HUMAN RESOURCE DEVELOPMENT FOR NPP PROJECT IN BANGLADESH

MOHAMMAD SHAWKAT AKBAR
BANGLADESH ATOMIC ENERGY COMMISSION
CONTENTS

1. Present Status of Nuclear Power Program of Bangladesh

2. Proposed Action Plan for Implementation of Rooppur Nuclear Power Project (RNPP) of Bangladesh

3. HRD Programme for RNPP

4. Summary
TODAY, Nuclear Power has become an inevitable energy option to meet the increasing demand of electricity.

To achieve the projected target of 20,000 MW electricity by 2021 as declared in the Vision – 2021 of the present Government of Bangladesh, the Government is committed to implement RNPP with two units.

Decision of immediate implementation on NPP was taken by the National Parliament in 2010.
BASICALLY, Nuclear power was identified as a viable proposition for Bangladesh as early as 1960's;  

The Rooppur Nuclear Power Project (RNPP) site was selected in 1963;  

A number of feasibility studies were conducted, each of which established that the project is technically, financially and economically feasible;
ISSUES AND CHALLENGES FOR INTRODUCTION RNPP

- A nuclear programme is a major undertaking – careful planning, preparation and investment
- Preparation of an appropriate national infrastructure for introduction of nuclear power program includes a wide range of technical competencies, institutions and activities
- Of course, it cannot be expected that in the arena of NPP, a newcomer developing country, like Bangladesh should have all required infrastructure, professionals and expertise at the stage of Pre-Project activities (Phase-I)

In this context, IAEA, International Bodies and the Vendor(s) play significant role at different phases of the programme of a newcomer
A road map to implement RNPP has been formulated in line with the Comprehensive Approach of Infrastructure Development of the IAEA.

A Stepwise Implementation Cycle for RNPP has been established.
## ROADMAP FOR RNPP

<table>
<thead>
<tr>
<th>STEP 1 (a)</th>
<th>STEP 1(b)</th>
<th>STEP 1(c)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Justification of NPP</td>
<td>Feasibility Study on Introduction of NPP</td>
<td>Formulation of Nuclear Power Action Plan</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STEP 2(c)</th>
<th>STEP 2(b)</th>
<th>STEP 2(a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conclusion of agreement(s)/Contract(s) with Vendor</td>
<td>Bidding/Bilateral Agreement</td>
<td>Accomplishment of activities for introduction of NPP</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STEP 3 (a)</th>
<th>STEP 3 (b)</th>
<th>STEP 3 (c)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Designing the Plant</td>
<td>RNPP Construction</td>
<td>Commercial Operation</td>
</tr>
</tbody>
</table>

**Notes:**
- **STEP 1:** Completed
- **STEP 2:** Ongoing
- **STEP 3:** Planning Stage
Activities to implement first NPP, the RNPP

Preparatory work for construction of a RNPP after a policy decision has been taken

Activities to implement first NPP, the RNPP

Maintenance and continuous infrastructure improvement

MILESTONE 0
Ready to include nuclear as realistic national energy strategy option

MILESTONE 1
Ready to make commitment to a nuclear

MILESTONE 2
Ready to invite bids for the first NPP

MILESTONE 3
Ready to commission and operate first NPP

Readiness to include nuclear as a national energy strategy option since 1960s

Pre-Project activities after Agency Mission

Preparatory work for construction of a RNPP after a policy decision has been taken

RNPP Project Timeline (proposed according to Vision 2021 and Sixth Five Year Planning of Bangladesh)
Establishment of the RNPP Implementation Process
Establishing national infrastructure focusing on 19 issues dealing with Milestone 1 and 2 of the IAEA Milestone document;
Finalization of Site Safety Report RNPP; designing/determining Site Specific Engineering parameters and Preparation of EIA Report;
Finalizing RNPP implementation scenario
Workforce Planning and finalization the modality of staff training and education required for RNPP
Establishment of an independent Regulatory Body;
Elaboration of recommendations on the power grid development aimed at its adaptation for connection of nuclear power reactor (two units) by 2017 and 2018
• Concluding all required contracts/agreements with vendor;
• Site Engineering, Site preparation and Facilities design;
• Development of working documents and NPP design; Manufacture and supply of equipment and materials to site;
• Training of the personnel and experts for construction and operation of RNPP;
• Construction work of 1st and 2nd unit of RNPP;
• Engineering Support for Installation and startup of reactor;
• RNPP Commissioning; Engineering Support for guarantee operation;
• Construction of the town site and administrative facilities
Finalization of Site Characteristics Study; Preparation of Site related Engineering Data, Preparation of ER Report 2009 -2012

Signing of Essential Agreements/Contracts 2011 - 2012

Approval of Siting and Construction licenses and arrangement of Staff Training for RNPP 2012

Construction, commissioning and test operation and acceptance of the plant (1st and 2nd Unit) 2012 - 2019

Commercial operation of Rooppur Nuclear Power Plant 2019-2020
<table>
<thead>
<tr>
<th>RNPP Sub-Committee 1:</th>
<th>Legal and Regulatory Aspects as well as International Obligations</th>
</tr>
</thead>
<tbody>
<tr>
<td>RNPP Sub-Committee 2:</td>
<td>Project Management/Ownership /Institutional Framework</td>
</tr>
<tr>
<td>RNPP Sub-Committee 3:</td>
<td>Nuclear Fuel Cycle, Management of Radioactive Wastes, Decommissioning and Environmental Monitoring</td>
</tr>
<tr>
<td><strong>RNPP SUB-COMMITTEE 4:</strong></td>
<td><strong>HUMAN RESOURCES DEVELOPMENT</strong></td>
</tr>
<tr>
<td>RNPP Sub-Committee 5:</td>
<td>Funding, Financing and Procurement</td>
</tr>
<tr>
<td>RNPP Sub-Committee 6:</td>
<td>Grid System Development</td>
</tr>
<tr>
<td>RNPP Sub-Committee 7:</td>
<td>National Participation</td>
</tr>
</tbody>
</table>
WORKING SUB-GROUPS ON RNPP CONSISTING OF RELEVANT STAKEHOLDERS

The Govt. of Bangladesh formed 08 (eight) committees with members of different Ministries/Departments/Academic Institutions to assess the entire range of nuclear infrastructure, establish recommendations focusing on the 19 issues dealing with the Milestones 1 and 2 of the IAEA Milestone document and take necessary steps for development of national nuclear infrastructure

1. Legal and Regulatory Aspects as well as International Obligations

(1) Ministry of Science and ICT; (2) Ministry of Law, Justice and Parliamentary Affairs; (3) Ministry of Foreign Affairs; (4) Ministry of Environment and Forest, (5) Bangladesh Atomic Energy Commission and (6) Others

2. Ownership, Project execution and Project Management

(1) Ministry of Science and ICT; (2) Ministry of Law, Justice and Parliamentary Affairs; (3) Ministry of Finance; (4) Ministry of Establishment; (5) Planning Commission; (6) Ministry of Foreign Affairs; (7) Bangladesh Atomic Energy Commission and (8) Others
WORKING SUB-GROUPS ON RNPP CONSISTING OF RELEVANT STAKEHOLDERS

3. DEVELOPMENT OF HUMAN RESOURCES

(1) Ministry of Science and ICT; (2) Ministry of Education; (3) Ministry of Foreign Affairs; (4) Bangladesh Atomic Energy Commission and (6) Others

4. Funding and Financing

(1) Ministry of Science and ICT; (2) Ministry of Finance; (3) Economic Relations Division; (4) Ministry of Foreign Affairs; (5) Bangladesh Atomic Energy Commission and (6) Others

5. National Participation

WORKING SUB-GROUPS ON RNPP CONSISTING OF RELEVANT STAKEHOLDERS


(1) Ministry of Science and ICT; (2) Ministry of Law, Justice and Parliamentary Affairs; (3) Ministry of Foreign Affairs; (4) Ministry of Environment and Forest; and (6) Bangladesh Atomic Energy Commission.

7. Grid System

(1) Ministry of Science and ICT; (2) BPDB, Power Cell, BPGB (3) Power Division, Ministry of Energy and Mineral Resources; (4) Planning Commission and (6) Bangladesh Atomic Energy Commission;

8. Heavy Equipment Transportation Planning

(1) Ministry of Science and ICT; (2) Ministry of Communication; (3) Ministry of Shipping; (4) Bangladesh Inland Water Transport Authority (BIWTA); (5) Chittagong Port Authority/Mongla Port Authority and (6) Bangladesh Atomic Energy Commission
ESTABLISHING RNPP DECISION MAKING PROCESS IN GOVT.

WORKING GROUP ON RNPP

The Working Group headed by the Secretary, Ministry of Science and ICT has been formed to take initiatives to accomplish all necessary activities for implementation of RNPP; coordinate to all responsible organizations and ministries and identification the areas of cooperation from supplier sources.

TECHNICAL COMMITTEE ON RNPP

A Technical Committee headed by the hon’ble State Minister, Ministry of Science and ICT has been formed. Secretaries of relevant Ministries; Chairman and Members of BAEC; experts of BAEC and Academic Institutions are the members of this Committee.

The Technical Committee is responsible to monitor the progress of the project activities, take initiatives for HRD, selection of technology, making liaison with vendor and prepare RNPP implementation guidelines for consideration of the Cabinet Committee on RNPP.
A Cabinet Committee on RNPP Headed by Hon’ble Prime Minister has been formed. Hon’ble Ministers and Secretaries of the relevant ministries, Chairman, BAEC and selected scientists by the Prime Minster are the Members of the Committee.

The Cabinet Committee is responsible to provide guidelines and directions on ownership, Project execution, Funding mechanism, conclusion agreements/Contracts with vendor, formation of Independent Nuclear Regulatory Body
BAEC has a good number of professionals in various branches of nuclear technology.

The Core Manpower for pre-implementation phase of the Rooppur Nuclear Power project is available in BAEC.

Fresh professionals are to be appointed soon. Fresh professionals for RNPP will be available from the General Universities, Universities of Engineering and Technology and Technical Institutions during implementation phase from annual output.
Human Resource Development

Human Resource Development should include:

(a) Bulk manpower needs,
(b) Breakdown by knowledge, skills and discipline,
(c) Flow of manpower to other projects,
(d) Available human resources in key stakeholder organizations,
(e) Human resources nationally developed,
(f) External human resources,
(g) Training,
(h) Expected support from a vendor country
Before contract  Phase I

IAEA PLAYS A MORE RELEVANT ROLE

Bangladesh desires cooperation of IAEA and other International bodies during all the implementation phases of the RNPP

MOU + After contract  Phase II and Phase III

VENDOR PLAYS A MORE RELEVANT ROLE

Bangladesh is looking for a vendor who will show vision and cooperate in implementation of HRD programme for safe and secured operation of RNPP
SOURCES OF HRD FOR RNPP

- R&D Organizations/Universities
- Bangladesh Government
- IAEA/Other International Bodies
- BAEC/MOSICT

Agreement With Supplier

Vendor
HRD for NPP Projects of Bangladesh: Vendor Source

**RNPP-Oriented Human Resources**

- Project promoting and implementing manpower (professionals, technicians for technical description, design aspects, QA/QC, construction)
- Operation & Maintenance (O&M), Maintenance Support and Management Manpower (professionals, technicians)

**NPP-Program Oriented Human Resource**

- Education, Research and development in nuclear science and technology professional
- Nuclear Law and regulation professionals
Russian Federation and the People’s Republic of Bangladesh in principle, has agreed to Cooperate in implementing RNPP

A bilateral agreement on the co-operation in the field of peaceful usage of atomic energy was signed on 21 May, 2010 between Bangladesh and the Russian Federation

An Intergovernmental Agreement between two governments on Cooperation Concerning the Construction of a Nuclear Power Plant was initialed on 24 February, 2011
A general approach of recruiting manpower for RNPP year by year during different milestones has been proposed on the basis of the following issues:

Different work functions,

Qualification of manpower and

Experience and Training requirements for different work function categories
Bangladesh Atomic Energy Commission/Ministry of Science and ICT, GOB has identified total 1635 personnel for the RNPP (2xunit) to perform different work functions.

In addition, 75 personnel have been identified for the Project Management Team.
Main philosophy for recruitment of manpower: the personnel who require more training will be recruited earlier

- By 2012, all the manpower needed for the Project management will be recruited.

- From 2013 – 2014 the manpower needed for operation and maintenance, QA/QC Modifications Engineering of Unit-1 of RNPP will be recruited.

- In the year 2014 the priority of recruitment will depend on personnel working Operation Support, Maintenance Support and management of Unit 1.

- During 2015-2016 priority of recruitment will be placed on personnel working in Operations, Operation Support, QA/QC Modifications Engineering, Maintenance, Maintenance Support of Unit 2.
RNPP MANPOWER RECRUITMENT PHASING

![Graph showing the recruitment phasing for RNPP manpower from 2008 to 2022.](image-url)
RNPP MANPOWER PHASING

- **Site Study, Preparation for Agreement with Vendor**
- **Design, Construction & Commissioning**

**MS 1**

**MS 2**

**MS 3**

Commissioning Unit-1

Commissioning Unit-2

The IAEA and the Vendor can play a vital role in the development of human resources of a newcomer country to NPP

As a newcomer, Bangladesh desires support and cooperation from the IAEA and International bodies as well as the vendor country in implementation of nuclear power programme of Bangladesh

Bangladesh expects assurance for training of personnel and experts for construction and operation of RNPP from the vendor sources

As a vendor country, the Russian Federation may cooperate Bangladesh in finalizing the training plan and training session schedule for RNPP
Russian Federation may cooperate in developing human resources required for RNPP through implementing comprehensive multileveled staff-training programme in Russian Federation.

The Russian Federation may also cooperate Bangladesh in developing a comprehensive programme of nuclear education for the Regulatory Body, academic institution, RNPP and other relevant stakeholders.
Thank you very much for your kind attention...

Shawkat_nped@yahoo.com