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Human Resource Development for Nuclear Power of Vietnam

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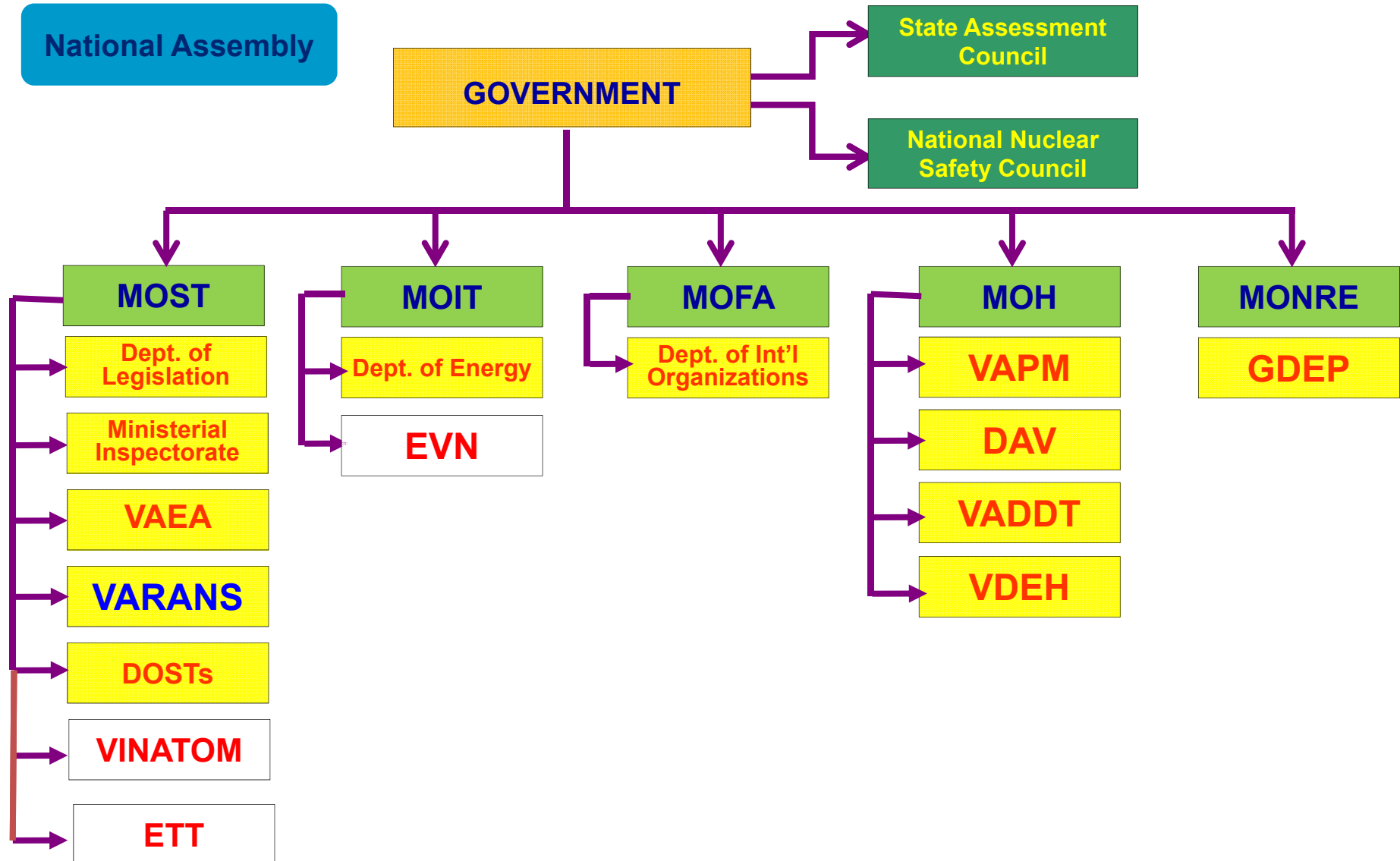
CONTENTS

1. Introduction
2. Current Status of Human Resources for Nuclear Power Program
3. Human Resources Needs for Nuclear Power Program up to 2020
4. Main Measures to Satisfy Human Resources Needs
5. Implementation Plan

I. INTRODUCTION

- Resolution No. 41/2009/NQ-QH12 by the National Assembly on the Investment Policy of the Ninh Thuan Nuclear Power Project, 2009.
- Decision No. 1558/QD-TTg of the Prime Minister, approving the National Scheme for Training and Development of Human Resource in the field of Atomic Energy, 2010 .
- Decision No. 940/QD-TTg of the Prime Minister, establishing the National Steering Committee on Human Resource Development in the field of Atomic Energy, 2011 .

I. INTRODUCTION



I. INTRODUCTION

- In 2012, MOST conducted a survey on the current status and further needs of human resources development in the field of atomic energy .
 - Collecting information of existing staff with undergraduate and postgraduate degree of each related organization;
 - Forecasting manpower needs and training needs of each related organization.
- MOST reported the results to National Steering Committee, and sent a report to MOET for drafting the master implementation plan of Scheme 1558.

II. Current Status of Human Resources for Nuclear Power Program

1. MOST

- In the field of atomic energy: 590 people of undergraduate and postgraduate degree.

(VAEA: 27, VARANS: 78, VINATOM: 485);

- Nuclear power workforce: estimated at about only 195 staff working in specialties/jobs that serving directly for the development of nuclear power

(VAEA: 21, VARANS : 55, VINATOM: 119).

2. EVN

- 105 personnel, mainly from Ninh Thuan Nuclear Power Projects Management Board (EVNNPB):
- Only 7 personnel specialized in nuclear reactor technology, safety and nuclear power installations.

II. Current Status of Human Resources for Nuclear Power Program

3. VIETNAM

- Current nuclear power workforce: 300 personnel
(204 BSc/Engineers, 77 Masters and 19 PhDs).
- Only about 100 people specialized in nuclear reactor technology, safety and nuclear power installations, mainly from MOST.

II. Current Status of Human Resources for Nuclear Power Program

Organization	Current nuclear power workforce (2012)			
	Bsc/Engineer	Master	PhD	Total
MOST	134	47	14	195
VAEA	17	3	1	21
VARANS	30	21	4	55
VINATOM	87	23	9	119
EVN	70	30	5	105
Total	204	77	19	300

III. Human Resources Needs for Nuclear Power Program Forecast up to 2020

1. MOST

- 2015:

- 1000 personnel in the field of atomic energy, including:
VAEA: 50, VARANS: 200 and VINATOM: 750.
- Nuclear power workforce: 500 personnel, including:
VAEA : 40, VARANS: 160, VINATOM: 300.

- 2020:

- 1900 personnel in the field of atomic energy: VAEA: 90, VARANS: 310, VINATOM: 1250 and NSTC: 250.
- Nuclear power workforce: 800 personnel: VAEA: 70, VARANS: 280, VINATOM: 400 and NSTC: 50.

III. Human Resources Needs for Nuclear Power Program Forecast up to 2020

2. EVN

- 2015:

- 305 staff, including 199 BSc/Engineers, 97 Masters, 9 PhDs, mainly from EVNNPB.

- 2020:

- About 2700 staff: 1270 BSc/Engineers, 120 Masters, 10 PhDs, 900 technicians and 400 workers.

- EVNNPB: about 400 staff during the peak period of construction (180 people will then work for NPPs).

- Design and Inspection Consultant: about 300-400 staff from electrical design consultant companies.

III. Human Resources Needs for Nuclear Power Program Forecast up to 2020

3. Need for Training

- MOST

- 2013 – 2015: about 1000 man*course;
- 2015 – 2020: about 1700 man*course.

- EVN

- 2013 – 2015: about 2200 man*course, (1980 for <3 months training courses, 200 for 3-6 months training courses, 20 for 6-12 months training courses).
- 2015 – 2020: about 3000 man*course (2660 for <3 months training courses, 260 for 3-6 months training courses, 80 for 6-12 months training courses).

IV. Main Measures to Satisfy Human Resources Needs

1. Policy , staffing and recruitment

- Policy and mechanism that encourage and attract young people to pursue careers in the nuclear energy field has been issued;
- There should be a persistent effective communication with the public contributing to attract people to study and pursue their careers in the field of nuclear power;
- Relevant organizations need to be provided necessary personnel to fulfill their functions. They should be staffed simultaneously and adequately in number, specialty and qualification, and in a timely manner consistent with nuclear power program's requirements.

IV. Main Measures to Satisfy Human Resources Needs

2. Domestic education and training

- Implement undergraduate and postgraduate nuclear engineering program in domestic universities;
- Extensive research and educational collaborations between the domestic educational institutions, the laboratories of R&D organization and partners in several other countries, including Japan, Russia, etc.;
- Permanent and obligated training courses to enhance competence of staff;
- A system of collaboration among educational institutions and recruitment organizations for hiring and curriculum development.

IV. Main Measures to Satisfy Human Resources Needs

3. Overseas education and training

- Priority: send trainees to countries with advanced nuclear power industry to take undergraduate or postgraduate program in specialties directly related to reactor and nuclear power .
- Focus on sending staff abroad for training in particularly specialized areas that Vietnam lacks qualified teacher, training supporting facilities and curriculum such as reactor safety analysis, nuclear fuel technology, etc.

V. Implementation plan

1. Responsibility for HRD

- Ministry of Education and Training (MOET):
 - Drafts a master implementation plan the Scheme 1558 and develops detailed plan for each year;
 - Implements undergraduate and postgraduate education plan for relevant organizations;
 - Implements investment project on enhancing facilities for domestic educational institution;
 - Develops the incentives and supporting policy for people to be sent for training, and for people teaching in the field of atomic energy .

V. Implementation plan

1. Responsibility for HRD

- MOST :
 - Assesses human resource needs of all relevant organizations;
 - Determines principles and resources of domestic and overseas education and training ;
 - Implements the training plan specialists for R&D institutions and human resources for state management agency, nuclear regulation body .

V. Implementation plan

1. Responsibility for HRD

- EVN:
 - Implements its “Project on Training human resources for Nuclear power plants project at Ninh Thuan Province” (approved at Decision No. 584/QD-TTg dated 11/4/2013);
 - Assesses technician and workers needs for the construction and operation of NPPs.
- Ministry of Home Affairs (MoHA):
 - Develops the professional incentives regulations for people working in the field of atomic energy ;
 - Develops the plan on necessary personnel supplement for relevant organizations consistent with theirs needs of nuclear workforce.

V. Implementation plan

2. MOET

a) Domestic education:

- Upgrades the current nuclear physics curriculum in domestic universities to meet higher standard;
- Implements undergraduate and postgraduate nuclear engineering programs in 6 domestic universities and 1 training center under VINATOM.
- Implements a train-the-trainer program and recruits domestic and international experts to prepare teachers for 6 domestic universities;
- Focus on 5 years nuclear engineering bachelor program and 2 years master program at HUST; on 2 years nuclear engineering master program at Dalat University in cooperation with Nuclear Research Institute;
- Promotes the use of Dalat research reactor and current training facilities .

V. Implementation plan

Vietnam National Scheme for Human Resource Development

- Nuclear physics and radiation application
Hanoi University of Science
- Nuclear physics and radioactive waste management
HCMC University of Science
- Nuclear power plant Equipment and Install
Danang University of Science and Technology
- Nuclear engineering and nuclear reactor technology
Hanoi University of Science and Technology
- Control and Automation of nuclear power plants
Electric Power university
- Basic training on nuclear physics; Nuclear engineering
Dalat University
- Nuclear power plant operators
Nuclear Training Centre

V. Implementation plan

2. MOET

b) Overseas education

- Implements the overseas education plan in the field of nuclear energy for relevant organizations through agreements with international partners.
- From early 2013 up to now: 70 students sent to Russia university .
- Total number of students in “Equipment and installation of nuclear power plants” at Russia: 230 people

V. Implementation plan

3. EVN

EVN implements its “Project on training human resources for Nuclear power plants project at Ninh Thuan Province”.

a) Domestic education

– During 2013 – 2016:

- 182 students attend 4-5 years course on nuclear power, nuclear physics, nuclear engineering and chemical engineering (46 students each year);

- 320 students attend 4-5 years course on automatic and control engineering, electrical, mechatronics and mechanical engineering, information technology and others.

– During 2013 – 2017: 922 students attend 3 years technician course at Electric Power College of Ho Chi Minh City and Electric Power College of Central Region.

V. Implementation plan

3. EVN

b) Overseas education

– For Ninh Thuan 1 NPP: During 2013 – 2015, at Russia

- 130 students to MEPHI or other universities during to attend 7 year courses on nuclear power;
- 24 students to attend 7 year courses on chemical;
- 3 students to attend 2 year master courses on nuclear power;
- 3 students to attend 3 year PhD courses on nuclear power.

– For Ninh Thuan 2 NPP: at Japan

- During 2013 – 2017 : 100 students to attend 5 year courses on nuclear power;
- During 2016 – 2018 : 3 students to attend 2 year master courses on nuclear power; 3 students to attend 3 year PhD courses on nuclear power.

V. Implementation plan

4. MOST

Within the Scheme 1558, MOST implements the training plan for specialists for R&D institutions and human resources for state management agency and nuclear regulation body .

a) Domestic training

- Implements :
 - + 9 – 12 months retraining courses for new staff;
 - + 3 – 6 months training courses providing basic nuclear knowledge for management staff;
 - + short term training courses (<3 months) providing advanced nuclear knowledge for experts and;
 - + professional language courses;
- Promotes the use of current facilities for training staff.

V. Implementation plan

4. MOST

b) Overseas training

- MOST cooperates with foreign partner to organize the professional training to train team leader for specializes discipline that Vietnam has not meet requirements of facilities

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c) Use of training centers and establishment of laboratories

- MOST will use 3 existing training centers: Nuclear Training Center (NTC); NuTech under Nuclear Science and Technology Institute; Training Center under Nuclear Research Institute;
- MOST is establishing a Nuclear Science and Technology Center with the assistance of the Russian Federation;

V. Implementation plan

4. MOST

c) Establishing training centers and laboratories

– MOST will establish a system of laboratories in variety field (I&C, radiation, reactor physics, nuclear thermal hydra, etc.)

under R&D institution of VINATOM with following duties:

- Recruiting staff to fulfill their function;
- Selecting staff for sending abroad to attend training courses on necessary specialties;
- Conducting R&D activities within The R&D program on nuclear power to satisfy requirements of the construction and operation of NPPs in Vietnam;
- Conducting international cooperation for R&D.

VI. CONCLUSION

- It is clear that HRD is a key factor to ensure the success of the NPP Program in Vietnam;
- There is an urgent need to ensure/sustain competent workforce to meet the requirements of en-users: regulatory body, utilities and R&D institutions;
- More work needs to be done to finalize the detailed training requirements for staff in the different organizations/functions and to determine how this training will be provided;
- More coordination is needed between the 'suppliers' of human resources (MOET, Universities, Training Centers) and their 'customers' (EVN, VAEA, VARANS, VINATOM, etc.) to ensure that supply matches demand in a timely manner .



We hope to receive your advices

Thank you for your attention