



**DIRECTORATE GENERAL OF ELECTRICITY
MINISTRY OF ENERGY AND MINERAL RESOURCES**

#EquitableEnergy

- in Electricity -

**Presented at The Indonesia – Japan Renewable Energy Workshop on
Promoting Local Renewable Electricity Business**



Tokyo, February 15th, 2018



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Kementerian Energi
dan Sumber Daya Mineral



Kementerian ESDM

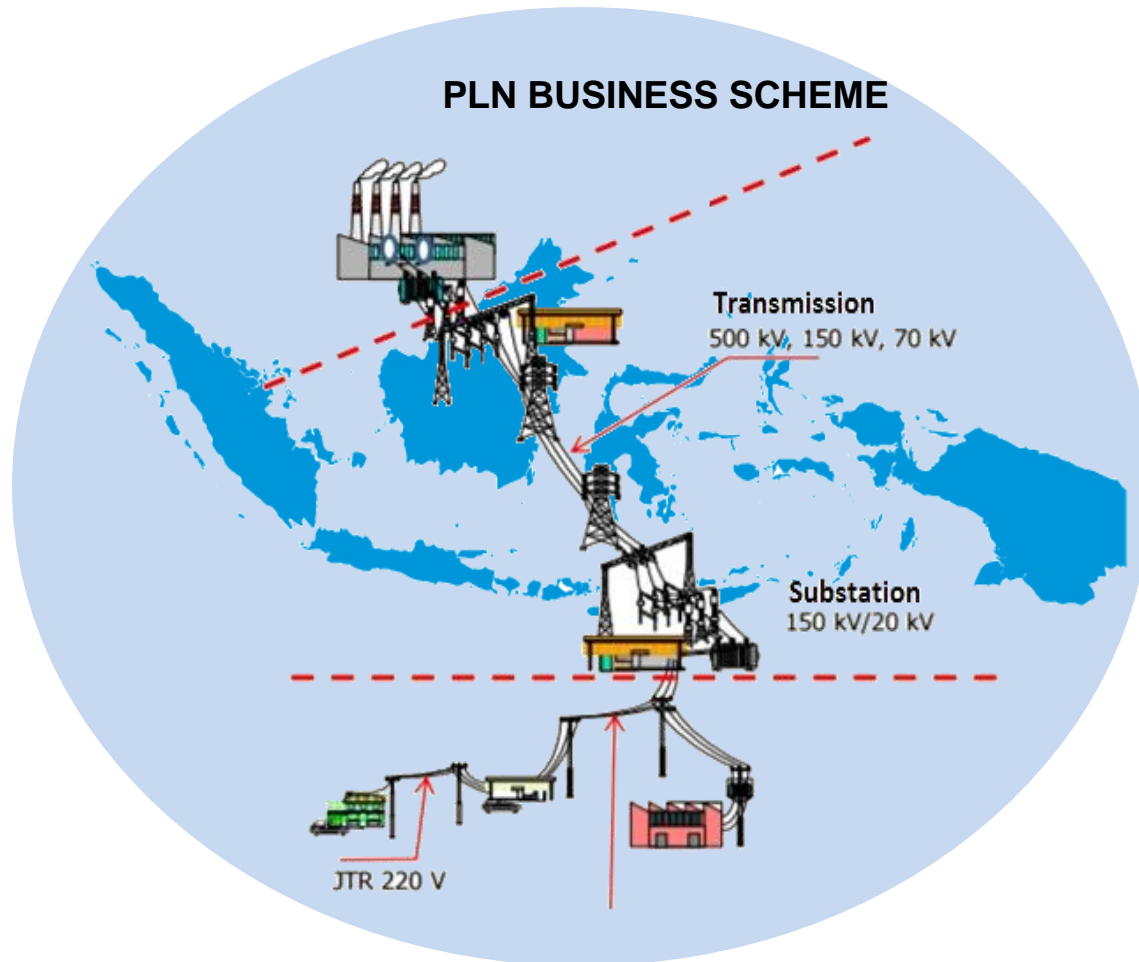


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POLICY ON POWER SECTOR DEVELOPMENT

(Based on Electricity Law No. 30 Year 2009)

- ❑ **Electricity provision is controlled by the state** and the implementation is carried out by the **government and local government** based on regional autonomy principle.



- ❑ **The implementation** of electricity supply business by the government and regional government shall be conducted by **state-owned enterprises** and **regional-owned enterprises**.
- ❑ **Other enterprises** (e.g. Regional Owned Enterprise (BUMD), Private sector, Cooperation and Society) **can participate** in electricity supply business.
- ❑ **The state-owned enterprise** shall be given **the first priority** to undertake a business of providing electricity for the public interest.
- ❑ **Electricity selling price, leased power grid and electricity tariff** should be subject to **approval or stipulated by the government or local government** in accordance with their respective authorities.



SCHEME OF PRIVATE PARTICIPATION

Scheme of business and Private participation in developing power generation consists of 3 types:

❑ **Engineering Procurement and Construction (EPC) Contract**

The owner of the project is PLN. The *Engineering, Procurement and Construction (EPC)* of the project is offered to private through tender, direct selection or direct appointment. Under this scheme, PLN is responsible for the activities and cost of plans, land acquisition, funding and operating the power generation, while the EPC contractor has responsible to engineer, procure and construct the project. Example: project under FTP I program and some projects under 35 GW program.

❑ **Independence Power Producer (IPP)**

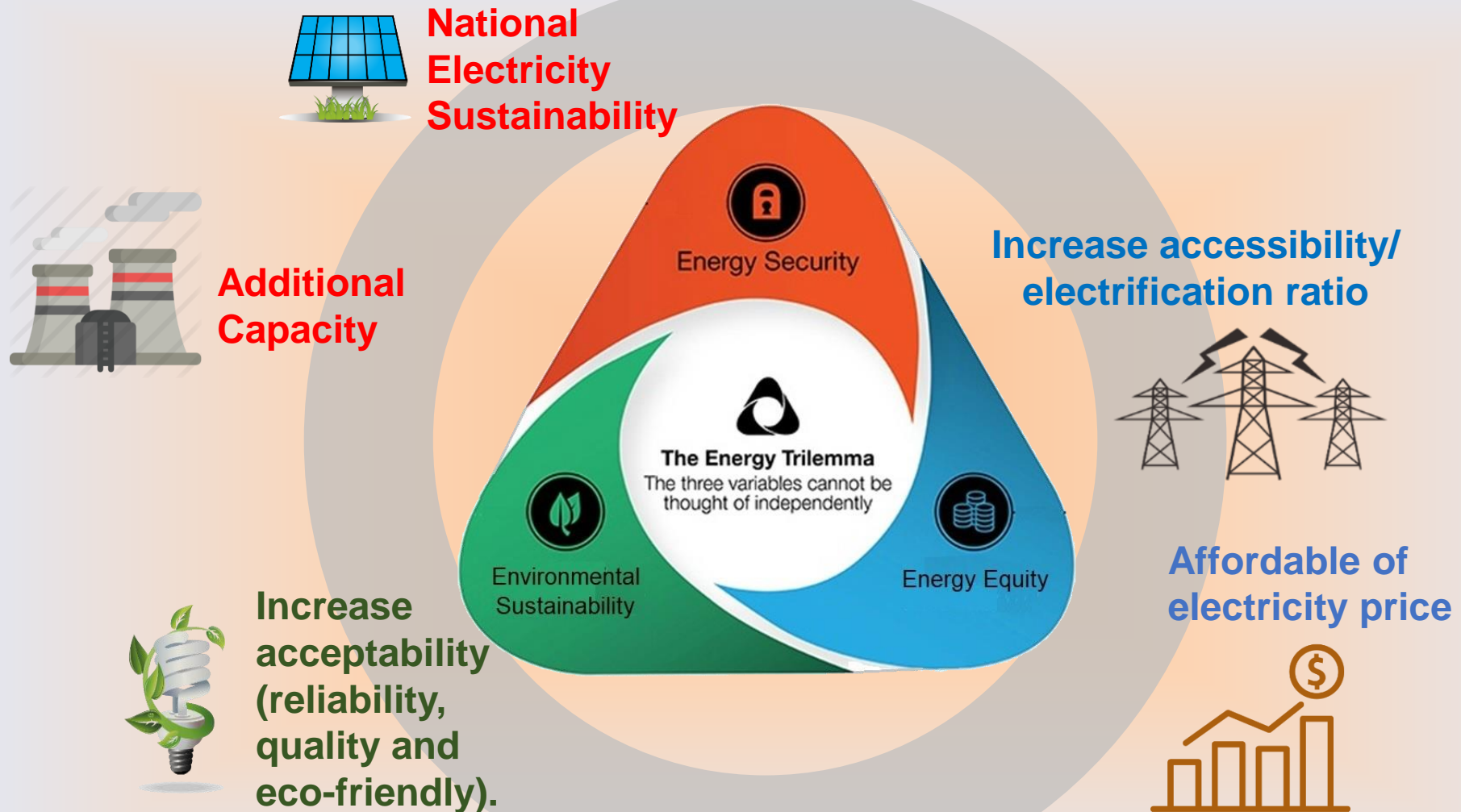
The owner of the project is private. Under this scheme, funding of the project 100% comes from private and its transforms to the electricity selling price to PLN. The private is doing anything includes land acquisition and operating the power generation for several years before the asset transfers to PLN. Example: some projects under FTP II program and some projects under 35 GW program. There is another type of IPP scheme, namely **Public Private Partnership (PPP) Project**. Under this scheme, the project is offered to private through a tender mechanism. The government may provide support or a government guarantee. If the private as an initiator of the project, then the government shall provide compensation. Example: Coal Fired Power Plant of Central Java 2 x 1,000 MW.

❑ **Private Power Utility (PPU)**

The owner of the project is regional owned company, private or cooperative. Under this scheme, the private can develop power generation, transmission and/or distribution as well as selling electricity directly to the community in special business area. The special business area is stipulated by the Minister of EMR. Example: PT PLN Batam, PTCikarang Listrindo.



ENERGY TRILEMMA



Source: World Energy Council

EQUITABLE ENERGY



#EquitableEnergy

Emphasize Social Welfare, Conducive Business Climate dan Economic Growth

Electrification Ratio

- ✓ [Increasing Power Generation Capacity \(35,000 MW\)](#)
- ✓ [Rural Electrification](#)
- ✓ [Electrifying 2,500 Villages](#)
- ✓ [Electricity Tariff of NRE](#)

Fair Distribution

- ✓ [Targetted Subsidy](#)
- ✓ [Single Retail Fuel Price](#)
- ✓ [City Gas](#)
- ✓ [LPG's Converter Kit for fisherman](#)
- ✓ [1 Gas Refueling Station Nozzle at Each gas station](#)

Sustainability & Affordability

- ✓ [Renewable Energy Utilization](#)
- ✓ [PPA Reform](#)
- ✓ [Mine Mouth Power Plant](#)
- ✓ [Wellhead Power Plant](#)

Investment & Growth

- ✓ [Mineral Added Value](#)
- ✓ [PI 10% from oil & gas contract](#)
- ✓ [Private Refinery](#)
- ✓ [Industrial Gas Price](#)
- ✓ [PSC Gross Split](#)
- ✓ [Sunk Cost Refund - PSC](#)

Bureaucracy Reform

- ✓ [Simplification of Permits](#)
- ✓ [Online System](#)
- ✓ [Good Governance](#)
- ✓ [Accountability](#)

Sovereignty and Energy Resilient



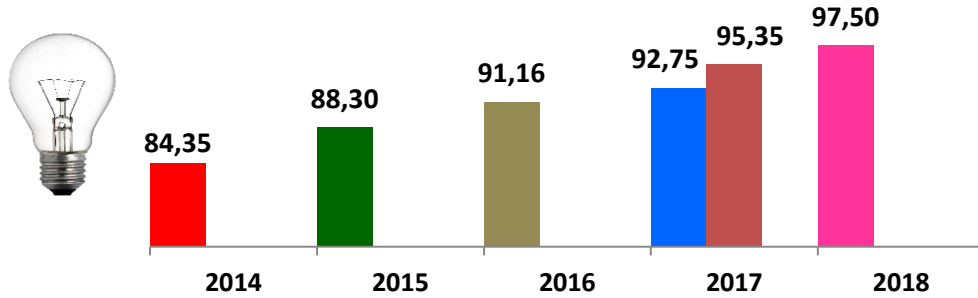
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Increasing Power Generation Capacity

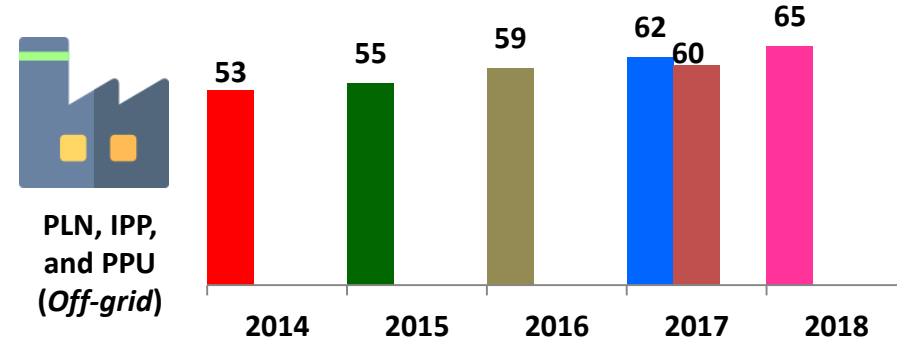


NATIONAL ELECTRICITY CONDITION IN 2017

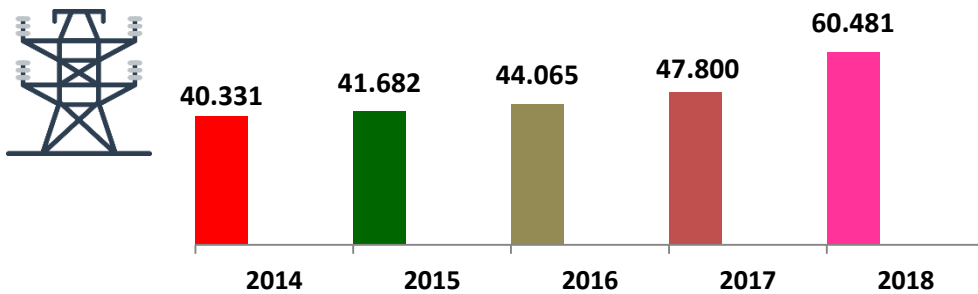
ELECTRIFICATION RATIO (%)



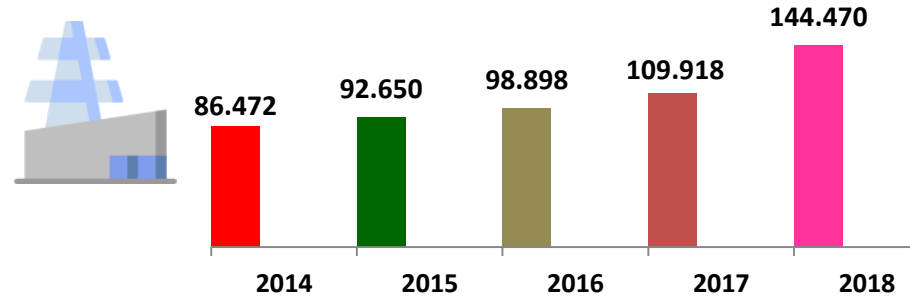
INSTALLED CAPACITY OF POWER GENERATION (GW)



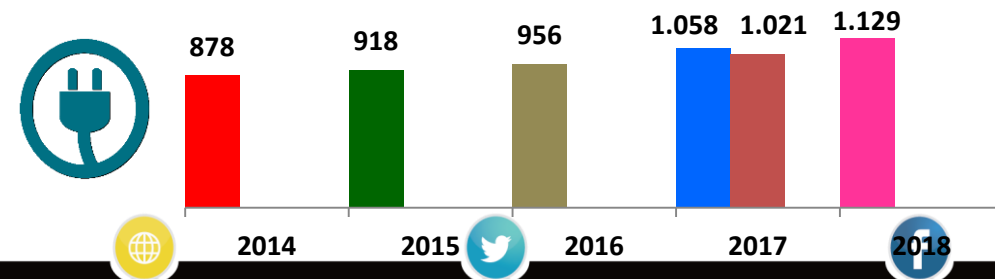
PROGRESS OF TRANSMISSION NETWORK (kms)



PROGRESS OF SUBSTATION (MVA)



ELECTRICITY CONSUMPTION (kWh/capita)



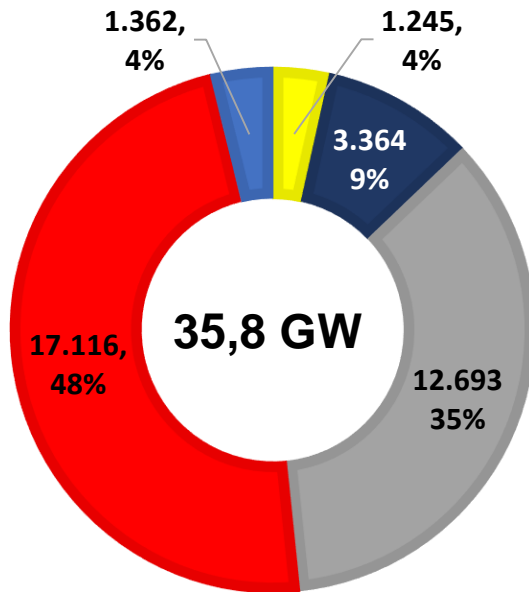
Achievement 2014
Achievement 2015

Achievement 2016
Target 2017

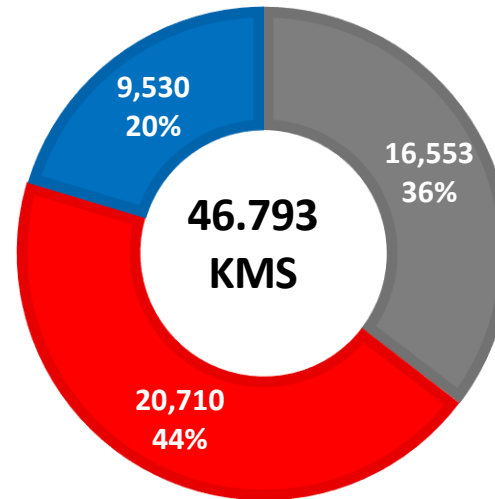
Achievement 2017
Target 2018

PROGRESS OF 35,000 MW PROGRAM (As of January 2018)

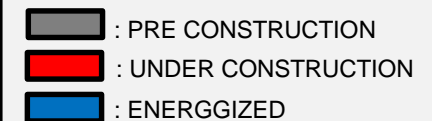
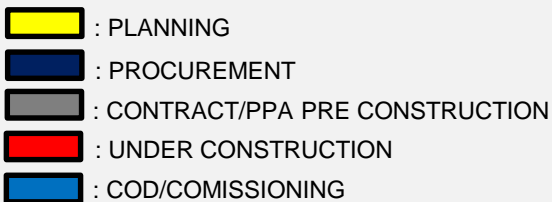
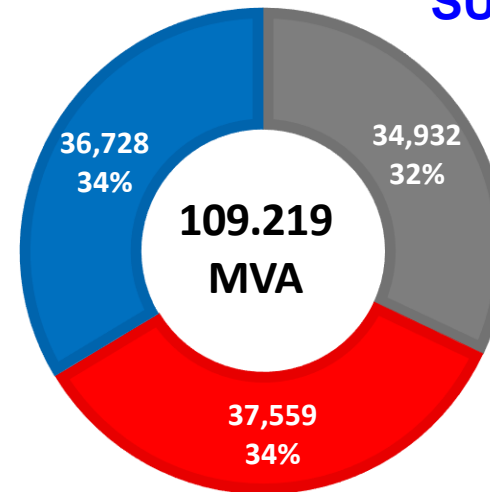
POWER GENERATION



TRANSMISSION NETWORK



SUB STATION

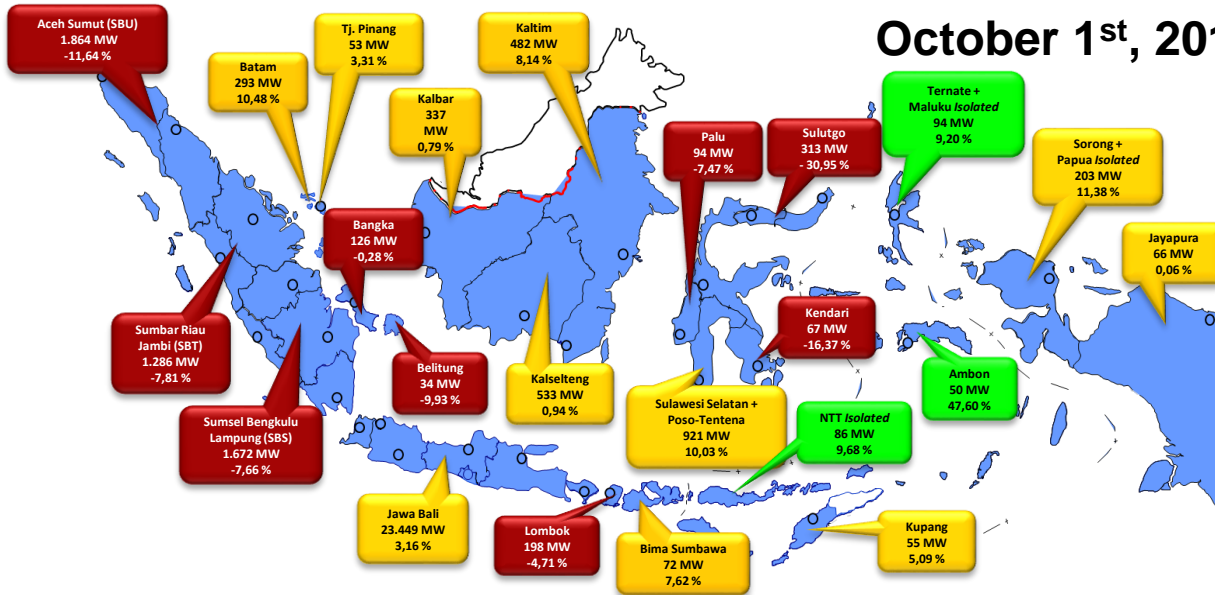


COMPARISON OF ELECTRICITY CONDITION IN 2015 AND 2017

October 1st, 2015

STATUS:

- : 3 Normal (sufficient of reserve)
- : 11 Alert (reserve less than the biggest power plant)
- : 9 Deficit (routine blackout for some areas)



National electricity condition is getting better:

- As of Oct 1st, 2015, there were **9 Electricity Systems in Deficit** (routine blackout for some areas)

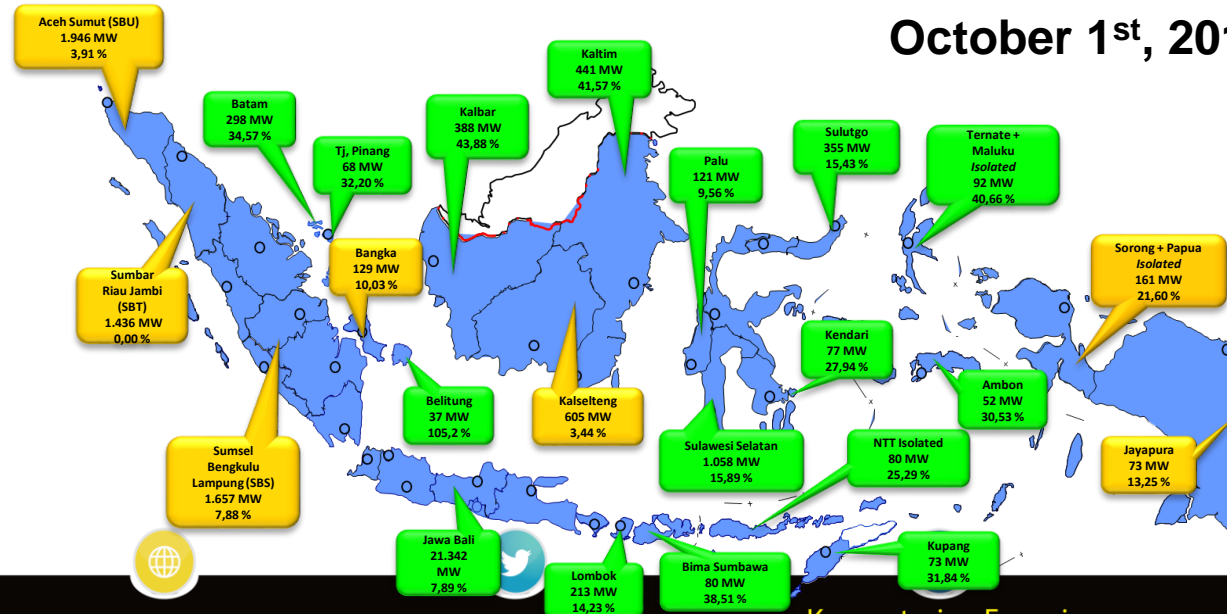


October 1st, 2017

- As of Oct 1st, 2017, there is **no more electricity system facing deficit.**

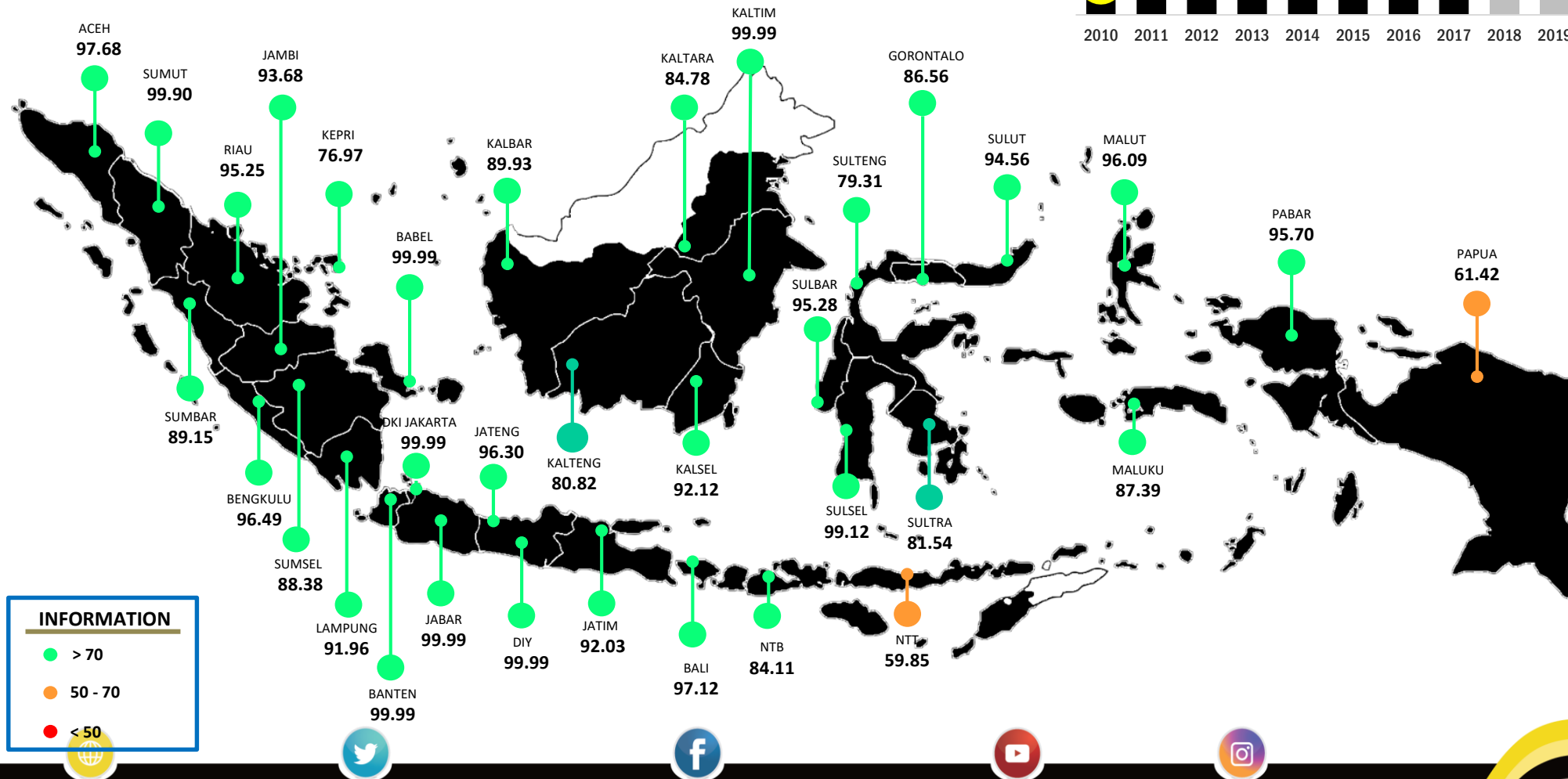
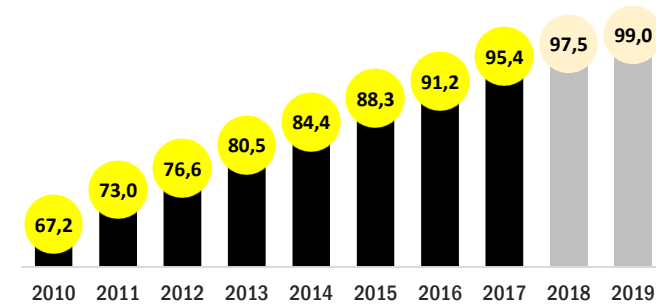
STATUS:

- : 16 Normal (sufficient of reserve)
- : 7 Alert (reserve less than the biggest power plant)
- : **0 Decisit** (routine blackout for some areas)



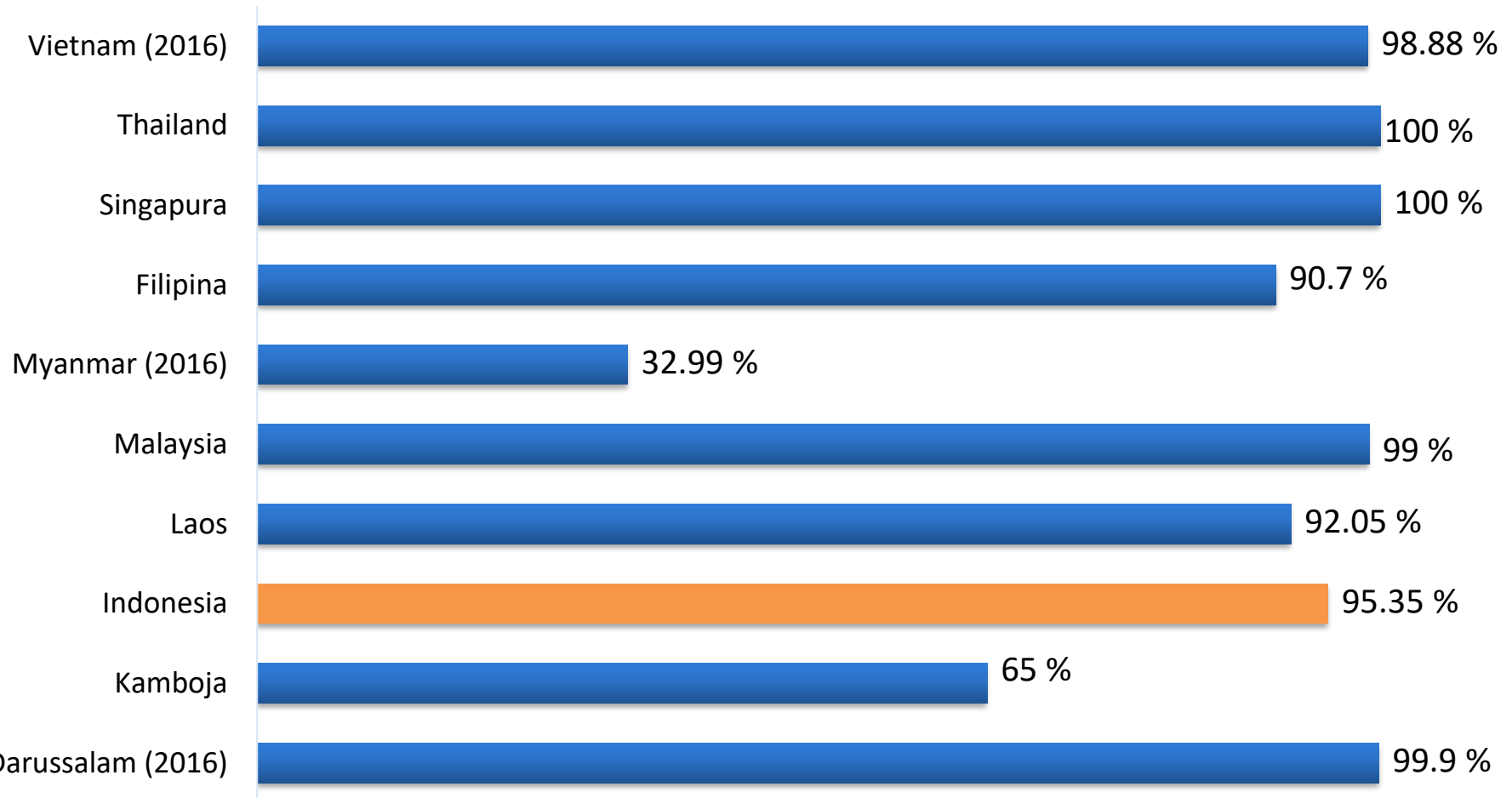
NATIONAL ELECTRIFICATION RATIO 2017 (%)

**National
95.35%**



COMPARISON OF ELECTRIFICATION RATIO IN ASEAN COUNTRY

Electricity ratio ASEAN 2017



(Source : ACE dan ESDM)



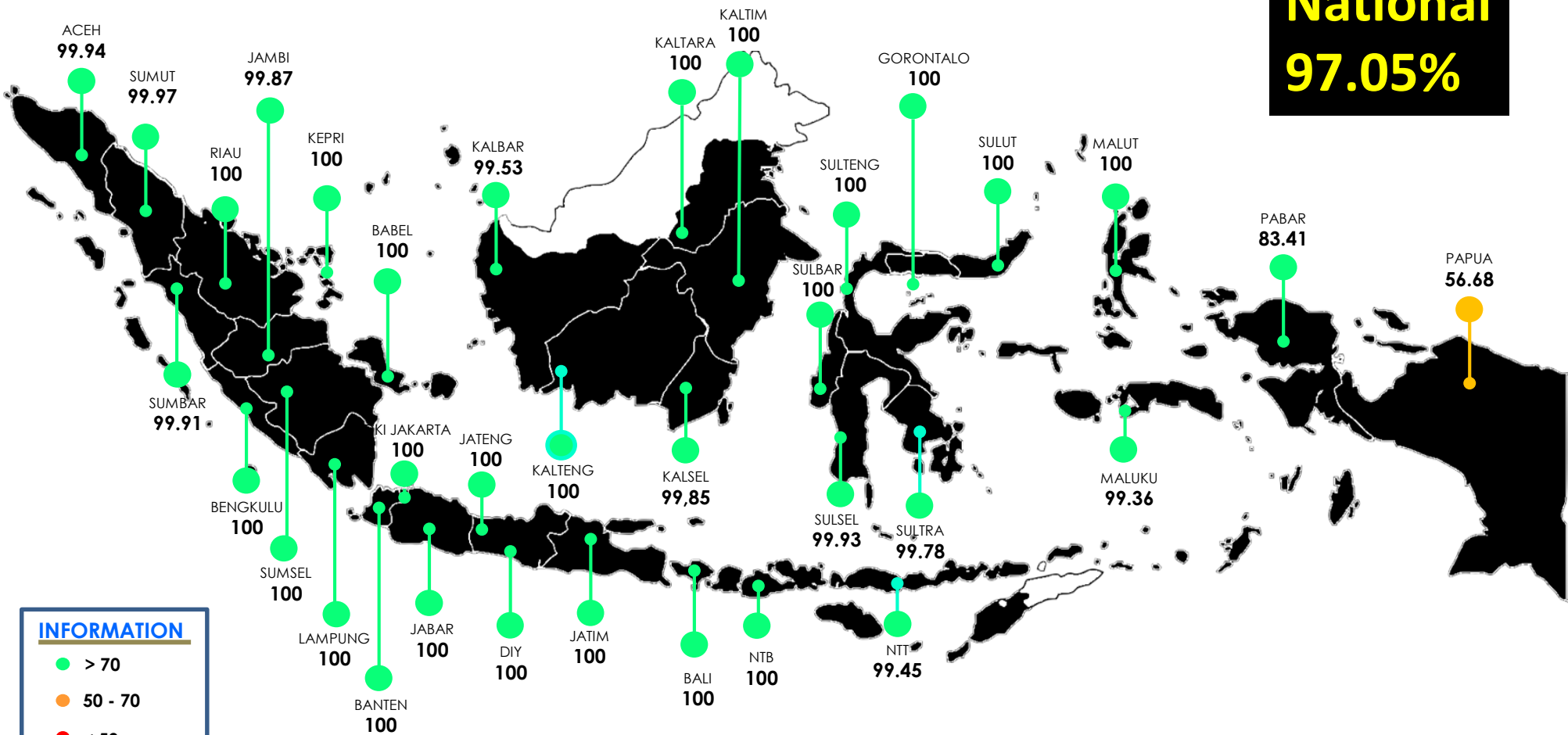


Rural Electrification & Electrifying 2,500 Villages

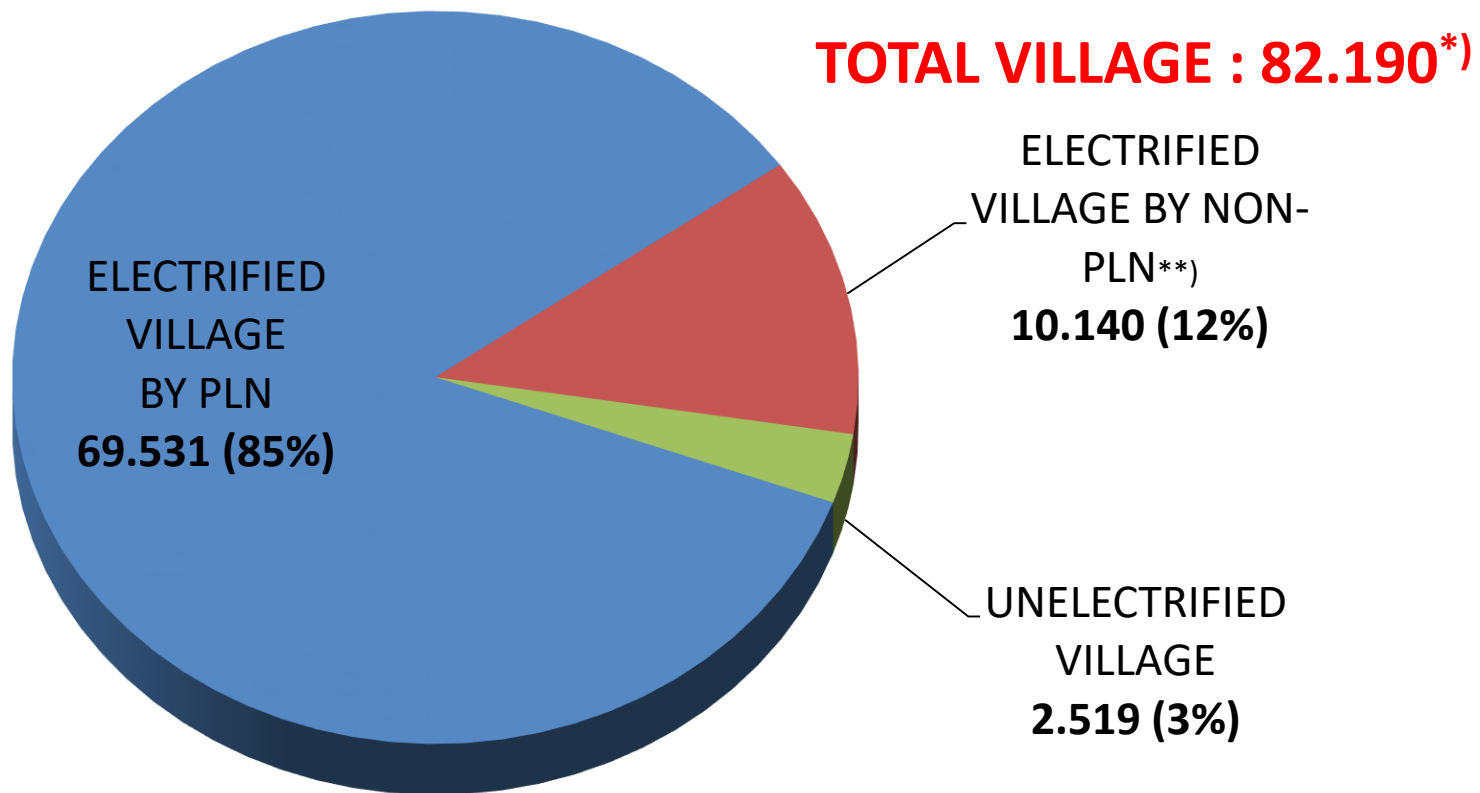


NATIONAL RURAL ELECTRIFICATION RATIO 2017 (%)

**National
97.05%**



CONDITION OF RURAL ELECTRIFICATION IN 2014



^{*)} Based on villages potency (Podes) BPS 2014

^{**)} Those villages are still considered as unelectrified village by PLN since PLN does not exist in that villages.



THREE APPROACHES TO INCREASE ACCESSIBILITY

Electrification ratio is carried out by addition of electricity infrastructure, pre-electrification program and small scale electricity supply business development (UPTLSK).

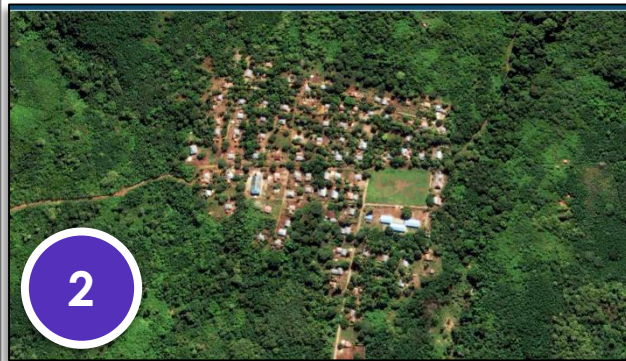
Village that located near by electrified village



Grid Extention



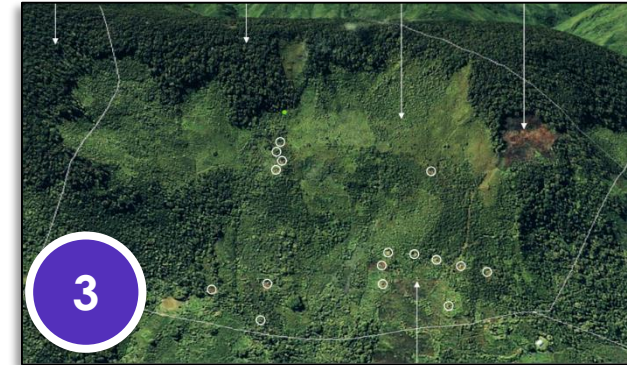
Village where the people live in the same place



Mini-grid off grid



Village where the people live scattered



Solar home system



**Ministerial
Regulation No
38 Year 2016****ACCELERATION OF INDONESIAN RURAL ELECTRIFICATION**

Electrification program up to
50 MW capacity are given to :

- Underdeveloped rural areas
- Remoted areas
- International border areas
- Small populated islands

2500 villages
without
electricity

**Renewable Energy Usage**

Rural Electrification Acceleration Program
utilizes renewable energy (RE) as a
source of electricity.

**Determining The Business Areas :**

- 1** Minister's authority to determine which business area to develop based on each Governor's proposal
- 2** Minister of Energy assigns companies that already have Power Supply Business License (IUPTL)
- 3** Governor proposes business area
- 4** Governor offers business area to companies
- 5** Governors issues Power Supply Business License (IUPTL)

**Procurement Mechanism****Investment**

Based on governor's proposal then
auctioned to corporations that
manage the business area

Assignment

Regional governments can assign
regional owned enterprise (BUMD) if
there are no interested investor

Tariff Mechanism**Subsidy**

The government calculates the required
subsidy to be proposed to the
parliament (DPR)

Nonsubsidised with agreed tariff

Tariff is set by the Minister or Governor
based on their respective authority

Nonsubsidised with national's tariff

PLN based tariff, regional government
can't set the tariff



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ILUMINATING FROM THE EDGE

Solar Energy Saving Lamp (LTSHE) Program



“ LTSHE is suitable as a pre-electrification program for house in villages which geographically and distribution of the people are scattered and it is difficult to be covered by PLN's grid. ”



Current Condition:

There are **2,500** villages that remain in the darkness, or **256,114** houses

TARGET:

Illuminating unelectrified villages within 2 years (2017-2018), especially for villages that are still remain in the darkness



2017



Installed in 5 provinces in Indonesia



Electrify **79,564** houses



2018

Installed in 15 Districts/Cities

Electrify **175,782** houses



#EnergyEquitable

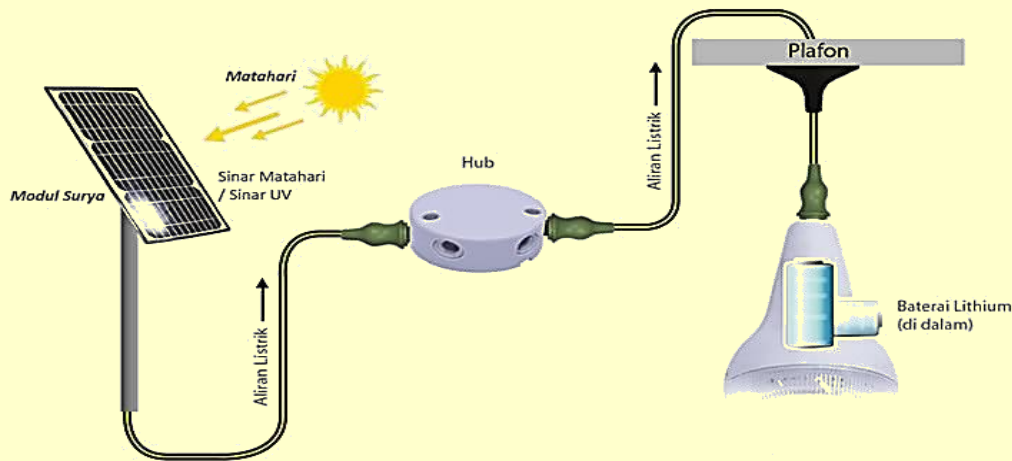


SOLAR ENERGY SAVING LAMP (LTSHE)



LTSHE COMPONENT:

- ✓ Ultra efisien Light Emitting Diode (LED)
3 Watt = Fluorescent lamp 25 Watt;
- ✓ Lithium Energy Storage Pack (battery Lithium);
- ✓ chip of energy management.

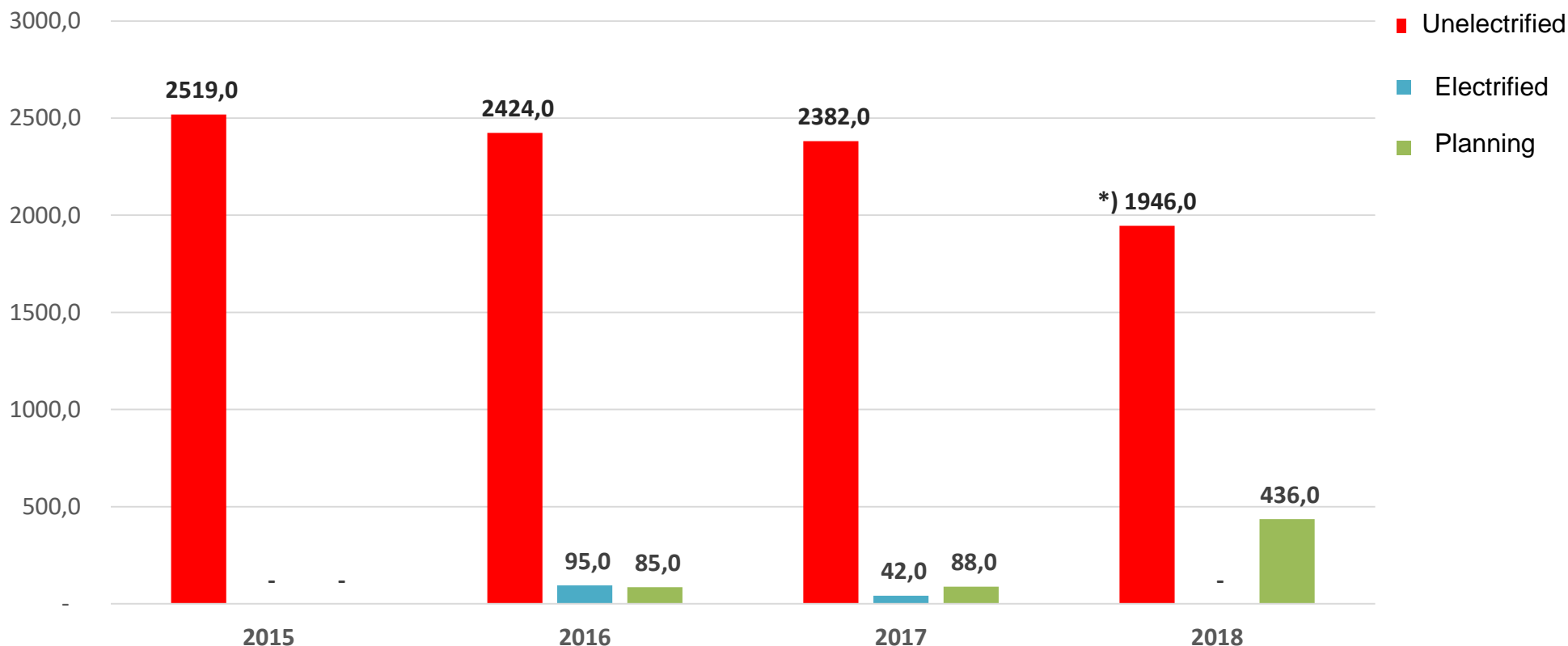


Could light on up to 6 hours, 12 hours or could operate up to maximum 60 hours in one time charging.



PROGRESS OF RURAL ELECTRIFICATION PROGRAM 2015-2017

- Year **2015** : **2,519** unelectrified villages.
- Year **2016** : **2,424** unelectrified villages, **95** electrified village.
- Year **2017** : **2,382** unelectrified villages, **42** electrified villages, 88 villages under planning.
- Year **2018** : 436 vilages will be electrified and the remain unelectrified villages will be electrified by using LTSHE.
- **Total electrified villages as off December 2017: 137** villages

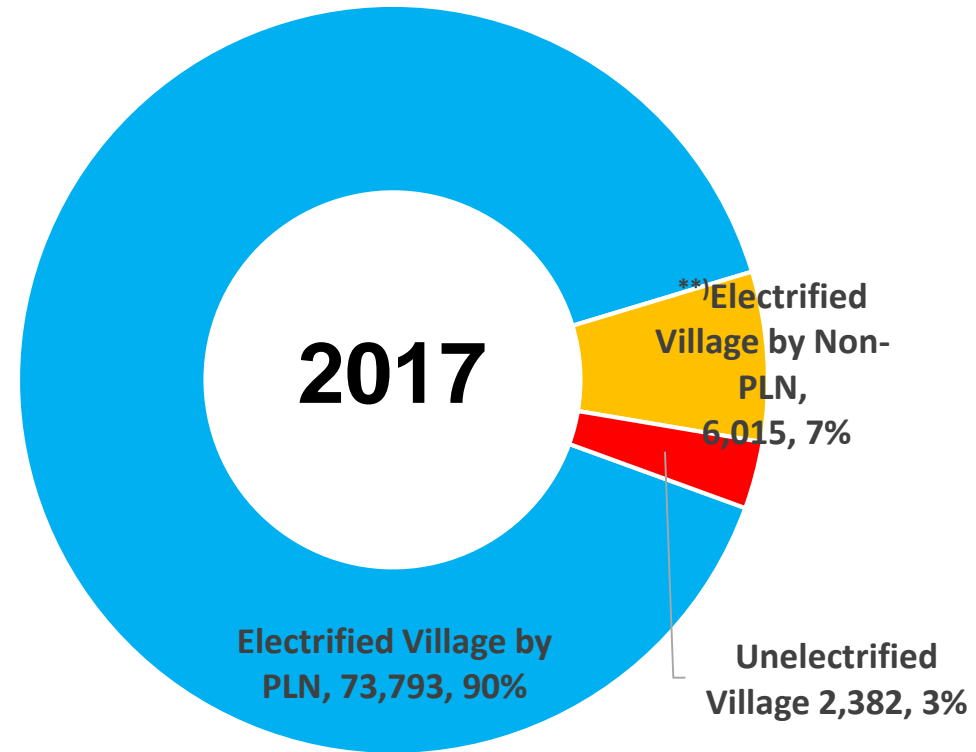
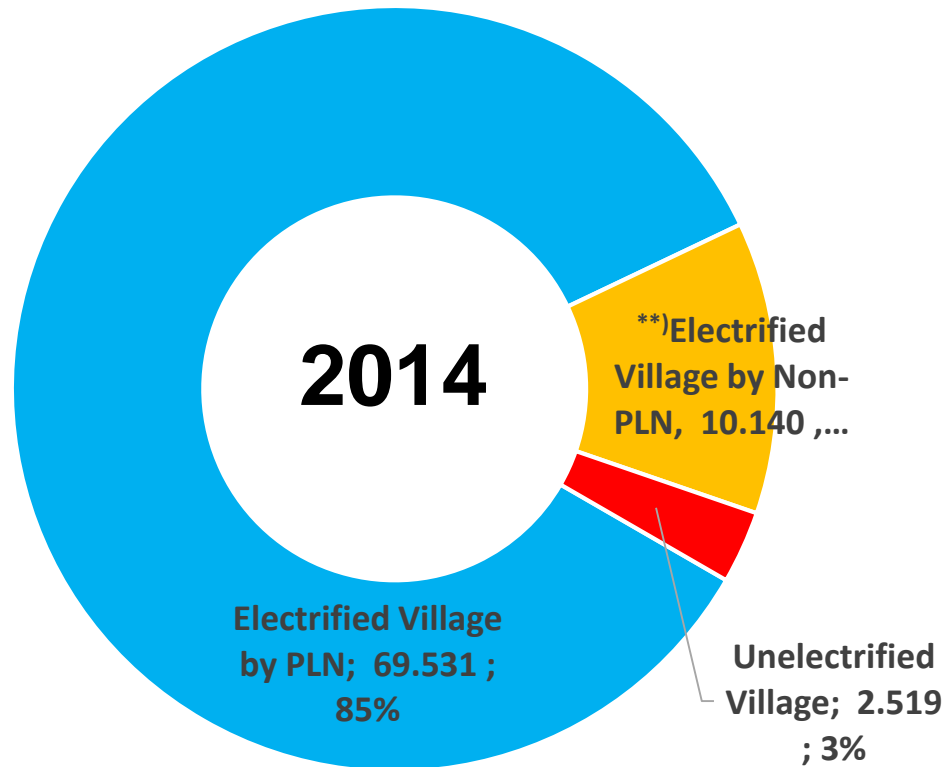


*) around of 1,946 unelectrified villages will be electrified by using Solar Energy Saving Lamp (LTSHE).



PROGRESS OF 2,500 UNELECTRIFIED VILLAGES

TOTAL VILLAGE : 82.190^{*)}

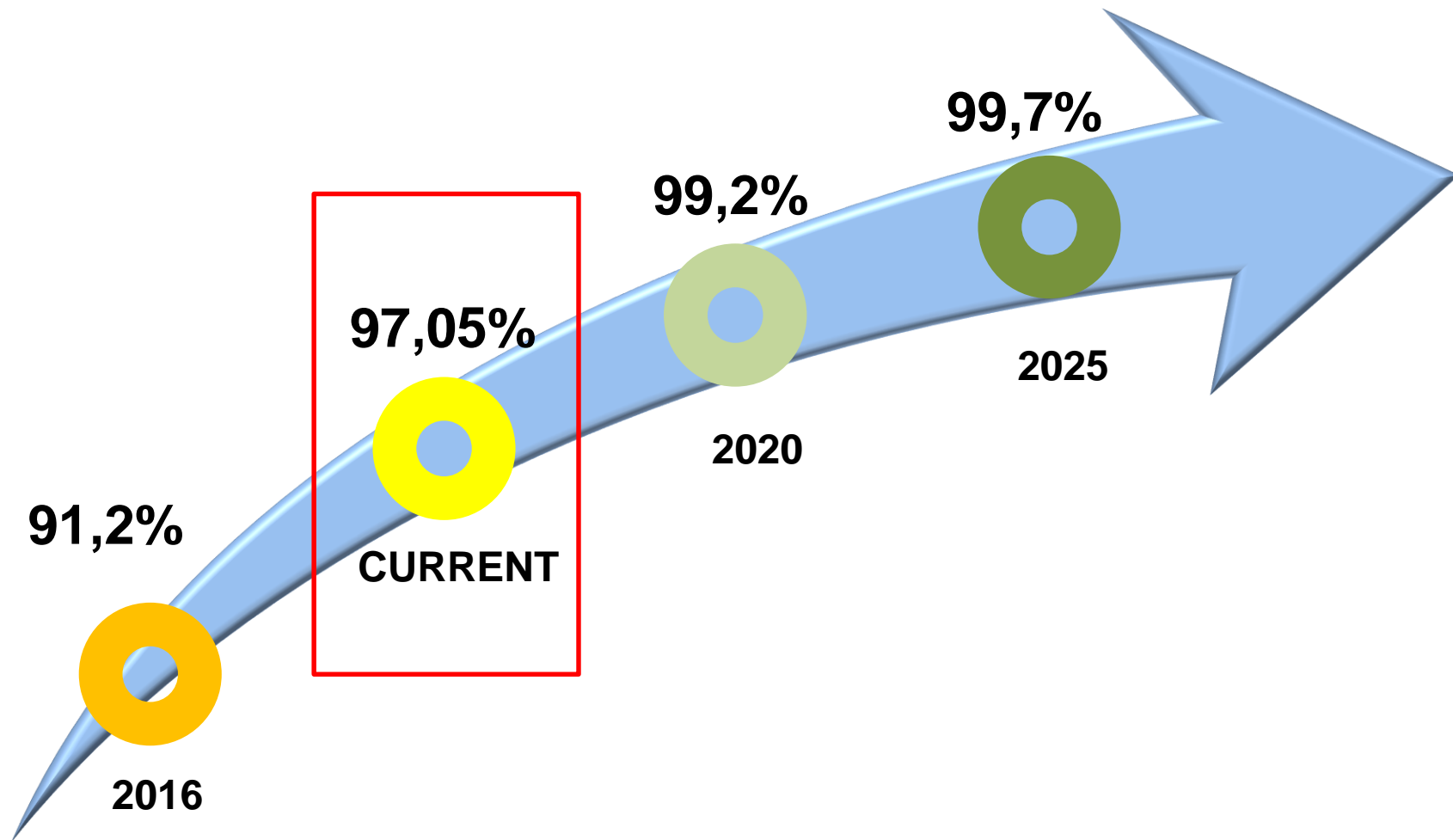


^{*)} Based on villages potency (Podes) BPS 2014

^{**)} Those villages are still considered as unelectrified village by PLN since PLN does not exist in that villages.



TARGET OF RURAL ELECTRIFICATION RATIO



Sources: Draft of National Electricity General Plan
2018 - 2037



RURAL ELECTRIFICATION DEVELOPMEN PLAN BY PT PLN (PERSERO)

Rural Electrification Program 2017-2026

Year	Unit	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
MV Network	kms	6.055	6.125	6.570	4.233	4.336	3.638	4.226	3.631	3.629	3.629
LV Network	kms	6.891	7.448	8.004	5.215	4.604	3.854	4.141	3.846	3.843	3.843
Transformer	MVA	232	331	299	147	153	144	156	145	145	145
Generation	kW	35.675	38.850	55.876	42.772	5.779	0	0	0	0	0
No. Cust.	Ribu Plg	421.860	414.277	372.809	251.712	210.095	191.777	214.404	189.861	187.623	187.623

SOURCE: RUPTL PT. PLN (PERSERO) 2017-20126





Sustainability and Affordability



Business Certainty in Power Purchase Agreement (PPA)

PPA Reform – Ministerial Regulation 49/2017



Improved business certainty:

- The risk of government force majeure is removed
- Fair balance / risk sharing

BACKGROUND

- Power purchase risk balance between PLN and IPP
- Ensuring reliability of electricity supply
- State's authority on electricity supply
- Power Purchase Agreement Standard (PJBL)

COOPERATION SCHEME PLN - IPP*

*IPP = Independent Power Producer

BOOT (Build, Own, Operate, Transfer)

Note :

Based on the Constitutional Court decision on Electricity Law regarding the state authority on electricity



PPA (PJBL) PERIOD

technical period at the most

30 years

since

(commercial operation date/COD)



PROVISIONS CERTAINTY OF COMMERCIAL OPERATION DATE

Delay of COD



IPP will be penalized

COD Acceleration as requested by PLN



IPP will get Incentives



CAPITAL INVESTMENT DEPRECIATION

Minimum

20 years

As basis for electricity sales price determination



PROVISIONS OF TRANSACTION

Delivery or Pay

If **IPP doesn't supply electricity according to the contract** due to IPP's fault



IPP will be penalized

Take or Pay

When **PLN doesn't absorb electricity as contracted** due to PLN's fault



PLN will pay penalty to IPP



AFFORDABLE ELECTRICITY PROVISION FOR THE PEOPLE FROM COAL FIRED POWER PLANT

Ministerial Regulation No. 19 Year 2017*

*REGARDING THE UTILIZATION OF COAL FOR POWER GENERATION AND THE PURCHASE OF EXCESS POWER

MINEMOUTH POWER PLANT

Combined cycle power plant in which it's coal supply was guaranteed by the mining company based on PPA

ADVANTAGES :

- ✓ **EFFICIENT:** Power plant's location is parallel with coal mine's location thus cutting distribution & transportation cost.
- ✓ **ENVIRONMENTAL FRIENDLY:** Transportation infrastructure (roads & river) are exempted from damage and reduced air pollution

MINE MOUTH POWER PLANT

- Power purchase can't be directly appointed
- PT PLN & Power Generation Company are obliged to ensure coal supply based on PPA
- PPA is implemented for 30 years since COD (BOOT Scheme)

REGULAR CFPP

- Power purchases are made under PPA, within 30 years since COD (BOOT Scheme)

*BPP = *Biaya Pokok Penyediaan Pembangkit*
(Cost of Power Generation)



Keterangan:
BPP: Biaya Pokok Penyediaan
COD: Commercial Operation Date
PAB: Perjanjian Jual Beli Tenaga Listrik
BOOT: Build-Own-Operate, Own (Hewit), Operate (Wongsoharjo), Transfer (Wongsoharjo)
B to B: Business to Business

#EnergiBerkeadilan

Electricity Purchase Price :

- If local BPP \leq national BPP average the ceiling price is **75%** of local BPP
- If local BPP $>$ national BPP average the ceiling price is **75%** of national BPP
- Electricity purchase price is set with the assumption of **80%** generating capacity

Electricity Purchase Price :

- **Larger than 100 MW**
 - If local BPP \leq National BPP the ceiling price is based on local BPP
 - If local BPP $>$ National BPP the ceiling price is based on national BPP
- **Capacity up to 100 MW**
 - If local BPP \leq National BPP the ceiling price is based on local BPP
 - If local BPP $>$ National BPP the price is based on auction or B2B process
- Electricity purchase price is set with the assumption of **80%** generating capacity



ACTUALIZING A MORE AFFORDABLE ELECTRICITY PRICE FOR THE PEOPLE

Ministerial Regulation No. 11 Year 2017 jo. Ministerial Regulation No. 45 Year 2017

Natural Gas Utilization for Generating Power

Natural Gas Utilization for Generating Power at Wellhead

“ could be done by direct appointment ”



Ensuring the availability of gas supply with a reasonable and competitive price, either gas pipeline or LNG



Providing a convenient setting in gas allocation for electricity power generation



Developing power plants at wellhead either through direct appointment or general auction

1

Direct Appointment

Gas Price \leq 8% ICP (MMBTU)



2

General Auction

Gas Price $>$ 8% ICP (MMBTU)

Natural Gas Utilization for Generating Power other than at Wellhead

14.5%

ICP / MMBTU

Highest price limit for power generation
(Free on Board)



If over than

14.5%

ICP / MMBTU

Import is allowed as long as the highest price is 11.5% ICP/MMBTU
(Landed Price)

Remarks:

ICP = Indonesian Crude Price

LNG = Liquefied Natural Gas

MMBTU = Million British Thermal Units



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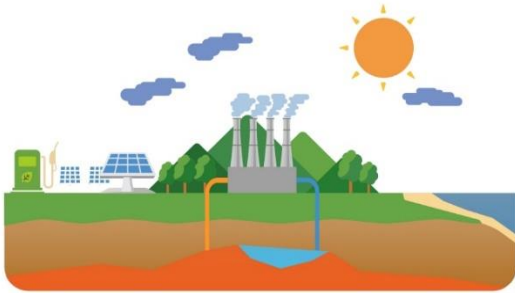
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Utilization of Renewable Energy for Affordable Electricity Price

Ministerial Regulation Number 50 Year 2017



Renewable Energy Sources

Energy source produced by sustainable energy resources, such as: solar, wind, hydro, biomass, biogas, municipal waste, geothermal, waves and OTEC

Renewable Power Plant Types:

- Solar
- Wind
- Hydro
- Biomass
- Biogas
- Waste
- Geothermal
- Ocean Currents

Implementation of Power Purchase



General Auction

Geothermal and Municipal Waste Power Plant



Direct Selection

Hydro, Solar PV, Wind, Biomass, Ocean Currents, and Biogas Power Plant

Renewable IPP Contract



Power Purchase Price

Indexing to generation cost in local system

> **National average power generation cost:**
Maximum purchase price is **85%** from local electricity generation cost

≤ **National average power generation cost:**
Power generation cost based on the agreement (B2B)

- Solar
- Wind
- Biomass
- Biogas
- Ocean Currents

- Waste
- Hydro
- Geo-thermal

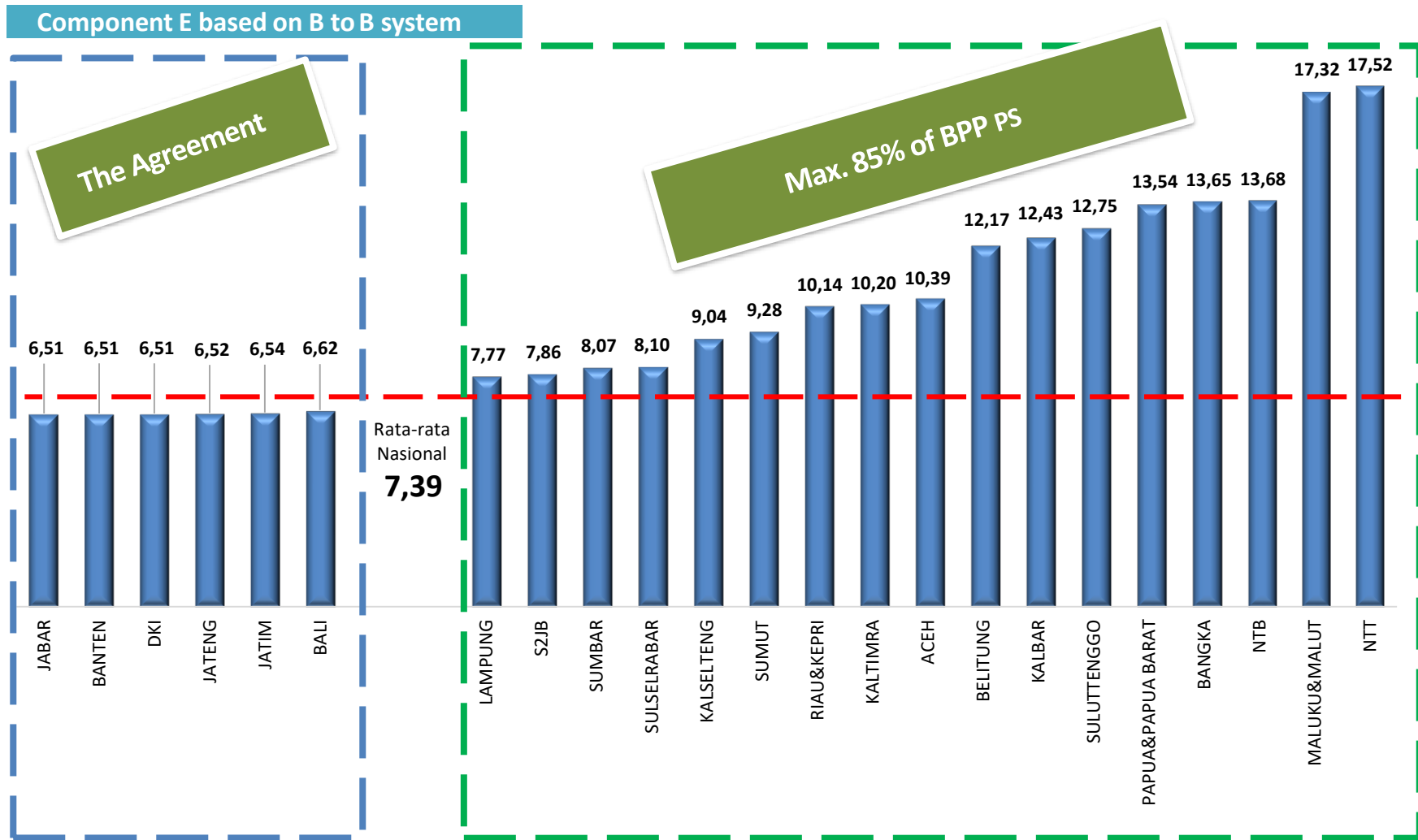
If power generation cost in local system > National average power generation cost

Maximum purchase price is **100%** from Local average electricity generation cost

Business to Business (B to B), if power generation cost in Sumatera, Jawa, Bali or local electricity area ≤ National average Power generation cost

THE ELECTRICITY PURCHASE FROM RENEWABLE ENERGY

Solar PV PP, Wind PP, Biomass PP, Biogas PP, Ocean Current PP



COST OF POWER GENERATION 2016 (sen USD/kWh)

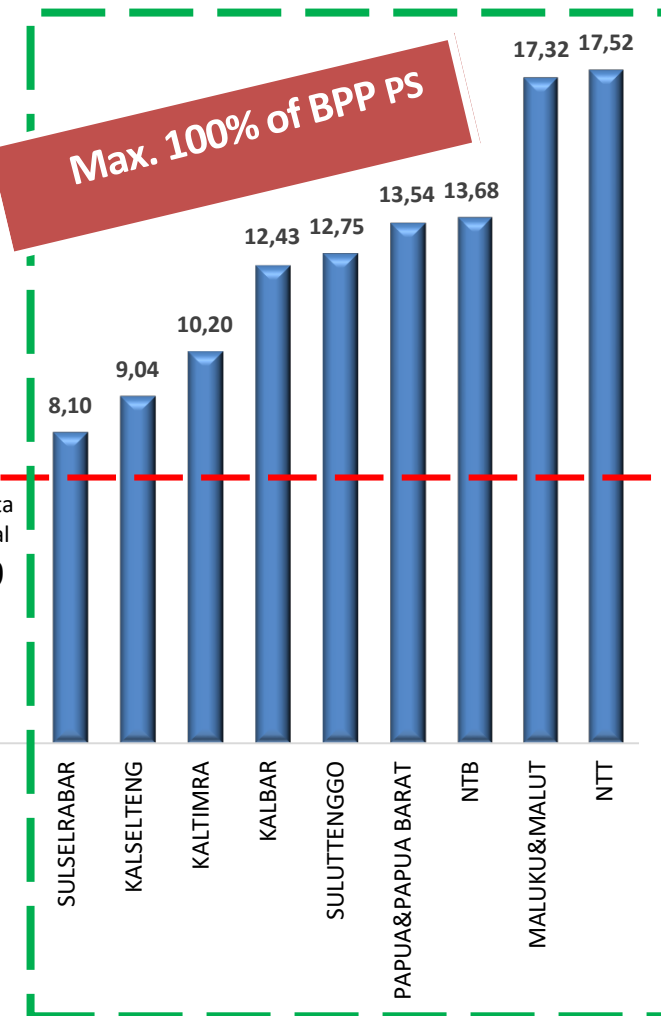
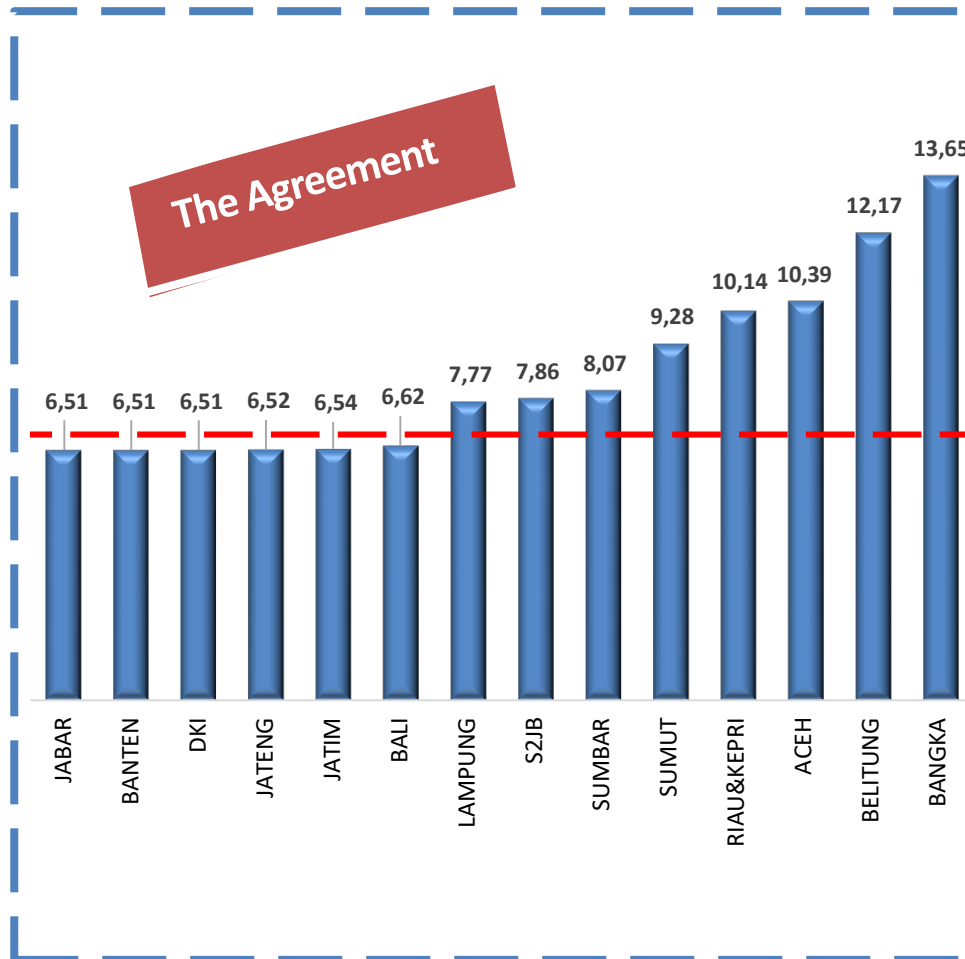
Based on MEMR decision No. 1404K/20/MEM/2017 MEMR RI



THE ELECTRICITY PURCHASE FROM RENEWABLE ENERGY

Hydro PP, Waste to Energy PP and Geothermal PP

Component E based on B to B system

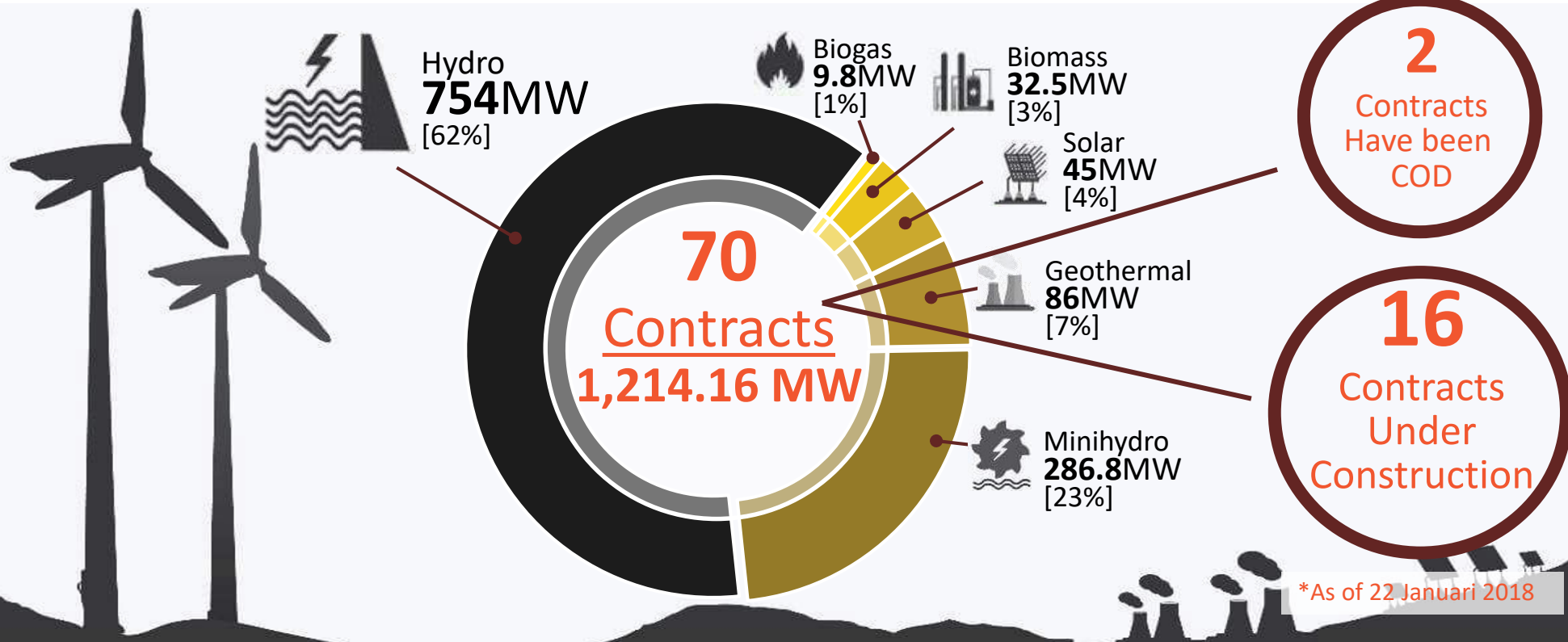


COST OF POWER GENERATION 2016 (sen USD/kWh)

Based on MEMR decision No. 1404K/20/MEM/2017 MEMR RI

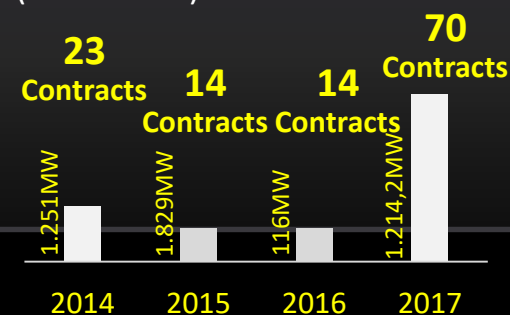
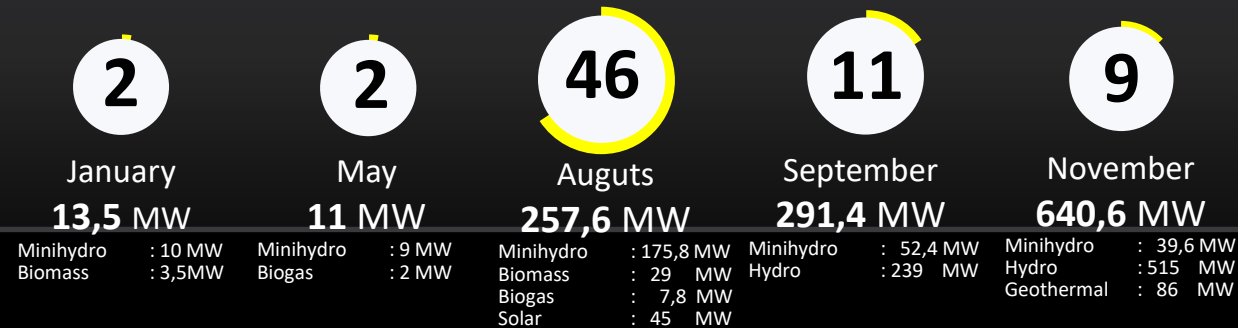


70 Contract of NRE Power Gen. in 2017



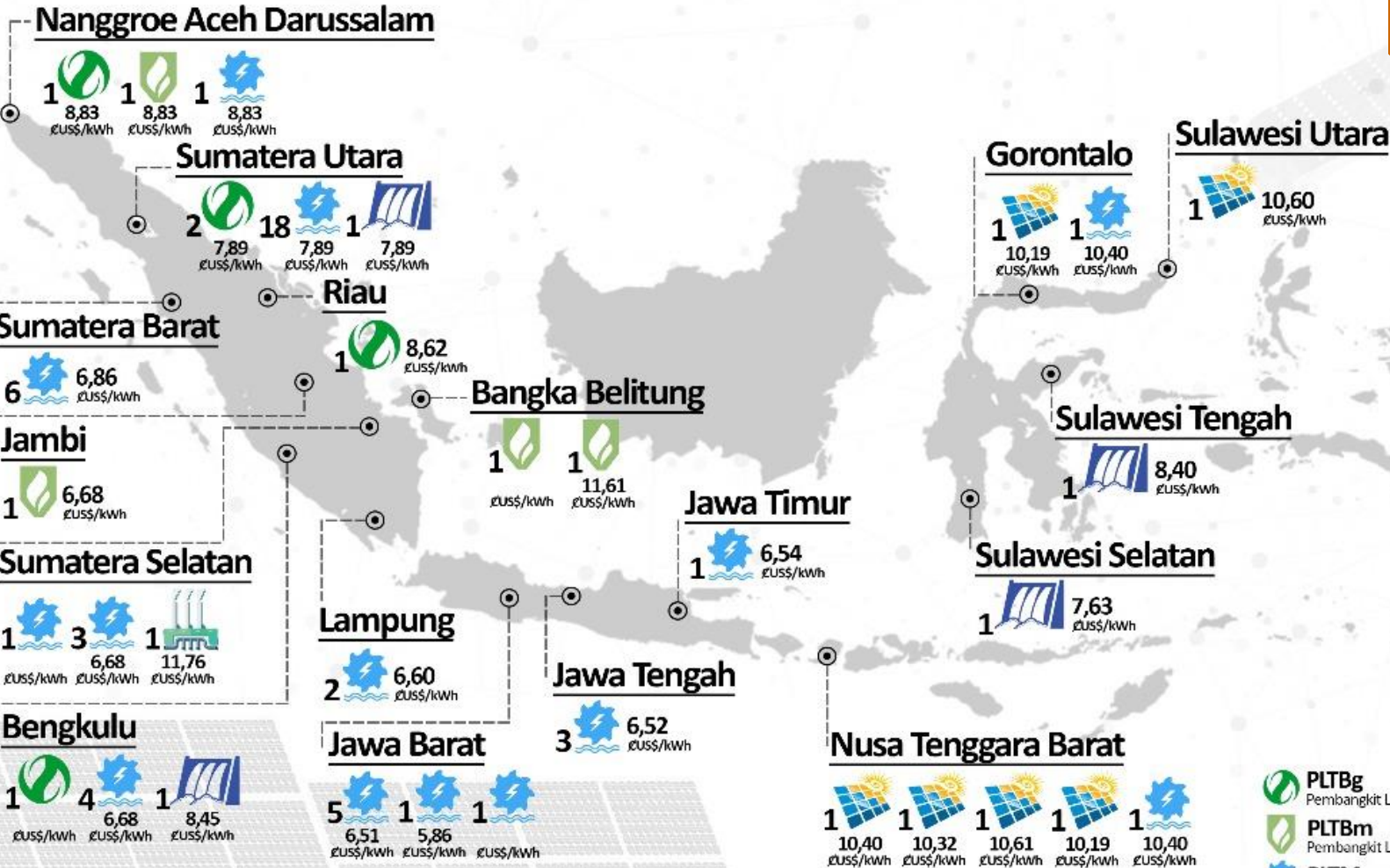
■ Penandatanganan 70 Kontrak
Pembangkit Listrik EBT Tahun 2017

■ Progress of NRE Generation Contracts
(2014-2017)



MAP OF RENEWABLE ENERGY GENERATION IN 2017

Total
70 PPAs



PLTBg
Pembangkit Listrik Tenaga Biogas

PLTBm
Pembangkit Listrik Tenaga Biomassa

PLTM
Pembangkit Listrik Tenaga Mikrohidro

PLTA
Pembangkit Listrik Tenaga Air

PLTS
Pembangkit Listrik Tenaga Surya

PLTP
Pembangkit Listrik Tenaga Panas Bumi

ADJUSTMENT OF SUBSIDIZED ELECTRICITY TARIFF OF 900 VA

(Based on Ministerial of EMR No. 28 Year 2016)

900 VA of Household will be divided into 2 categories of Tariff



R-1/900 VA

Poor and Non Affordable Customer with
Class of 900 VA are still subsidized



R-1/900 VA-RTM

Affordable Customer with Class of 900 VA
are not subsidized

**THE ADJUSTMENT OF TARIFF FOR CLASS OF R-1/900 VA –
AFFORDABLE CUSTOMER WILL BE CARRIED OUT BY 3 PHASE:**

Initial Tariff

(until December 2016)

Reguler Blok I: Rp275/kWh
Reguler Blok II: Rp445/kWh
Reguler Blok III: Rp495/kWh
Pre-paid : Rp605/kWh

Phase I Adjust.

(1 January – 28 February 2017)

Reguler Blok I: Rp360/kWh
Reguler Blok II: Rp582/kWh
Reguler Blok III: Rp692/kWh
Pre-paid : Rp791/kWh

Phase II Adjust.

(1 March – 30 April 2017)

Reguler Blok I: Rp470/kWh
Reguler Blok II: Rp761/kWh
Reguler Blok III: Rp1.014/kWh
Pre-paid : Rp1.034/kWh

Phase III Adjust.

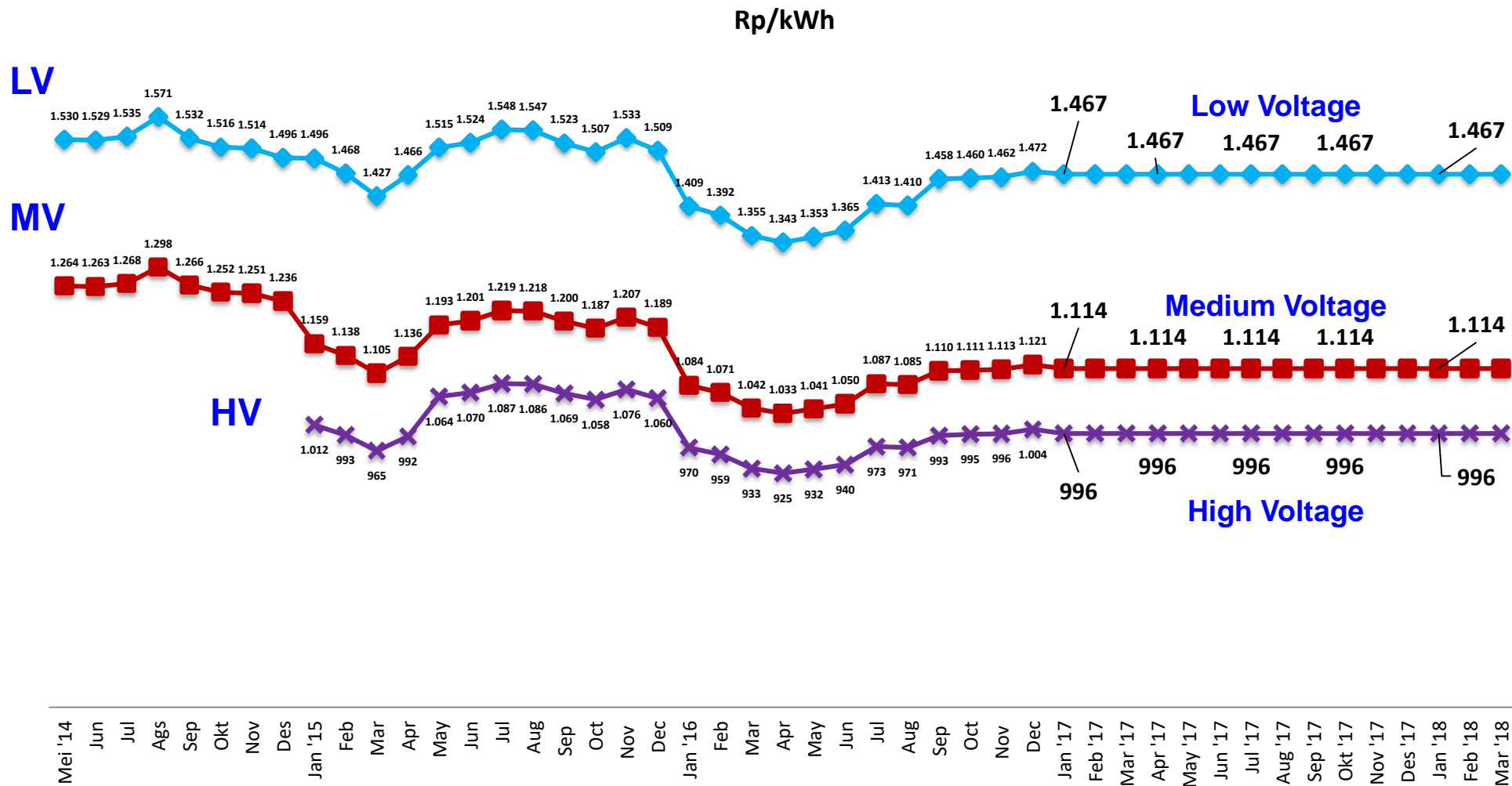
(Starting 1 Mei 2017)

Reguler Blok I: Rp1.352/kWh
Reguler Blok II: Rp1.352/kWh
Reguler Blok III: Rp1.352/kWh
Pre-paid : Rp1.352/kWh

Sumber: KESDM









REALIZATION OF ELECTRICITY TARIFF IN 2017 AND Q1-2018



COMPARISON OF ELECTRICITY TARIFF IN ASEAN COUNTRY

(As of December 2017)

Type of Use						
	Indonesia (cUSD/kWh)	Malaysia (cUSD/kWh)	Thailand (cUSD/kWh)	Singapore (cUSD/kWh)	Philippines (cUSD/kWh)	Vietnam (cUSD/kWh)
Household	11.00	9.34	12.70	16.73	15.61	9.67
Medium Business -LV	11.00	12.68	9.60	11.88	9.44	12.07
Big Business -MV	8.36	8.96	9.29	11.62	9.19	11.10
Medium Industry -MV	8.36	7.75	8.36	10.82	9.02	7.17
Big Industry-HV	7.47	7.24	8.36	10.53	8.96	6.82

Country		Source
Indonesia	Kementerian ESDM	www.esdm.go.id
Malaysia	Tenaga Nasional Berhad	https://www.tnb.com.my/residential/pricing-tariffs
Thailand	Board of Investment Thailand	http://www.boi.go.th/index.php?page=utility_costs&language=en
Singapura	Energy Market Authority (EMA)	https://www.ema.gov.sg/Electricity_Consumers.aspx
Phillippines	The Manila Electric Company (MERALCO)	http://www.meralco.com.ph/consumer-information/rates-archive
Vietnam	Vietnam Electricity (EVN)	http://en.evn.com.vn/c3/gioi-thieu-l/Electricity-Price-9-28.aspx



IV

Bureaucracy Reform



LICENSING, CERTIFICATION, AND RECOMMENDATION

A. Licensing

Based on Ministerial of EMR Regulation No. 35/2014, the permit that has been transferred to Investment Coordinating Board (BKPM), as follows:

1. Electricity Supply Business License;
2. Operating Permit;
3. Determination of Special Business Area;
4. Sell and Purchase Electricity Cross Country Permit;
5. Business license for power support services which is undertaken by SOEs or foreign investors (the majority shares owned by foreign investors); and
6. Permit for Utilization of Electricity Network for Telecommunication, Multimedia, and Informatics;

B. Certification

1. Certificate of Business Entity (SBU);
2. Certificate of Commissioning (SLO); and
3. Certificate of Electrical Power Engineering Personnel (SKTTK)

**On-line
Registration**

C. Recommendation

1. Plan for Import of Goods (RIB)
2. Foreign Workers Use Plan (RPTKA)



ON-LINE REGISTRATION SERVICES

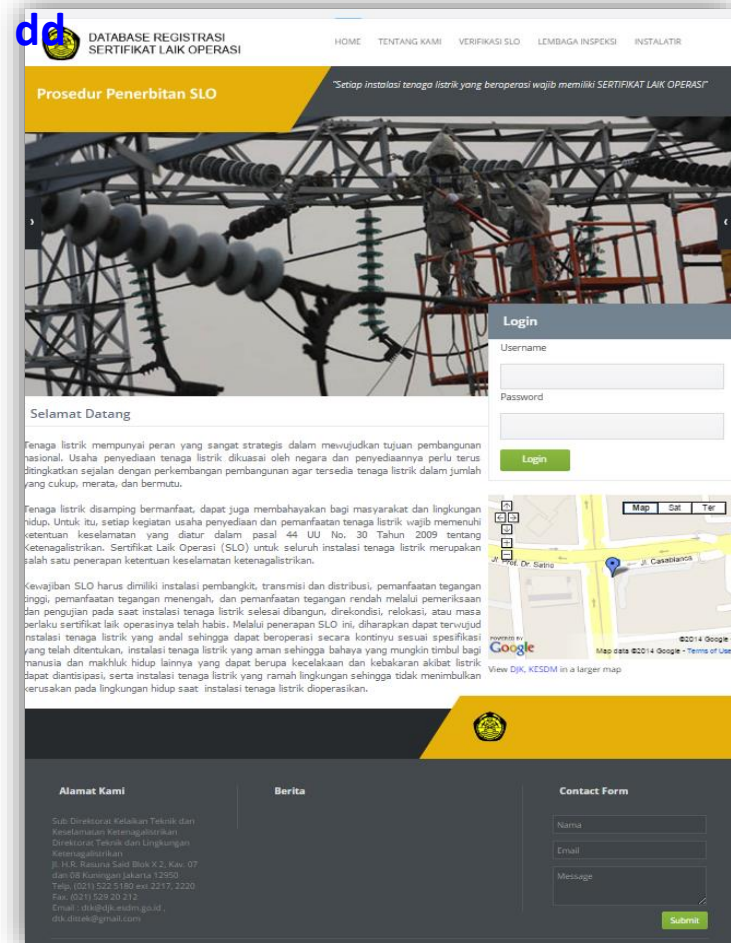
1 <https://skttk.djk.esdm.go.id>



2 <https://sbu.djk.esdm.go.id>



3 <https://slo.djk.esdm.go.id>



SIMPLIFICATION AND REVOCATION OF REGULATIONS

As an effort to create a conducive investment climate, the Ministry of EMR has simplified and revoked several regulations in 2018.

15

Regulations have been **revoked**

And there are more

- **Ministry of EMR Regulation No. 2 year 2018** concerning The Compulsory Enforcement of National Standard of Indonesia (SNI) in the Field of Electricity.

This regulation has revoked 10 Ministry of EMR Regulations and 1 Ministry of EMR Decree.

- 4 Ministry of EMR Regulations have been revoked, as follows:
 1. **The Ministry of Mines and Energy No. 02 P/451/M.PE/1991** concerning the Relationship of the Electricity Business Authority Holders and the Holders of Electricity Business Permit For Public Interest with the society;
 2. **The Ministry of Mines and Energy No. 03 P/451/M.PE/1991** concerning Requirements for Connecting Electricity;
 3. **The Ministry of Energy and Mineral Resources Regulation No. 33 Year 2008** concerning Electricity Selling Price Provided by PT Batam, National Electricity Service;
 4. **The Ministry of Energy and Mineral Resources Regulation No. 04 Year 2012** concerning Electricity Purchase Price by PT PLN (Persero) from Power Generation Using Small and Medium Scale Renewable Energy or Excess Power.





Thank You

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