

Nuclear power development in Vietnam Opportunity and challenges

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Ministry of Science and Technology

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I. Atomic Energy field in Vietnam Introduction

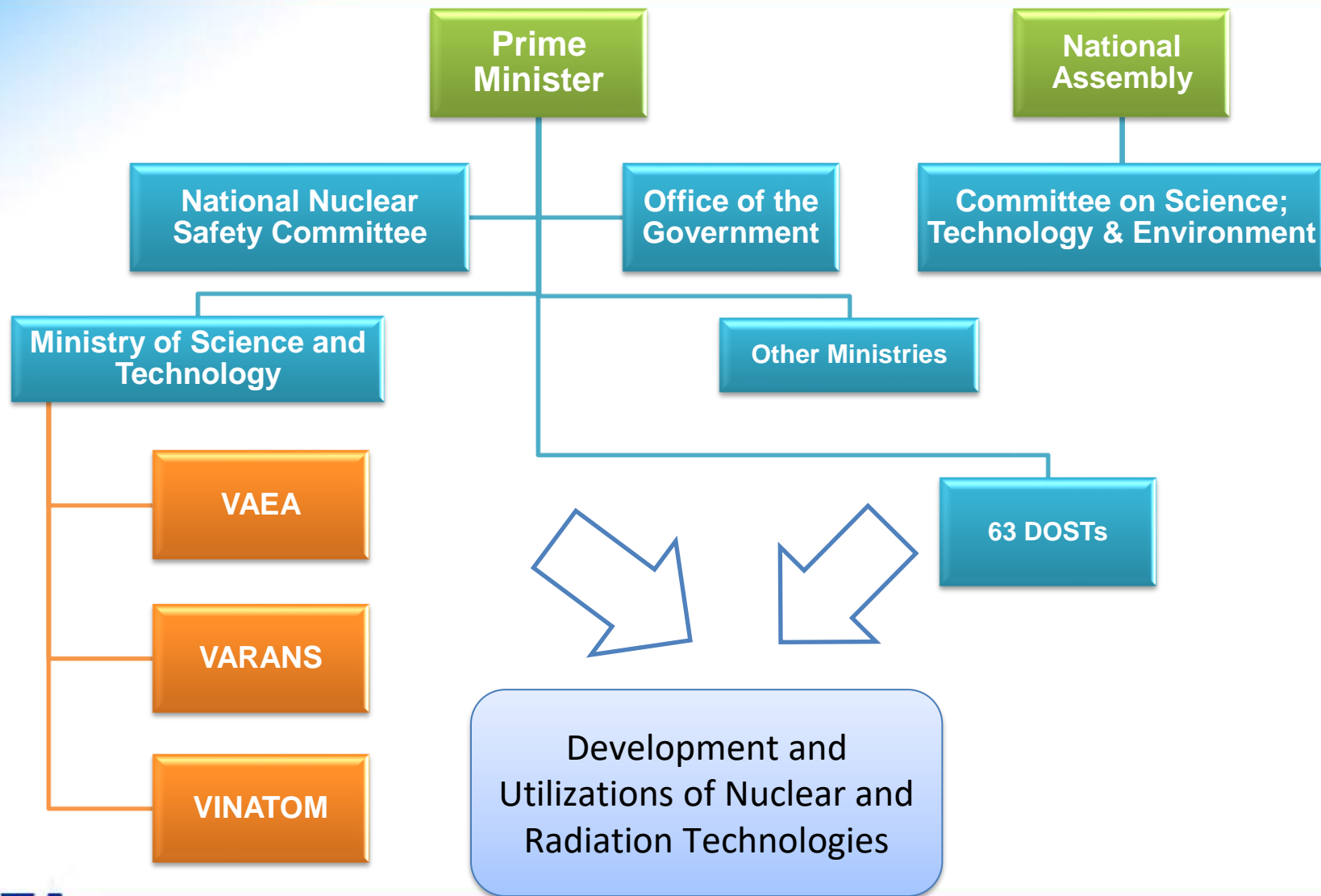
II. Nuclear Power development in Vietnam:
Opportunity and challenges

III. Upcoming main tasks

IV. Conclusions

I. Atomic Energy field in Vietnam

Management Mechanism



I. Atomic Energy field in Vietnam

Radiation and Radioisotopes Utilizations Development



Indochine Radium Institut du (1923)



K hospital (2023)

Vietnam has been using radiation and radioisotopes for cancer treatment purposes since 1923

I. Atomic Energy field in Vietnam

Radiation and Radioisotopes Utilizations Development

DEVELOPMENT OF NUCLEAR TECHNOLOGIES FOR SOCIO-ECONOMIC DEVELOPMENT

In Healthcare

In Industry

In Agriculture

In Natural Resources and Environment

Research and Application of Radiation Technology



Today, Vietnam is one of the leading countries in Southeast Asia in the radiation and radioisotopes utilizations for socio-economic development

I. Atomic Energy field in Vietnam

Radiation and Radioisotopes Utilizations Development



Vietnam is currently coordinating with the IAEA to support Laos and Cambodia in developing atomic energy applications

I. Atomic Energy field in Vietnam

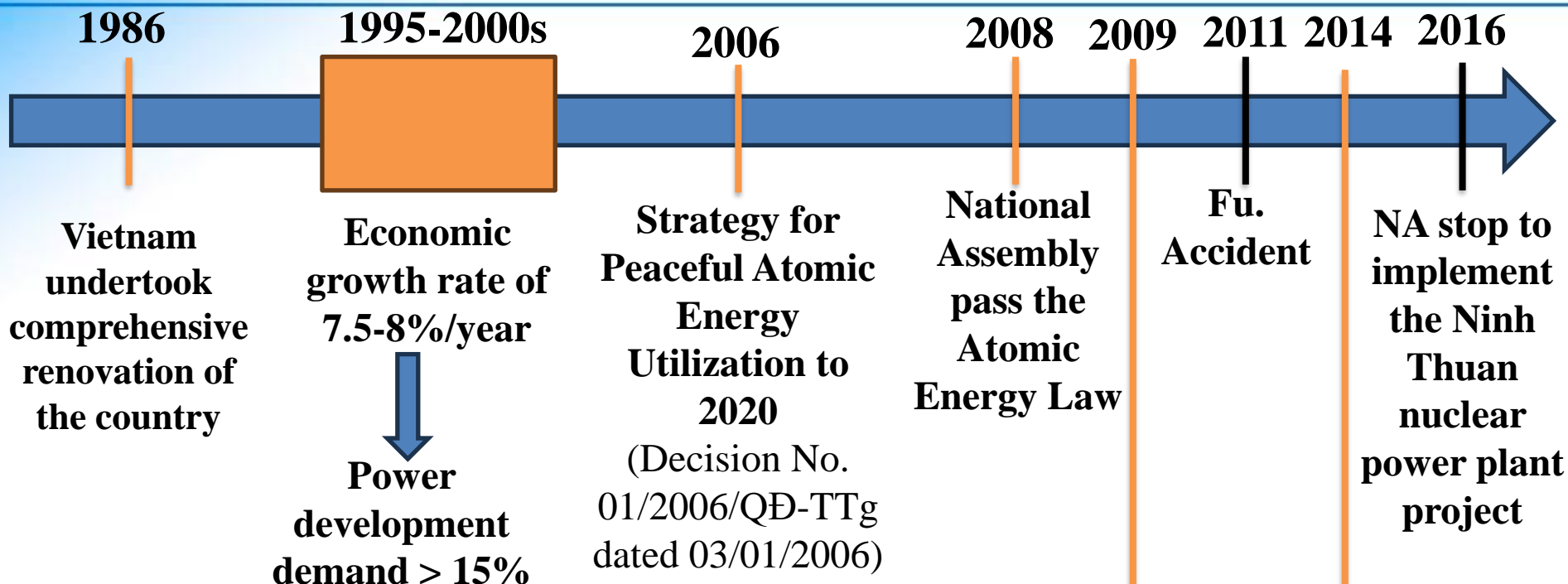
Nuclear facility



- TRIGA Mark II, 250kw (1963) by US
- Stop: 1968-1982
- Restoring and increasing capacity to 500kw (support by USSR): 1982-1983
- Re-operating: 20/3/1984 till now
- 9/2007: fuel transfer HEU (39% U-235) to LEU (19% U-235)

I. Atomic Energy field in Vietnam

Nuclear Power plants Project in Vietnam



***Vietnam imported electricity from China from 2005 (1%). 2022, imported 3% electricity from China, Lao.**

*** Power Development demand after 2010: ~10%**

*** Vietnam proactively builds large hydropower plants using domestic resources.**

Decision of the National Assembly (25/11/2009) on investment policy of Ninh Thuan nuclear power project

I. Atomic Energy field in Vietnam

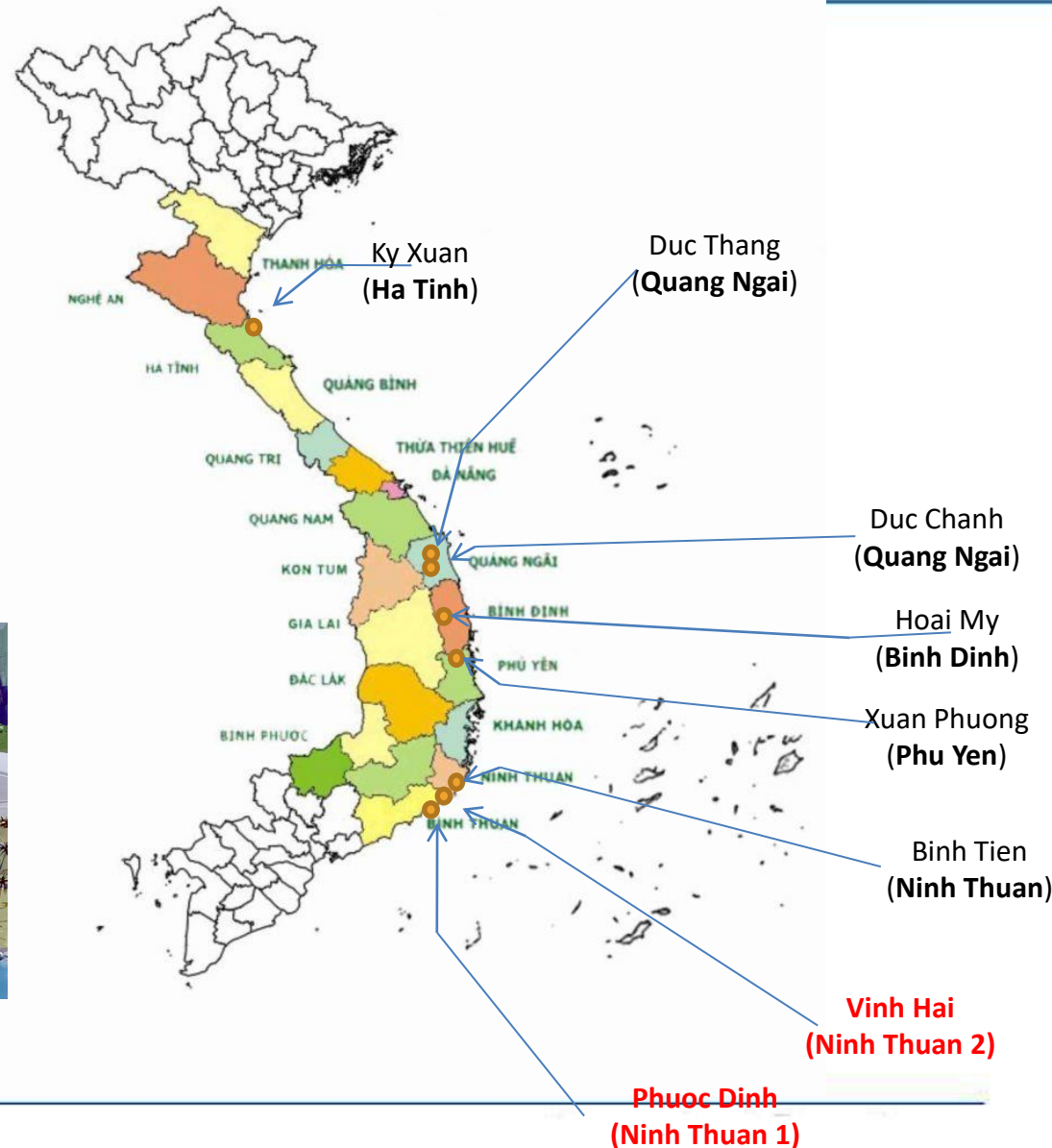
Nuclear Power plants Project in Vietnam



NT1 NPP_Landscape



NT2 NPP_Landscape



I. Atomic Energy field in Vietnam

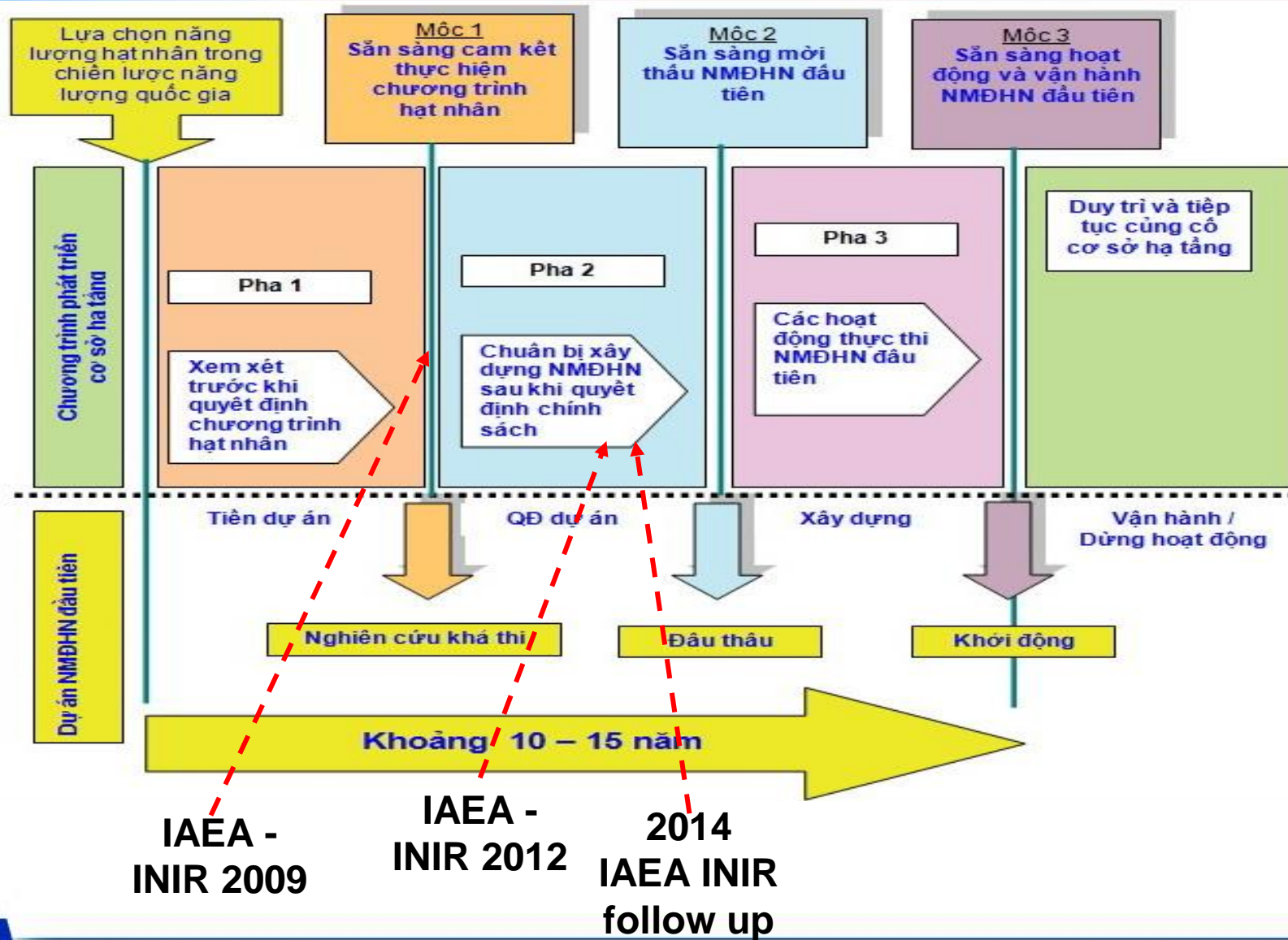
Nuclear Power plants Project in Vietnam



- Signed cooperation agreements to build NPPS on Vietnamese territory with the Russian Federation (in 2010) and with Japan (in 2011).
- Signed an agreement with the Russian Federation (in 2011) on providing state export credit for the construction of Ninh Thuan 1 NPP.
- Established the State Appraisal Council to appraise the dossier approving the Site and Investment project of Ninh Thuan 1 and Ninh Thuan 2 NPP projects (2013).
- Investment Project Feasibility Study (FS) and Site Approval Dossier (SAD) of Ninh Thuan 1 NPP Project: submitted to the Prime Minister (09/2015)
- In preparation FS and SDA report of Ninh Thuan 2 NPP.

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Nuclear Power plants Project in Vietnam



I. Atomic Energy field in Vietnam

Nuclear Power plants Project in Vietnam



CNST_Landscape

- Intergovernmental agreement on cooperation in building the Nuclear Science and Technology Research Center (CNST) in Vietnam in 2011;
- The framework agreement was signed in 2014;
- The Decision to build the CNST was signed dated 19/11/2018.
- ...

I. Atomic Energy field in Vietnam



Nuclear Power plants Project in Vietnam

	NPP Project (STOPPED)	CNEST project (in progress)
Scale	Very large (\$ Billions)	Large (\$ 350 Million)
Information and communication Project	National project (No.370 Project) <ul style="list-style-type: none">- Approved by the Prime Minister.- Chair by MOST (VAEA is the focal point for implementing the project)	Public communication for CNEST (being drafted) <ul style="list-style-type: none">- Approved by MOST's Minister.- Chair by Vinatom, VAEA, VARANS.
I&C activities	<ul style="list-style-type: none">- Advertising: television, radio, National Press, local newspapers, magazines, posters.- Publications : Brochures and others- Films and videos- Exhibitions: on-site visitors centres through to off-site exhibitions, travelling expositions and small on or off-site displays- Speakers panels, seminars, forums- Education: Educational materials-	<ul style="list-style-type: none">- Advertising: television, radio, National Press, local newspapers, magazines, posters.- Publications : Brochures and others- Films and videos- Exhibitions: on-site visitors centres through to off-site exhibitions, travelling expositions and small on or off-site displays- Speakers panels, seminars, forums- Education: Educational materials-

II. Nuclear Power Program in Vietnam: Opportunities and challenges



Vietnam's Net Zero commitment by 2050 at COP26.
**This will have a comprehensive impact on the way
energy is used as well as many other areas.**

II. Nuclear Power Program in Vietnam: Opportunities and challenges



THỦ TƯỚNG CHÍNH PHỦ

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập - Tự do - Hạnh phúc

Số: 500/QĐ-TTg

Hà Nội, ngày 15 tháng 5 năm 2023

QUYẾT ĐỊNH

PHÊ DUYỆT QUY HOẠCH PHÁT TRIỂN ĐIỆN LỰC QUỐC GIA THỜI KỲ 2021 - 2030, TẦM NHÌN ĐẾN NĂM 2050

THỦ TƯỚNG CHÍNH PHỦ

Căn cứ Luật Tổ chức Chính phủ ngày 19 tháng 6 năm 2015; Luật sửa đổi, bổ sung một số điều của Luật Tổ chức Chính phủ và Luật Tổ chức chính quyền địa phương ngày 22 tháng 11 năm 2019;

Căn cứ Luật Quy hoạch ngày 24 tháng 11 năm 2017;

Căn cứ Luật Điện lực ngày 03 tháng 12 năm 2004; Luật sửa đổi, bổ sung một số điều của Luật Điện lực ngày 20 tháng 11 năm 2012;

Căn cứ Nghị quyết số 61/2022/QH15 ngày 16 tháng 6 năm 2022 của Quốc hội về tiếp tục tăng cường hiệu lực, hiệu quả thực hiện chính sách, pháp luật về quy hoạch và một số giải pháp tháo gỡ khó khăn, vướng mắc, đẩy nhanh tiến độ lập và nâng cao chất lượng quy hoạch thời kỳ 2021 - 2030;

Căn cứ Nghị quyết số 81/2023/QH15 ngày 09 tháng 01 năm 2023 của Quốc hội về Quy hoạch tổng thể quốc gia thời kỳ 2021 - 2030, tầm nhìn đến năm 2050;

Căn cứ Nghị định số 37/2019/NĐ-CP ngày 07 tháng 5 năm 2019 của Chính phủ quy định chi tiết thi hành một số điều của Luật Quy hoạch;

Căn cứ Nghị định số 137/2013/NĐ-CP ngày 21 tháng 10 năm 2013 của Chính phủ quy định chi tiết thi hành một số điều của Luật Điện lực và Luật sửa đổi, bổ sung một số điều của Luật Điện lực;

Theo đề nghị của Bộ Công Thương tại Tờ trình số 2842/TTr-BCT ngày 14 tháng 5 năm 2023 và Công văn số 2851/BCT-ĐL ngày 15 tháng 5 năm 2023; Báo cáo thẩm định số 62/BC-HĐTDQHĐ ngày 13 tháng 5 năm 2023 của Hội đồng thẩm định Quy hoạch phát triển điện lực quốc gia thời kỳ 2021 - 2030, tầm nhìn đến năm 2050.

QUYẾT ĐỊNH:

Điều 1. Phê duyệt Quy hoạch phát triển điện lực quốc gia thời kỳ 2021 - 2030, tầm nhìn đến năm 2050 (gọi tắt là Quy hoạch điện VIII) với những nội dung chủ yếu sau:

I. PHẠM VI, RANH GIỚI QUY HOẠCH

National electricity development plan for the period of 2021 - 2030, with a vision to 2050 (Decision No. 500/QĐ-TTg dated May 15, 2023 of the Prime Minister)

II. Nuclear Power Program in Vietnam: Opportunities and challenges



By 2030: Total capacity of power plants serving domestic demand will be 150,489 MW, of which:

- + Onshore wind power 21,880 MW (14.5%);
- + Offshore wind power 6,000 MW (4.0%);
- + Solar power 12,836 MW (8.5%);
- + Biomass electricity, electricity produced from waste 2,270 MW (1.5%);
- + Hydropower 29,346 MW (19.5%);
- + Pumped storage hydropower 2,400 MW (1.6%); + 300 MW storage battery (0.2%);
- + Cogeneration electricity 2,700 MW (1.8%);
- + Coal thermal power 30,127 MW (20.0%);
- + Domestic gas thermal power 14,930 MW (9.9%);
- + LNG thermal power 22,400 MW (14.9%);
- + Flexible power source 300 MW (0.2%);
- + Import electricity 5,000 MW (3.3%), possibly up to 8,000 MW.

There is not nuclear power

II. Nuclear Power Program in Vietnam: Opportunities and challenges



Vision to 2050: Total capacity of power plants is 490,529-573,129 MW:

- + Onshore wind power 60,050-77,050 MW (12.2-13.4%);
- + Offshore wind power 70,000-91,500 MW (14.3-16%);
- + Solar power 168,594-189,294 MW (33.0-34.4%);
- + Biomass electricity, electricity produced from waste 6015 MW (1-1.2%);
- + Hydropower 36,016 MW (6.3-7.3%);
- + Storage power 30,650-45,550 MW (6.2-7.9%);
- + Cogeneration electricity 4,500 MW (0.8-0.9%);
- + **Coal thermal power 0 MW (0%) (no longer using coal to generate electricity);**
- + Thermal power using biomass and ammonia 25,632-32,432 MW (4.5-6.6%);
- + Gas thermal power use LNG 7,900 MW (1.4-1.6%);
- + Gas thermal power use hydrogen 23,430-27,930 MW (4.5-5.0%);
- + Gas thermal power use hydrogen and LNG mix 4,500-9,000 MW (0.8-1.8%);
- + Flexible power source 30,900-46,200 MW (6.3-8.1%);
- + Imported electricity 11,042 MW (1.9-2.3%).

There is not still nuclear power...

II. Nuclear Power Program in Vietnam: Opportunities and challenges



APPENDIX I

LIST OF PRIORITY PROJECTS ON COMPLETING LEGAL POLICY AND STRENGTHENING THE CAPACITY OF THE ELECTRICITY SECTOR

(Attached to Decision No. 500/QĐ-TTg dated May 15, 2023 of the Prime Minister)

1. Projects/projects to develop and improve policies and laws.
2. Projects/projects to strengthen science and technology capacity, build basic research centres and development centres include:
 - Centre for scientific and technological research in renewable energy and new energy;
 - Energy and climate change research centre;
 - **Nuclear Power Research and Development Centre;**
 - Research the project to form an inter-regional renewable energy industrial and service centre.
3. Project/project on training and improving the quality of human resources.

II. Nuclear Power Program in Vietnam: Opportunities and challenges



- **The biggest (key) challenge is the relaunch of a new nuclear project in the condition of the past nuclear project is stopped.**
- The 2 locations previously chosen for NPP1, NPP2 has now been removed from planning and people are allowed to farm and build houses;
- Lack of highly qualified human resources after stopping the nuclear power project in 2016. The majority of human resources trained in the Russian Federation and Japan are now working abroad or moving to other fields.
- Old problems still exist: investment costs, technology, public acceptance, Safety concerns (after Fu. Accident)...

III. Upcoming main tasks

- VARANS is responsible for organizing the Atomic Energy Law amendment (maintaining the content on both nuclear power development and non-energy utilizations), MOST submit to the Government for approval to submit to the National Assembly.
- VAEA is responsible for organizing the Plan of Atomic Energy Application Development for period to 2030, vision to 2050, MOST submit to the Prime Minister for approval.
- Vinatom is responsible for being the investor and implementing the Nuclear Science and Technology Research Center (CNST) with new research nuclear reactor.
- Promote the operation of The Nuclear power research and development Center to advise the government on the restart of the nuclear program in Vietnam.

Conclusion

- Vietnam has made a strong commitment and gradually implemented activities aimed at achieving net_zero by 2050.
- Nuclear power with its great advantages is still considered a potential option to contribute to Vietnam's net_zero goal.
- Vietnam will not consider the possibility of having nuclear power before 2030.
- The Nuclear power research and development Center deployed and operating in the near future will be the key to deciding whether Vietnam will develop nuclear power after 2030 or not.

It is necessary to continue next time:



- To boost investment in scientific research and technological development in the atomic energy field.
- Strengthening information and communication activities to raise and keep public acceptance to support for the atomic energy utilizations.
- Human resources training and development, NKM.
- Strengthening the coordination between State management agencies, scientific and technological organizations and enterprises.
- Promote international cooperation.

Thanks for your attention!