

# INDONESIAN POLICIES AND BUSINESS MODELS FOR RURAL MINIGRIDS

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ANDRE SUSANTO



# OUR MISSION

## EMPOWER rural communities through INNOVATION







E



# MINIGRIDS





# FACTORS



# LEARNING

## G



WHAT  
KIND



FONDIN  
G






# SERIOUS





A photograph of the Mahkamah Konstitusi (Constitutional Court) building in Jakarta, Indonesia. The building features a prominent portico with eight tall, fluted columns supporting a pediment. The name 'MAHKAMAH KONSTITUSI' is inscribed in large, raised letters on the pediment. A large, dark dome is visible on the roof behind the portico. The building is surrounded by other modern structures, and a telecommunications tower is visible in the background to the right. A wide set of stone steps leads up to the entrance.

MAHKAMAH KONSTITUSI

THE  
CONSTITUTION



# OHM'S LAW

WATTS=P

$$\frac{E^2}{R}$$

$$R \times I^2$$

$$E \times I$$

$$R \times I$$

$$\frac{P}{I}$$

$$\sqrt{P \times R}$$

E=VOLTS

AMPS=I

$$\sqrt{\frac{P}{R}}$$

$$\frac{P}{E} \quad \frac{E}{R}$$

$$\frac{E}{I}$$

$$\frac{E^2}{P}$$

$$\frac{P}{I^2}$$

R=OHMS



**PRESIDEN  
REPUBLIK INDONESIA**

**UNDANG-UNDANG REPUBLIK INDONESIA**

**NOMOR 30 TAHUN 2009**

**TENTANG**

**KETENAGALISTRIKAN**





# MINISTERIAL REGULATION

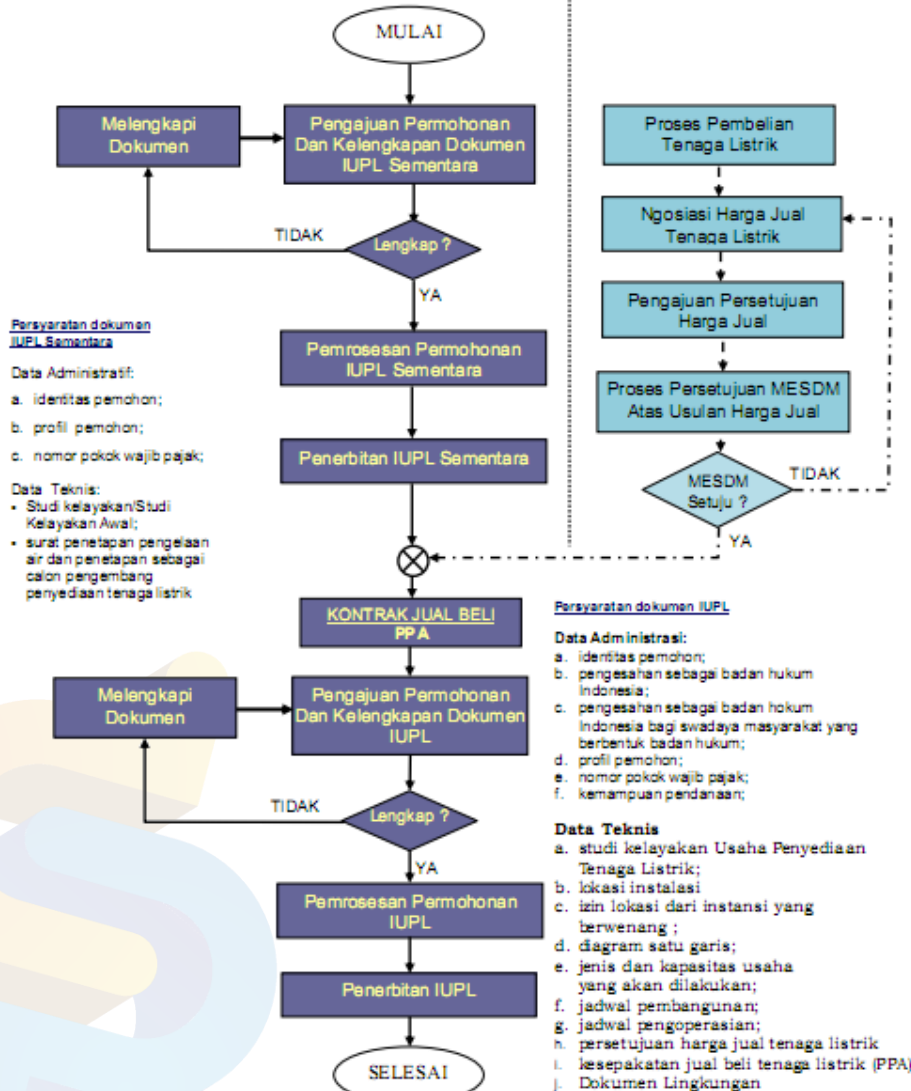
# TATA CARA PERIZINAN USAHA PEMBANGKITAN TENAGA LISTRIK

Sesuai Permen ESDM Nomor 35 Tahun 2013



## PENGEMBANG

## PLN/PIUKU



# ELECTRIC POWER GENERATION LICENSE





# MINISTERIAL REGULATION

# Certificate of Operational Readiness

	<b>PERKUMPULAN PERLINDUNGAN INSTALASI LISTRIK NASIONAL</b>		No. Seri : 03002158
	<b>BADAN PELAKSANA PPILN WILAYAH</b>		
	Jalan Transkarawang RT 001/001 KARANGMATA Kec. Karangmata Kab. Karangasem		
	Pusat Bina Sarana Listrik Pusat Bina Listrik Transkarawang Karangmata Telp. : 0361-834404		
Penetapan Menteri Energi dan Sumber Daya Mineral Nomor 0994 K/20/MEM/2012 Tahun 2012			
<b>SERTIFIKAT LAIK OPERASI</b>			
Nomor Sertifikat : LMS.0017.000.0001.14			
Dengan ini menerangkan bahwa instalasi pemanfaatan tenaga listrik tegangan rendah :			
Nama pemilik	:	KARANGMATA	
Alamat pemilik	:	DAL PERUMKIN RT 001/001 KARANGMATA KARANGMATA	
Daya tersambung	:	900 VA	
Penyedia tenaga listrik	:	PT PLN (Persero) KARANGMATA	
Nomor LHPP / tanggal	:	2014-01-14-0001-PNS / 1 Desember 2014	
telah sesuai dengan ketentuan keselamatan ketenagalistrikan sehingga dinyatakan			
<b>LAIK OPERASI</b>			
Sertifikat Laik Operasi ini berlaku sampai dengan tanggal 1 Desember 2020 sepanjang tidak ada perubahan kapasitas, perubahan instalasi atau direkondisi.			
Registrasi Dirjen Ketenagalistrikan		Ditetapkan di pada tanggal Managar Area	
 2014-01-14-0001	 1000000-000000		
CATATAN :			
1. Lembar Asli untuk Pemilik Instalasi      2. Lembar Merah untuk Penyedia Tenaga Listrik      3. Lembar Hijau untuk Arsip			





# MINISTERIAL REGULATION



# MINIGRID BUSINESS MODELS



# LEARNING G





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KIND

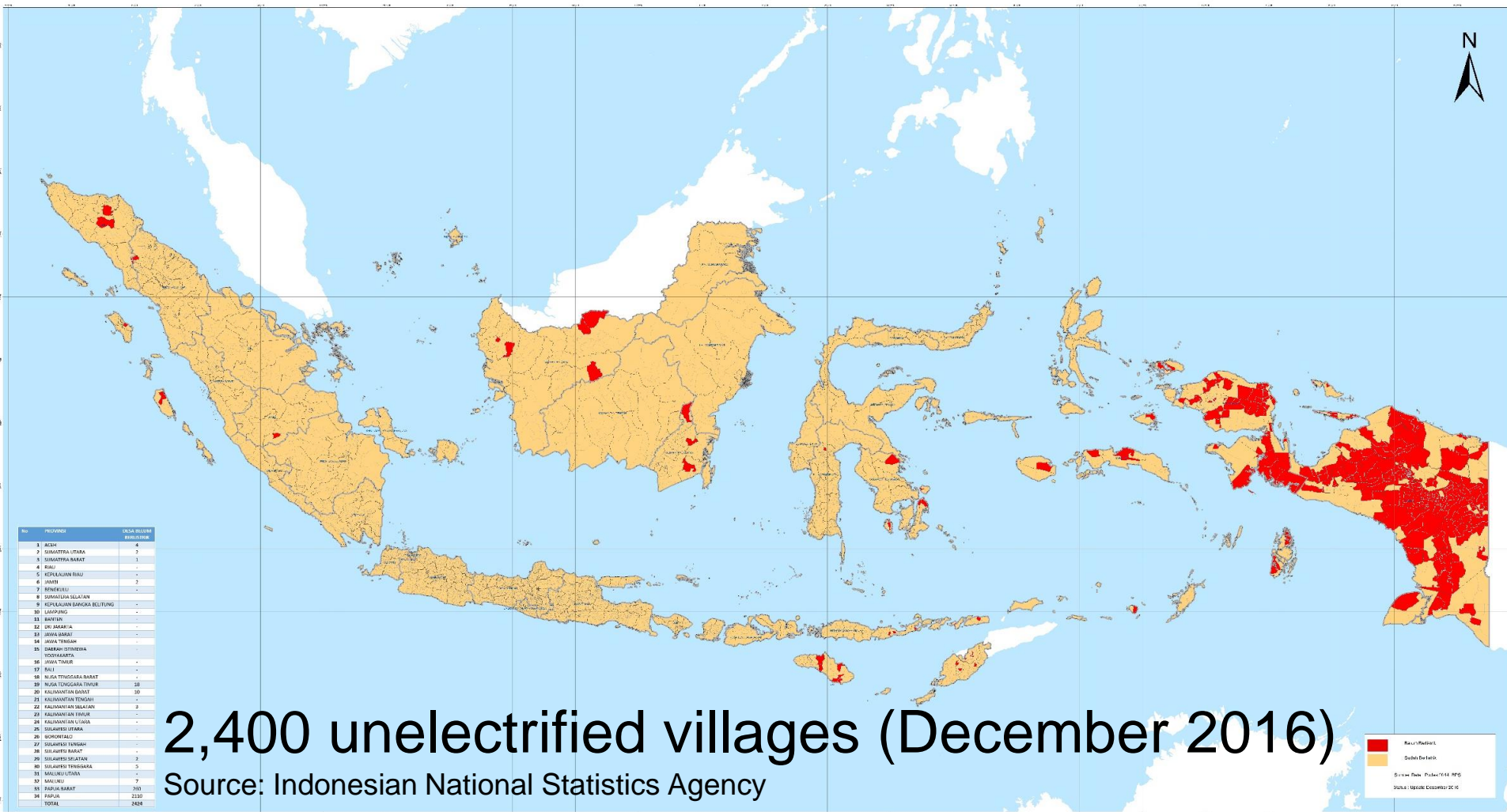


FONDIN  
G





# GOOD





# MINI UTILITY





# ANCHOR TENANT





# MINI IPP





# MULTI SERVICE





# COMMUNITY OWNED





# LEASE TO OWN





# OTHERS





# PUTTING IT ALL TOGETHER





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+62 811 911 0427

<http://www.linkedin.com/in/andresusanto>



# THANK YOU

# REFERENCE SLIDES

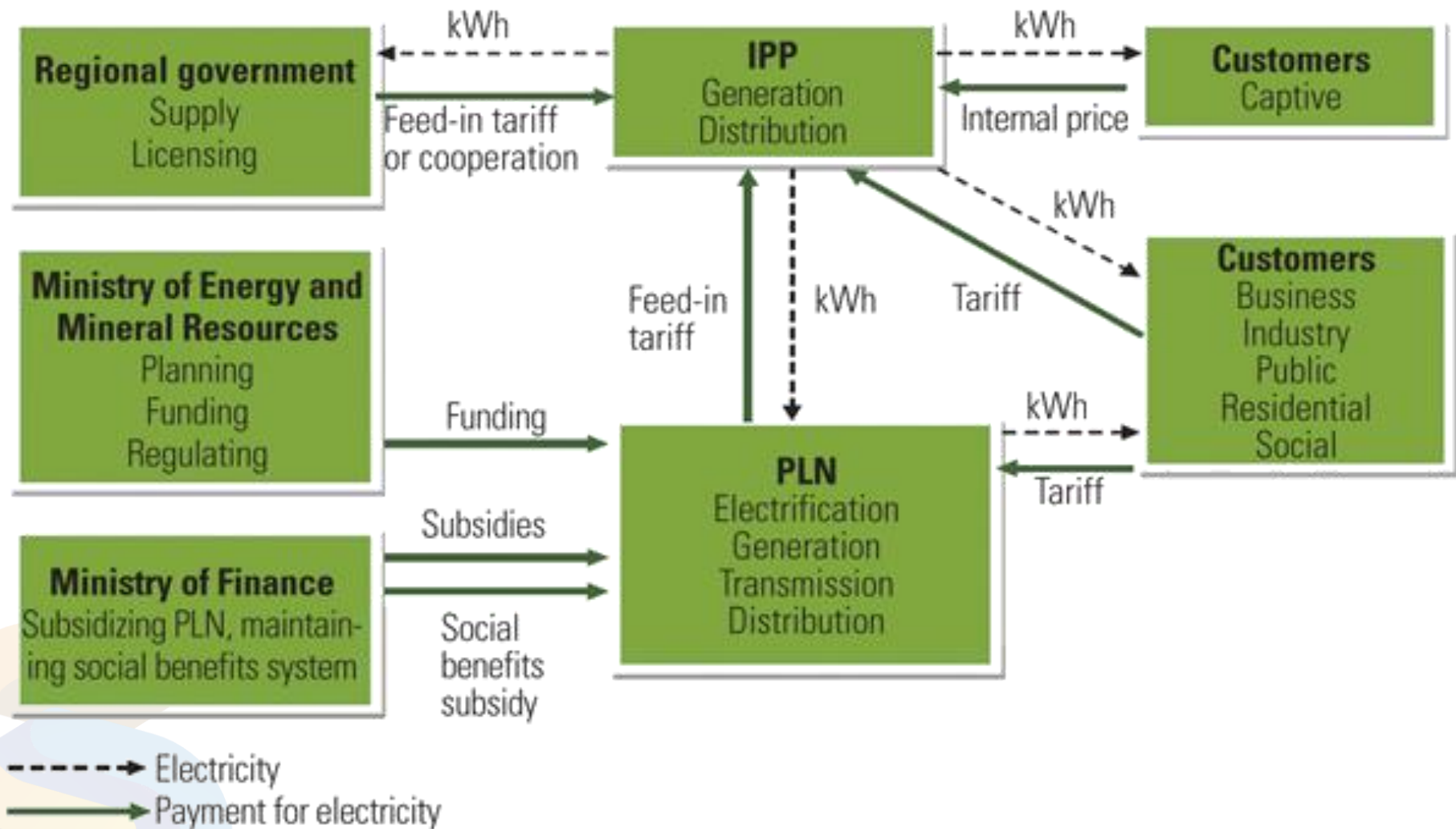
[www.pt-inovasi.com](http://www.pt-inovasi.com)

**ACEF 2018 Deep Dive Workshop on Minigrids**





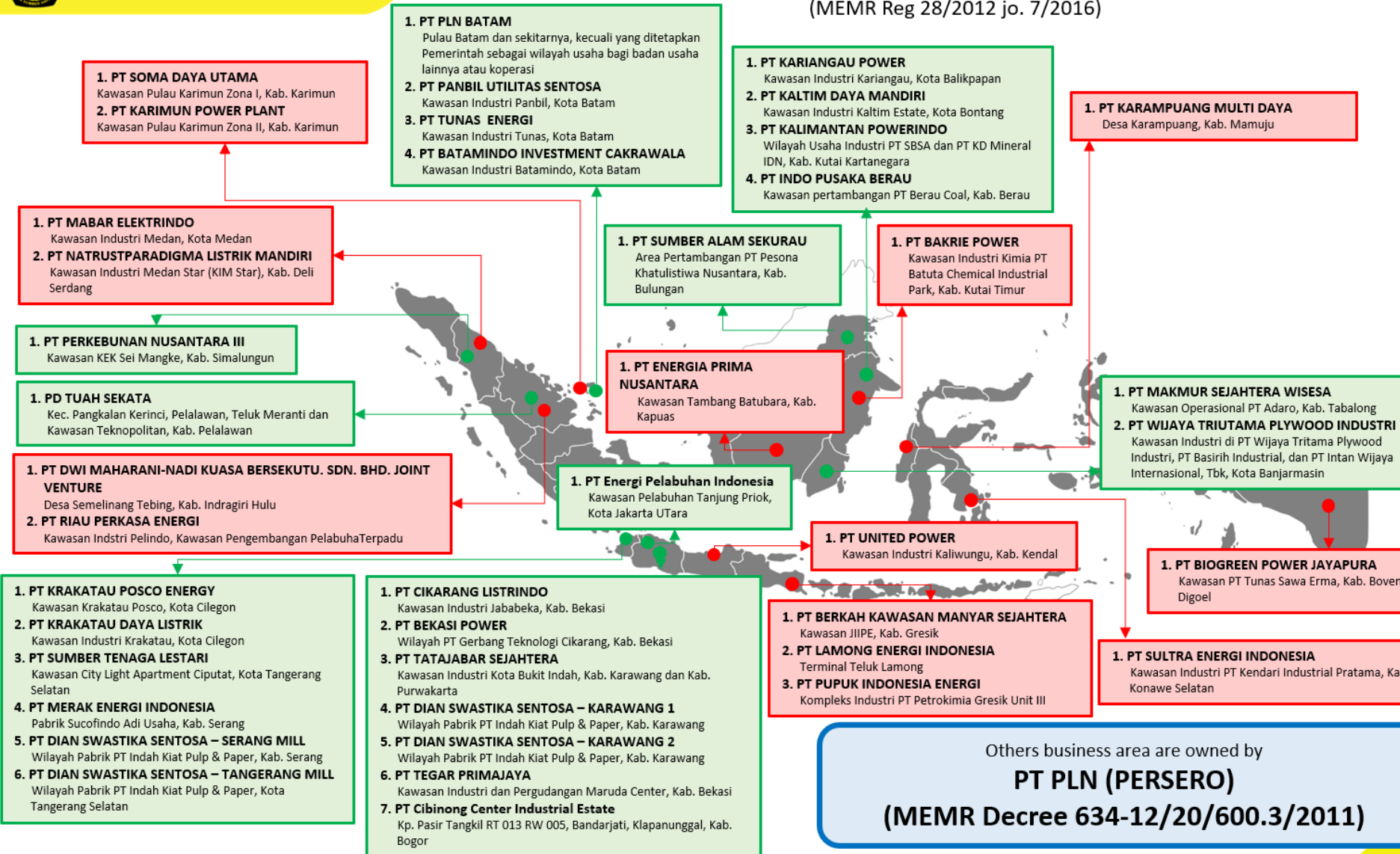
# Indonesia's Relevant Electricity Sale Stakeholders





# ELECTRICITY BUSSINESS AREA

(MEMR Reg 28/2012 jo. 7/2016)



Others business area are owned by  
**PT PLN (PERSERO)**  
(MEMR Decree 634-12/20/600.3/2011)

● : Belum Operasi  
● : Sudah Operasi



[www.esdm.go.id](http://www.esdm.go.id)



Kementerian ESDM



@kesdm



Kementerian Energi  
dan Sumber Daya Mineral



@KementerianESDM

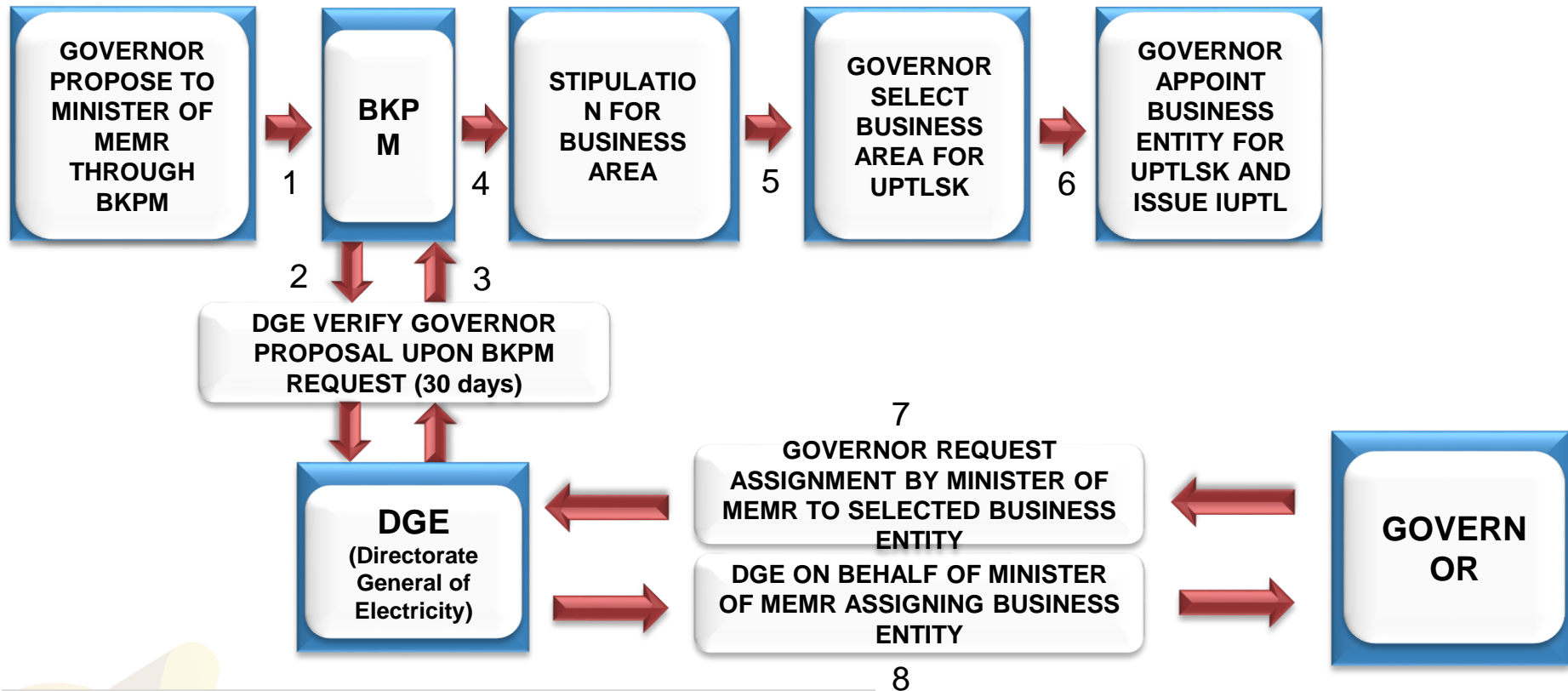




# MEMR REGULATION 38/2016



## Stipulation Mechanism of UPTLSK Business Area (Article 6-7)



Administrative Documents for Business Area Development:

- Business area region, width minimum 1 (one) district;
- Analysis on Renewable Energy Source Potential;
- Analysis on the needs and Planning for Electricity Supply;
- Analysis on planned-electrified households;
- Analysis on local peoples capacity and willingness to pay;
- Average estimation on material price, services and transportation.

NOTE: UPTLSK is Business for small scale electricity provider or *usaha penyediaan tenaga listrik skala kecil*

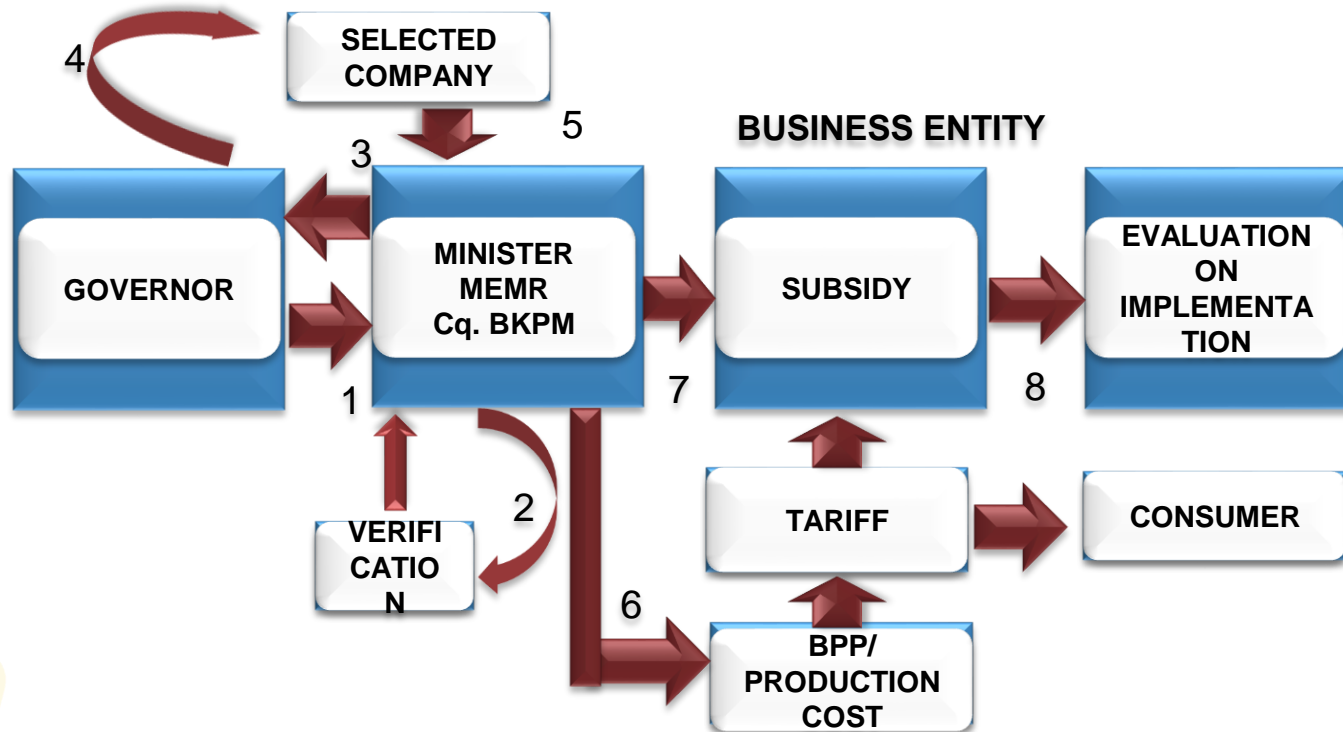






# UPTLSK Scheme on Subsidized Business Area

- Law 30/2009 subject to Electricity Article 4 para (3) & Article 11 para (3).
- PP 14/2012 subject to Business of Electricity Supply Article 9 para (3).



Remark:

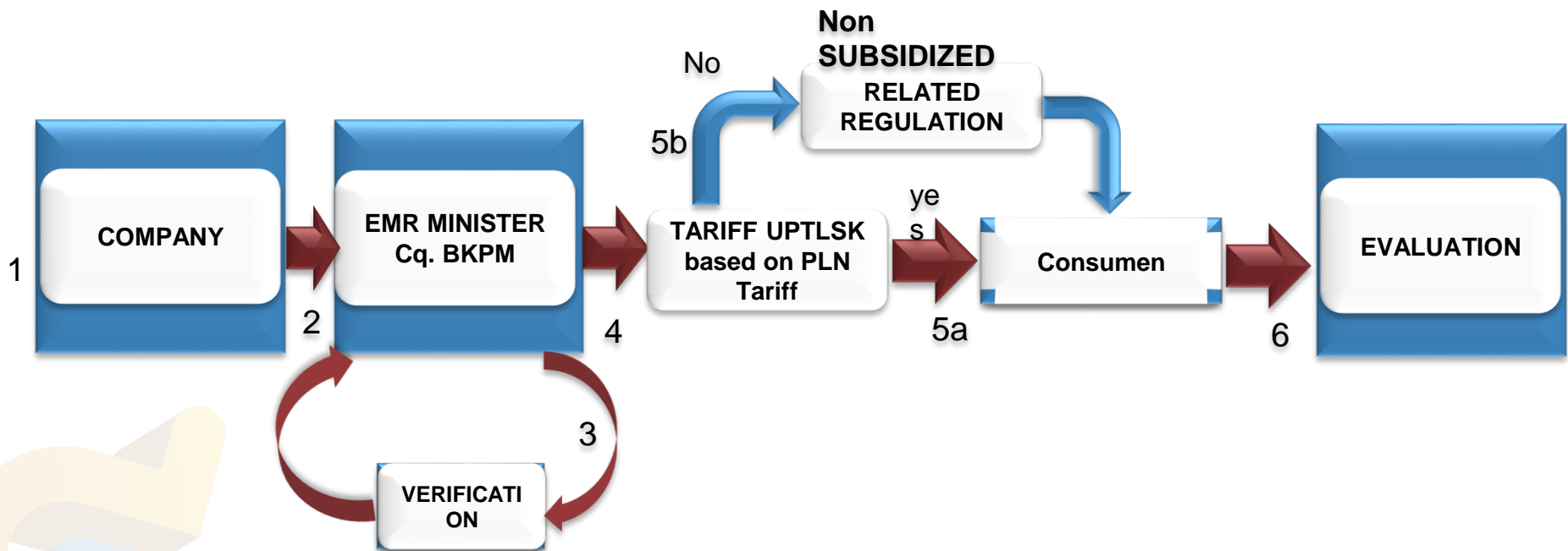
1. The priority is renewable energy
2. The priority product goods and services from Indonesia
3. PLN tariff for 450 VA consumer
4. Ratio electrification until 95% by 5 years
5. Build the infrastructure of electricity and has its function by 1 year from an assignment.





# UPTLSK Scheme on Non Subsidized Business Area

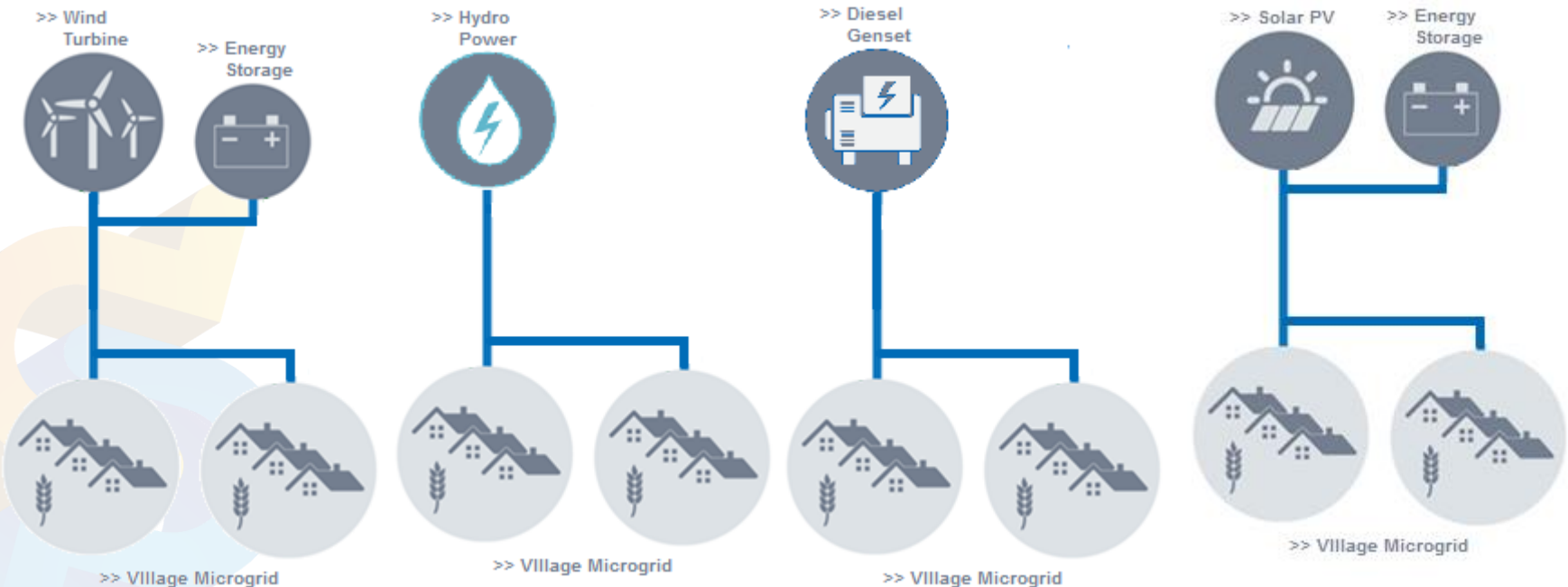
- Law No. 30/2009 of Electricity.
- Government Regulation No. 14/2012 of Electricity Provision.
- MEMR Regulation No. 28/2012 of Business Area.





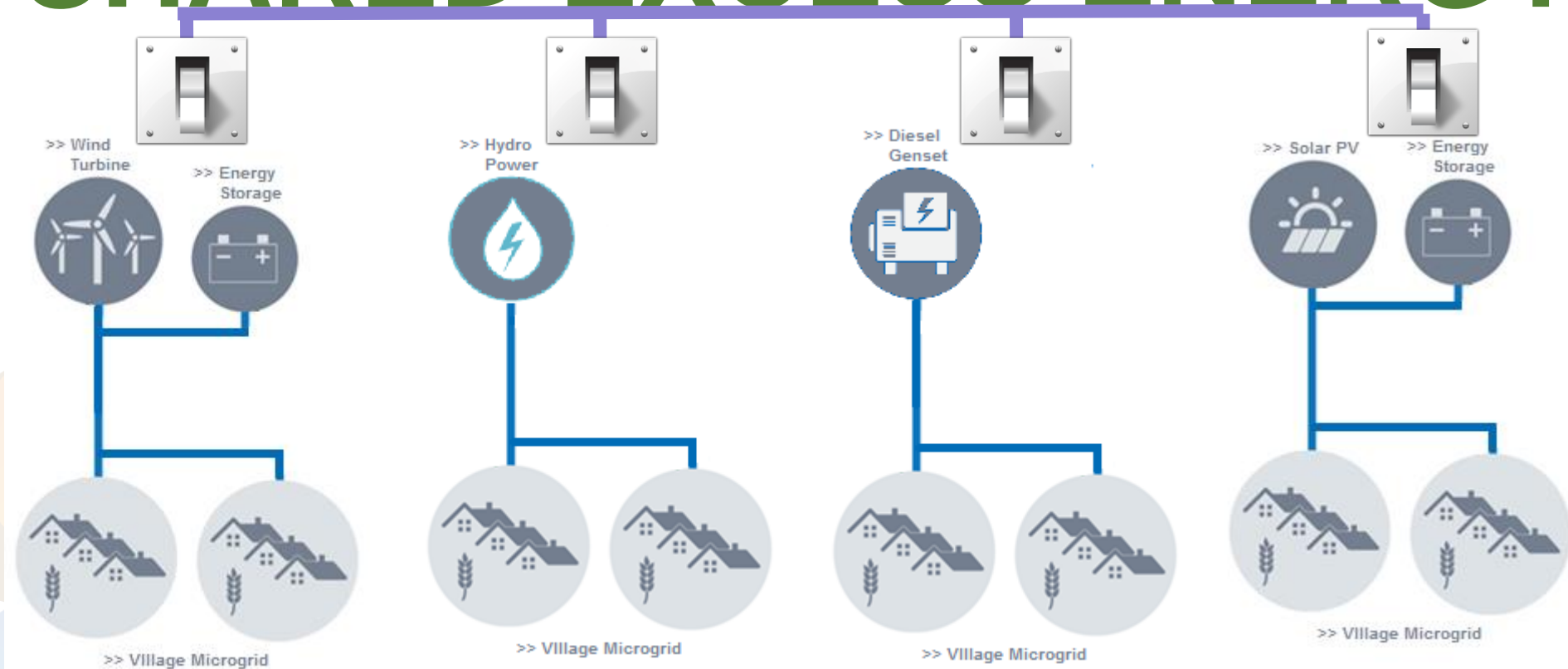
# TYPICAL MINIGRIDS

## INDIVIDUAL SYSTEMS



# CONNECTED MINIGRIDS

## SHARED EXCESS ENERGY

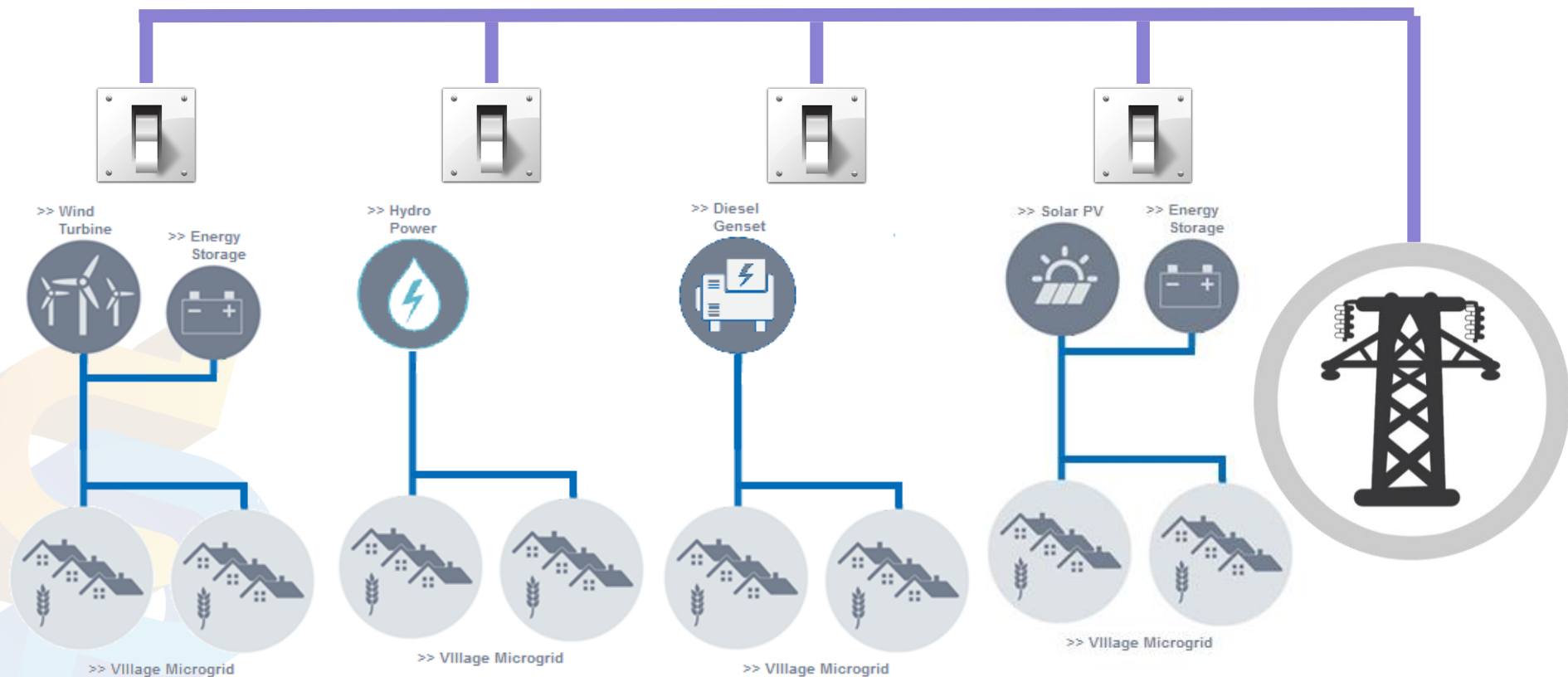




# “THE GRID”

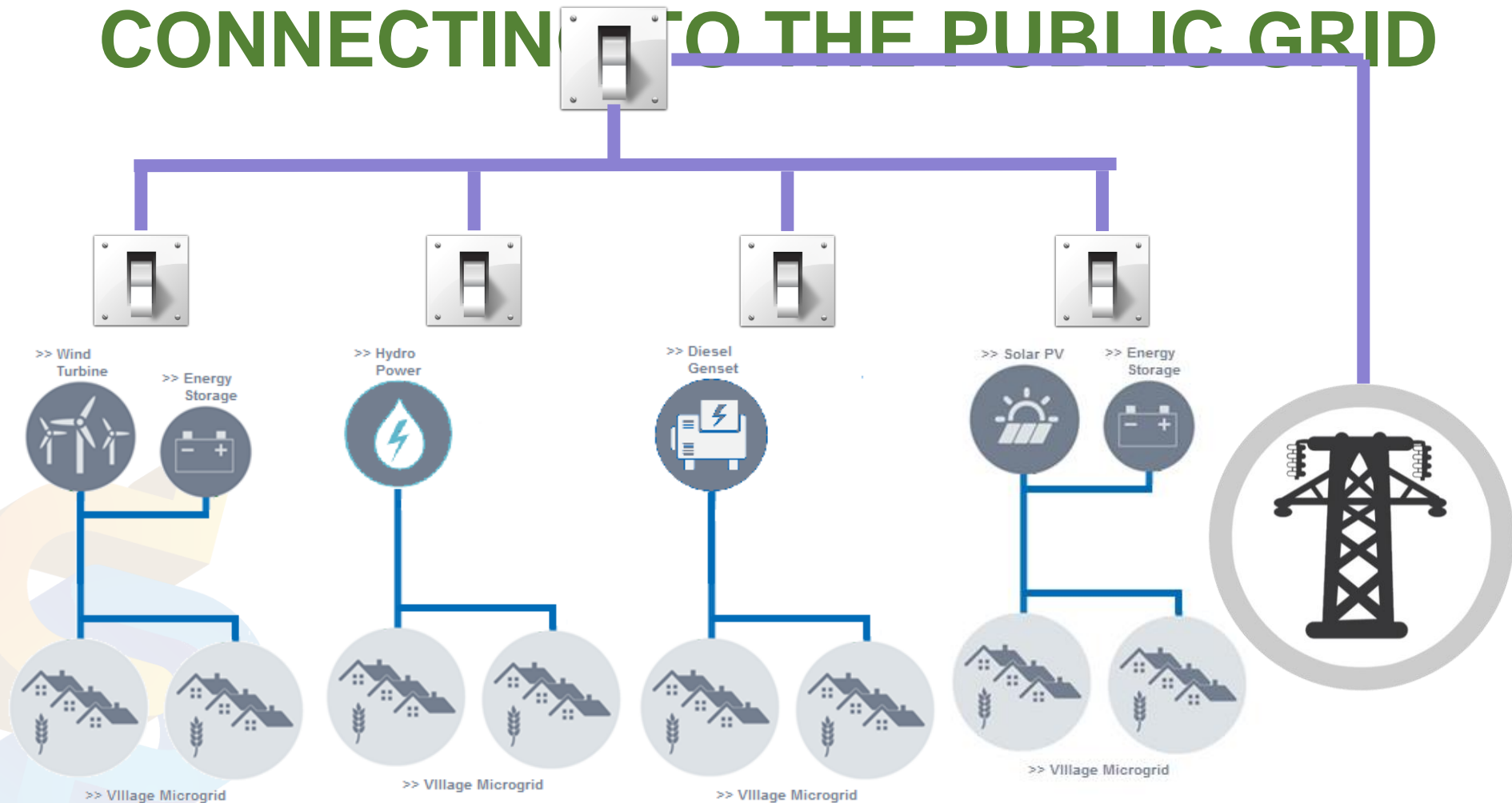
## CONNECTION

### CONNECTING TO THE PUBLIC GRID



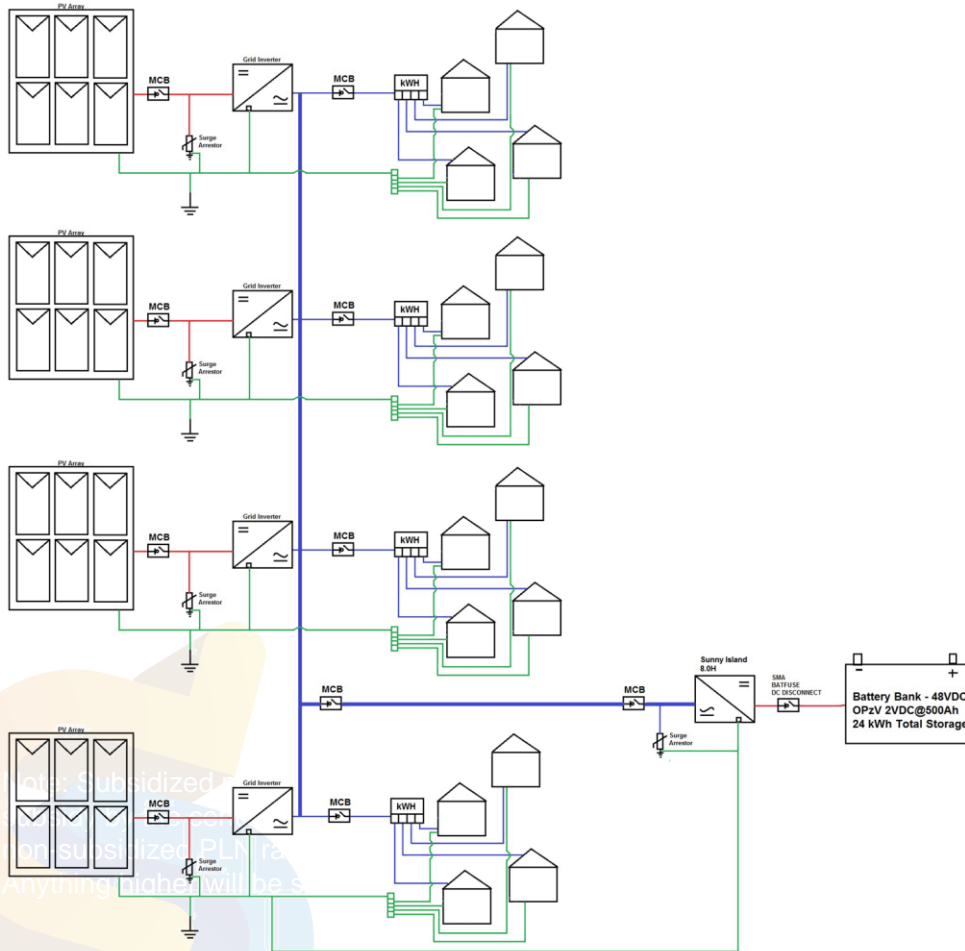
# “THE GRID” CONNECTION

## CONNECTING TO THE PUBLIC GRID





# MODULAR TOPOLOGY MICROGRID



- Full grant for Papua pilot project by Lundin Foundation – <http://lundin.pubco.net/s/investments.asp?ReportID=709370>
- Designed to be modular on both generation and storage
- Smart metering allows for both agent based credit purchases and individuals
- Pole mounted solar PV and grid inverter
- Electrical and communication system designed by Andre Susanto and confirmed by inverter manufacturer engineers