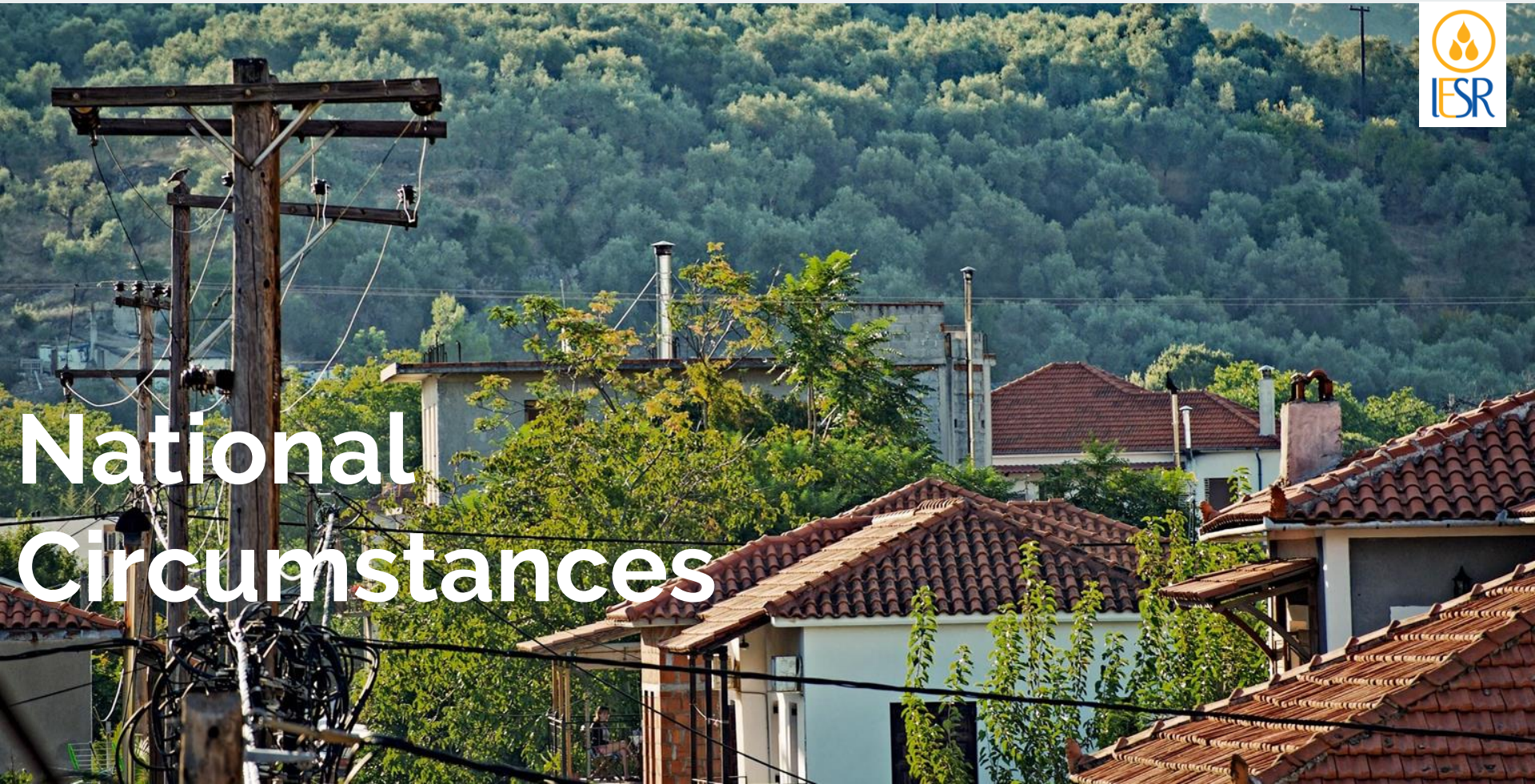




Challenges for Rapid Deployment Renewables in Indonesia

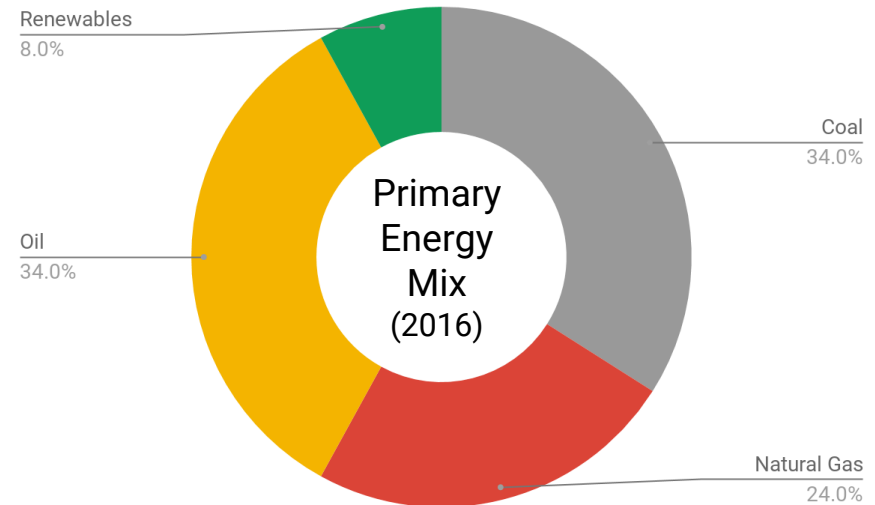


National Circumstances



Renewable Energy in Indonesia

- Renewable ~ 7.7% of total primary energy mix in 2016, from 3,5% in 2006
- In power sector, increased 8% p.a. (2011-2015), but declined in 2016 to 2,9%.
- Slow down factor:
 - *Inconsistency of policy and regulatory framework*
 - *Lack of fiscal incentives*
 - *Financial and non-financial barriers*



What Makes RE Project Expensive?



Risk

- Policy and regulatory, currency risks
- Limited experience of local financial sector in RE financing
- Higher expected return from investor/developer



Financing

- High interest rate of local financial institution ~ 10 to 12%
- Short tenor/payback 6 to 8 years
- High equity portion >30%



Project Cost

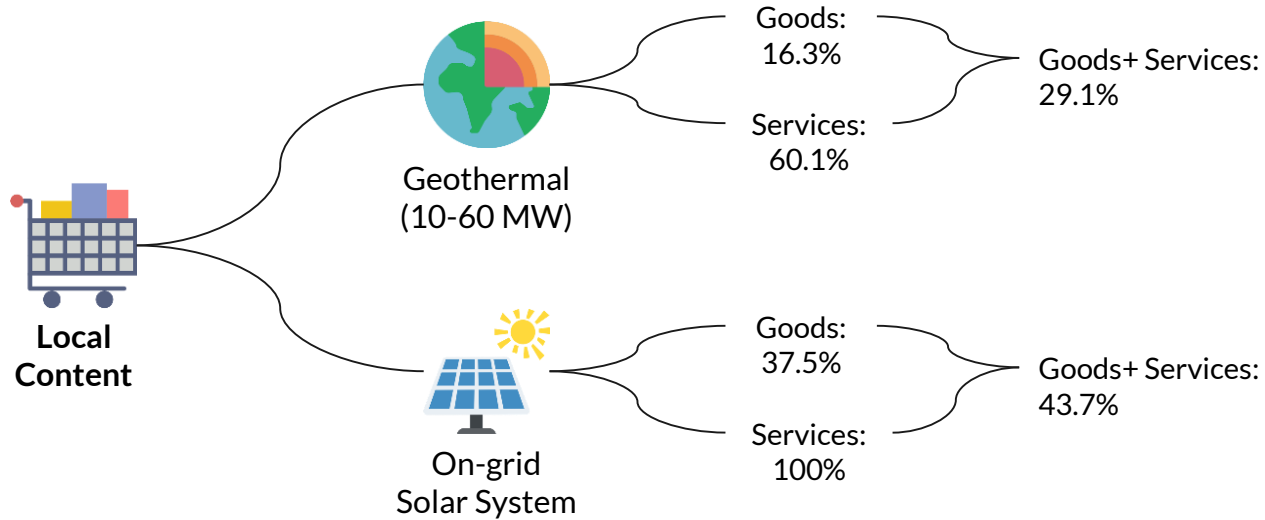
- Logistic cost varies
 - location
 - Infrastructure
- Scale (Solar PV)
 - Utility: 0.9-1.2 \$/Wp
 - Medium: 1.2-1.4 \$/Wp



Bid/PPA

- Bid bond ~10%
- Performance bond/Project Development Account in escrow account 10% of total project cost
- PPA is in Rupiah (IDR), adjusted to USD value

What Makes RE Project Expensive?



Financial Simulations



Financial Simulation PV Project (5 MW)



Investment (IDR)	Interest (%)	PPA (IDR/kWh)	NPV (IDR)	IRR (%)
78,750,000,000 (1,150/kWp)	12%	1,600	(37,692,654,872)	5
		2,000	(9,825,154,617)	10
		2,400	15,122,734,146	15
		2,800	37,414,703,599	19

IDR 1,600 = \$ 0.12/kWh
 IDR 2,000 = \$ 0.145/kWh
 IDR 2,400 = \$ 0.18/kWh

Financial Simulation PV Project (10 MW): Bali, Indonesia

Specific yield (kWh/kWp/year):
 1,492
 Performance ratio:
 80.2%
 Annual Yield (MWh/year):
 14,936
 Tariff (set):
 \$0.066/kWh
 PPA:
 20 years

Total Project Cost (\$/Wp)	1,0	1,0	0,90	0,9	0,72
VAT (%)	10,0	10,0	0,0	0,0	0,0
Income Tax (%)	25,0	0,0	0,0	0,0	0,0
Inflation Rate (%)	3,0	3,0	3,0	3,0	3,0
Interest Rate (%)	7,0	7,0	7,0	5,0	5,0
Tenure (Years)	8,0	8,0	8,0	10,0	10,0
IRR Project (%)	3,7	5,3	6,8	6,8	10,1
IRR Equity (%)	2,9	4,4	6,6	8,1	14,9
PPA Tariff (\$/kWh)	0,066	0,066	0,066	0,066	0,066



Possible Solutions



Solutions



- End to end solutions:
 - Enabling policies: project preparation policies, project finance regulation
 - Financial risk mitigation instruments: guarantees, currency hedging instrument
 - Structured finance: green bonds
- Financing:
 - Low interest (< 7%)
 - Patient capital (mezzanine finance) >10 years
 - “Equity gap” capital
- Policy and regulatory reform to create bankability PPA



Thank You



Fabby Tumiwa
Executive Director

www.iesr.or.id | fabby@iesr.or.id