# NUCLEAR POLICY AND DEVELOPMENT IN INDONESIA

Presented by:
Deputy Director for Various New and Renewable Energy Programs

On The Event:
IAEA INS0020 Technical Cooperation Project: National Workshop on Industrial Involvement and Discuss and Update the Infrastructure Status

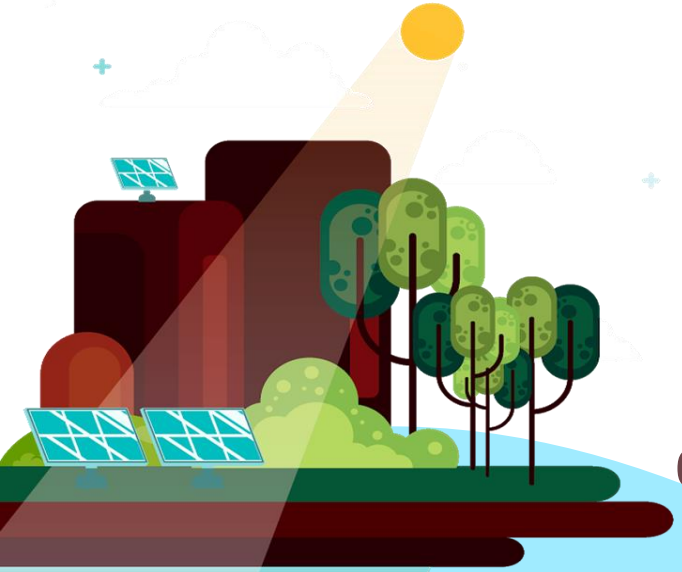
JAKARTA, FEBRUARY 24 2020

# PRESENTATION OUTLINE

1. Existing NRE Development in Indonesia
2. Policy and Regulation
3. Conditions and Opportunities for Indonesia's Nuclear Energy Development

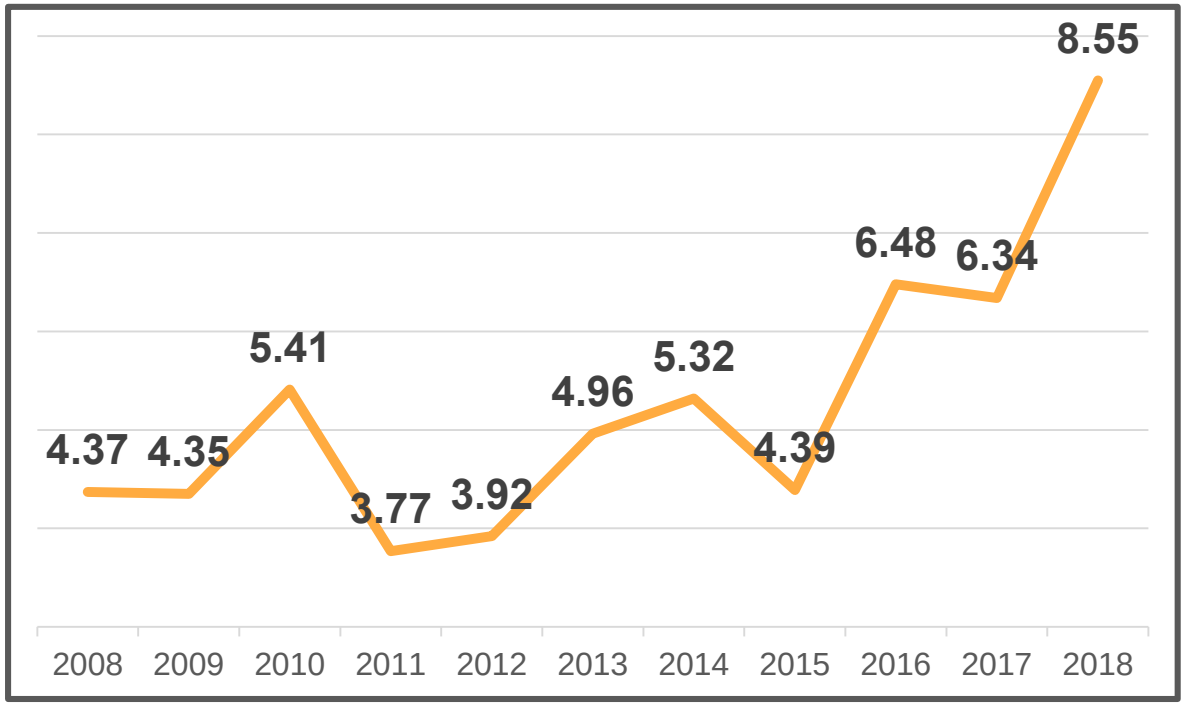
# EXISTING NRE DEVELOPMENT IN INDONESIA

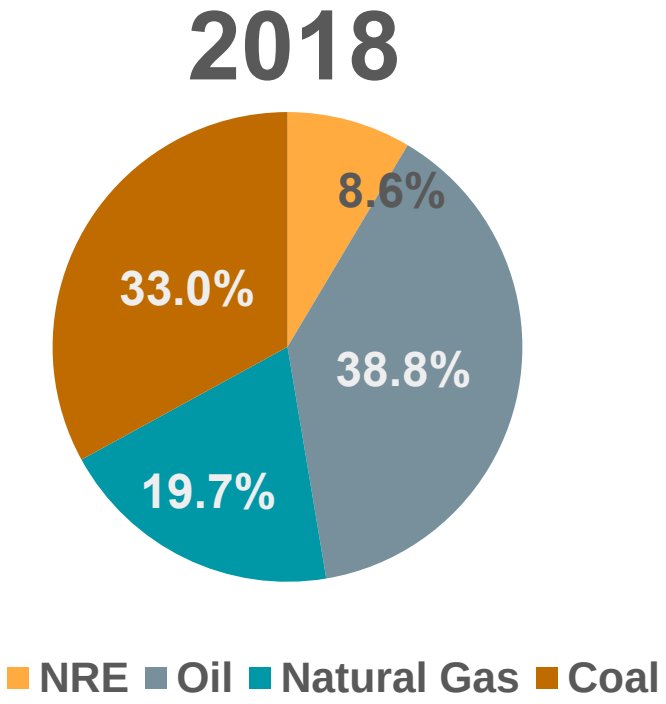
# NRE POTENTIAL VS CAPACITY INSTALLED



| | | |
|---|---|---|
| 17.9 GW | OCEAN | 0 MW (0%) |
| 28.5 GW | GEOTERMAL | 2,130 MW (7,5%) |
| 32.6 GW | BIOENERGY | 1.882.8 MW (5,8%) |
| 60.6 GW | WIND | 154.3 MW (0,3%) |
| 75 GW | HYDRO | 5,885.5 MW (7,9%) |
| 207.8 GW | PHOTO - VOLTAICS | 96.94 MWp (0,05%) |

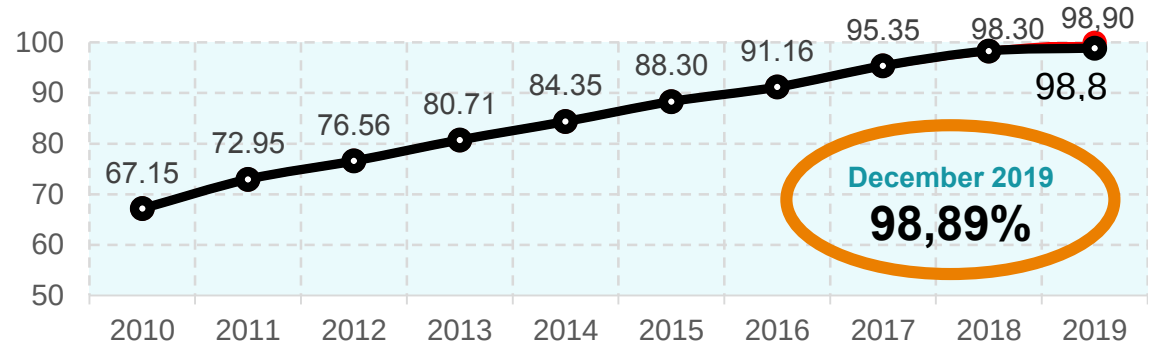
# INDONESIA PRIMARY ENERGY MIX

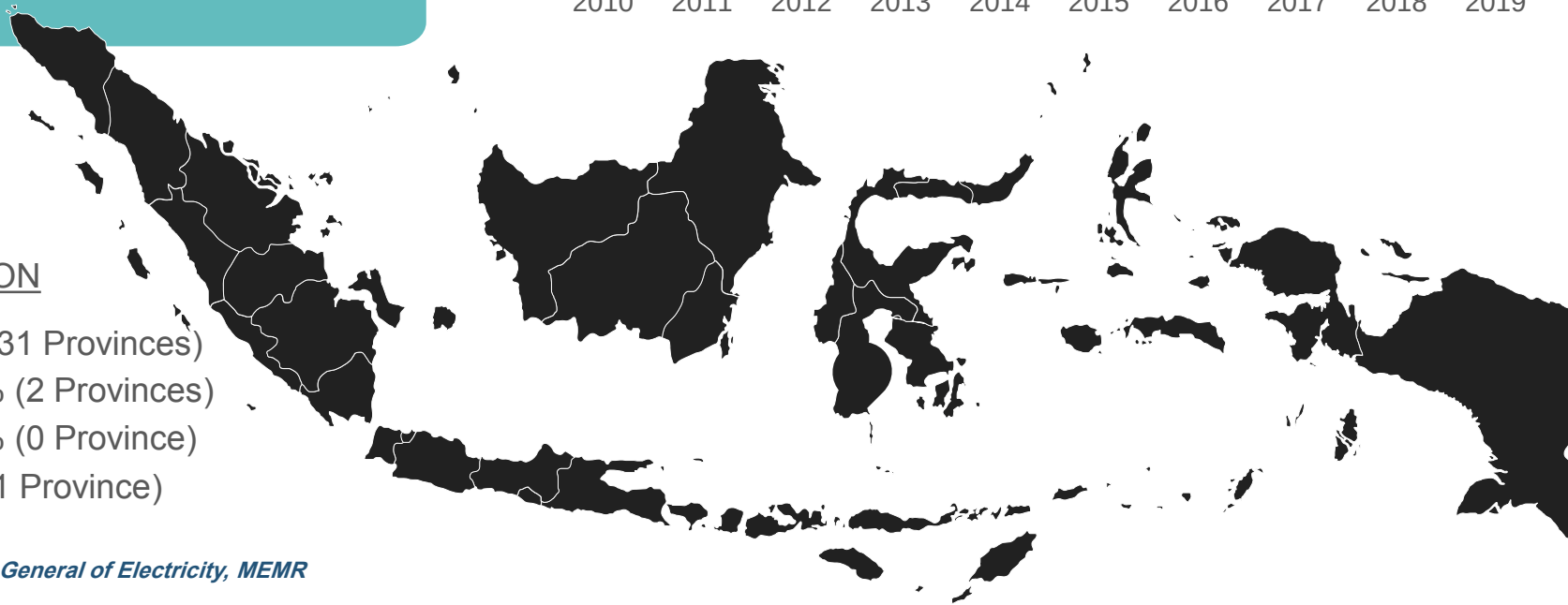



*Source: Handbook Of Energy Economic and Statistic Indonesia 2018*

# ELECTRIFICATION RATIO



INFORMATION

- : > 95 % (31 Provinces)
- : 90 - 95% (2 Provinces)
- : 80 - 90% (0 Province)
- : < 80% (1 Province)

*Source: Directorate General of Electricity, MEMR*

# POLICY AND REGULATION

# INDONESIA COMMITMENT FOR CLIMATE CHANGE MITIGATION


PARIS2015
UN CLIMATE CHANGE CONFERENCE
COP21·CMP11

## Global Commitment

Maintain the increase in the earth's temperature at 1.5C, not exceeding 2C


## National Commitment

Act 16/2016: Ratification of GHG emission reductions in 2030: 29% of BaU (National Efforts) 41% of BaU (International Support)

**Mitigation Actions:**

- Substitution of subsidy budget for productive activities (infrastructure)
- 23% share of NRE in the National Energy Mix in 2025;
- Waste to energy conversion.

## Energy Sector Commitment

Reducing GHG emissions by 314 - 398 Million Tonnes of CO2 in 2030; 23% RE on National Energy Mix & 17% Final Energy Savings from BAU Scenario

# ACTS CONCERNING NUCLEAR DEVELOPMENT

## ACT 10/1997 CONCERNING NUCLEAR

The Development of NPP is decided by **the Government** in coordination with the Legislative Body.

## ACT 17/2007 CONCERNING RPJPN (NATIONAL LONG-TERM DEVELOPMENT PLAN) 2005 - 2025

**Nuclear utilization requirement for Energy Diversification:**

- Strict consideration on the **safety factor;**
- In accordance with **public situation;**
- **Environmentally sustainable**.

## ACT 30/2007 CONCERNING ENERGY

Fossil energy resources, geothermal, large-scale hydro, and **nuclear energy** are managed by the government and utilized **solely for public prosperity.**

# Governmental Regulation (GR)

## GR 79/2014 Concerning National Energy Policy

**Nuclear energy development criteria:**

a) **Energy security**;
b) **Carbon emission** reduction;
c) **Prioritization of** economically feasible **renewable energy development**;
d) **Last- choice** option.

## GR 14/2015 Concerning National Industry Development Masterplan

a. **2015 – 2019**: Developing blueprint for efficient NPP facility with high safety level.

b. **2020 – 2035** : Developing efficient NPP facility with high safety level.

## Presidential Regulation 22/2017 Concerning National Energy Development Masterplan

**There is no nuclear development until 2025**

# OTHER REGULATIONS CONCERNING NUCLEAR UTILIZATION

01 **GR 2/2014** concerning Nuclear Installation License and Nuclear Material Utilization .

02 **GR 61/2013** concerning Radioactive Waste Management.

03 **GR 54/2012** concerning Nuclear Installation's Safety and Security

04 **GR 46/2009** concerning Nuclear Liability Limit

05 **GR 29/2008** concerning Licensing for Utilization of Ionizing Radiation Sources and Nuclear Materials

# OTHER REGULATIONS CONCERNING NUCLEAR UTILIZATION

06 **GR 33/2007** concerning Radiation Safety & Security of Radioactive Sources.

07 **Presidential Regulation 74/2012** concerning Nuclear Damage Liability

08 Several **BAPETEN Chief Regulations** as technical implementation regulator governing the provisions in each stage of the construction and operation of nuclear power plants, among others, reactor site evaluation, construction, commissioning, operation, and decommissioning.

09 Some guidelines / standards include **130 SNIs** in the nuclear field which will then be further developed into standards for the construction and operation of nuclear power plants.

*Some supervision and licensing regulations in the Nuclear Power Supervisory Agency (BAPETEN) still refer to the Light Water Reactor (LWR) technology, while the supervision and licensing regulations for the fourth generation nuclear reactors that refer to non-LWR (Molten Salt Reactor) technology have not been accommodated.*

# Conditions and Opportunities for Indonesia's Nuclear Energy Development

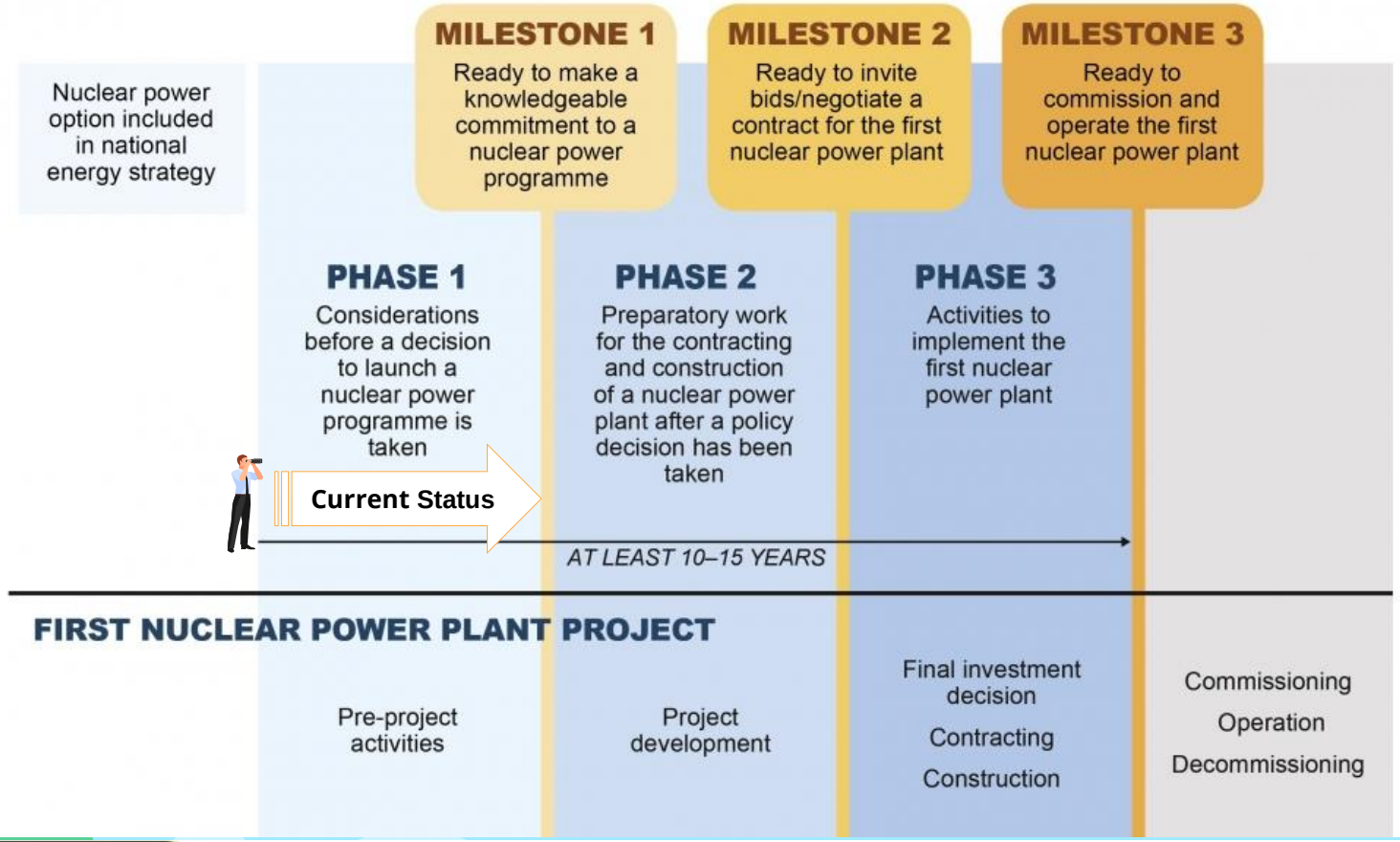
# IAEA Analysis of Indonesian Nuclear Readiness

In Accordance With The Integrated Nuclear Infrastructure Review (INIR) Mission to Review The Status Of Indonesia's National Nuclear Infrastructure by IAEA, 2009


From 19 items of nuclear energy infrastructure in phase 1 (decision making for Go Nuclear):

- ❑ 16 items are completed
- ❑ 3 (three) items need to be prepared, namely:
  a) National Position;
  b) Management (Formation of NEPIO); dan
  c) Involvement of stakeholders.

# NUCLEAR POWER INFRASTRUCTURE DEVELOPMENT



# REGULATION TONE TOWARD NPP DEVELOPMENT

"The development of nuclear power plants still requires time and preparation. An INIR update needs to be undertaken once more by the IAEA"

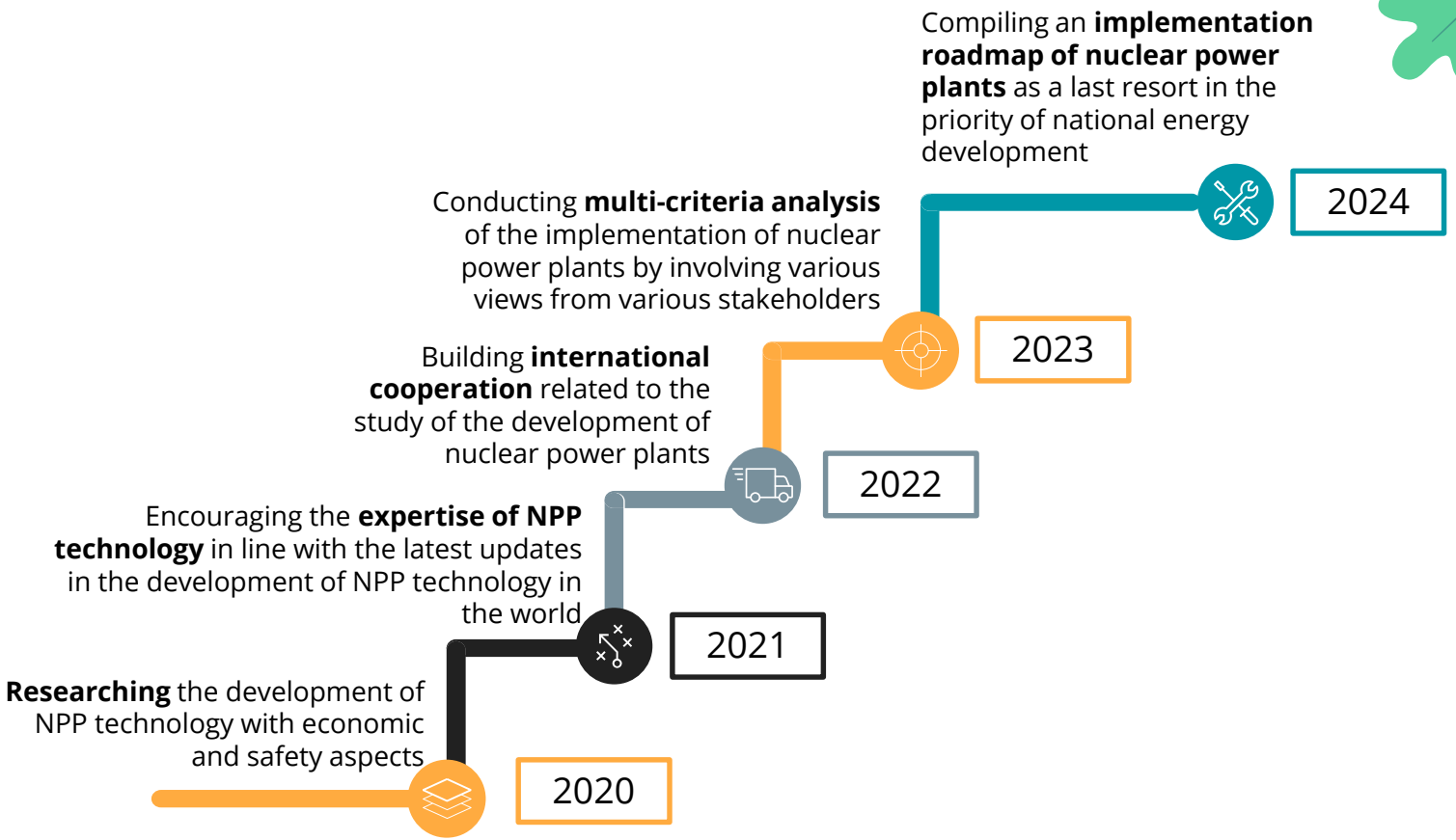
### GR 79/2014 and Presidential Regulation 22/2017
**The use of nuclear energy as a last resort by paying close attention to safety aspects and optimizing the use of non-nuclear NRE first.**

### GR 2/2014 concerning Nuclear Installation License and Nuclear Material Utilization .
**The construction of a NPP was determined by the MEMR after consulting with the Parliament.**

### Electricity Provision General Plan 2019-2028
**There are no plans to build a NPP**

### Presidential Regulation 22/2017 on RPJMN 2020-2024
**Increasing electricity provision through commencement of the construction of NPP in Kalimantan is strived for.**

# NUCLEAR ON NATIONAL MIDDLE-TERM DEVELOPMENT PLANNING 2020-2024



# ACTIVITIES RELATED TO THE DEVELOPMENT OF NPP

**5000 MW NPP Development White Paper** drafting, 2014

**NPP Development Roadmap** drafting, 2017

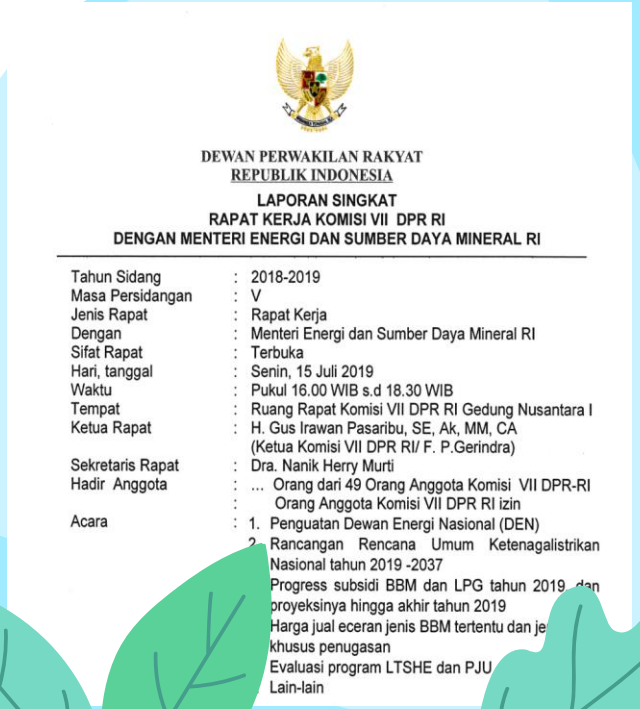
Conducting **Thorium PLT Study** through the Cooperation of BLU P3TEK KEBTKE and Thorcon International Ltd., 2019

**Active collaboration** through Capacity Building activities with NPP technology developing countries:

- Bilateral: China, France, Japan, South Korea, etc.
- Regional: ASEAN Nuclear Energy Cooperation Sub Sector Network (NEC-SSN)
- Multilateral: International Atomic Energy Agency (IAEA)

# LEGISLATIVE BODY WORK MEETING JULY 15, 2019

Commission VII of the Indonesian House of Representatives urges MEMR to immediately assess the opportunities for **NPP** to be included in the **National Electricity General Plan 2019-2038**, and to compare them with the external costs of fossil plants



DEWAN PERWAKILAN RAKYAT
REPUBLIK INDONESIA

LAPORAN SINGKAT
RAPAT KERJA KOMISI VII DPR RI
DENGAN MENTERI ENERGI DAN SUMBER DAYA MINERAL RI

| | | |
|---|---|---|
| Tahun Sidang | : | 2018-2019 |
| Masa Persidangan | : | V |
| Jenis Rapat | : | Rapat Kerja |
| Dengan | : | Menteri Energi dan Sumber Daya Mineral RI |
| Sifat Rapat | : | Terbuka |
| Hari, tanggal | : | Senin, 15 Juli 2019 |
| Waktu | : | Pukul 16.00 WIB s.d 18.30 WIB |
| Tempat | : | Ruang Rapat Komisi VII DPR RI Gedung Nusantara I |
| Ketua Rapat | : | H. Gus Irawan Pasaribu, SE, Ak, MM, CA (Ketua Komisi VII DPR RI/ F. P.Gerindra) |
| Sekretaris Rapat | : | Dra. Nanik Herry Murti |
| Hadir Anggota | : | ... Orang dari 49 Orang Anggota Komisi VII DPR-RI |
| | : | Orang Anggota Komisi VII DPR RI izin |
| Acara | : | 1. Penguatan Dewan Energi Nasional (DEN) |
| | | 2. Rancangan Rencana Umum Ketenagalistrikan Nasional tahun 2019 -2037 |
| | | Progress subsidi BBM dan LPG tahun 2019 dan proyeksinya hingga akhir tahun 2019 |
| | | Harga jual eceran jenis BBM tertentu dan je khusus penugasan |
| | | Evaluasi program LTSHE dan PJU |
| | | Lain-lain |

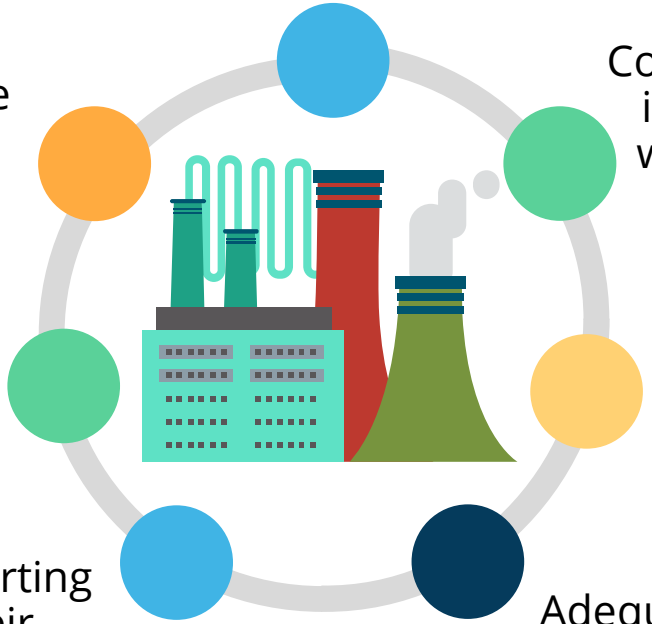
The House of Representatives Commission VII agreed with MEMR to carry out a **FGD on NPP organized by PT PLN (Persero).**

# SUPPORTING FACTORS FOR NPP DEVELOPMENT

Significantly increase renewable energy share in National Energy Mix

NPP Operation to be managed by PT PLN

Commercial NPP technology is available in the market with an increasingly good level of safety



Basic infrastructure support for NPP Development

Utilization of NPPs for sustainable development

The growth of supporting industries and their derivative products

Adequate Nuclear Experts

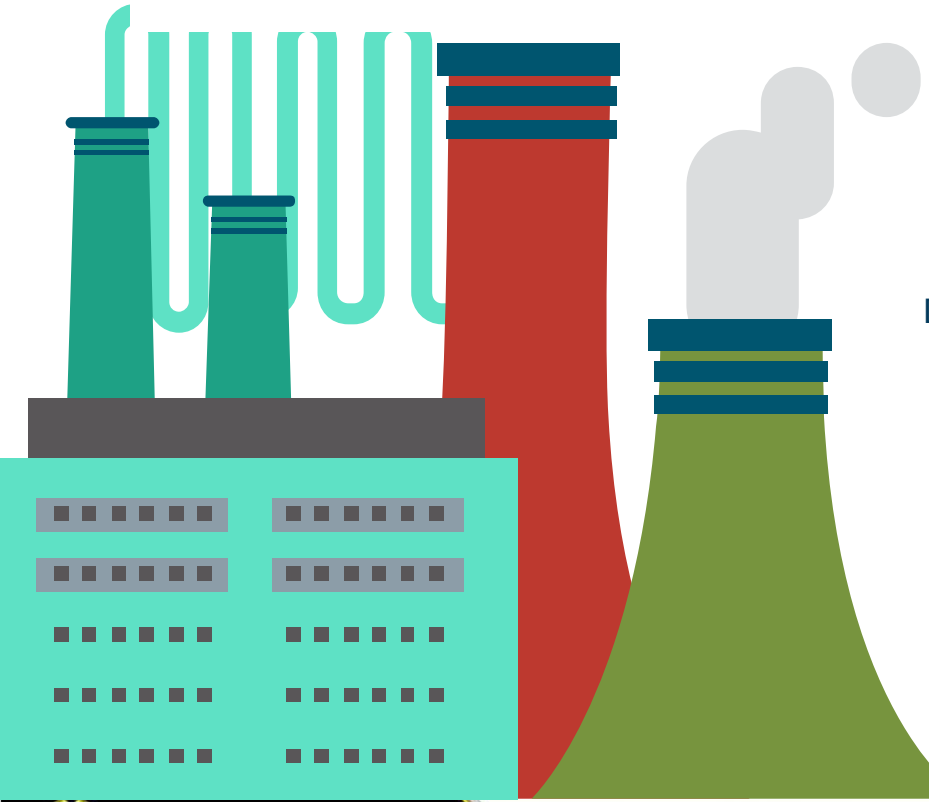
# PROPOSED FUTURE ACTIONS IN COLLABORATION WITH IAEA

01 Conducting another **review** to obtain updated evaluation of Indonesia Nuclear Infrastructure readiness.

02 **Information dissemination** of NPP development to the representatives

03 **Capacity building** for nuclear-related government official/regulator.

04 Drafting **a study of NPP impacts** on national economy



# Terima Kasih!


KEMENTERIAN ENERGI DAN SUMBER DAYA MINERAL
Jl. Medan Merdeka Selatan No. 18, Jakarta

DIREKTORAT JENDERAL ENERGI BARU, TERBARUKAN DAN KONSERVASI ENERGI
Jl. Pegangsaan Timur No.1 Menteng, Jakarta

# Presidential Regulation 22/2017 Concerning National Energy Development Masterplan (1) (SPECIFICALLY REGARDING NPP)

| NO | STRATEGY | PROGRAM | ACTIVITY | COORDINATOR | INSTRUMENT | TIMELINE |
|---|---|---|---|---|---|---|
| 1 | Development of nuclear energy that is utilized by considering the security of national energy supply on a large scale, reducing carbon emissions and prioritizing the potential of new energy and renewable energy according to its economic value, and considering it as a last resort by paying close attention to safety factors | Study on the use of Nuclear Power Plants (NPP) | 1. Researching the development of NPP technology with economic and safety aspects | MRTHE | K / L Strategic Plan | 2016-2050 |
| | | | 2. Encouraging the expertise of NPP technology in line with the latest updates in the development of NPP technology in the world | MRTHE | K / L Strategic Plan | 2016-2050 |
| | | | 3. Building international cooperation related to the study of the development of nuclear power plants | MEMR | K / L Strategic Plan | 2016-2050 |
| | | | 4. Conducting multi-criteria analysis of the implementation of nuclear power plants including urgent interests, large scale, guarantee of supply, balance of energy supply, reduction of carbon emissions, safety factors and economies of scale by involving various views from various stakeholders | MEMR | K / L Strategic Plan | 2016-2019 |
| | | | 5. Compiling an implementation roadmap of nuclear power plants as a last resort in the priority of national energy development | MEMR | K / L Strategic Plan | 2016-2050 |

# Presidential Regulation 22/2017 Concerning National Energy Development Masterplan (2) (SPECIFICALLY REGARDING NPP)

| NO | STRATEGY | PROGRAM | ACTIVITY | COORDINATOR | INSTRUMENT | TIMELINE |
|---|---|---|---|---|---|---|
| 2 | Each nuclear plant operator must pay attention to the safety and risk of accidents and bear all compensation to third parties who have suffered losses due to nuclear accidents | Strengthening national capacity in the field of safety for the use of nuclear power | 1. Implement international standards for nuclear power plant safety<br>2. Preparing a pre-feasibility study (academic study) to decide on the planning of the construction of a nuclear power plant<br>3. Implement consistently Presidential Regulation No. 74 of 2012 concerning Nuclear Damage Liability | MRTHE<br>MEMR<br>MRTHE | K / L Strategic Plan<br>K / L Strategic Plan<br>K / L Strategic Plan | 2016-2050<br>2016-2019<br>2016-2050 |
| 3 | The Central Government and/or Regional Governments strengthen the fields of research, development and application of energy | Increasing research and development as well as mastery and application of energy technology | Improving NPP technology experts | MRTHE | K / L Strategic Plan | 2016-2050 |