

Transaction Services

Power Sector: Commercial/Regulatory Update

PwC Power Guide Launch Event 2017

6 December 2017
*Strictly private
and confidential*

Tim Boothman

Section 1

RUPTL and 35 GW Programme

Under the Government's future plan, fossil fuels are expected to continue to play a dominant role, but an increased focus on renewables.

Total PLN: 20,983
Total IPPs: 42,061
Unallocated 16,643

Targeted Additional
Installed Capacity
(MW)

**December 2017 update:
3.1% Demand Growth in 2017 → Reserve Margin fears
Concerns about PLN's financial position from MoF
Postponing Gas Fired Power Plants
Review of pre-construction IPP Tariffs**

Source: Jakarta Post, 04 December 2017

*including mini-hydro and
pumped storage

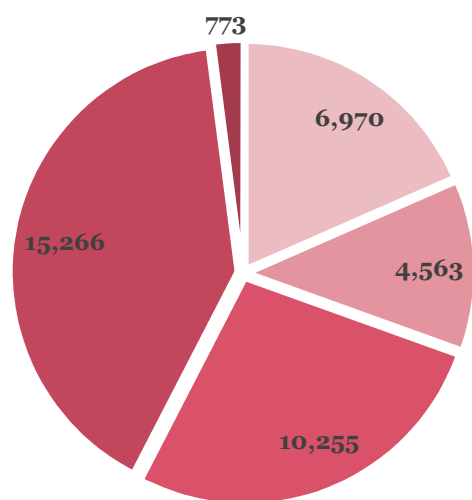
Unallocated: -
Total: 1,224

The 2017 PLN RUPTL
focuses on achieving the
25% energy mix from
renewables as dictated by
the 2014 NEP.

Source: PLN RUPTL 2017-2026

Management of the 35 GW Program is still the greatest challenge in Power Sector in Indonesia

Progress of 35 GW programme (in MW), as of September 2017

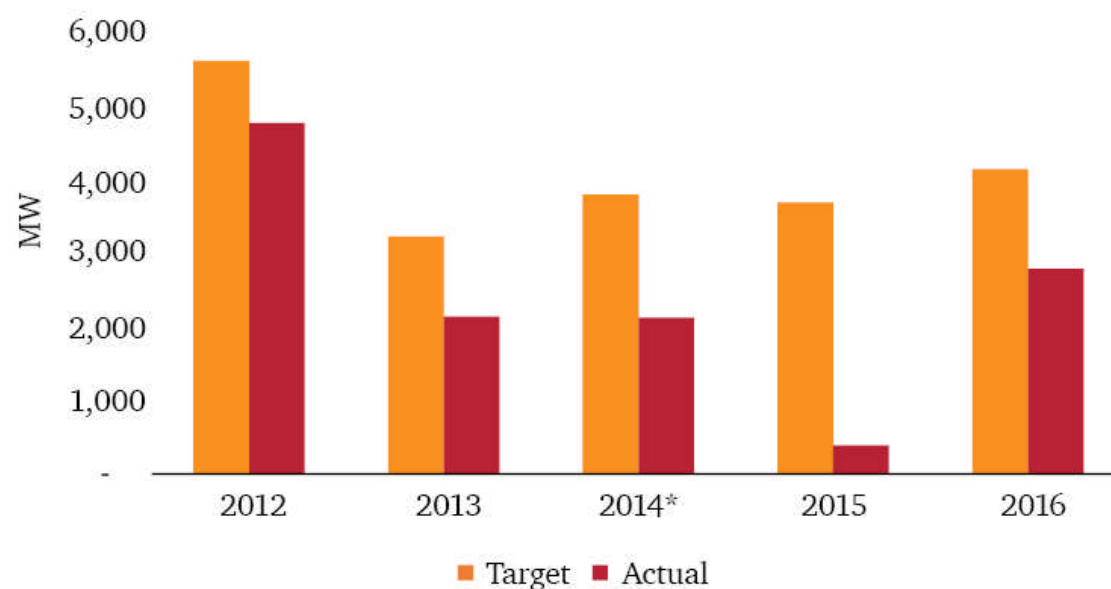


- Planning
- Procurement
- Contracted/PPA, not yet Construction
- Contracted/PPA, Ongoing Construction
- COD

Note: This excludes the 7 GW of power generation capacity left over from the previous Fast Track Programmes. All of this capacity is at least in the construction phase.

Source: PwC Power Guide 2017

Actual vs. target capacity installation, 2012-2016

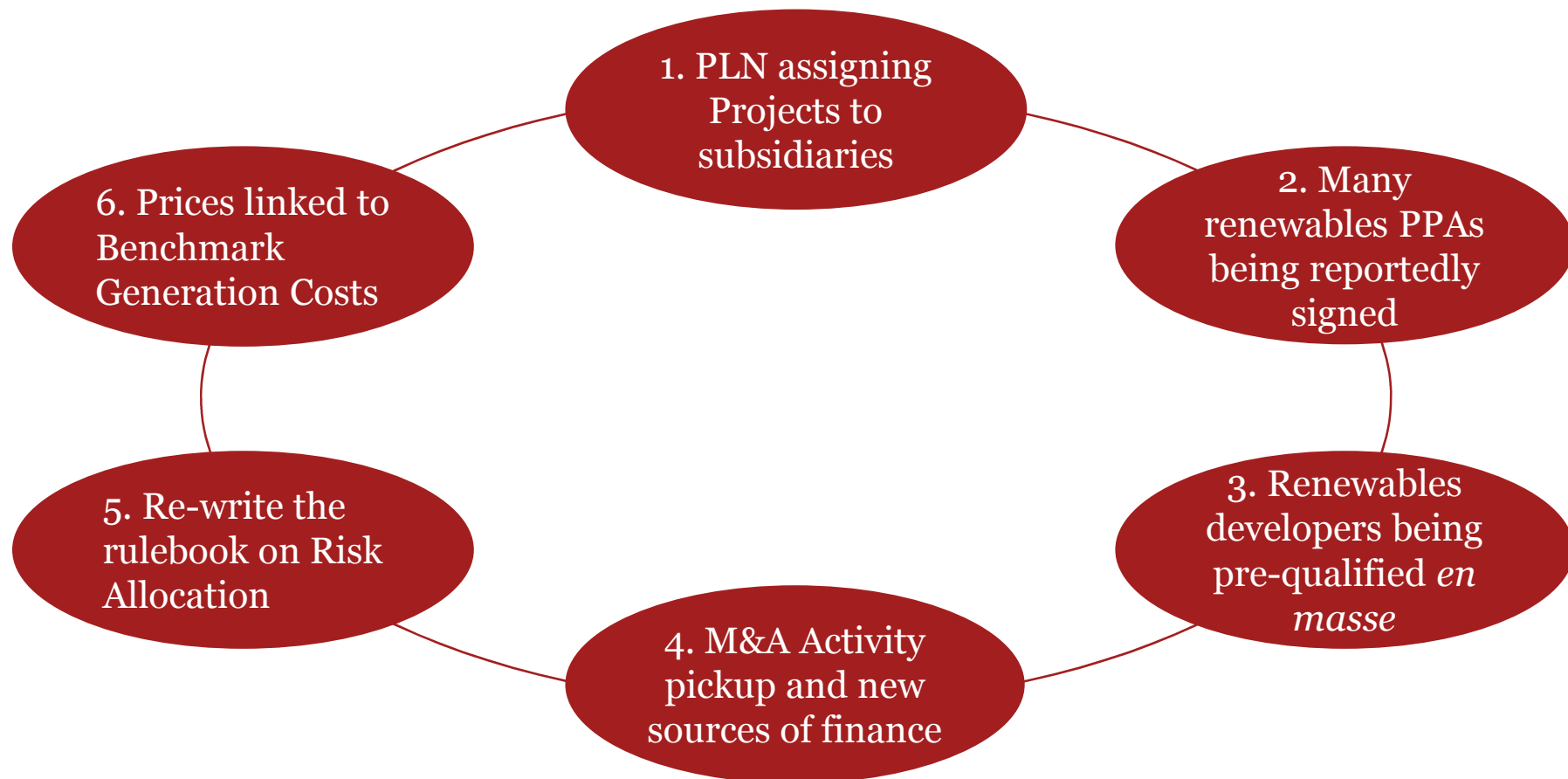


Source: RUPTLs since 2012

Section 2

Top Trends in 2017

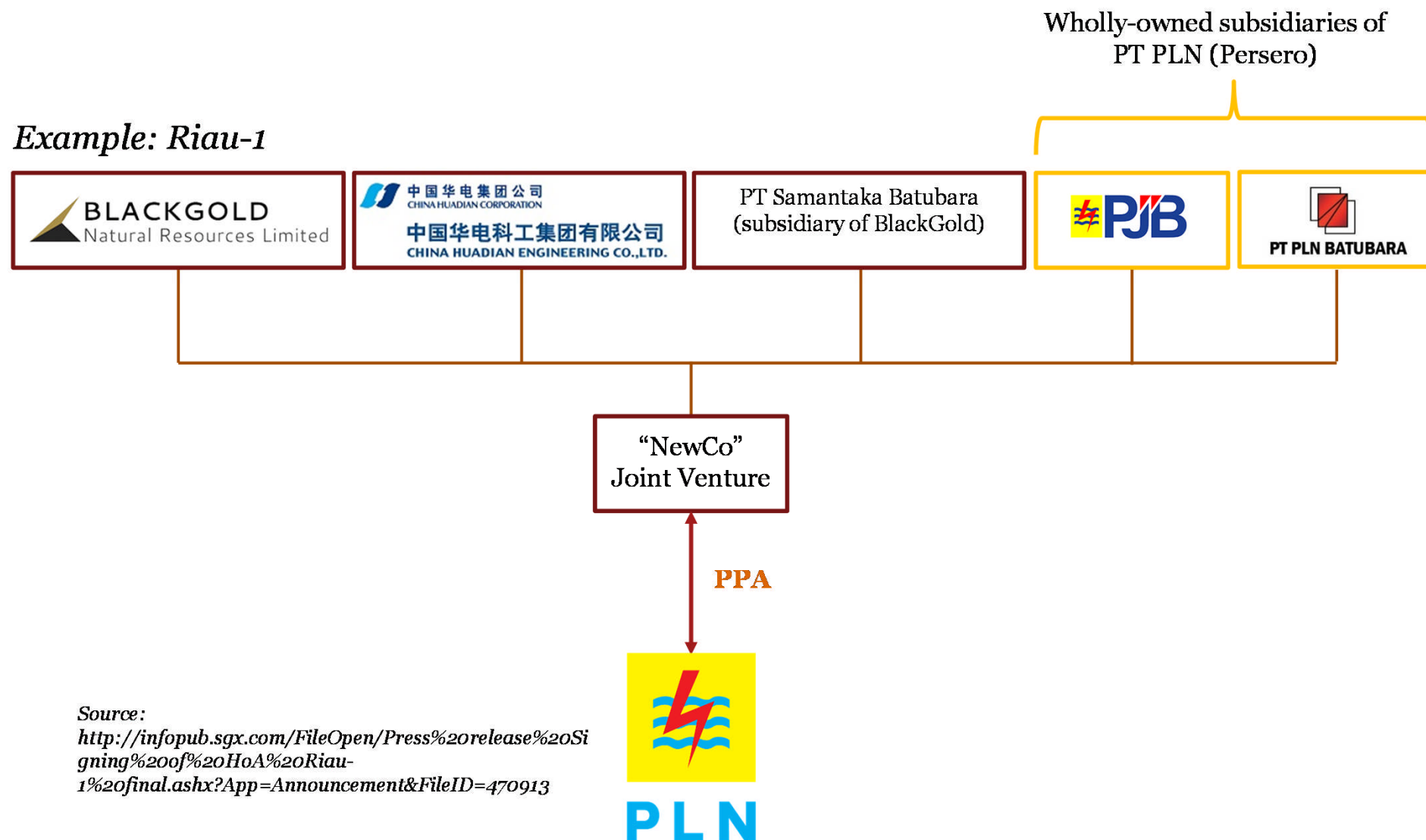
Top 6 Trends of 2017



1. PLN assigning Projects to Subsidiaries

- PerPres 04/2016 and subsequent amendments (PerPres 14/2017) allow PLN to assign Projects to PLN Subsidiaries.
- PLN publicly confirmed in October 2017 that there would be no more large Thermal plants tendered – to be assigned to PJB and Indonesia Power (PLN subsidiaries)
- PJB and Indonesia Power are requested that they hold 51% in Joint Ventures.
- Some of these (Riau-1) done privately
- Some of these (Java-3) done by open tenders
- PJB and Indonesia Power announced market outreach starting this month ...

1. PLN assigning Projects to Subsidiaries



Source:

<http://infopub.sgx.com/FileOpen/Press%20release%20Signing%20of%20HoA%20Riau-1%20final.ashx?App=Announcement&FileID=470913>

2. Many renewables PPAs being reportedly signed

Solar

Solar PV projects that signed a PPA on 2 August 2017

No.	Solar PV Project	IPP/Developer	Capacity
1	PLTS Gorontalo	PT Quantum Energi	10 MW
2	PLTS Sengkol, Lombok	PT Infrastruktur Terbarukan Cemerlang	5 MW
3	PLTS Selong, Lombok	Infrastruktur Terbarukan Buana	5 MW
4	PLTS Kuta, Lombok	NV Vogt Pte. Ltd., PT Delapan Menit Energi	5 MW
5	PLTS Pringgabaya, Lombok	PT Infrastruktur Terbarukan Adhiguna	5 MW
6	PLTS Likupang, Minahasa	PT Infrastruktur Terbarukan Lestari	15 MW

Source: Official Letter of PLN No. 1364/DAN/01.01/DITDAN/2017, Rambuenergy, <http://www.synergy-renewable.com/projects.html>

2. Many renewables PPAs being reportedly signed

Bioenergy

Bioenergy projects that signed a PPA on 2 August 2017

No.	Type of Biomass	Capacity (MW)	IPP/Developer	Location	Tariffs (¢USD/kWh)
1	Biogas	1	PTPN II	Pagar Merbau, N. Sumatera	7.89
2		1	PTPN II	Kwala Sawit, N. Sumatera	7.89
3		10	PT Rezeca Isa	Bangko Sampurna, Rokan Hilir, Riau	8.62
4		3	PT Pasadena Biofuels Mandiri	Ujung Batu, Rokan Hulu, Riau	8.62
5		3	PT Green Energy Specialist One	Rumbai, Riau	8.83
6	Biomass	10	PT Cipta Multi Listrik Nasional	Deli Serdang, N. Sumatera	7.89
7		5	PT Inhil Sarima Kelapa	Sarimas, Indragiri Hilir, Riau	8.62
8		3	PT Karya Energi Jambi	Mersam, Jambi	6.68
9		6	PT Energi Karya Persada	Energi Karya Persada, Sumatera	11.61

Source: Official Letter of the MoEMR No.5827/23/MEM.L/2017, PwC Analysis

2. Many renewables PPAs being reportedly signed

Hydro

Small Hydro Power projects that signed a PPA on 2 August 2017: Summary

Capacity Range (MW)	Amount of Projects	Average Price of Tariff (¢USD/kWh)
<3	12	7.30
3≤x<7	15	6.86
7≤x<10	10	7.40
10	12	7.00

Source: See PwC Power Guide 2017

2. Many renewables PPAs being reportedly signed

Hydro

Small Hydro Power projects that agreed a tariff in September 2017

No.	Generator Name	Capacity (MW)	Project Location	Selling Price of Power (¢US\$/kWh)	Percentage of BPP Generation
1	PLTM Aek Sibundong	8.0	Sumatera Utara	7.89	85.0%
2	PLTM Aek Situmandi	7.0	Sumatera Utara	7.89	85.0%
3	PLTM Aek Sigeaon	3.0	Sumatera Utara	7.89	85.0%
4	PLTM Sisira	9.8	Sumatera Utara	7.89	85.0%
5	PLTM Batang Toru 4	10.0	Sumatera Utara	7.89	85.0%
6	PLTM Bayang Nyalo	6.0	Sumatera Utara	6.86	85.0%
7	PLTM Batu Brak	7.7	Lampung	6.60	85.0%
8	PLTM Kunci Putih	0.9	Jawa Tengah	6.52	100.0%
9	PLTA Air Putih	21.0	Bengkulu	7.80	99.3%
10	PLTA Pakkat	18.0	Sumatera Utara	8.60	92.7%
Total Capacity		91.4			

3. Renewables developers being pre-qualified en masse

12 October 2017 PLN invited:

- Qualified providers to develop Renewables IPPs under MoEMR No. 50/2017 Direct Selection mechanism
- Technologies included Solar PV, Hybrid, Wind, Biomass, Biogas, MSW, and Tidal
- BOOT under long-term PPA
- Foreign companies welcome although Local Partner required in SPV

Deadline was 14 November 2014 – awaiting results

Not clear if developers who did not participate will be ineligible for future renewables projects listed in RUPTL and whether unsolicited proposals will continue to be accepted

4. M&A Activity pickup and new sources of finance

Finance raising: PLN and IPPs

- *June*: Global Bond \$2 bn, *June/November*: Local Bonds 2-4.5 trn (\$240 m)
- *November*: PLN Rp. 16 trn (\$1.2 bn) syndicated loan (10 years, 25% shariah)
- *November*: Indonesia Power \$300m securitization (ABS) of Sarulaya Coal Fired Power Plant to fund 2 × 1 GW upgrades
- *August*: Minejesa Capital (Nebras financing vehicle for PT Paiton Energy) raises \$2.75 bn through bonds listed on SGX. Mixture of USD and JPY. 12 yr @ 4.625% and 20 yr @ 5.625%. 4.7x over-subscribed.

M&A

- *October*: US-based Global Infrastructure Partners (also part-funded by China's CIC Capital, China and Canada's La Caisse) bought Equis Energy including Indonesian portfolio for \$5.0 bn (3.7 bn net of liabilities assumed)
- *October*: Medco Energi bought 77.7% of Saratoga Power (51% MPI) for \$129.2 m
- *November*: Metro Pacific bought 42.25% of PT Nusantara Infrastruktur for \$132m, taking their stake to 47%. They soon announced they would be divesting most non-toll road assets, including Hydro Power.

5. *Re-write the rulebook on Risk Allocation*

Regulation No. 10/2017 (amended by No. 49/2017) sets the content and principles included in the PPA for most (in practice ... all) new power projects

Risk Sharing and Allocation

- PLN no longer has to pay Deemed Dispatch under certain FM events that affect its ability to evacuate power.
- (1) Natural FM, (2) Change in laws and regulations
- In the case of (1) where power cannot be evacuated, the PPA can be extended depending on the duration of disaster and project repair.
- In the case of (2) IPP is entitled to change the tariff

Type of contract and contract period

- A PPA's duration is a maximum of 30 years after Commercial Operation Date (COD).
- All projects (except mini-hydro, intermittent renewables, biogas and MSW) shall follow BOOT business scheme, under which the IPP facilities shall be transferred to PLN at the end of concession
- Take or Pay period 'considering' Lending Period

Penalties

- If IPPs cannot meet their PPA obligations or there is a delay in COD on the IPP's account, IPPs shall pay penalties.
- New penalties for technical aspects (reactive power etc.)

6. Prices linked to Benchmark Generation Costs

For renewables ...

No.	Type of Renewable Energy	Method of Procurement	Maximum Benchmark Price	
			Regional BPP > National BPP	Regional BPP ≤ National BPP
1	Solar PV	Direct Selection based on Capacity Quota	85% Regional BPP	B2B Negotiations
2	Wind Power			
3	Biomass			
4	Biogas	Direct Selection	85% Regional BPP	B2B Negotiations
5	Ocean Energy			
6	Hydropower			
7	Municipal waste-to-energy	Based on laws and regulations*	Regional BPP	In the cases where the Regional BPP in the regions of Sumatera, Java, and Bali or other systems ≤ National BPP, the tariff shall be based on B2B negotiations.
8	Geothermal			

Notes: BPP = Biaya Pokok Pembangkitan (cost of electricity/power generation), the 2016 National BPP is USD 7.39 cents/kWh (based on MD No. 1404/K/20/MEM/2017).

Source: MoEMR Regulation No. 50/2017; Coffee Morning Session with DGE, 10 August 2017;

* GR No. 7/2017 states that the geothermal procurement is based on open tender or direct appointment method.

* GR 14/2012 states that waste-to energy can be based on open tender, direct selection, or direct appointment.

What about e.g. North Sumatera, where Regional > National BPP?

6. Prices linked to Benchmark Generation Costs

For coal ...

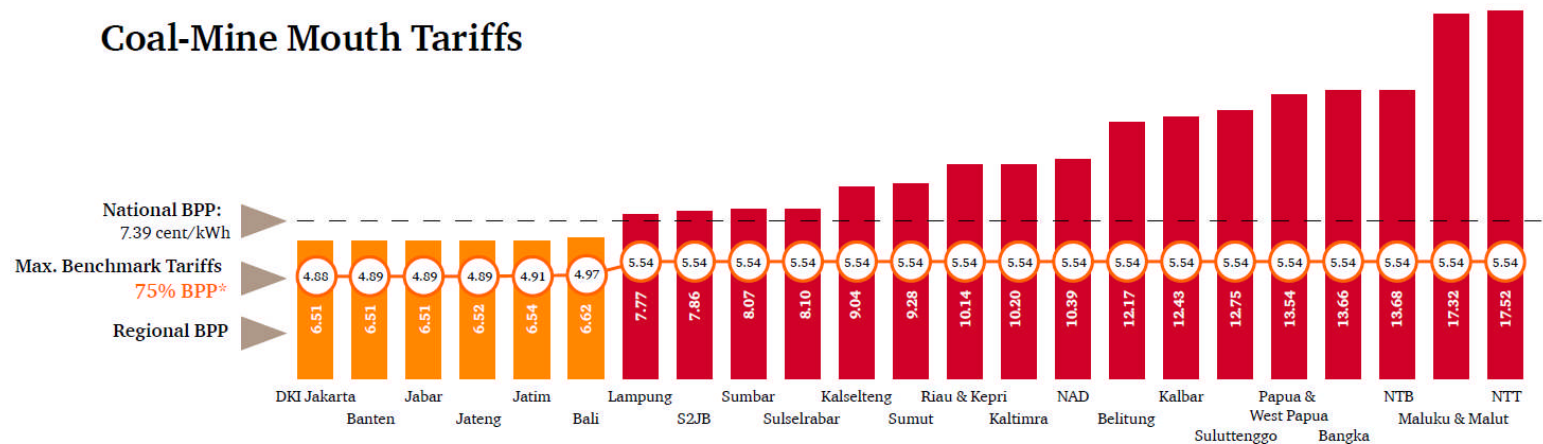
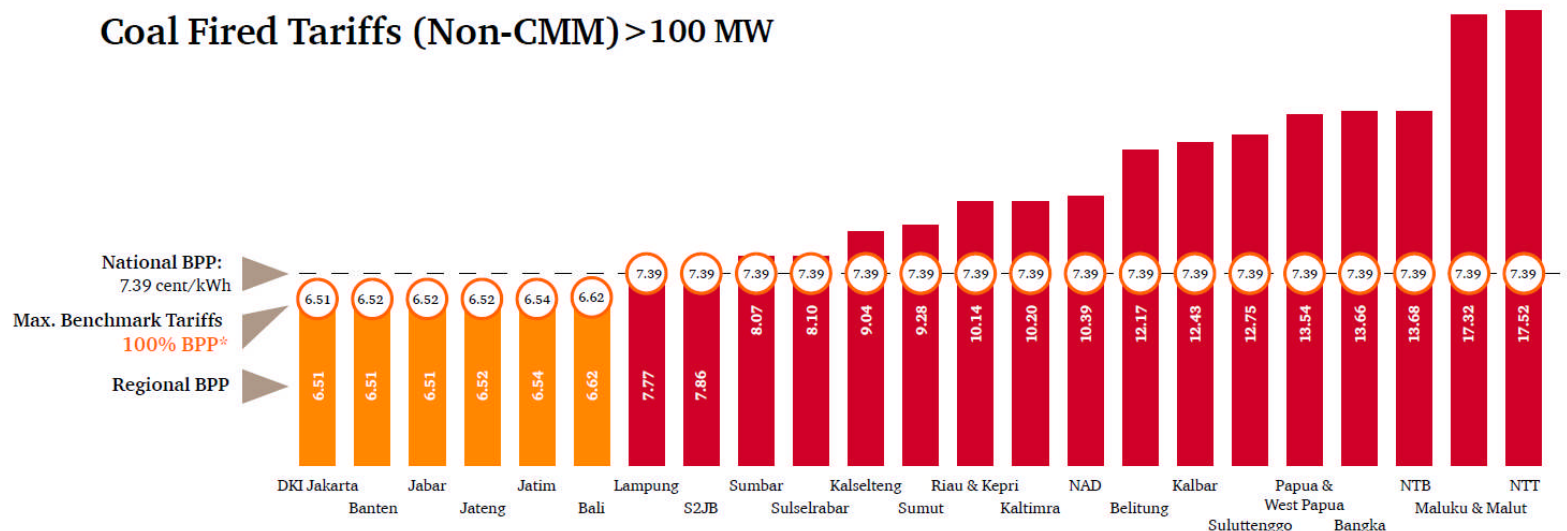
No.	Type of Power Plant	Maximum Benchmark Price	
		Regional BPP > National BPP	Regional BPP ≤ National BPP
1	Coal-fired > 100 MW*	National BPP	Regional BPP
	Coal-fired ≤ 100 MW*	B2B	Regional BPP
2	Coal Mine Mouth (CMM)	75% National BPP	75% Regional BPP
3	Excess Power	90% Regional BPP	

Source: MoEMR Regulation No. 19/2017, Coffee Morning Session with DGE 3 March 2017

- But note reality of Ministerial intervention in tariff-setting process

6. Prices linked to Benchmark Generation Costs

Implied prices for coal plants



Source: Aksin (PLN), "Indonesia Electricity Supply and the Role of IPP within", Presentation at the 7th IPP Summit, 9-10 May 2017

Section 3

Trends to watch in 2018

Trends to watch in 2018

1. Continuing falls in the price of renewables globally

- Solar and Wind costs continue to fall in developed and developing markets
- Ultimately this must impact Indonesia

2. Continuation of PLN's Procurement Processes

- PLN, through PJB and Indonesia Power about to launch broader Market Engagement process for large thermal plants
- Including looking abroad
- Renewables continue through PLN

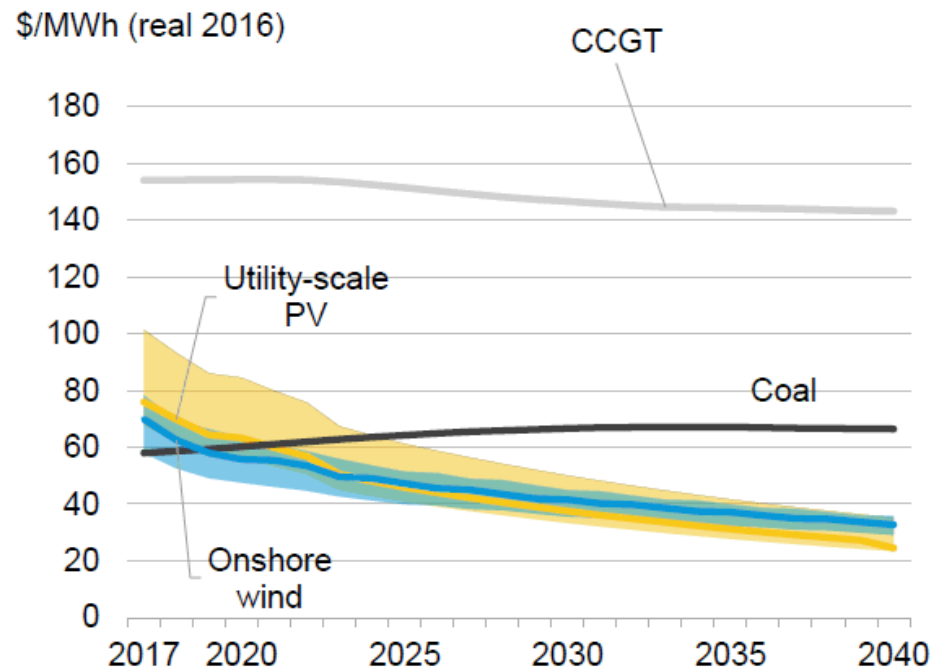
3. BPP goes up?

- 90% of PLN's kWh's come from coal, oil or gas
- Fuel prices appear to be heading in one direction ...

1. Continuing falls in the price of renewables globally

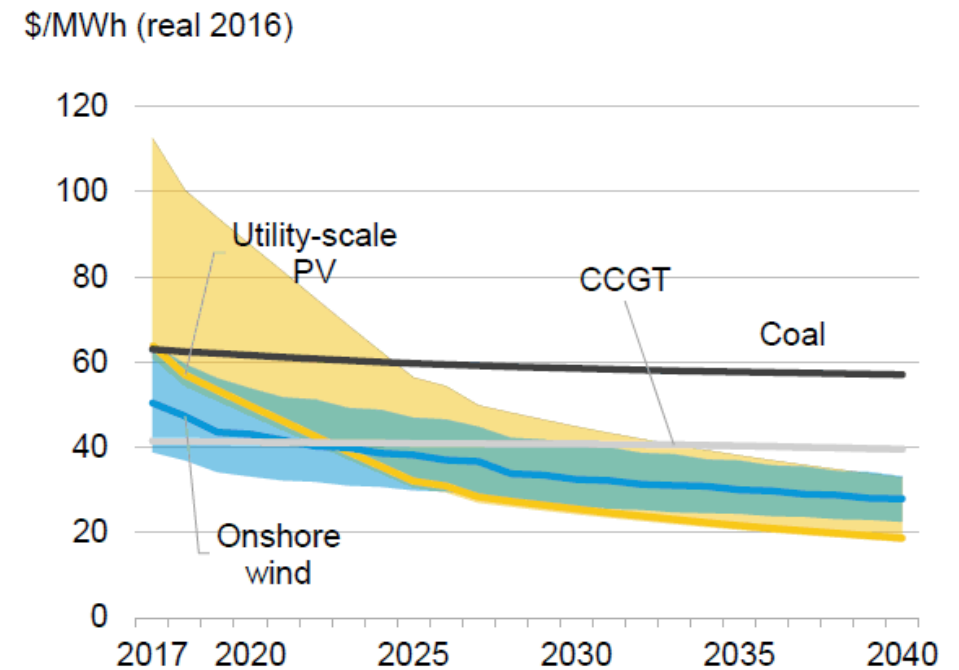
Renewables are getting cheaper ...

China



Source: Bloomberg New Energy Finance, *NEO 2017*

U.S.



1. Continuing falls in the price of renewables globally ... in fact they're already cheap

National BPP = 7.5 c/kWh

Java 1 CCGT = 5.5

India Wind = 4.0

Mexico Solar PV
= 1.77

***“When the wind of change
blows, some people build
walls, others build windmills”***

Ancient Chinese Proverb

Source: MoEMR, Jakarta Post, BNEF

2. Continuation of PLN's Procurement Processes

Coal (PLN Subsidiaries)

November 2017: PLN announced that PJB and Indonesia Power are commencing a competitive process to select partners to DFBOT Coal-Fired Power Plants in Indonesia.

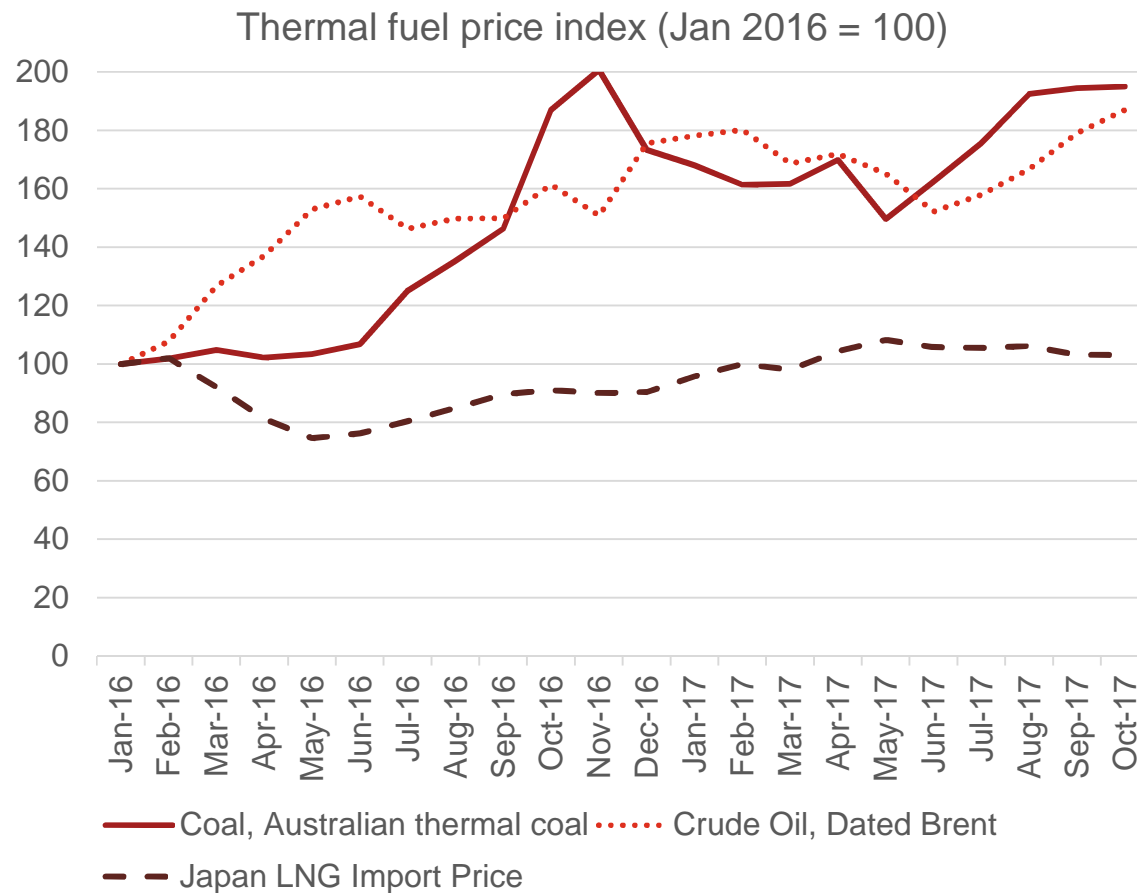
- Up to 7 Projects
- 200 - 600 MW
- All in Sumatera or Kalimantan
- Each of the Projects 'has signed a long term PPA with PLN to be fast tracked for execution and implementation"
- Road shows in Jakarta and major financial centres (London etc.) in December 2017
- EoI deadline yesterday, 5 December 2017

PJB and Indonesia Power are asking for a 51% ownership interest in Project SPVs. This leaves open the question of how much funding private sector is providing for PLN Subsidiaries' interest.

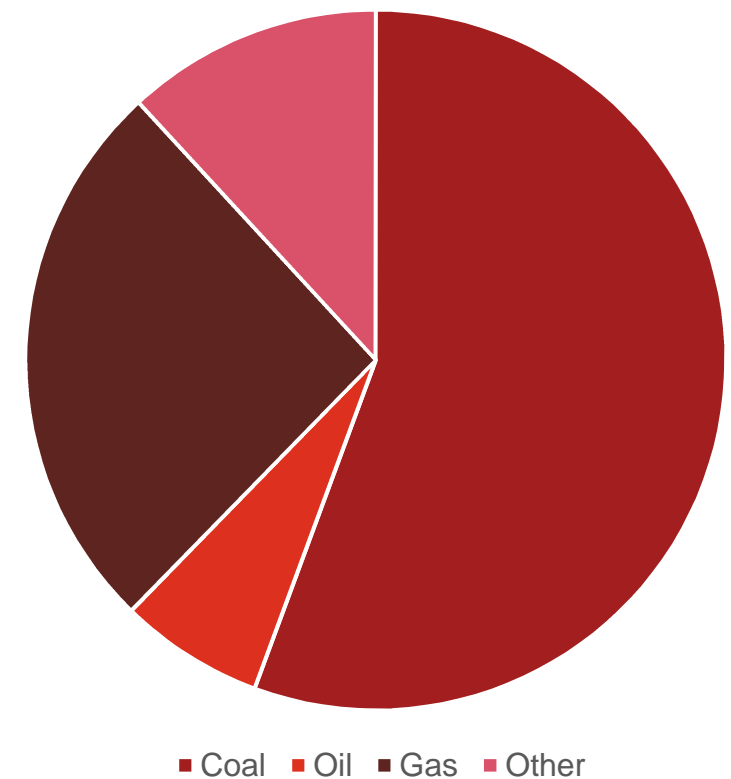
Solar (PLN)

- In August 2017, PLN opened auction for solar power plants of 167.6 MW across Sumatera.
- Pre-qualification completed in October and several domestic players announced they had pre-qualified. Auction will take place next year.

3. BPP goes up?



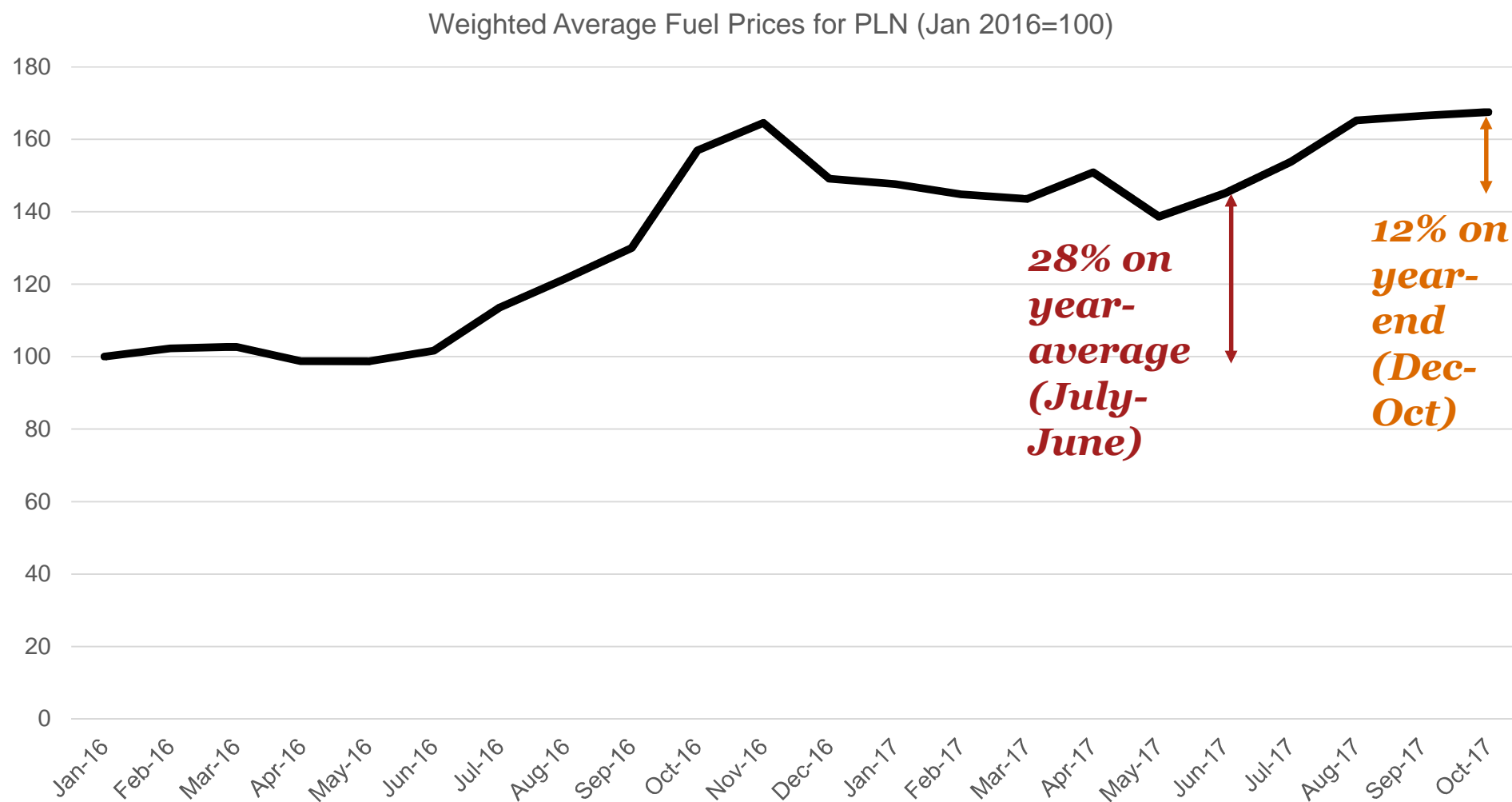
2017 Fuel Weights for PLN (by kWh)



Source: indexmundi.com, ycharts.com

Source: PLN RUPTL 2017-2026

3. BPP goes up?



Section 4

Other Project updates

1) Coal

Status updates on several coal projects

No	Project	Status
1	Sumsel 9 (2 x 600 MW) and 10 (1 x 600 MW) Mine-Mouth Coal-Fired Power Plants	Cancelled
2	PT Bukit Asam PPA Sumsel 8 (2 x 620 MW) Coal-Fired Power Plant	PPA Amendment signed October 2017, Power to be sold to Sumatera, 45km Transmission line to interconnection point
3	Central Java Coal-fired Power Plant (2 x 1,000 MW)	In construction
4	<i>Cirebon-2 (1000 MW) Coal Fired Power Plant (Marubeni, KOMIPO, Indika and others)</i>	Reached Financial Close November 2017 Further legal challenge by WAHLI expected in 2018
5	Toba Bara (2 x 50 MW) – Gorontalo	In financing
6	<i>Tanjung Jati B (2,000 MW expansion) (Kansai Electric, Sumitomo, United Tractors)</i>	Financial Close on \$3.35 bn of debt March 2017
7	<i>Bengkulu 200 MW Coal Fired (Sinohydro, Intraco Penta)</i>	Financial Close on \$270 m of debt July 2017
8	Riau-1 Project Coal-Fired Power Plant (2 x 300 MW) (as of September 2017)	Consortium just formed, which includes: BlackGold Natural Resources, China Huadian Engineering, PT Samantaka Batubara, PT Pembangkitan Jawa-Bali, and PT PLN Batubara
9	<i>Kalbar-2 (2 x 100 MW)</i>	Indonesia Power (51%) looking for Partners.
10	<i>Java 9 and 10 (2 x 1,000 MW), Banten, Ultra-Super Critical</i>	Indonesia Power announced it had formed JV with Barito Pacific

2) Gas

Status updates on several gas projects

No	Project	Status
1	FSRU for Java 1	Java 1 FSRU to take in first LNG cargoes in 2021
2	5 Gas Fired Power Plants totalling 255 MW across Indonesia	Wartsilla and PT. PP announced EPC and 5-year O&M contracts for 255 MW
3	Wellhead Gas IPP at Puspa, Sumatera 20-50 MW	Andalas E&P announced MoU with Pertamina Power Indonesia and Siemens
4	Jambi Wellhead Gas IPP 20-50 MW	Andalas (49%) and PT. PP Energi (51%) signed
5	275 MW Riau Gas Fired Power Plant (Medco Power 51%, Ratchaburi 49%)	PPA signed ADB providing Anchor Financing.
6	Java 3 Gas Fired Power Plant (800 MW), CCGT	In tender process (40 companies) with PJB as 51% shareholder
7	Gas Fired Power Plant in Sumatera (800 MW)	Nebras Power was reported to be ready to invest \$1 bn in the project with COD by 2020.
8	Tambak Lorok, Semarang, Java 780 MW	Announced Indonesia Power awarded EPC contract to Marubeni and GE (\$366 m)
9	Other	Indonesia plans to increase the total of FSRU's to 7 in 2018, and 9 by 2021

3) Renewables

New Solar PV Projects signed MoUs with PLN in March 2017

No.	Location	Type of Power Projects	Capacity	Company
1	Jakabaring, South Sumatera	Solar PV	2 MW	PDPE Sumsel and Sharp
2	Sulawesi	Solar PV	5 MW	PT Cakrawala Energi Sulawesi
3	Lombok, Bangka, Karimun Islands, Kupang, Minahasa and Gorontalo	Solar PV hybrid with Diesel/Gas Machine	N/A	PT Arsari Enviro Industri, and Sunpower Systems SARL.
4	Sumbawa, Bima/Sape, Lombok, Ambon, Madura/Ketapang/Bawean, Waena, Bombana, Bangka/Belitung, Nias	Solar PV hybrid with Diesel/Gas Machine	N/A	PT Sumberdaya Sewatama
5	Selayar Island, Kei Kecil Island, Ambon and Buru Island	Solar PV hybrid with Wind/Small Hydro	N/A	PT UPC Renewable Indonesia and PT Binatek Energi Terbarukan

Source: Rambuenenergy¹⁰⁸

Wind updates

Project	Size (MW)	Developer	Status
PLTB Sidrap, South Sulawesi	70	UPC Renewables Indonesia	PPA signed in August 2015. Construction commenced in 2015, and is expected to achieve COD in early 2018. In 2016, the project secured financing support from OPIC (Overseas Private Investment Corporation) of up to USD 120mn.
PLTB Jeneponto, South Sulawesi	60	Equis	PPA signed in September 2016. Construction will commence soon, and is expected to be completed by the end of 2018. FiT = USD 10.89c/kWh.
----	N/A	PACE Energy Pte Ltd	PACE Energy Pte Ltd and PLN (Persero) has signed a MoU in March 2017. This MoU covers eight renewable energy (wind/solar) projects across Indonesia.
----	< 50	AC Energy + UPC Renewables	Announced plans to look at up to 50 MW across small islands

Other Solar PV updates

Project	Status
200 MW Floating Solar PV on Cirata Reservoir, West Java	PJB and Masdar signed Project Development Agreement

3) Renewables

Bioenergy project developments signed MoU's with PLN in March 2017

No	Type of Biomass	Capacity (MW)	IPP/Developer	Location
1	Forest Waste (Biomass)	0.7	PT Charta Putra Indonesia and IKPT	Mentawai, West Sumatra
2	Palm Waste (Biomass)	10	Pt Cahaya Manggala Power	Kobar, Central Kalimantan
3		10	PT Biogreen Power Kobar	Kobar, Central Kalimantan
4		10	PT Pajar Mitra Energi	Sukamara, Central Kalimantan
5		10	PT Intika Accord Power	Sintang, West Kalimantan
6		10	PT Carpediem Elektrikal Nusantara	Sintang, West Kalimantan
7	Biomass	4	PT Pundi Global Investama	Kubu Raya, West Kalimantan
8		10	PT Biomas Energy Abadi	NAD
9		10	PT Subulussalam Green Energy	Subulussalam, NAD
10		7	PT Pasadena Biofuels Mandiri	Rokan Hulu, Riau
11		5	PT Inhil Sarimas Kelapa	Sarimas, Indragiti Hilir, Riau
12		4	PT Sentosa Jaya Bersama	N/A
13		3	PT Karya Energi Jambi	Batanghari, Jambi
14		6	PT Energi Karya Persada	N/A
15	Biogas	10	PT Sentosa Jaya Purnama	N/A
16		10	PT Rezeca Isa	Bangko Sampurna, Rokan Hilir, Riau
17		46	PTPN V	Kampar, Riau
18		3	PT Pasadena Biofuels Mandiri	Ujung Batu, Rokan Hulu, Riau
19		3	PT Green Energy Specialist One	Rumbai, Riau

3) Renewables

Geothermal updates

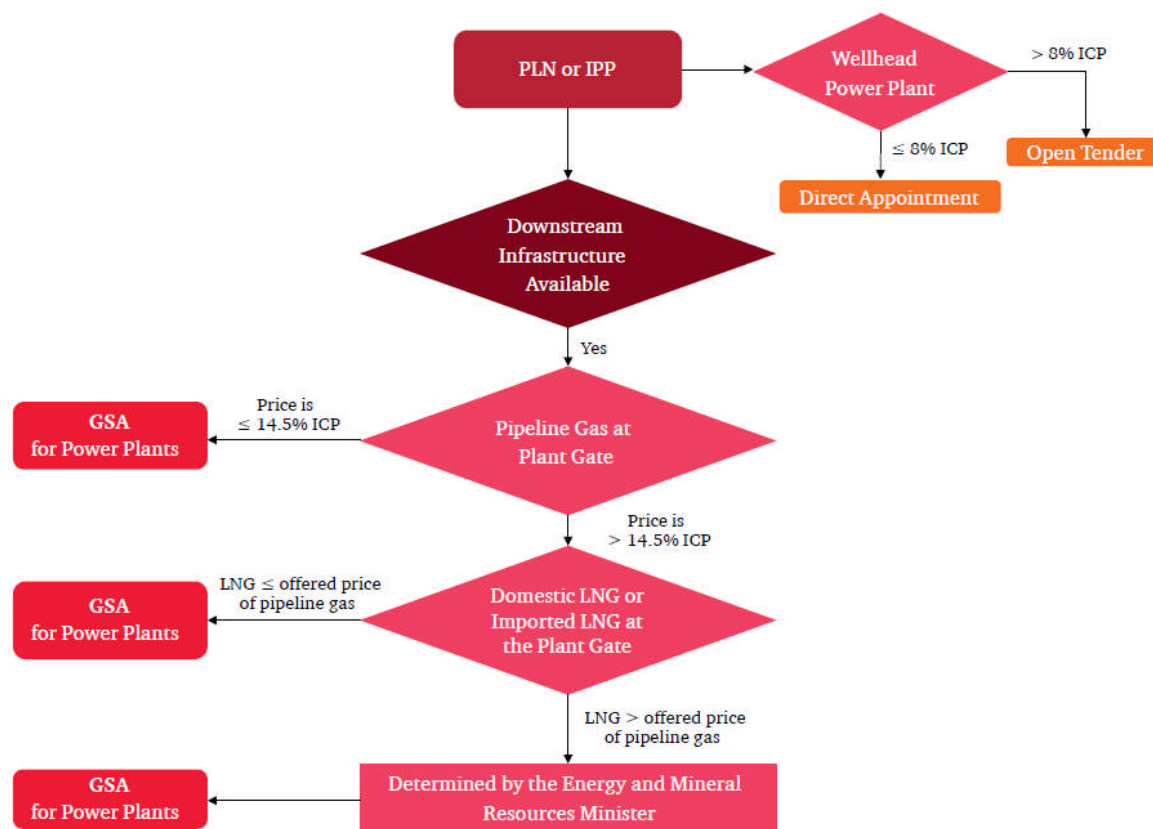
- **August 2017; PLN seeking partners** to work on 14 geothermal blocks worth US\$4 billion. The total potential of the blocks is estimated to be 1000 MW.
- Medco-Aboitiz Joint Venture for Geothermal exploration in Java aborted
- Chevron Indonesia has sold its geothermal assets, namely the Darajat (270 MW) and Salak power plant (377MW), to a consortium led by Star Energy (including Ayala Energy). The reported value was around \$2 billion. **Subsequently Austindo Nusantara Jaya also sold their 5% interest in Darajat to the Star Energy Consortium.**

Section 5

Other noteworthy regulations

MoEMR Regulation No. 45/2017: Use of Natural Gas for Power Plants

Regulation No. 3/2015 for Gas/Gas Engine power plants has been revoked by No.19/2017. Maximum Power Tariffs are now unregulated, but the gas price is regulated by MoEMR 45/2017



Source: MoEMR Regulation No. 45/2017, Coffee Morning Session with DGE 10 August 2017

MoEMR Regulation No. 48/2017 sets new share transfer restrictions

Change of shareholding

- Before COD – not allowed, except to > 90%-owned subsidiary (and must be 1 level below) and with PLN's approval
- After COD – allowed with PLN approval
- Problem - bank step-in rights during COD ...?
- Geothermal – depends on whether shares listed
 - If listed, need Minister's approval
 - If not, just need to notify Minister

Change in BoD/BoC

- MoEMR notification

Geothermal regulations

Earlier this year, the Government issued **GR No. 7/2017**, which concerns geothermal for indirect use. One key implication of this and MoEMR 50/2017 is that the tariff cannot be fixed **until after reserves proven**. Note also that MoEMR No. 17/2014 on Geothermal FiTs was revoked under No.50/2017.

Some key points of Law No. 7/2017 regarding Geothermal:



The new law states that the proposal will be graded on: (a) a review of Geothermal Data and Information to estimate the feasibility of the Working area; (b) exploration and Exploitation implementation strategy, completion targets, and cost budget plan; and (c) commitment regarding the COD.

01
Different
Criteria



Business Entities that have performed PSPE and participate in the assigned working area tender will be prioritized (ranked first) in the tender, while any state-owned enterprise shall be ranked second.

02
Priority
Changed



Authority over all geothermal fields has been transferred from provincial administrations to the central government to better assess geothermal projects.

03
Authority is
Centralised



The tender winner is determined by the Energy and Mineral Resources Minister. Within four months after being declared the winner, such Business Entity has to pay the base price for the working area data as a Non-Tax State Revenue (“Non-Tax Revenue”) and put in place the Exploration Commitment.

04
Who decides
the winner?

New Captive Power/Excess Power regulations

MEMR 19/2017

Sets a maximum benchmark price for excess power **equal to 90% Regional BPP**, the PPA may be less than one year, depending on local power needs.

MEMR 01/2017

PPUs may establish a backup connection to PLN under the following specified parameters:

1. A Connection Charge: based on existing Law and related ministerial regulations;
2. A Capacity Charge: calculated using the following formula, total power generated (MW) times 40 hours times electricity tariff;
3. An Energy Charge:
 1. Normal Energy Charge: applies when PPU normally operate in parallel systems;
 2. Emergency Energy Charge: when emergency situation occurs, which led PPU to use electricity supplied by PLN.

See next slide for details of Wilayah Usaha

Terima kasih

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