Country Presentation-Bangladesh

Environmental Impact Assessment (EIA) in the Legal and Regulatory Framework for Nuclear Power Plant in Bangladesh

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Bangladesh Atomic Energy Commission

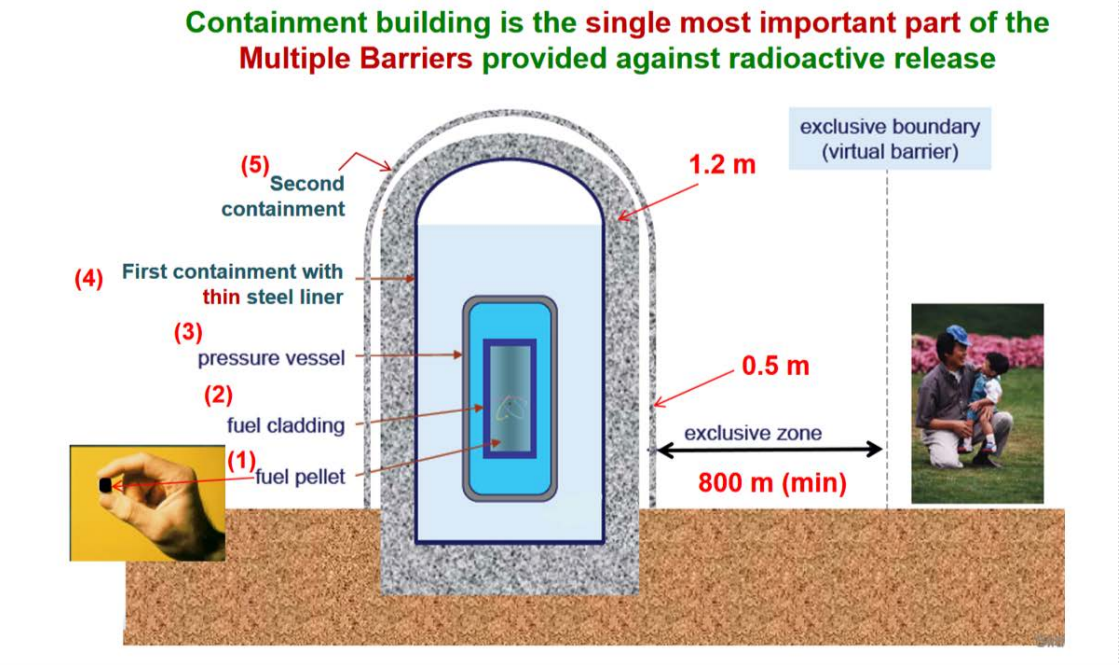
- **Owner, Operator and Licensee of Rooppur Nuclear Power Plant in Bangladesh**
- Established in 1973
- Largest Research Organization in Bangladesh in the field of Nuclear Science & Technology

Rooppur Nuclear Power Plant (RNPP) at a glance

Time bound action plan for the implementation of RNPP in Bangladesh

Activities	Unit 1	Unit 2
First concrete	30 November 2017	14 July 2018
Fuel loading	October 2022	October 2023
Power Start up	December 2022	December 2023
Provisional takeover	October 2023	October 2024
Final Take over	October 2024	October 2025

Five layers Safety System of RNPP Containment Building



Rooppur Nuclear Power Plant (RNPP)at a glance

Authorization for Rooppur Nuclear Power Plant (RNPP)

Authorization	Unit 1	Unit 2
Siting Licence	issued by Bangladesh Atomic Energy Regulatory Authority (BAERA) on 21 June 2016	
Design and Construction Licence	issued by BAERA on 2 November 2017	issued by BAERA on 8 July 2018

BAEC submitted EIA Report to BAERA for Siting Licence and also submitted to the Department of Environment (DoE) for Environment Clearance Certificate for RNPP

First Concrete Pouring Ceremony Inaugurated by Honorable PM Shiekh Hasina on 30 Nov 2017

Main Technical Features of Rooppur NPP

Features	Value
Number of Units	2
Basic Design	AES-2006(VVER-1200)
Reference Plant	Novovoronezh NPP-2
Seismic Impact Maximum Design Earthquake (MDE) Design Basis Earthquake (DBE)	 0.333g 0.172g
Aircraft Crash	up to 5.7 t falling at a velocity of 100m/s
Utilization factor	92%
Construction Period	Unit-1: 86 months after FCD Unit-2: 98 months after FCD

Features	Value
Service life: Power unit Reactor plant	 50 years 60 years
Thermal output (each unit)	3212 MW
Power unit capacity	Not less than 1150 MW (at water temperature equal to 28°C)
Period between re-fueling	12 months
Coolant pressure at the core outlet	16.2±0.3MPa
Coolant Temperature at the reactor inlet	298.2 °C
Coolant Temperature at the reactor outlet	328.6 °C

Bangladesh Atomic Energy Regulatory Authority

Bangladesh Atomic Energy Regulatory Authority

Established in 2013

Legal Basis

- Bangladesh Atomic Energy Regulatory Act, 2012
- Nuclear Safety and Radiation Control Rules-1997

What we regulate?

- Nuclear and Radiation facilities and radiation sources
- Radioactive waste management
- Transport of Radioactive materials
- Import & Export of radiation sources
- Physical Protection and Safeguards

How we regulate?

- Laws, Regulations, Codes, and Guides
- Authorization
- Inspection and enforcement

Major Achievements of BAERA in the establishment of 1st NPP in Bangladesh

- ❖ Issuance of Siting Licence of Rooppur Nuclear Power Plant (RNPP) on 21 June 2016; and
- ❖ Issuance of Design & Construction Licence of RNPP Unit 1 on 02 November 2017
- ❖ Issuance of Design & Construction Licence of RNPP Unit 2 on 08 July 2018

Design & Construction Licence Issuing Ceremony of Unit 2

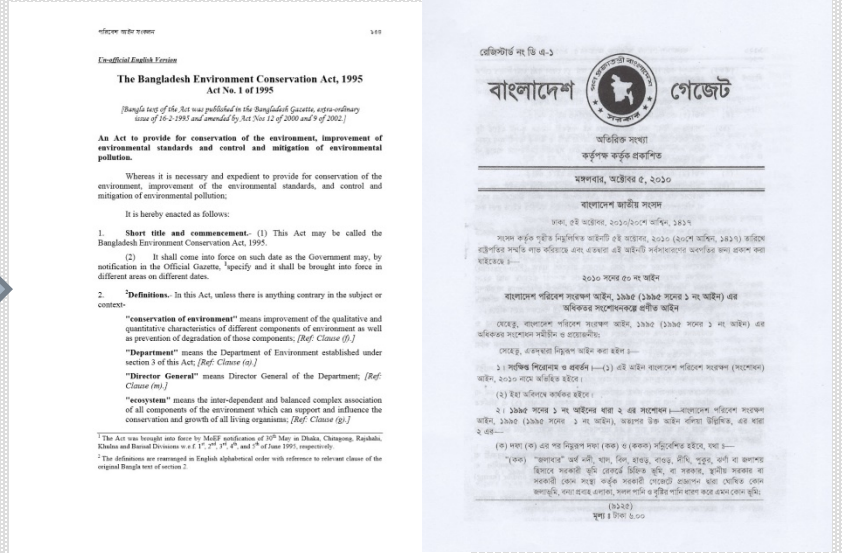
Legal and regulatory framework for Environmental Impact Assessment (EIA) of NPP

Legal & Regulatory Framework for EIA relevant to NPP

- **Act**: **The Bangladesh Environment Conservation Act, 1995** (Act No. 1 of 1995) which is Amended by Act 12 of 2000, and Act No. 9 of 2002 and finally Act No. 50 of 2010.

Objectives: An Act to provide for conservation of the environment, improvement of environmental standards and control and mitigation of environmental pollution.

Act

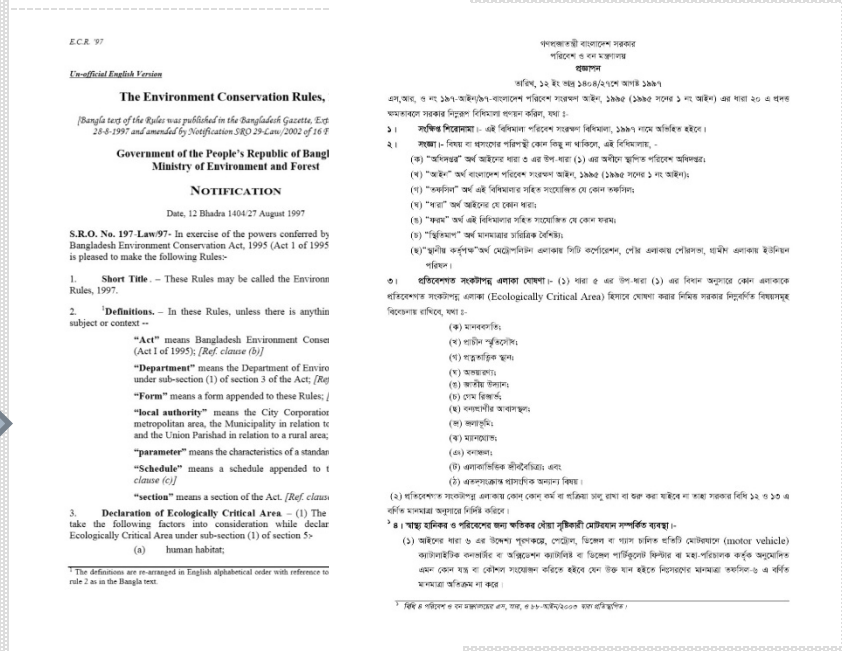


The Bangladesh Environment Conservation Act, 1995
Act No. 1 of 1995

বাংলাদেশ গেজেট

- **Rules**: **The Environment Conservation Rules, 1997** (SRO No. 197-Law/97), which is amended by notification SRO No. 29-Law/2002, SRO No. 234-Law/2002, SRO No. 88-Law/2003, SRO No. 220-Law/2005, SRO No. 117-Law/2008, SRO No. 355-Law/2010, and finally amended by SRO No. 349-Law/2017.

Rules



The Environment Conservation Rules,

NOTIFICATION

Bangladesh Environment Conservation Act

- **Department of Environment.-** (1) The Government shall, for carrying out the purposes of this Act, establish a Department to be called the Department of Environment and headed by a Director General**. [Section-3(1)]**
- **Environmental Clearance Certificate**.- **[Section-12 (1)] :** No industrial unit or project shall be established or undertaken without obtaining, in the manner prescribed by rules, an **Environmental Clearance Certificate** from the Director General.

In addition, Section 6 (4) of the amended Act (Act No. 50 of 2010) states that Environmental Impact Assessment Report, Environmental Management Plan, **public opinion**, **Public access to information** regarding these matters, formation of committee for clearance, terms of references, minimum regulatory requirement, and appeal etc. will be addressed in detail in the Regulations on Environmental clearance for the purpose of the Act.

Procedure for issuing Environmental Clearance Certificate

- For the purpose of issuance of Environmental Clearance Certificate, the industrial units and projects shall, in consideration of their site and impact on the environment, be classified into the following four categories:-
  - **(a) Green;**
  - **(b) Orange – A;**
  - **(c) Orange – B; and**
  - **(d) Red (e.g. 35. Nuclear Power)**

[rule 7. (1) of *E.C.R.* '97]

- For industrial units and projects falling in the Orange – A, Orange – B and Red categories, firstly a **Location Clearance Certificate** and thereafter an **Environmental Clearance Certificate** shall be issued;

Provided that the Director General may, without issuing a Location Clearance Certificate at the first instance, **directly issue Environmental Clearance Certificate** if he, on the application of an industrial unit or project, considers it appropriate to issue such certificate to the industrial unit or project.

[rule 7.(4) of *E.C.R.* '97]

Procedure for issuing Environmental Clearance Certificate Cont'd…

According to the Rule 7.(6)(d) of *E.C.R.* '97 the following documents shall be attached with the application for Environment Clearance Certificate:

i. report on the feasibility of the industrial unit or project

ii. report on the Initial Environmental Examination (IEE) relating to the industrial unit or project, and also the **terms of reference** for the **Environmental Impact Assessment** of the unit or the project and its Process Flow Diagram; or

Environmental Impact Assessment report prepared on the basis of terms of reference previously approved by the Department of Environment, along with the Layout Plan (showing location of Effluent Treatment Plant), Process Flow Diagram, design and time schedule of the Effluent Treatment Plant of the unit or project, (these are applicable only for a proposed industrial unit or project)

Procedure for issuing Environmental Clearance Certificate Cont'd…

iii. report on the Environmental Management Plan (EMP) for the industrial unit or project, and also the Process Flow Diagram, Layout Plan (showing location of Effluent Treatment Plant), design and information about the effectiveness of the Effluent Treatment Plan of the unit or project (these are applicable only for an existing industrial unit or project);

iv. no objection certificate of the local authority;

v. emergency plan relating adverse environmental impact and plan for mitigation of the effect of pollution;

vi. outline of relocation, rehabilitation plan (where applicable); and

vii. other necessary information (where applicable)

BAERA Requirements for NPP relevant to Environmental Impact Assessment

Responsibilities of BAERA according to BAER Act, 2012

For carrying out the purposes of this Act, the Authority shall:

- communicate and to co-ordinate with various government or non-government bodies having competence in the area of health and safety, **environmental protection**, security and transport of dangerous goods [Article 11(21)]

- determine the limits of radioactivity in soil, water and air or any type of food used for human beings and animals or used otherwise [Article 11(12)]

BAERA Requirements Cont'd…….

Responsibilities of licensee for obtaining NPP Siting Licence:

- According to Rule 17.3 (2) of NSRC Rules, 1997, a **safety analysis report** prepared in pursuant to rule 17.3 (a) (1) shall have to be submitted to the authority (BAERA)

- According to rule 44.(1) (g) of NSRC Rules, 1997, **safety analysis report** shall contain the factors which may accelerate a substantial release of any radioactive material and measures available to prevent or control such a release , and the maximum activity of any radioactive material which, in the event of a major failure of the containment, may be released to the atmosphere.

It is noted that **BAERA issued Siting Licence** on the basis of **review of EIA report, Feasibility Evaluation Report, Engineering Survey Report** and other necessary relevant documents.

BAERA Requirements Cont'd……..

- **For Siting**, the following subjects shall have to be taken into consideration:-
  - The factors which affect exposure or potential exposure of radiation workers, other employees and members of the public and for a source constituting a large inventory of radioactive materials and **having the potential for large release into the environmen**t, the **site selection** shall take into account relevant features (e. g**. environmental features** and **local population**) that might affect the radiation safety of the source, or **be affected by the source**, and the feasibility of carrying out emergency plans. [NSRC Rule 17.3.(a) (1) (a)]

- **Operational Requirement**: The licensee shall ensure that-

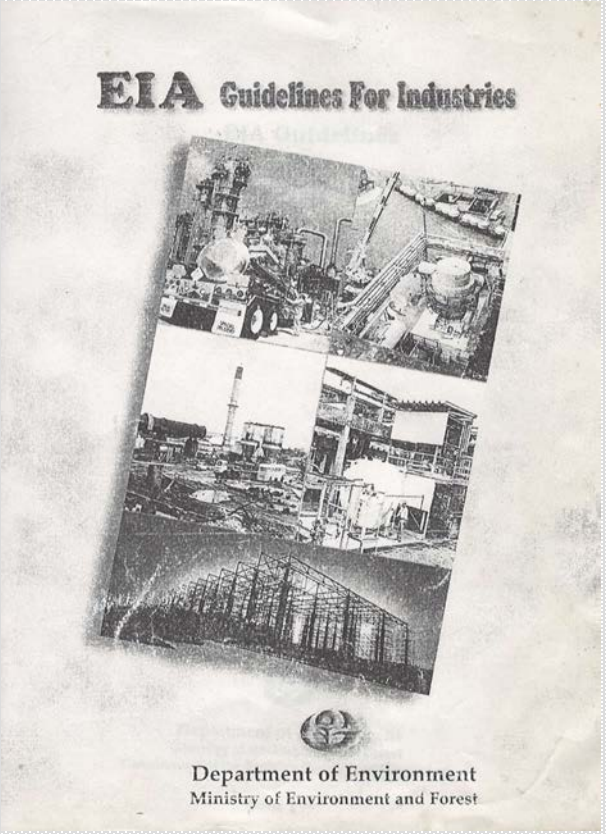
The likely consequence of any potential exposure, its magnitude and probability of occurrence, and the number of person who may be affected by it are assessed. [Rule 55(d)]

EIA Guidelines for Industries

EIA Guidelines for Industries

EIA Guidelines for Industries was published by the Department of Environment in June 1997, which includes detail guidelines on:

- EIA Procedures
- Screening of Industrial Projects
- Application of Environmental Clearance
- Review of EIA Report
- Methodology for the EIA Process
- Criteria for Locating Industrial Plants
- Initial Environmental Examination(IEE)
- Environmental Impact Assessment (EIA):
  - Baseline Studies,
  - Impact Identification,
  - Impact Prediction,
  - Evaluation,
  - Mitigation measures,
  - EMP,
  - Post-Project Monitoring Plan,
  - Special Studies,
  - Documentation and Communication
  - **Public Participation**
  - Structure of an EIA Report



EIA Guidelines for Industries Cont'd....

Public Participation

Since the general public is the ultimate recipient of the economic benefits and environmental damages, an **EIA study should involve the public** as part of the **decision- making process development**.

According to **EIA Guidelines** the **following techniques** could be adopted for **Public Participation**:

▪ Radio and television	▪ Workshops
▪ News releases	▪ Public meetings
▪ News letters	▪ Public hearings
▪ Advertisements	▪ Information van, and
▪ Sample polls	▪ Citizens advisory committee
▪ Lobbying	

EIA Report for Rooppur Nuclear Power Plant

Department of Environment (DoE) Approved the EIA Report for RNPP on 26 Nov 2017.

The following features have been discussed in detail in the EIA Report for Rooppur Nuclear Power Plants:

- Legal & Legislative Framework
- Specification
- Project Description
- Analysis of Suitability of the Land Cover/Land Use
- Description of the Environment
- Environmental Impacts
- Evaluation of Environmental Impacts
- Environmental Mitigation
- Environmental Protection Measures
- Risk Assessment
- Environmental Monitoring Plan
- Work Plan
- Consultation /Provision of the Information to the Population

Conclusion

- Russian vendor Atomstroyexport (JSC ASE EC) prepared the Environmental Impact Assessment Report of Roopur Nuclear Power Plant (RNPP) on behalf of Bangladesh Atomic Energy Commission according to Acts, Rules and Regulations of Russia and Bangladesh, as well as following IAEA and other applicable international codes and standards

- Department of Environment approved the EIA Report for the construction of Rooppur Nuclear Power Plant in Bangladesh

References:

- The Bangladesh Environment Conservation Act, 1995
- The Environment Conservation Rules, 1997
- Bangladesh Atomic Energy Regulatory Act, 2012
- Nuclear Safety and Radiation Control Rules, 1997
- www.rooppurnpp.gov.bd
- http://www.doe.gov.bd
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- http://doe.portal.gov.bd/sites/default/files/files/doe.portal.gov.bd/page/5a9d6a31_d858_4001_b844_817a27d079f5/ECR%201997.pdf

Thank you