

Seven Insights for Vietnam's Energy Transition in the Power Sector





**Vietnam
Initiative
for Energy
transition
(VIET)**



**“ An independent
think tank to
accelerate
Vietnam's
transformation
to a low carbon
economy**

Old narrative: building more coal power plants can meet the demand growth

Coal power pipeline

Pipeline 2018 (GW)

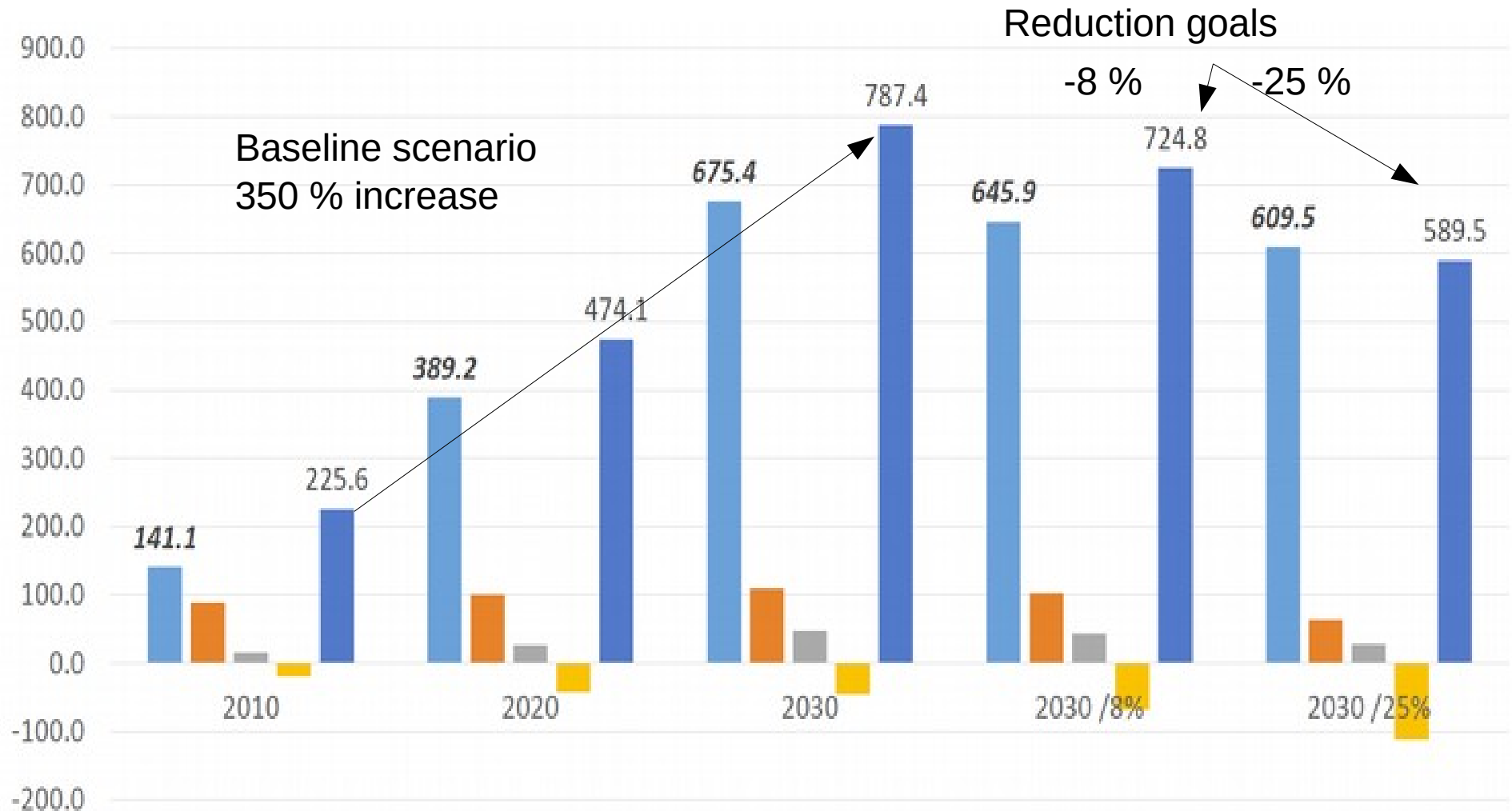
- Planned
- Under construction
- Net % changes 2015-2018



VN CO₂ emissions 2010 — 2030

25 % reduction on 350 % increase

MtCO₂eq



National problems

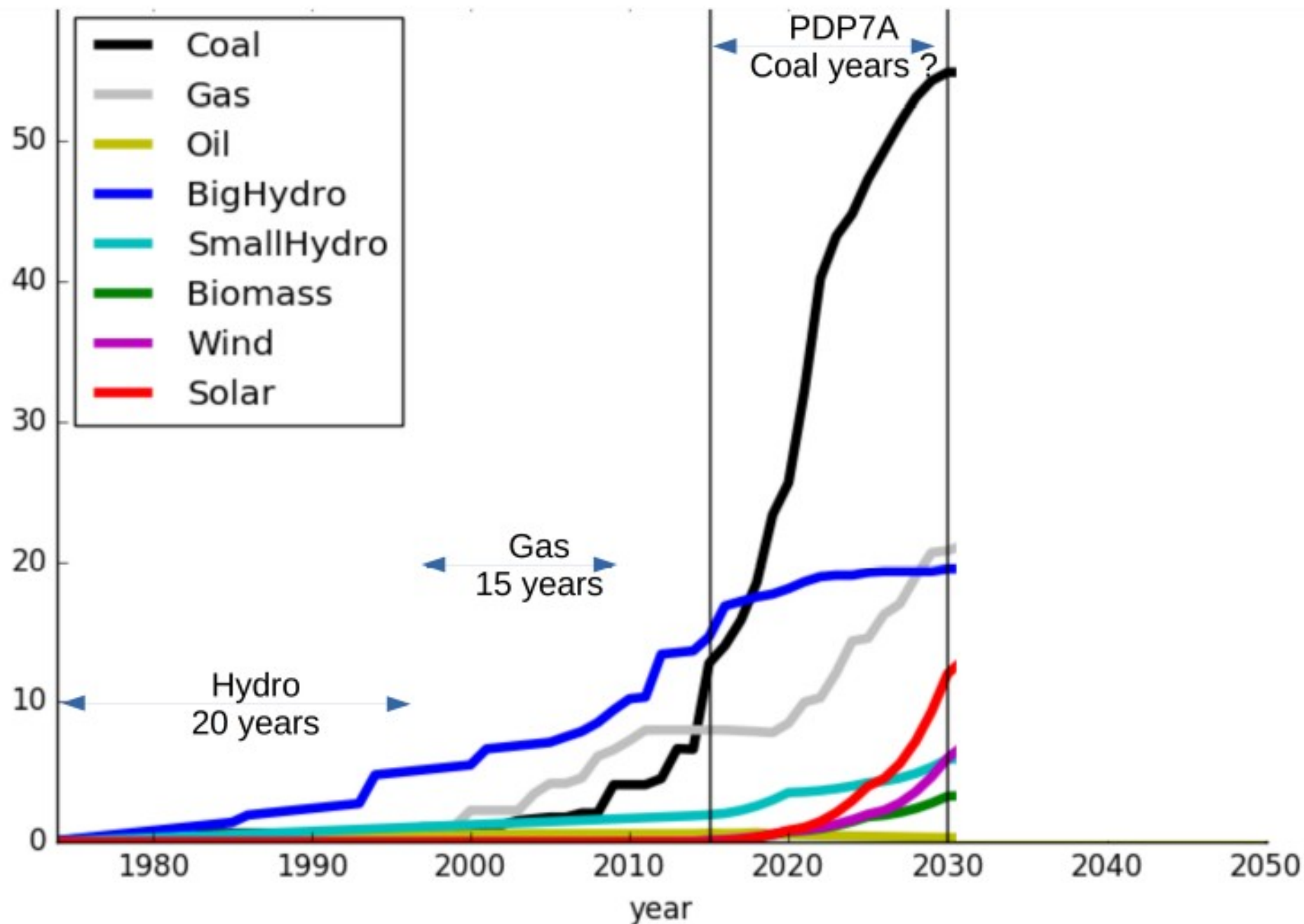
- Delays in building plants, power shortage risk back
- Exposure to international coal price risk since 2016
- EVN GENCO 3 IPO failed
- Air quality degradation

7 insights for a new narrative

- 1) The Vietnam power system can change course rapidly.
- 2) There is lots of potential for energy efficiency.
- 3) Renewables are competitive with fossil fuels.
- 4) Solar and wind power generation is developing exponentially fast.
- 5) Hydro, flexible thermal power and batteries can ensure system reliability at acceptable costs.
- 6) Power market reform can foster investments in renewable energy sources
- 7) Technological forces towards a smart, decentralized energy system are irresistible.

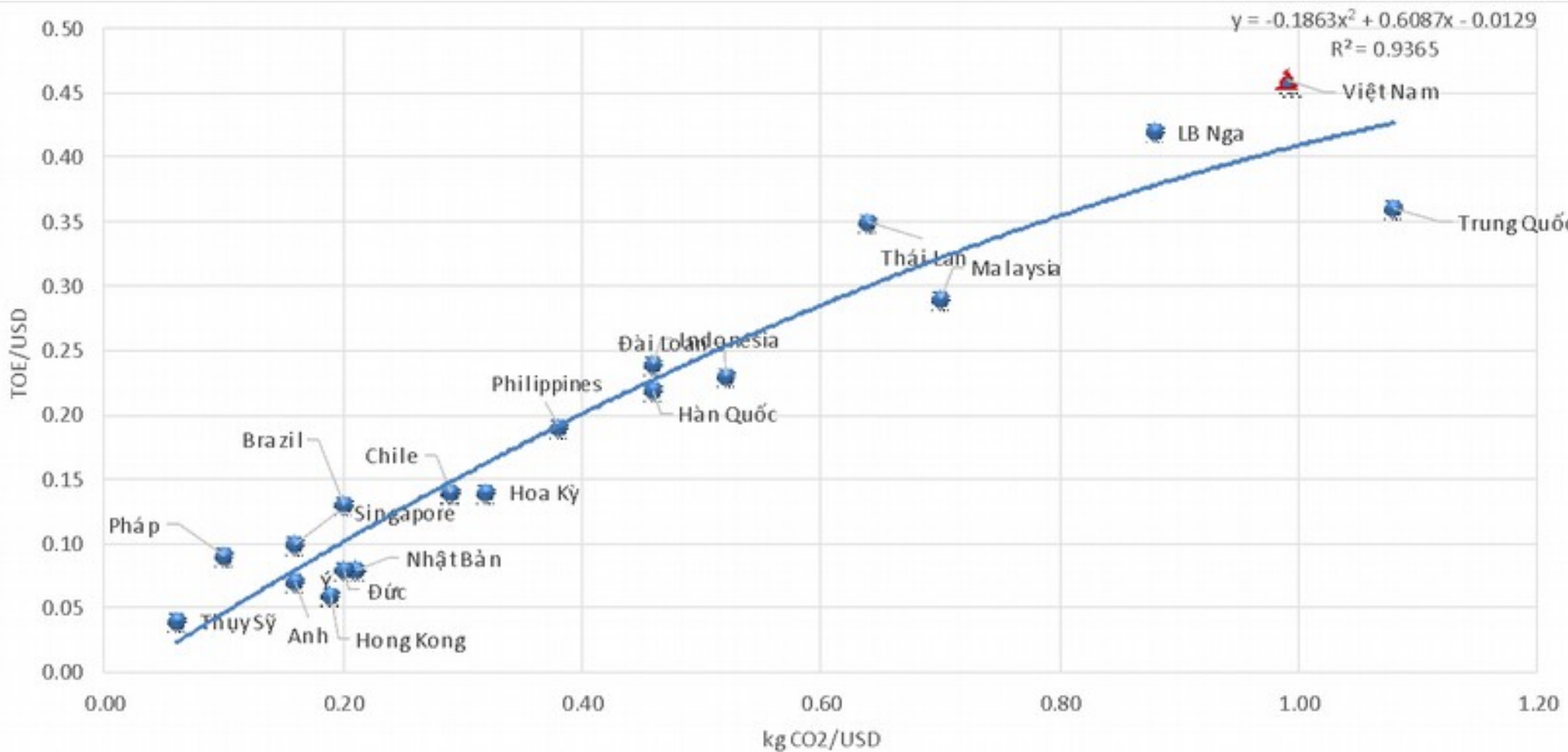
1. Vietnam energy system can change course rapidly

Vietnam Generation capacity by technology, 1975 - 2050



**2. Vietnam economy as lots of potential to
increase efficiency in energy
supply and demand**

Comparison of energy intensity and the intensity of CO2 emissions per GDP
 (Fig 6 in Energy Statistics Vietnam 2015)





Tác giả: Khánh Linh

3. Solar and wind electricity generation costs are competitive with those of fossil fuels.

Cost comparison from different viewpoints

- Financial: New solar PV is well placed to outcompete new coal almost everywhere
- Provincial: External pollution costs of coal are not acceptable.
- National: Domestic potential of hydro, coal and gas are fully used, adding more require imports.
- Global : Carbon neutral by 2050 is the only way to avoid the risk of dangerous climate change.

4. Solar and Wind power generation is developing exponentially fast

National Target (MW)	PV	Wind
2020	850	800
2025	4 000	2 000
2030	12 000	6 000

Vietnam renewable energy projects pipeline as of July 2018

Status July 2018:	Operation	Construction	Design and FS	Pre-investment
Solar energy	1 project 7 MW	10 projects 1002 MW	28 projects 1 432 MW	79 projects 12 622 MW
Wind energy	6 projects 189 MW	16 projects 739 MW	21 projects 1 804 MW	21 projects 3 012 MW
Biomass energy	13 projects 270 MW	1 project 60 MW	17 projects 481 MW	10 projects 87 MW

Source (Le Xuan Dong, 2018). Statistics do not include a significant number of Solar projects approved or registered in the summer of 2018.



Năng lượng thủy điện - Liệu có phù hợp? - Lê Hoài Hân

5. Hydro, flexible thermal power and batteries can ensure system reliability at acceptable costs.

Integration of renewables has costs

- The problem today is local hotspots : provinces where the grid cannot evacuate peak generation.
- It will be solved by better planning and increasing marginal costs of land.
- Reliability is a problem of tomorrow, it has been solved in many countries.

6. Power market reform can facilitate clean energy growth

- Equitization and market opening to attract capital in the energy sector
- Risks
 - Stranded assets for coal
 - EVN may not take the electricity and pay
 - Compensation in case of early termination
 - Arbitrage in case of conflict
- Finance grid expansion without State debt ?

Energy sector never left to market forces only Feed In Tariff (FIT)

Market price

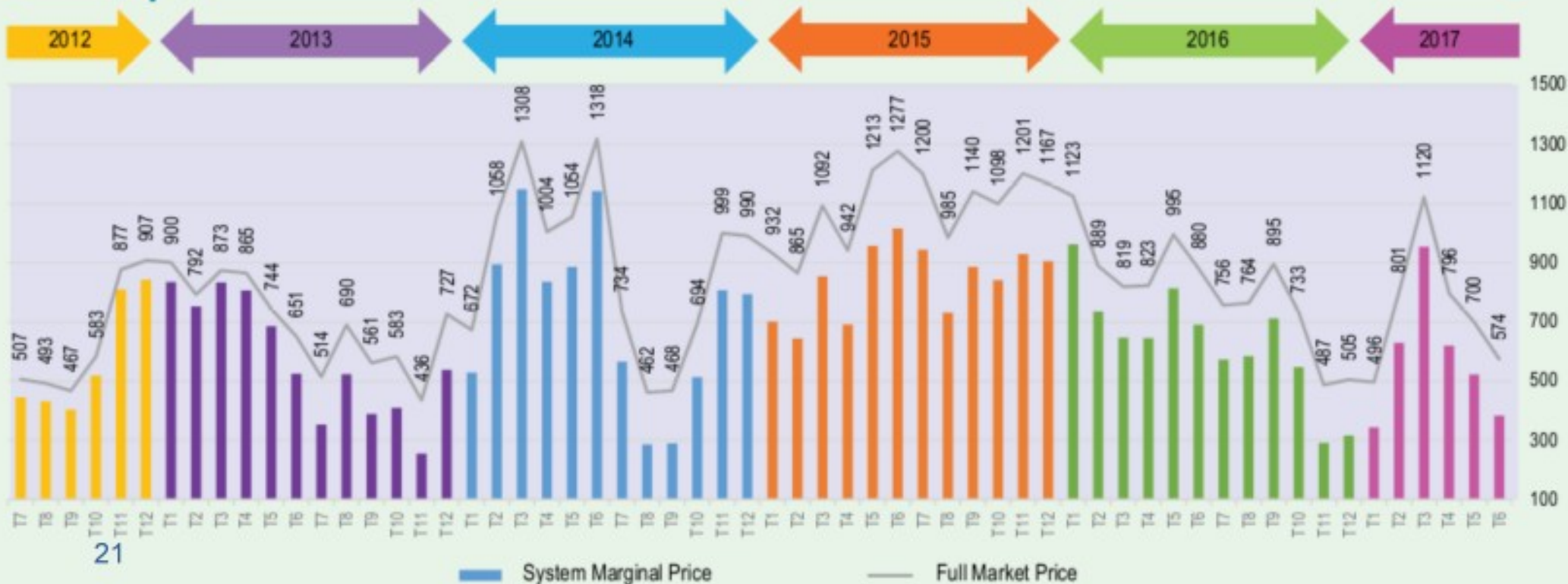
1 200 VND / kWh at most

Solar energy FIT

2 086 VND /kWh

Market price

Monthly Average System Marginal Price and Full Market Price (VND/kWh)





7. Technological forces towards a smart, decentralized energy system are irresistible.

Ready or not, smart grid is coming

- The fourth industrial revolution will disrupt almost every industry, everywhere.
- Develop smaller generation units, closer to the load :
 - Solar fields in eco-industrial parks
 - PV rooftops big and small
 - Electric vehicles
- The 8th Power Development Plan may be the last of its kind. Flexibility rules now.

Conclusion

Energy policy focus started to shift in 2018

- Solar and wind farms are affordable
- They can be build fast.
- Other domestic resources are exhausted.
- Gas is cleaner and more flexible than coal.
- International climate policy.