

**Austrian DRAFT  
of a Scoping List  
for a Comprehensive Environmental Impact Assessment  
of the Temelin Nuclear Power Plant**

**1. PROJECT DESCRIPTION**

**1.1. Basic Data**

- designation of the building
- nature/stage of the construction (complete section going through test run; section in the process of completion; about to be completed)
- location (district, municipality, listing of cadastral communities affected by the construction)
- applicant, developer, operator
- date for start and end of construction and its most important parts
- projected operating time
- basic data on closure, removal and post-operational management
- short description of technical and technological set-up (main characteristics of production process, capacity, number of employees)
- total capital expenditure
- listing of Czech municipalities potentially affected by effects of planned project
- listing of states potentially affected by effects of the planned project (normal operations, design basis accidents, decommission)
- listing of states potentially affected by possible accidents that go beyond design basis accidents
- traffic and transport infrastructure for construction and operation
- description of the schedule for planning, redesigning, and implementation of the project
- description of the procedure in consideration of administrative procedures accompanying implementation (concluded proceedings, pending proceedings, proceedings to be expected – authority, legal issues, parties, reference number of official notice)

## **1.2. Use of Resources**

### **Land/Soil**

- overall use of land/soil:
- temporary use: construction site requirements, etc.
- permanent use: agricultural land, forest areas, protected areas as defined by law, areas dedicated to special purposes (e.g. gas pipes)

### **Water**

- overall water use (m<sup>3</sup>/h; m<sup>3</sup>/a)
- water used for operation and during construction
- overall water use (m<sup>3</sup>/h; m<sup>3</sup>/a)
- description of sources of water (public water conduit, surface water sources, underground water sources) and water supply

### **Electrical Energy**

- consumption during construction and operation; sources of energy

### **Other sources of raw material and energy (esp. nuclear fuel)**

- nature of raw material/fuel; origin (self-owned sources, bought from the Czech Republic, imported)

### **Traffic and Transport**

- transport of raw materials to and from the site: means of transport, frequencies, infrastructure
- transport of employees to and from the site: means of transport, frequencies, infrastructure

## **1.3. Emissions (Normal Operations)**

### **Airborne Emissions**

For the following kinds of sources of emissions:

- point sources of emissions
- diffuse sources of emissions (e.g. storage of dust-generating substances such as building material, construction and groundwork, open pieces of ground, etc.)

- linear sources of emissions (traffic and transport),

the following parameters are to be given:

- technological processes causing pollution
- concentration and load of pollutants emitted t/y (mainly solid emissions, sulfur oxide, nitrogen oxide, carbon monoxide, heavy metals, hydrocarbons, hydrocarbon halogen derivatives, radio nuclides (characteristics, activity, toxicity) and other characteristic pollutants as well as vapor)
- nature of emission filtering (nature and effectiveness of stripper and filter systems, projected capacity, nature of disposal of stripped and filtered pollutants)
- description of waste air system of the nuclear power plant, including
- filter and delay loops
- average emissions to be expected and maximum emissions permitted, as well as
- data on the system's operability in case of an accident

### **Emissions to Water**

- overall amount of discharged waste water ( $m^3/a$ ), including: water evaporated during cooling; water conducted directly into the recipient (surface water); water discharged via waste-water treatment plant;
- technological processes causing waste water and specific pollution
- nature, projected capacity and effectiveness of waste-water treatment plants
- description of spent-fuel pits and nuclear retainers as well as data on operability of the system in case of an accident
- character of recipients (waters used for engineering, supply and distribution; category of pollution at the site of discharge)
- amount of pollution discharged (t/y, mg/l), average limits (particularly for biological oxygen demand ( $BOD_5$ ), chemical oxygen demand ( $COD_{cr}$ ), phosphorus, nitrogen, tritium, radio nuclides, biological and microbiological parameters, heat, etc.)

### **Waste**

- nature of waste (including hazard classification)
- technological processes causing waste

- nature of wastes in the various hazard categories (t/y)
- nature of treatment and disposal of wastes (incl. recycling, use of the energy potential, a.o.)

### **Noise, Vibration, Light**

#### **1.4. Description of the Physical Characteristics of the Overall Project and the most Significant Features of the Production Process**

A description of the entire plant about to start operating as compared to the originally planned WWER 1000 serial reactor, as well as:

- building plans and sections
- location of components
- technical description and data on nuclide stock of the new core
- data on high-density fuel rack

#### **1.5. Post-Operational Management, Decommissioning, Preservation of Evidence;**

## **2. ALTERNATIVE SOLUTIONS/REASONS FOR CHOICE**

Advantages and Disadvantages of the following **alternatives** to the planned project (start-up of blocks 1 & 2):

- decision not to construct/not to operate the power plant
- decision not to construct/not to operate the power plant and to substitute it with other sources of energy (gas and vapor units, renewable sources of energy, etc.)
- start-up of operation of block 1 only or block 2 only
- start-up of the planned project including alternatives of technical procedure

The alternatives were chosen under the following **aspects**:

- Energy production in the Czech Republic
  - projected consumption considering a potential increase of energy efficiency over the coming 30 years

- consideration of supply and demand options in the light of new conditions created by the opening of the electricity market
  - structure of energy sources
  - guarantee of energy supply, losses at energy distribution and optimizing of size and distribution of sources
  - evaluation of energy import and export options
- effects on global climate and the ozone layer
  - effects on waste disposal (with special consideration of the spent fuel elements and the decommissioning of the power plant following its shut-down)
  - evaluation of the effects on various goods deserving care and protection (esp. water, air)

### **3. POTENTIALLY ADVERSELY AFFECTED ENVIRONMENT**

A description of the environment of the area potentially adversely affected by normal operations and/or design basis accidents and decommission is to be given.

#### **Humans**

- structure of Settlements
- adjacent structures
- population figures and development
- health hazards significant in terms of human medicine occurring in the surroundings of the nuclear power plant (previous level of air pollution, radioactivity, sound)
- quality of drinking water
- zoning codes
- description of areas suitable for recreational purposes

#### **Animals and Plants**

- characterization of the biosphere concerned, including national and international protection zones
- types of plants and plant societies
- biotopes and biotic interdependence
- fauna (gamut of species and their interdependence, particularly rare and endangered species)
- forest (existing area and its condition)

#### **Soil**

- geology and Morphology
- structure and types of soil
- condition of the soil (contamination, compaction, erosion, etc.)
- use of the soil/ground

## **Water**

- overall hydrology and geohydrology
- surface waters affected
- water used for engineering purposes (supply and distribution)

## **Air and Climate**

- previous level of relevant pollution, heat, irradiation
- characterization of microclimatic situation
- wind, precipitation, humidity, temperature, inversion
- spreading of air pollutants and irradiation

## **Landscape**

- general landscape characterization
- significant features
- protection zones
- potential of the biosphere (nature protection, recreation, use of raw materials and soil)

## **Material Goods and Cultural Heritage**

- description of existing material and cultural goods (incl. archeological monuments)

# **4. POTENTIAL EFFECTS UPON THE ENVIRONMENT**

## **4.1. Construction and Operation**

**Description and assessment** of potential effects (direct, indirect, secondary, cumulative, synergetic, short-term, transitory, long-term, permanent) upon the environment on the basis of

- existence of plants
- use of natural resources
- emission of pollutants, causing of nuisance and disposal of wastes
- decommission of plants.

Especially the following **impacts** upon goods deserving care and protection are to be given:

## **Humans**

- number of inhabitants to be affected by the effects of the construction, activities, and technologies (during construction, normal operation of the nuclear power plant itself, the transport of fuel and waste, decommissioning of the plant after its closure, including transportation and storage of construction material as waste)
- effects upon human health (air pollutants, irradiation, noise, use of drinking water, smell, change of meteorological conditions)
- adverse effects upon other factors affected by the purpose, activity or technology of the building construction (attractiveness as residential, business or recreational area; real-estate prices, etc.)

- adverse effects upon the “well-being” of (permanent or temporary) residents in general

### **Animals and Plants**

- loss of habitat (incl. forest habitat) due to construction
- impacts on (terrestrial and aquatic) habitats (incl. forest) and on life communities owing to the operation (direct impact through air pollution, irradiation, water abstraction)

### **Soil**

- use of soil/ground
- changes in soil, changes through use, pollution
- changes in local topography, impacts on stability and erosion of soil
- impacts on the geomorphological situation as well as on non-renewable resources

### **Water**

- effects upon the hydrogeological situation (groundwater level, flow-through, abundance of sources of water, changes in hydrological partial catchment area, isolation of waters, flood drainage situation)
- effects upon surface and underground water ecology through pollution, change in the drainage and run-off situation, water abstraction
- adverse effects on existing use of water

### **Air and Climate**

- changes in the current pollution situation
- changes in macro- and microclimate

### **Landscape**

- impact of the project upon scenery, protection zones and biosphere potential

## **Material Goods and Cultural Heritage**

- effects upon integrity and use of material and cultural goods
- effects upon non-material cultural heritage (local customs and traditions, etc.)
- Mutual Effects and Interrelationships of the above Goods Deserving Care and Protection

## **Area Management**

- compatibility with existing (regional, national, international) acts of planning and zones of protection
- effects on the traffic and transport infrastructure of the area
- effects on settlement and supply infrastructure

## **Description of the system of radiation control inside and outside the nuclear power plant, containing:**

- the location of measuring devices, technical data of measuring system (methods, detection limits...) for emission control
- a definition of warning thresholds and measures
- the number and location of fixed measuring stations and points of sampling for pollution measurement (frequency and timing of discontinuous measurement and sampling)
- the system for documentation of environmental monitoring and public information on the results

## **4.2. Accidents**

Description of security risks during operation, at design basis accidents and accidents going beyond design basis as well as during the future decommissioning of the building, bearing in mind the following aspects:

- analysis of potential causes for accidents: provision of relevant studies and investigations, assumptions, methods, implications
- analysis of potential impacts of accidents upon the surrounding environment



The assumptions and results of the Probabilistic Safety Assessment (PSA), stage 1&2 are to be described, as well as:

- measures to modernize the nuclear power plant derived from the PSA
- the quantification of improvements achieved

Data on limiting design basis accidents as well as on methods of calculating strains on the environment:

- source term, energy released, process of release, level of release
- description of model on spreading of pollution
- parameters for calculating the spreading of pollution (meteorological data...)
- results of pollution calculation and dose

Analysis of the consequences of accidents transcending the design basis of the nuclear power plant, as far as precautionary protective measures have to be taken.

Particularly required are:

- a description of analyzed accidents and the probability of their occurrence
- source terms, energy released, process of release, level of release
- a description of the model on pollution spreading
- parameters for calculating the spreading (meteorological data...)
- results of the pollution calculation and dose
- studies on long-range transport of radio nuclides

The sources of relevant data, dates of studies, authors, assumptions for calculations, and methods are to be given. Studies should be made accessible within the process of the environmental impact assessment.

## **5. AVOIDANCE, DAMAGE CONTROL, AND COMPENSATION**

### **5.1. Measures for Construction and (Normal) Operation**

- description of measures to avoid, reduce or compensate to the extent possible significant adverse effects of the project on the environment in the process of construction, operation, or in case of an accident
- checking and monitoring during construction and operation

## **5.2. Accidents**

A detailed description of measures of protection in case of design basis accidents as well as accidents transcending the design basis, giving evidence of:

- the sequence of events and decision criteria, as well as
- information, criteria for action and plans for taking measures, to be provided to the local administration and government authorities.
- information to be provided to the authorities of neighboring countries, including a description of information channels and the time-delay to be expected
- description of all available systems to prevent accidents or limit their consequences
- accident, emergency and evacuation plans
- measures to deal with consequences
- compensation for ecological and economic losses and damage in case of an accident in or outside the country

## **6. NON-TECHNICAL SUMMARY**

### **7. DIFFICULTIES IN GATHERING AND PROVIDING INFORMATION**

### **8. USE AND PUBLIC ACCESSIBILITY OF LITERATURE**

### **9. DATA ON AUTHORS OF THE ENVIRONMENTAL IMPACT ASSESSMENT DOCUMENTATION (NAME, ORGANIZATION, QUALIFICATION, CONTACT ADDRESSES)**