



Business case for Rooftop Solar PV Project Development in Indonesia
“ROOFTOP SOLAR PV MARKET DEVELOPMENT IN INDONESIA”
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Solar PV in Indonesia's Energy Mix



- **60+ GW current install capacity**
- **Development of solar power is very limited at 100+ MW**
- **Consists of stand-alone solar photovoltaic located in remote areas, on-grid larger capacity up to 5 MW, commercial, industrial and residential**
- **30-35 MW of commercial, industrial and residential PV, capacity up to 1.6 MW**

Solar Potencial and Forecast

- **Indonesian Power Sector Expands by 250 %, from 60 GW to 200 GW in 2040**
- **By 2040, Indonesia should install 28 GW of C&I and residential scale PV, up from around 30MW in 2016. This is 50% of the total installed PV capacity in 2040..**
- **By 2040, 40% of the total installed rooftop PV capacity is in the residential sector**
- **Total PV generation rises from almost zero in 2016 to 11% in 2040, as both utility and small-scale capacity grows. Small - scale PV reaches only 5% of the total generation in 2040.**
- **Until 2031 PV (only) is expected to be the dominant product in the market, due to the high costs of storage. However from 2031, the uptake of PV (with storage) begins to gather pace, as storage prices fall and payback periods contract. Some 1.8GW/4.5GWh of battery storage is projected to be installed behind - the - meter by 2040 representing only 15% of the total flexible capacity in the system**

C&I Solar PV Market Conditions

- Increased interested in C&I PV but yet slow development
- MNCs globally committed to reduce CO2 emission and to go 100 renewable showing strong interest for rooftop solar PV- not interest in savings
- Mostly interested in PPA or operational lease, not interested in owning
- Asking developers to match PLN tariffs
- Business owner which are not committed to be “green” looking into savings only
- If owning desired payback period is up to 7 years
- Long discussion with the customer before signing a contract
- Owning
 - Large upfront capital investment, O&M, but more savings on the long term
- vs
- Financing
 - Operational lease, No capital investment, no maintenance, less savings long term

Current Challenges in C&I PV

- **Payback period**
 - Still relatively long, 7-8 years
 - For developers IRR is below 10%
 - Low electricity tariffs
 - Still relatively expensive EPC
- **Financing**
 - High interest rates
 - Bank reluctant to lend money to solar developers
- **Regulations**
 - PPAs not allowed
 - Operational lease limited to 100% domestic investment
 - PV is not classified as industrial equipment (BKPM)
 - Net Metering cannot be applied
 - ESDM Regulation 1/2017 (Parallel Generation)

The Regulations

- **ESDM Regulation 01/2017**

- “Parallel Generation Regulation” regulates and penalizes all power generation parallel to the grid
- Three (3) type of fees, connectivity fee, capacity fee and electricity purchase fee.
- The capacity fee penalizes all power generation above 200 kVA installed parallel to the grid:
total net generating capacity (MW) x 40 (forty) hours x electricity tariff
- Solar PV generates only 4hour/day or 120hour/month vs diesel/gas 720hours/month
- Reduces production/revenue by 33%
- Increases payback period up to 12 years or longer
- Makes rooftop solar PV unattractive and expensive

- **PLN Regulation 0733/2013 on Net Metering**

- Net Metering only up to 30 kWp

- **Negative Investment List**

- Operational lease limited to 100% domestic capital
- PV is not classified as industrial equipment (BKPM)

The Conclusion

- Undeveloped C&I rooftop solar PV
- Government regulations are not supporting rooftop solar PV (C&I)
- Revision of unfavored regulations (ESMD 01/2017)
- Raising awareness/socialization (Net metering)
- Government and PLN's understanding and support (to learn from international case studies)
- Private sector can help to reach 23% RE in the mix by 2025
- You do not need to give us an incentives but do not penalize us for developing solar projects, please!

Thank you

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