the compliance with international regulations, such a project might be regarded as beneficial or detrimental. Public and environmental safety should be paramount in making such a decision, taking into account the fact that a major accident at the Kozloduy would impact on both Bulgaria and Romania with equal magnitude. Should this project meet all the national and international criteria for approval, the health impact study regarding the Romanian population in the area of influence would include:
 - a. The transboundary impact: estimation of individual and population excess risk for conditions associated to the exposure to ionizing radiation (cancer, genetic defects, and developmental defects) based on the estimated exposure levels and the ICRP 103 and UNSCEAR models. These estimates should cover both *normal operation instances*, and *all the possible scenario of incidents through major accident (worst case scenario)*;
 - b. The health impact study regarding the Romanian population residing in the area of influence of the Kozloduy NPP should take into account **all** the facilities operating on the same site (waste disposal site, waste processing installation, new reactor, old reactor); thus, the estimation of the excess risk should take into account the **cumulative** effect of all these facilities working simultaneously;
 - c. The health impact study should include the Romanian population residing within a radius of 5,10, 30, and 100 km from the NPP Kozloduy (the "Health Risk Assessment from the Nuclear Accident after the 2011 Great East Japan Earthquake and Tsunami" is a very good example of health risk assessment in case of major accident), as well the *environmental assessment impact at different distances from NPP Kozlodui (5 km, 10 km, 30 km and 100 km) not only 100 km*;
- Cumulated environmental impact, considering the condition of the environment at the end of design life, as well as the impacts applying to the service life extension period;
- Environmental impact assessment and measures to be taken for dealing with the large quantity of radioactive waste generated during project implementation;
- Presentation of how Bulgaria will perform / participate in environment and population health monitoring on Romanian territory, located under the influence zone of U5 and U6;
- Demonstration of spent fuel storage capabilities in the context of service life extension;
- Consideration of severe accidents and also consideration of multi- units events (combined effects from all existing facilities on Kozloduy platform and its vicinity, on short, medium and long term), the cumulative effects of all nuclear facilities at Kozloduy;

MINISTRY OF ENVIRONMENT AND CLIMATE CHANGE

- Throughout evaluation of the condition of buildings and structures (special attention to be paid for confinement systems, reactor pressure vessel);
- Assessment done concerning the aging management;
- Effects of climate changes and severe weather conditions;
- Seismic hazard considering the current applicable standards and methodologies;
- Seismic backfitting;
- Nuclear safety improvements (i.e. use of passive safety systems);
- Potential impact on the Danube river and Black Sea aquatory (considering air emissions during accidents, potential Danube water pollution, thermal load effects);
- Effect of climate change on:
 - a. the normal functioning of all objectives on the Kozlodui platform, including units 5 and 6, as well as in its the vicinity,
 - b. radionuclides transport in environment under the normal and emergency situations.
- Scenarios of transboundary cumulative impact from all existing facilities from Kozloduy platform and its vicinity in emergency situations;
- Presentation of how the Romanian population will be informed of the results from environmental monitoring on Romanian territory located under the influence zone of U5 and U6;
- The documentation sent does not include a strategy for the prevention of thermal and radioactive pollution risk in the context of climate change. From the climatological predictions is known that in the south of Europe is expected the decrease of precipitation levels about 20 % until the year 2050, which will attract a decrease of the Danube flow. To mitigate the impact of climate change (e.g. increased of the temperature, changing of the rainfall regime, increased of the frequency of droughts / floods), the International Commission for the Protection of the Danube River (ICPDR) has completed in the year 2013 a climate change adaptation Strategy for the Danube Basin (<http://www.icpdr.org/main/activities-projects/climate-change-adaptation>), which was not mentioned. In the condition of decrease of the Danube flow, the thermal and radioactive impact of the effluent is expected to grow by operation of the two units 5 and 6, requiring the long-term impact modeling in order to prevent negative effects (will be need to increase the volume of water used for the cooling of the two additional reactors, and also the growth of the effluent volume, considering that the Danube flow will decrease);
- Also, please take into consideration the long-term impact, cumulative of the planned infrastructure projects to be undertaken in the area, such as:
 - a. the project "Improving the navigation condition on the Romanian – Bulgarian common sector of the Danube";
 - b. the taking over of an additional water flow for cooling of the units 5 and 6, in collaborated with technical measures for the improvement of the navigation, the reduction of rainfall and flow of the Danube, which will affect the level of the groundwater, can induce an increase in aridisation of the surrounding area. In this case it is necessary to perform a modeling which to estimate this impact in order to mitigate or prevent compensatory measures;
 - c. Appropriate assessment study in the NPP area, given the fact that on the Danube sector where is located Kozloduy NPP and also upstream, on the Bulgarian area, there are some habitats of sturgeon breeding, species of community interest (Directive Habitats), that are considered the symbol species of the Danube Basin. In order to stop their decline in the EU Strategy for the Danube Region was launched the Sturgeon Program 2020, which aims to protect these species and implementation of a socio-economic measures in the purpose of the

MINISTRY OF ENVIRONMENT AND CLIMATE CHANGE

- sustainable exploitation of the natural resources (stimulating local markets, eco, bio and ecotourism);
- d. Areas that are sensitive on the Romanian territory, likely to be affected in the view of the existence of a Site of Community Importance ROSCI 0045 Jiu Corridor and a Special Protected Area ROSPA 0023 Confluence Jiu- Danube as well ROSPA0135, „Sands of Dabuleni” and ROSPA 0010 Bistret;
- The environmental impact study should analyze the impact on the tourism activity and on the development of local communities.

Therewith, from the point of view of water management we consider that the Environmental Impact Assessment Report in the transboundary context for the project must contain the following information:

- A hydrogeological study based on data from existing wells on the site and surroundings is necessary, both regional phreatic aquifer and aquifer hosted in Pliocene deposits;
- It must be addressed the issue concerning the impact of termic pollution of the project “Lifetime Extension of Units 5 and 6 at Kozloduy NPP” on the Danube River ;
- Any plumes of pollution, already existing in groundwater must be characterised. Also, it must be presented the measures that will be taken on this issue;
- Regarding the surface waters must be add the description of drainage water systems and the flows of waste water discharged into surface waters and mainly into Danube River;
- More information concerning influence of the project on surface water condition in the region and especially on the Danube River;
- The correlation between the quantity (in takes, discharges) and quality (discharged substances - quantity /year). A correlated balance between quantity and quality should be provided;
- The provided information does not take into consideration the biological elements and water bodies according to Water Framework Directive. As it is already known that hot effluent has a negative impact on water bodies and biological elements as well. For this reason we need some clarification regarding the following points:
 - a. inputs (e.g. raw material, power sources, etc.);
 - b. references related to waste water plant, elucidation about if it used the old facilities, and if these facilities have the capacities to take all waste waters;
 - c. proposed mitigation measures;
 - d. clarification related to protection measures for aquatic organisms (fish, phytoplankton, macro invertebrates). The PFII – Chiciu Silistra Danube sector is a water body at risk, because of the hazardous substance (according to 2000/60/EEC – Water Framework Directive) therefore we request information regarding monitoring program of the groundwater and surface water in the area of project.

Hereby, we would like to inform you that, on 4 March 2013, the National Administration "Romania Waters" has sent to Ministry of Environment and Waters of Bulgaria, some information about monitoring data on sections of the rivers in the area, respectively 30 miles away Kozloduy maps in GIS format on the same emplacement. In this respect, we consider that all the information can be used for the assessment of the environment impact, respectively the specific section dedicated to the management of water resources.

Regarding the information on the transboundary impact, in notification is stated that no boundary impact is expected. This affirmation is not sustained, at least for severe and probably accident, even in the case of certain project basis accident. In this respect, please provide the Romanian Part with the results of the project "Exploring and identifying the location of a preferred site for the construction of the new nuclear unit at the site of Kozloduy NPP" regarding the values established

MINISTRY OF ENVIRONMENT AND CLIMATE CHANGE

for the Design Basis Earthquake, for the new nuclear unit, and their justification, tacking into account the most recent seismic data and the last international requirements in the field. What are the probabilities of nuclear incidents or accidents that may affect the territory of Romania and the Danube river, which are exposed areas and the foressed measure to prevent, reduce and where possible, the compensation of any significant adverse environmental effects;

- Describe also, forecast methods used in the assessment of environmental effects;
- The works proposal for the restoration of the site, at the finish of the activities or in case of an accident;
- Modification/amendment of the „Agreement between the Government of Romania and the Government of the Republic of Bulgaria for the early notification of a nuclear accident and information exchange on nuclear facilities” to ensure:
 - a) direct information of all the local Romanian authorities in the area of influence of the Kozloduy site and the provision of recommendations for the protection of the population in the early phases of an accident, in the same conditions as these are made by NPP Kozloduy for the local Bulgarian population, for any accident on the Kozloduy site;
 - b) the periodic information of the Romanian authorities, including for the information of the local population on the results of the radiological monitoring of the influence area of the Kozloduy site.
- It's necessary that the EIA Report to contain a chapter to cross – border effects both in normal and emergency situation;
- Please specify who's going to perform the monitoring program of the Kozloduy NPP effects on the territory of Romania;
- A description of the proposed project;
- The sources of pollutants and emission, by type and quantity, expected for water, air, soil, subsoil, radiation, human settlements, flora, fauna, climatic factors, etc., as well the waste expected to result from the project;
- Description of the measures for the protection of the quality of environmental factors;
- Taking into consideration the potential transboundary impact, we consider necessary to be achived a study of modeling pollutants dispersion in the air in adverse conditions, with effect on Romania (considering all meteororlogical factors);
- the current and planned use of the adjacent area of the project.

In conclusion, we consider that the Environmental Impact Assessment Report in the transboundary context that will be elaborated for this project must respect the legal frame work, respective European Directives (e.g. Water Framework Directive, Birds and Habitats UE Directives, etc.), Espoo Convention and bilateral agreements between Romania and Bulgaria.

In this respect, please be so kind and transmit to us, at your earliest convenience, the EIA Report and the time schedule for the transboundary EIA procedure.

I am taking this opportunity to express our readiness to continue our fruitful cooperation and please accept, Ms. Minister, the assurance of my highest consideration and esteem.

Yours sincerely,

Attila KORODI

MINISTER