

National Context on Radioactive Waste Management in the Czech Republic



MINISTERSTVO
PRŮMYSLU A OBCHODU

Ing. Eduard Muřický
Deputy Minister
Ministry of Industry and Trade



State Energy Policy Targets

- ➔ Achieve a 40 % reduction in CO₂ emissions by 2030 in comparison with 1990 and a further reduction in emissions in compliance with EU strategies
- ➔ Increase energy savings in 2020 by 20 %
- ➔ Ratio of annual electricity production from domestic primary sources to the total gross amount of electricity generated in the Czech Republic of at least 80 %
- ➔ Diversified mix of primary sources



Nuclear Energy in the Czech Republic

Nuclear energy sources supply now over 33 % of all electricity produced from two nuclear power plants in Dukovany (4 reactors WWER 440) and Temelin (2 reactors WWER 1000)



Nuclear Power Plant in Temelin



Nuclear Power Plant in Dukovany



Nuclear Energy Targets

- ➔ In the long term, nuclear energy could provide in excess of 50 % of the amount of electricity generated, thus replacing a large proportion of the coal sources
- ➔ Within the time frame of the State energy policy is the construction of additional nuclear power units to produce around 20 TWh by 2035



Conditions for Sustainable Nuclear Fuel Cycle

- ➔ Optimum use of natural resources
- ➔ Nuclear waste minimisation
- ➔ Minimum impact on environment



Radioactive Waste Management Policy in the Czech Republic

- ➔ Radioactive Waste and Spent Nuclear Fuel Management Policy was approved by the Government of the Czech Republic on 15 May 2002, resolution No. 487 and newly taken into account by resolution No. 1061 of 15 December 2014, followed now by the SEA process
- ➔ Radioactive Waste Repository Authority (SURA) is responsible for the safe disposal of spent nuclear fuel radioactive waste
- ➔ Waste producers are responsible for the safe treatment of radioactive waste and storage of spent fuel assemblies
- ➔ The Policy represents a basic strategic document for the SURA long-term, three-year and annual plans of activities which are submitted annually to the Government for approval.



Basic Principles

- ➔ Compliance with national strategic aims and internationally recognised principles
- ➔ All the cost of radioactive waste management are borne by the producers and will not be passed on to the future generations
- ➔ Waste producers are obliged to restrict waste generation to a minimum level
- ➔ The public will be fully involved in repositories development process and will be invited to actively participate in this process



Basic Targets

- ➔ To determine and specify scientifically, ecologically, financially a socially acceptable technologies concerning radioactive waste management
- ➔ To maintain a system framework to aid the decision-making process at organizations responsible for radioactive waste management
- ➔ To communicate in an understandable manner information on the long-term solution of radioactive waste management to all the stakeholders
- ➔ To create a framework for the preparation of relevant reports as required by the IAEA Joint Convention and EC Directive 2011/70/Euratom



Current state of radioactive waste management

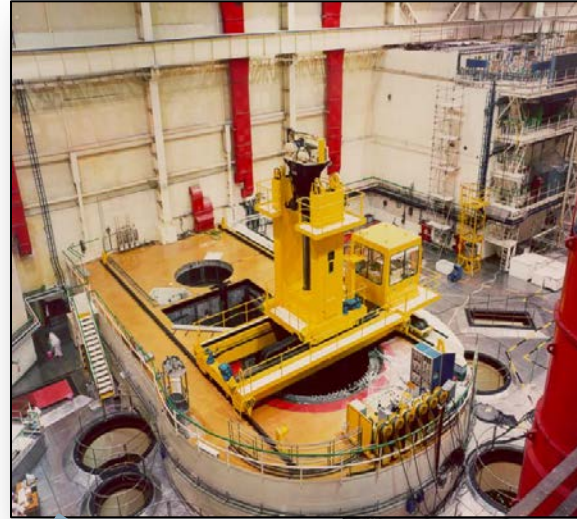
- ➔ Low level waste generated at NPPs are disposed of at near surface facility within Dukovany complex and low level waste from industrial, research and medical sectors is disposed at the underground repositories Richard and Bratrstvi.
- ➔ The operation of the all Czech repositories is managed by SÚRAO in compliance with the relevant licenses granted by SÚJB.
- ➔ Waste non-acceptable (intermediate and high level) to current repositories is safely stored



Surface repository in Dukovany

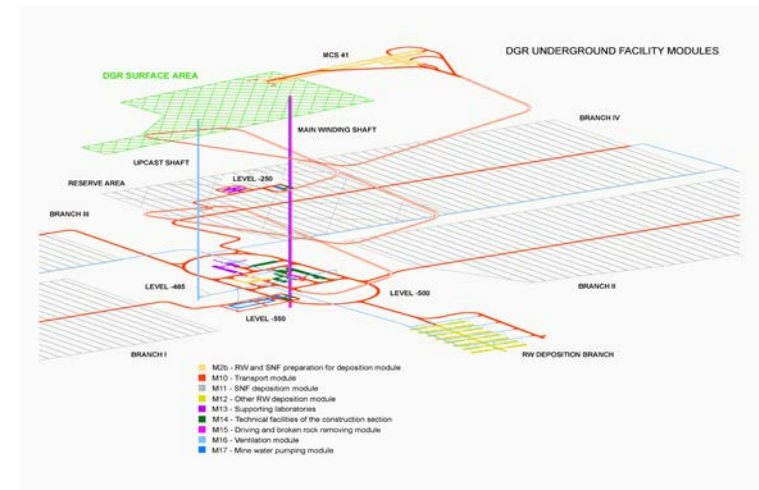
Current state of spent fuel management

- ➔ Spent fuel assemblies are safely stored in the proximity of the generation units and
- ➔ Subsequently transferred to a dry storage facilities where they are stored in specially-designed storage containers.
- ➔ It was proven that this technology can ensure safety over very long time.



Spent Fuel Disposal Strategy

➔ Basic Czech DGR disposal strategy is to dispose of spent fuel assemblies in granite host rock according to Swedish KBS3 concept, but with steel based canisters (approx. 6000 canisters with spent fuel assemblies)



Deep Geological Repository Siting Timetable

Selection of two candidate localities based on the preliminary characterisation of the localities, including the position of the communities concerned	2020
Selection of the final locality including the position of the communities concerned and submission of an application for land protection at the selected locality	2025
Commencement of the EIA procedure for the construction of an underground laboratory at the final locality	2026
Submission of an application for planning permission for the underground laboratory at the final locality	2028
Commencement of the EIA procedure for DGR construction	2035
Submission of documentation for DGR planning permission to all the institutions concerned including the SÚJB (safety report)	2040
Submission of documentation for building permission	2045
Deep geological repository construction (including the first disposal section) and the drafting of documentation for the commencement of operation	2050
Drafting of documentation for DGR operation authorisation, decision issuance	2063
Commencement of deep geological repository operation	2065



Public Approach in DGR Development

- ➔ The solution finally chosen must be acceptable for the communities in which the facilities are/ or will be located
- ➔ New law concerning deep geological repository siting is under preparation
- ➔ Decisions must be made in a transparent manner which allows the public to actively influence the process
- ➔ Financial Contributions for each community: CZK 600 000 per year for each community concerned CZK 0.30 for each square meter of community land defined as part of an investigation are CZK 4 million is the maximum amount which can be received by any community in one year



Research and Development Policy in Energy Field

- ➔ Research, development, innovation and education are fundamental factors in the competitiveness of the energy economy and critical factors for success
- ➔ National strategy for research and development in energy field (Government Decision No. 294/293) is to increase:
 - The efficiency of nuclear sources
 - Lifetime of nuclear sources
 - Safety of nuclear source, including the management of radioactive waste and spent nuclear fuel



Research and development priorities in radioactive waste management

- ➔ To provide basic scientific and technology information concerning the radioactive waste management
- ➔ To improve public awareness of radioactive waste issues aiming to support the acceptance of deep geological disposal concept
- ➔ To support development of new technologies focused on waste minimisation



Research and development priorities in development of deep geological repository

- ➔ To get understanding of the processes which may occur within the repository for period of hundreds of thousand years
- ➔ To prove safety of sites selected for location of the repository
- ➔ To develop best available technologies for disposal disposal of spent fuel assemblies and radioactive waste
- ➔ To provide education and training to maintain the continuity of the programme over very long time of repository development, operation and institutioanl control after closure



International Cooperation in Research and Development

- ➔ The promotion of international cooperation in applied research is highly important and is essential part of promotion of the economic interests of the Czech Republic
- ➔ Existing opportunities to participate in European projects and established platforms create the ability to apply approaches and experience from abroad
- ➔ The involvement of Czech research organisations in Joint Programming is therefore considered as a very important step towards successful radioactive waste management and sustainable maintaining and development of nuclear energy in the Czech Republic



Thank you for your attention



MINISTERSTVO
PRŮMYSLU A OBCHODU

Ing. Eduard Muřický
Deputy Minister
Ministry of Industry and Trade

