



International Conference on the Challenges Faced by TSOs in Enhancing Nuclear Safety and Security

Challenges of Capacity Building for VARANS' TSO for the NPP program in Vietnam

25 – 28 October 2010
Tokyo, Japan

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III. Challenges faced by VARANS' TSO for NPP program

I. Current Status of Technical Support in Vietnam

I.1. Status of Technical Expertise

Current expertise in nuclear safety in Vietnam

Organization	Number of Staff
Vietnam Atomic Energy Institute (VAEI)	15
Institute for Nuclear Science and Technology (INST)	5
Dalat Nuclear Research Institute (DNRI)	10
Vietnam Agency for Radiation and Nuclear Safety (VARANS)	32
Division of Legislation	6
Division of Nuclear Safeguard	4
VARANS Inspectorate	6
Division of Nuclear Safety	16

I.1. Status of Technical Expertise

VAEI (Nuclear Utility)

- Vietnam Atomic Energy Institute (VAEI) is responsible for R&D in the field of nuclear energy.
- VAEI assists VARANS in performing the technical services such as device calibration, personal dose monitoring, etc.
- VAEI is responsible for RR in its subordinate DNRI and plans to establish Center for Nuclear Science and Technology which has another new RR with the human resource from itself and its subordinate institutes
- VAEI is a nuclear utility (operator)
- VAEI can be the TSO for NPP promotion and development. Due to “independence principle”, it can not be a TSO for the Regulatory Body

I.2. Why VARANS needs its own TSO

Establishment of independent TSO

- Under VAEI: independence can't be obtained
- Independent from VAEI and VARANS: expenditure, lack of experienced staff

Establishment of independent TSO under VARANS

- Make full use of:
 - ✓ Existing resources and experience of VARANS
 - ✓ Existing rich and successful international cooperation of VARANS

I.2. Why VARANS needs its own TSO

For radiation application

- There are 220 radiation facilities using 4275 radiation sources (1) in 63 provinces
- VARANS issues licenses for most of radiation works as well as conducts inspection and enforcement for radiation safety all over the country

- (1). Based on the data of “The national information system on radiation and nuclear safety” developed by VARANS, The data is updated by 2010

I.2. Why VARANS needs its own TSO

For nuclear safety field

- VARANS reviewed to issue licenses for Dalat RR. Although, Dalat operators have best practical experience in VN but the inspection and oversight activities of RB are very necessary to ensure the quality and safety of the RR activities having the potential risks for human and environment and prevent the subjective psychology of operators
- VARANS has duty to assess and organize assessment for nuclear safety at all stages of NPP including site approval construction permission and operation license

I.2. Why VARANS needs its own TSO

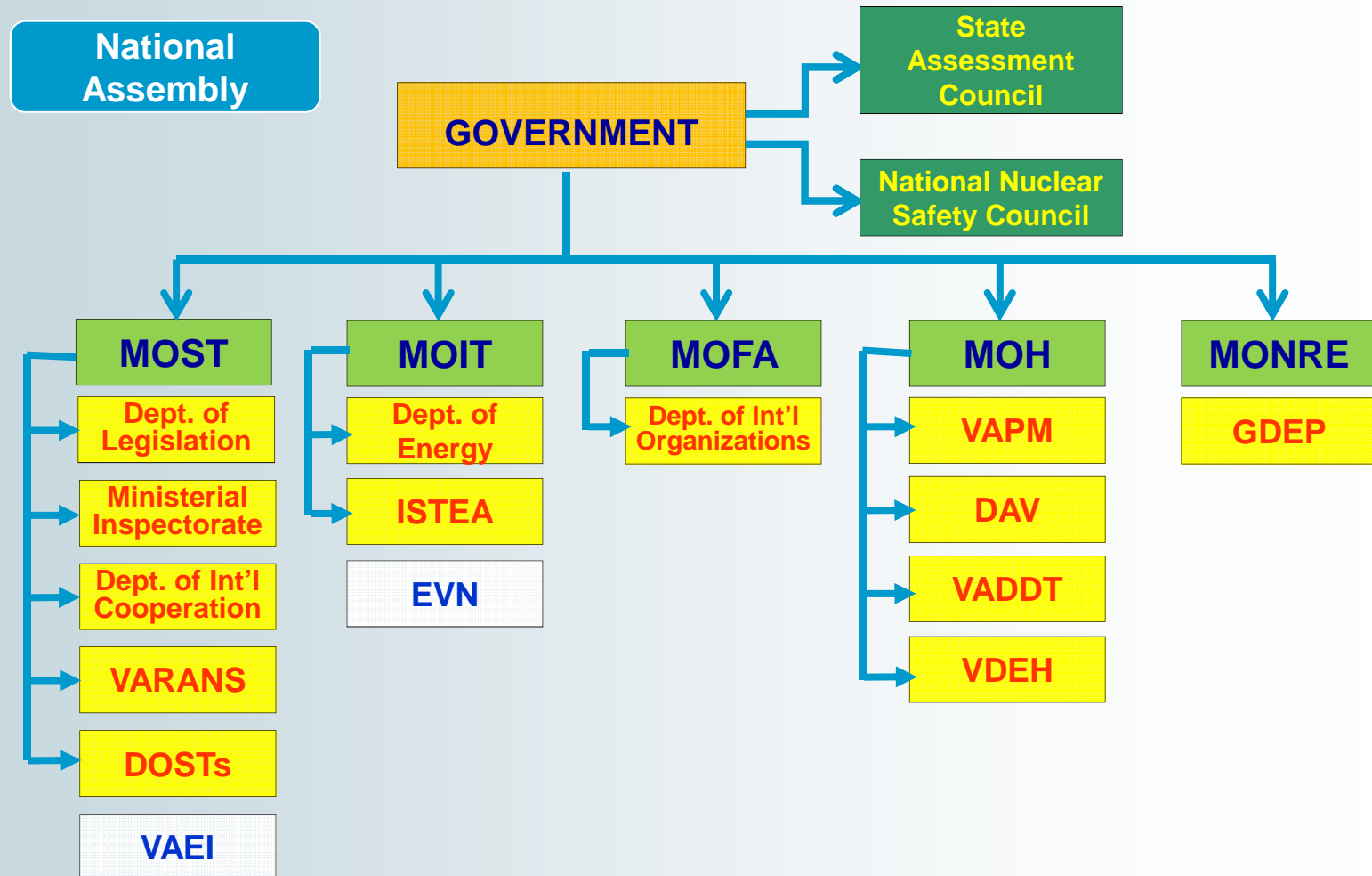
For NPP Program

- The first NPP project was approved by National Assembly in Nov. 2009
- The relevant Ministries have been directed by Prime Minister in implementation of necessary tasks in which the responsibility for ensuring the safety operation of NPP was strongly considered

II. Current Status of VARANS' TSO

II.1. Introduction to VARANS and its TSO

State Management System in nuclear energy



II.1. Introduction to VARANS and its TSO

Vietnam Agency for Radiation and Nuclear Safety – VARANS (Regulatory Body)

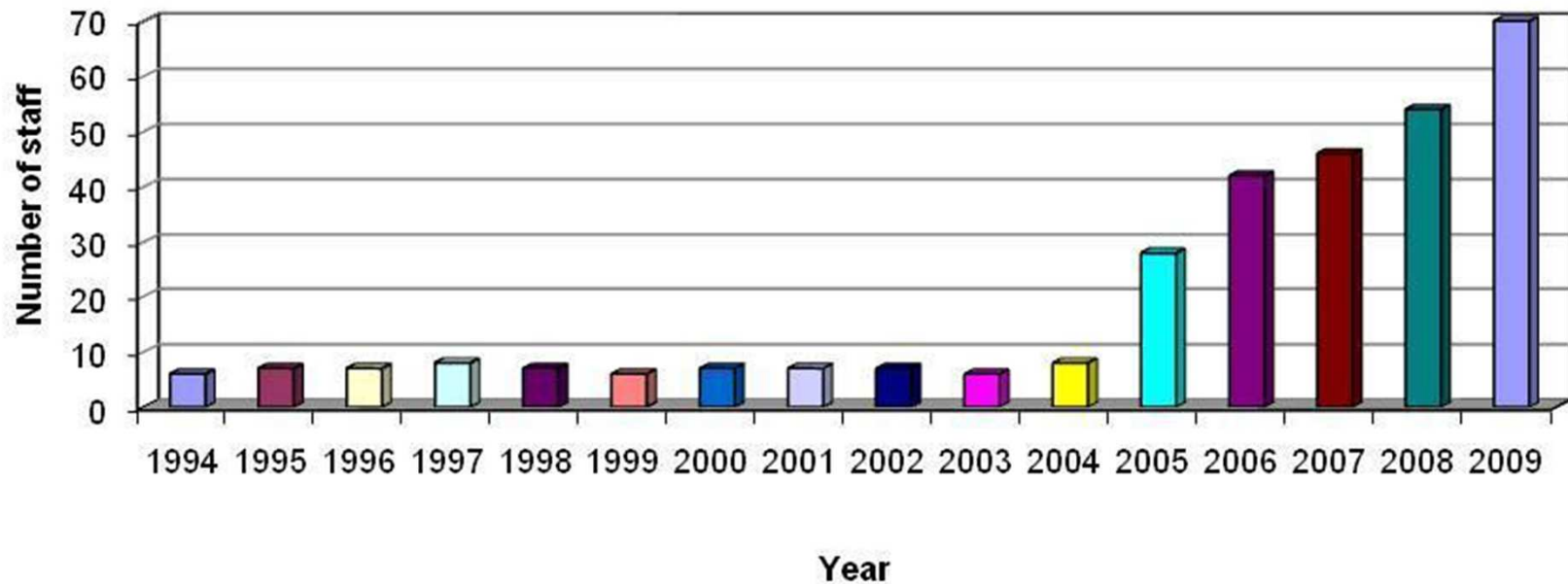


VARANS Headquarters

VARANS, established in 2003, is an agency belonged to MOST and assists the Minister of S&T in State management of radiation and nuclear safety (*Atomic Energy Law, Article 8*)

II.1. Introduction to VARANS and its TSO

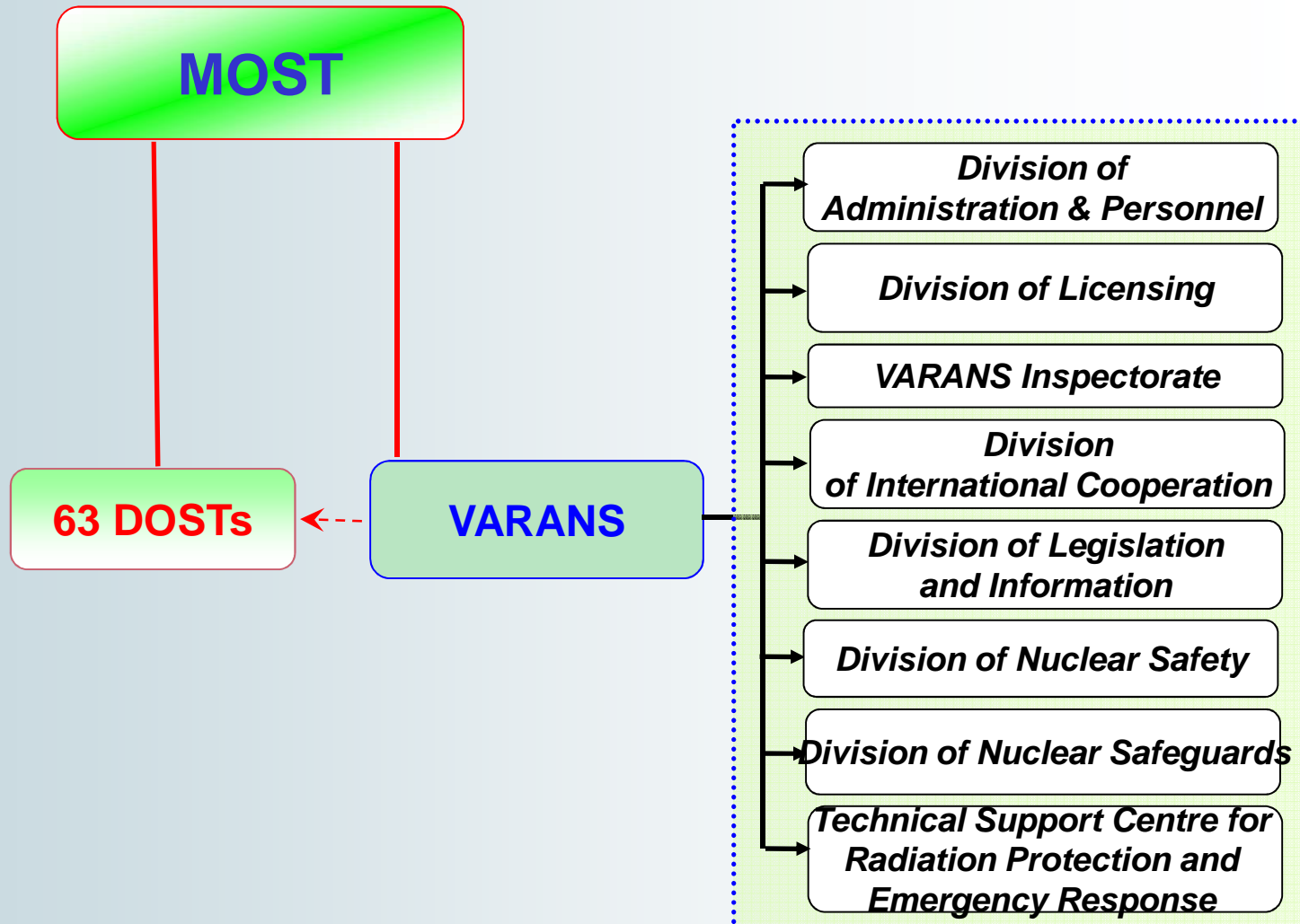
Human resources – VARANS



- August 2005: **8 staff**
- September 2010: **75 staff**
(10 PhD, 10 MSc, 55 Engineering & Bachelor Degrees)

II.1. Introduction to VARANS and its TSO

Organizational Chart – VARANS



II.2. Support Activities for Radiation Protection

TSC-VARANS

- VARANS established its **Technical Support Centre for Radiation Protection and Emergency Response (TSC-VARANS)** with 13 staff
- TSC-VARANS provided with various trainings in radiation protection and orphan source recovery
- The TSC-VARANS was invested with approx. US\$ 950 000 (mostly from the Government) to establish a laboratory for low radioactivity



TSC-VARANS Office and Lab

II.2. Support Activities for Radiation Protection

TSC-VARANS

- Providing technical support to:
 - ✓ Division of Licensing in verification of license application for radiation facilities and activities
 - ✓ VARANS Inspectorate in inspection on radiation facilities and activities



II.2. Support Activities for Radiation Protection

TSC-VARANS

- Supporting the Emergency Response
 - ✓ Radioactive source loss incidents: found the lost source, assessed the contaminated area, decontamination
 - ✓ Radioactive sources found under the sea near the coast of Vung Tau



II.2. Support Activities for Radiation Protection

TSC-VARANS

- Evaluating levels of abnormal radioactivity in Lai Chau province to provide recommendations to the local authority



Radioactive Dose at area of Nam Xe ore, Lai Chau province

II.2. Support Activities for Radiation Protection

TSC-VARANS

- Supporting Illicit Trafficking Prevention
 - ✓ VARANS' TSO helped the police locate and recover radioactive material trafficked across the Vietnam-Chinese border to be used in gambling



II.3. Support Activities for Nuclear Safety

VARANS established Division of Nuclear Safety (VARANS's TSO)

- The Division has 16 staff with various disciplines to provide technical support for regulatory activities in nuclear safety
- The staff of the Division have been trained through:
 - ✓ Lectures on reactor technology, nuclear materials ...
 - ✓ Workshops by US NRC (nuclear safety, introduction to codes and standards,...)
 - ✓ Regional training courses (ANSN)

II.3. Support Activities for Nuclear Safety



Nuclear Safety Division

- The Division will be provided with PCTTRAN using IAEA financial support
- The Division has a library for reactor technology / nuclear safety
- The Division will be provided with the software for calculation in nuclear safety review

II.3. Support Activities for Nuclear Safety

Assessment of Dalat RR SAR for:

- The license renewal application
- The core conversion
- The replacement of I&C system

Nuclear safety assessment for NPP:

- Reviewing Pre-FS for the first NPP investment project



III. Challenges faced by VARANS' TSO for NPP program TSO

III.1. Nuclear Power Plant Program in Vietnam

1. Decision in-principle

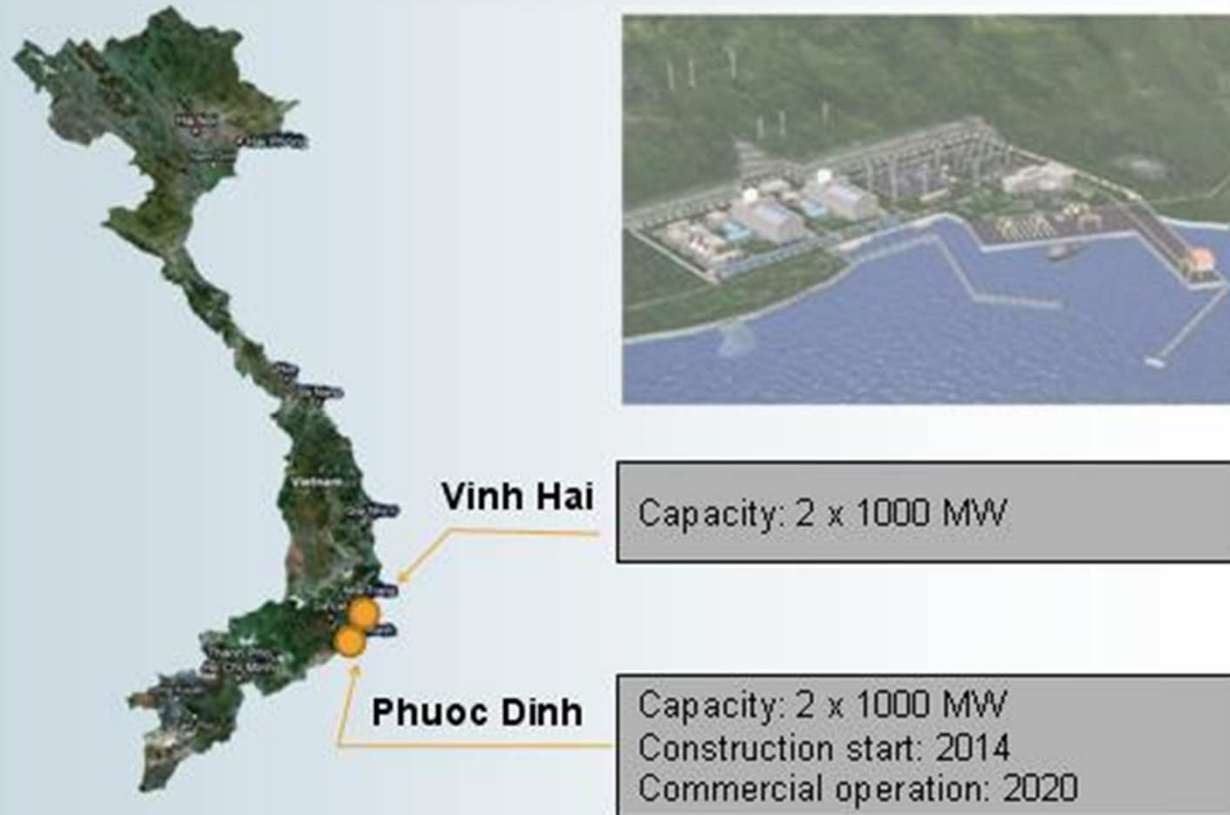
- On November 25, 2009 the National Assembly in its Resolution No.41/2009/NQ-QH12 approved investment in Ninh Thuan Nuclear Power Project

2. Proposed Counterpart and Technology for the first NPP

- Counterpart: [Rosatom, Russia](#)
- Technology: [VVER-1000](#)

III.1. Nuclear Power Program in Vietnam

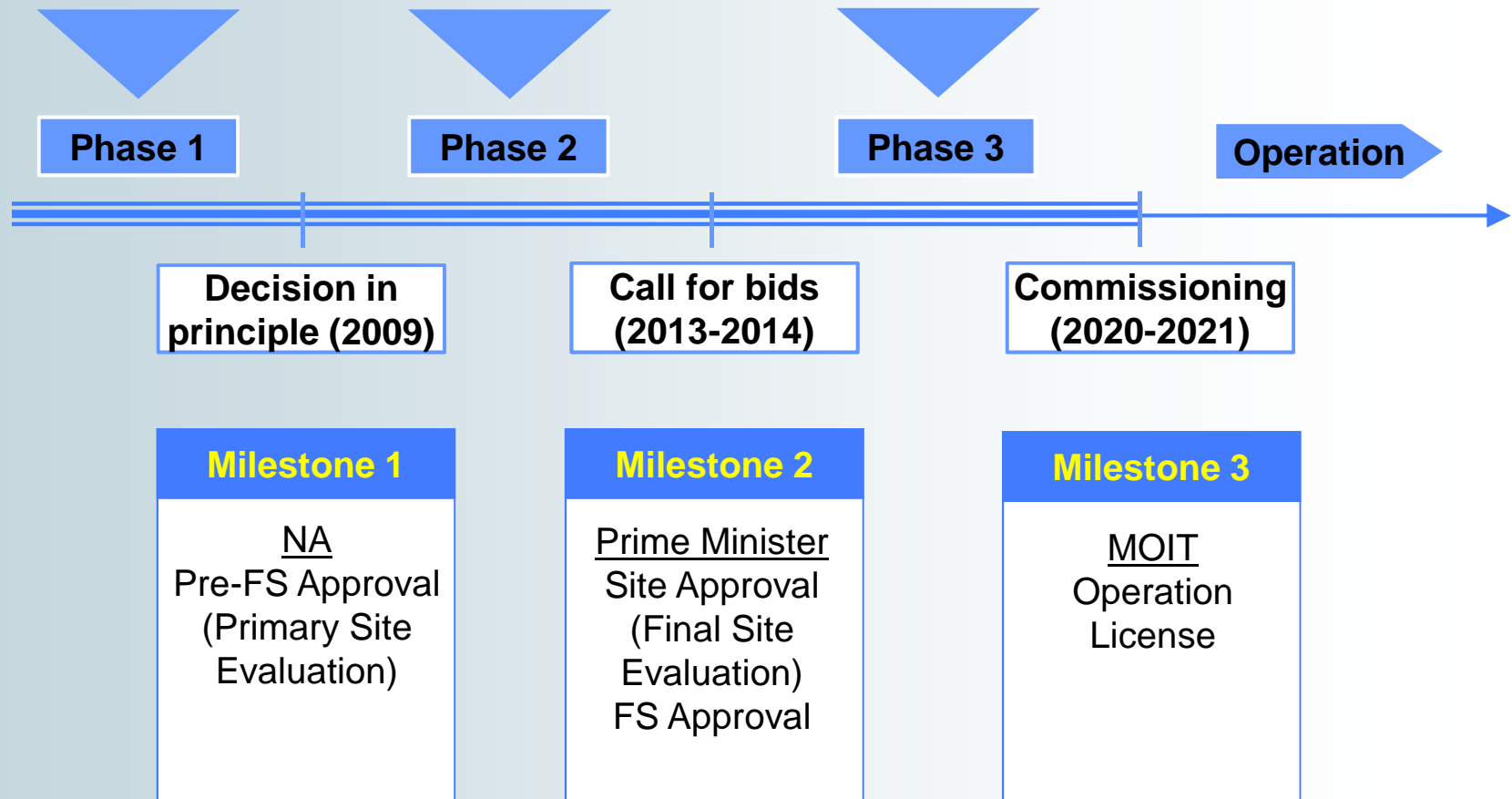
Siting



Investor: Vietnam Electricity (EVN)

III.1. Nuclear Power Program in Vietnam

Road-map for the first NPP



III.2. Challenges

Effective independence

MOST

VAEI

- operating Dalat research reactor and other radiation facilities
- carrying out research & development activities

VARANS

- regulating research reactors and radiation facilities

MOIT

- Issuing operation licenses for NPP

EVN

- future owner/operator of NPP

MONRE

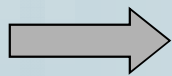
- issuing licences to bodies for ore mining and processing

- operating ore mining and processing activities

III.2. Challenges

New responsibility, duty and authority of VARANS

- Drafting legal documents for NPP
- Reviewing and organizing the review mission for nuclear safety
- Conducting inspection and enforcement for activities related to the NPP's operation
- Responding to radiation and nuclear incidents/accidents
- Developing and updating the national information system on nuclear safety
- Becoming the representative of Vietnam in the implementation of its responsibility related to the international treaties, conventions, agreements on nuclear safety, security and safeguards



Challenges for VARANS: to have qualified staff who are professionally trained in multi-disciplines

III.2. Challenges

New organization – General Department for Radiation and Nuclear Safety

State Management Units	Technical Units
Department of Administration & Personnel	Center for Nuclear Safety
Department of Licensing	Center for Technical Support for Radiation Safety
Department of Inspection	Center for Emergency Response of Radiation and Nuclear Incidents
Department of International Cooperation	Center for Information and Library
Department of Legislation	Center for Training on Radiation and Nuclear Safety
Division of Nuclear Safeguard and Security	
Office of National Nuclear Safety Council	
Ninh Thuan Office of Oversight and Control on Nuclear Safety	

III.2. Challenges

Legal document development

- In the Action Plan for Strengthening National Capacity on Nuclear Safety, VARANS has proposed to develop 60 documents for NPP and other 50 documents (during the period of 2010-2014)
(Total: ~110 Documents)

III.2. Challenges

Human resource development

Year	2010	2011	2012	2013	2014
Nuclear Safety assessment	26	34	42	48	62
Legal document development	15	30	45	50	50
Regular duties	49	66	83	112	168
Total	90	130	170	179	280

- Qualification process proposed, including general knowledge training and on-the-job training
- It is difficult to recruit staff for above position

III.3. Ways to Move Forward

Recommendations from the IAEA's Integrated Regulatory Review Service (IRRS) conducted in Vietnam in 2009:

- VARANS should be strengthened without delay its human, financial resources, and technical capability to meet immediate needs for regulating both existing activities and, in particular, for the introduction of nuclear power
- VARANS should be provided with adequate technical expertise to conduct independent review and assessment, both now and in the future

III.3. Ways to Move Forward

VARANS should have its strong TSO to support its regulatory activities, especially for the NPP program

- The Government should provide VARANS with sufficient resources, especially financial resource in order help VARANS:
 - *Have sufficient staff;*
 - *Provide training for recruited staff;*
 - *Have sufficient workplace and equipment.*
- International cooperation is important in sharing experience and knowledge in:
 - *Legal documents and Codes and Standards relevant to nuclear safety;*
 - *Expertise training;*
 - *Forms of Cooperation : expert exchange, networking, trainings*

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Nuclear Seismic Safety Training Course in Vietnam

On 19 October, 2010 at the Headquarters of the Vietnam Agency for Radiation and Nuclear Safety (VARANS), the VARANS in collaboration with the Japan Nuclear Energy Safety Organization (JNES) organized the Nuclear Seismic Safety Training Course in Vietnam. Dr. Le Chi Dung, Deputy Director General of VARANS came to attend and addressed opening speech of the Training Course.

AGENCY'S ACTIVITIES

Nuclear Seismic Safety Training Course in Vietnam



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- Working with Rosatom delegation
- Vietnam Delegation to the IAEA 54th General Conference in Vienna
- Workshop on Physical Protection and Security Management of Radioactive Sources
- Regional Workshop on the Lessons Learned from Peer Review Missions (IRRS)

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THE NATIONAL ASSEMBLY OF THE SOCIALIST REPUBLIC OF VIETNAM



For more information, please visit our website: <http://www.varans.gov.vn>

Thank you for your attention!