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COUNTRY REPORT OF VIETNAM

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1. Overview of radiation technology utilization in human health

1.1 Policy on radiation technology utilization in human health

1.2 Current status of advanced technology related to radiation oncology

1.3 Current status of techniques/skills including protocols developed in FNCA projects as well as challenges

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Overview of radiation technology utilization in human health



1.1 Policy on radiation technology utilization in human health

Detailed Master Plan on Application Development of Ionizing Radiation in Health Care up to 2020 (Decision No. 1958/2011/QĐ-TTg dated 04 Nov 2011)

Overall objective of promoting the application of diagnostics and nuclear medicine nationwide

Six specific targets by 2020

1.2 Current status of advanced technology related to radiation oncology

- 1. Diagnostic Imaging:** Color ultrasound, 3D, 4D, multislices CT (64 slices, 256 slices...), MRI 1.5 Tesla, MRI 3.0 Tesla...
- 2. Endoscopy** with soft endoscope/tube, endoscopic ultrasound...
- 3. Laboratory:** Tumor markers, Circulating tumor cells
- 4. Histopathology, molecular biology:** immunohistochemistry (IHC), gene mutation...
- 5. Nuclear Medicine:** SPECT, SPECT/CT, PET, PET/CT, PET/MRI



256 slices CT scanner



**Image acquisition for moving tumor:
Slow CT, 4DCT with RPM**

Overview of radiation technology utilization in human health



1.3 Current status of techniques/skills developed in FNCA project

Treatment protocols for cervical cancer (Cervix-III) and nasopharyngeal carcinoma (NPC-I) have been accepted as the standard treatment protocols in almost cancer centers in Viet Nam

- Patients to be selected for NPC-III, PMRT, CERVIX-IV studies are continually following-up and monitoring.
- Lectures on protocols: NPC-III, PMRT, CERVIX-IV, Cervix-III, NPC-I have been introduced to doctors from other hospitals through program of the Training and Direction of Healthcare Activities Centre – National Cancer Hospital.



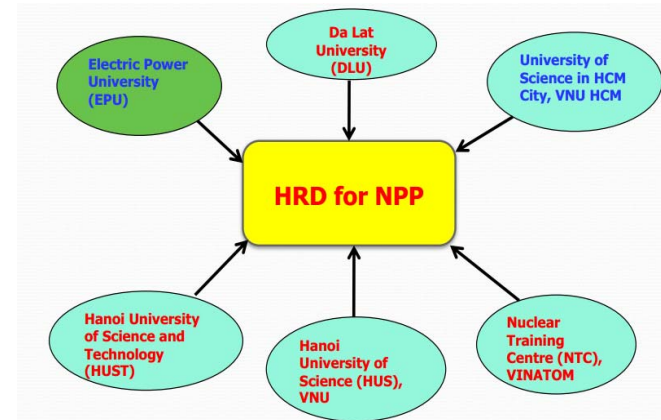
*Lectures on introducing protocols
developed in FNCA project*

2. Status of HRD in the field of nuclear energy technology



■ Implementation of National Projects for HRD

- *Decision No. 1558/QĐ-TTg of Prime Minister, approving the National Scheme for Training and Development of HR in the field of Atomic Energy, 2010 (2011-2016);*
- *Decision No. 584/QĐ-TTg of Prime Minister, approving EVN's Project on Training Human Resources for NPP Project at Ninh Thuan Province, 2013 (2013-2016)*



Training course on NPP Technology (TOSHIBA, HUST & NTC)



HRD Challenges in the field of nuclear energy technology

- Lack of a good strategic plan for electricity generation (Master Plan VII);
- Renewable energy can not be a large fraction;
- Uncompleted legal and regulation infrastructures;
- Postponement of Ninh Thuan Nuclear Power Projects → *Decreasing of international and governmental supports; Difficulty in attracting students and experts and Human capital flight;*



- ❖ Continuous supports from international organizations (IAEA, FNCA...) and advanced nuclear power countries in the HR development of nuclear technology in Viet Nam;
- ❖ Attract talented students to work for new project on **Research Center for Nuclear Energy Science and Technology (RCNEST)**

3. Status of nuclear energy technology utilization



On 22 November 2016, National Assembly passed a resolution to postpone the construction of nuclear power plants

- On Nov 19, 2018, the Prime Minister signed Decision No. 75 / QĐ-TTg approving the investment policy of **Research Center for Nuclear Energy Science and Technology (RCNEST)** (*Pre- FS report*);
- On May 22, 2019, the MOST of Viet Nam and General Director of ROSATOM signed a MOU on the Project Implementation Schedule;

The RCNEST (planned to be located at Long Khanh, Dong Nai - 70km from HCM city) will have a new research reactor with power 10MW (upgradable 15MW) and 6 research units.



Lay-out of CNEST

CONCLUSION



- More and more advances in the diagnosis and treatment of cancer has been recorded in Viet Nam. Some treatment protocols developed in FNCA project have become standard ones in Viet Nam that contributed to the improvement of treatment outcomes in the region.
- R&D results as outcomes of FNCA projects in agricultural and industrial production are expected to be taken into account the possibility of their commercialization in Viet Nam.
- Viet Nam desires to strengthen cooperation with FNCA and other cooperation channels to promote peaceful applications of nuclear energy for socio-economic development in Viet Nam, particularly addressing issues of environmental protection and climate change mitigation.
- Viet Nam would like to receive continuous support of international organizations and FNCA MCs in the HR development of nuclear science & technology in the forthcoming coming years.



Thank you for your kind attention