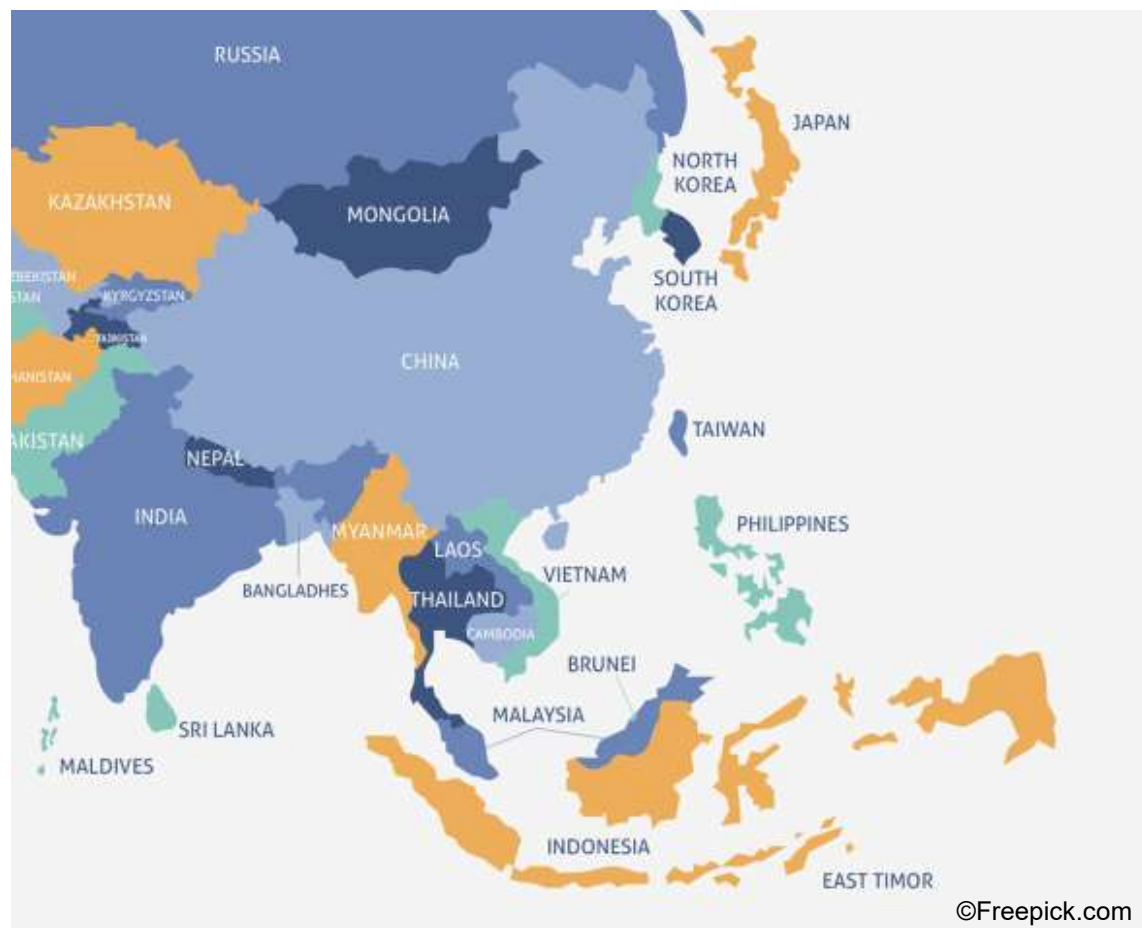


# Commercial PPAs changing the PV landscape: Focusing on Asian PV market



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# Contents

- About RTS Corporation
- Asian PV market and LCOE status
- Corporate PPA and challenges
- Summary

# RTS Corporation – founded in 1983, 37-year experience

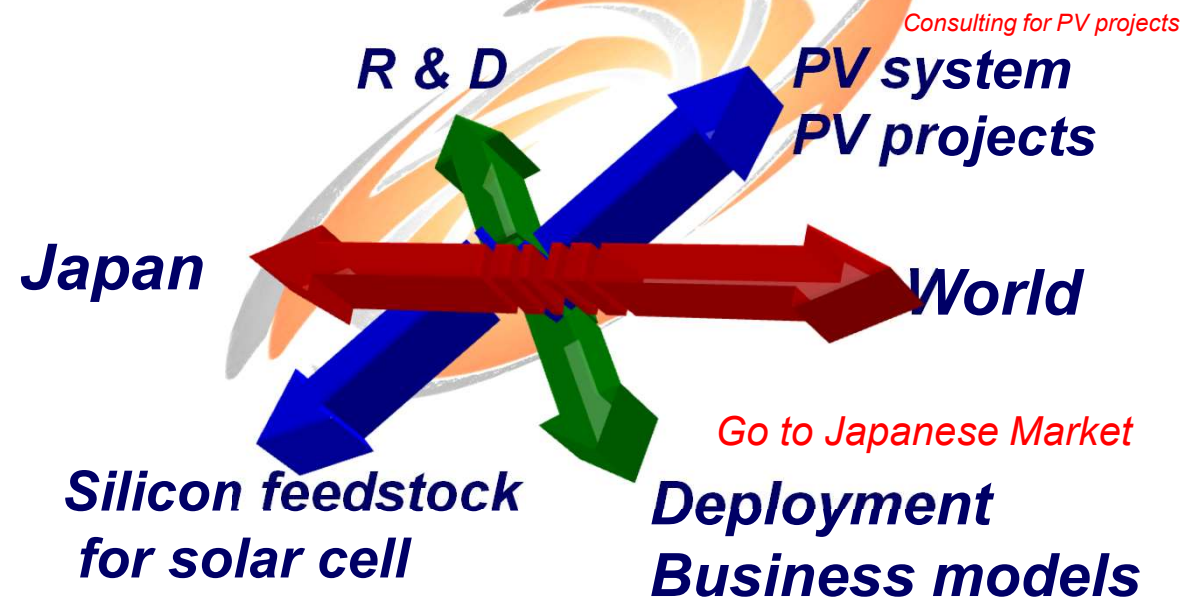
<https://www.rts-pv.com/en/>

[Comprehensive Consulting company on Photovoltaics \(PV\)](#)

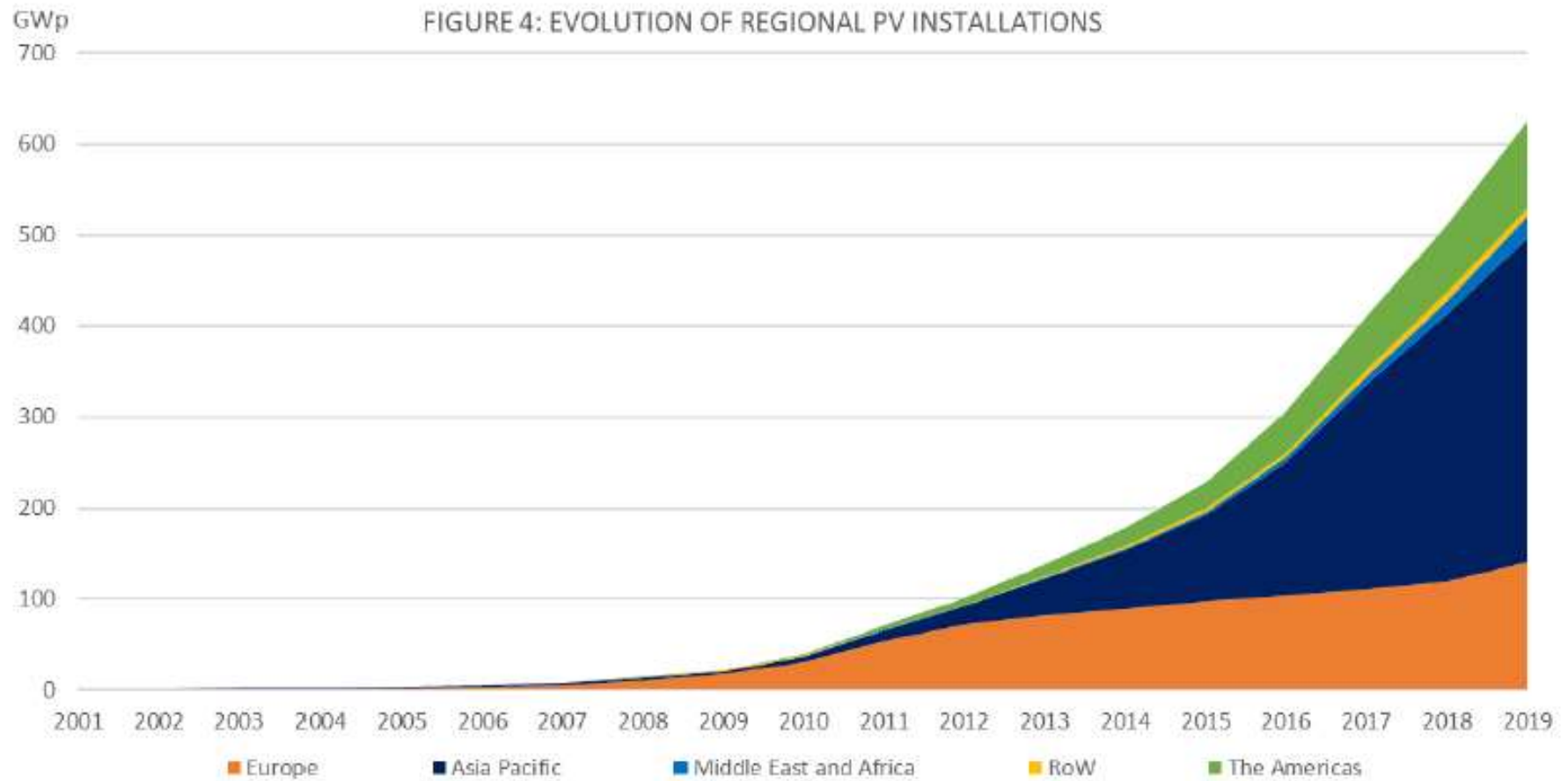
**Business:** Helping establish PV business strategy, **“Go to Japanese market ”**

**Clients:** Government agencies, utilities, manufacturers (entire value chain of PV) project developers, financial institutes, industry associations, etc.

in JP, US, DE, IT, FR, AT, NR, CHE, AUS, CHN, IND, KOR, Taiwan, Thailand, Norway, etc.



# Asia Pacific region leads the global market

























Source: IEA PVPS

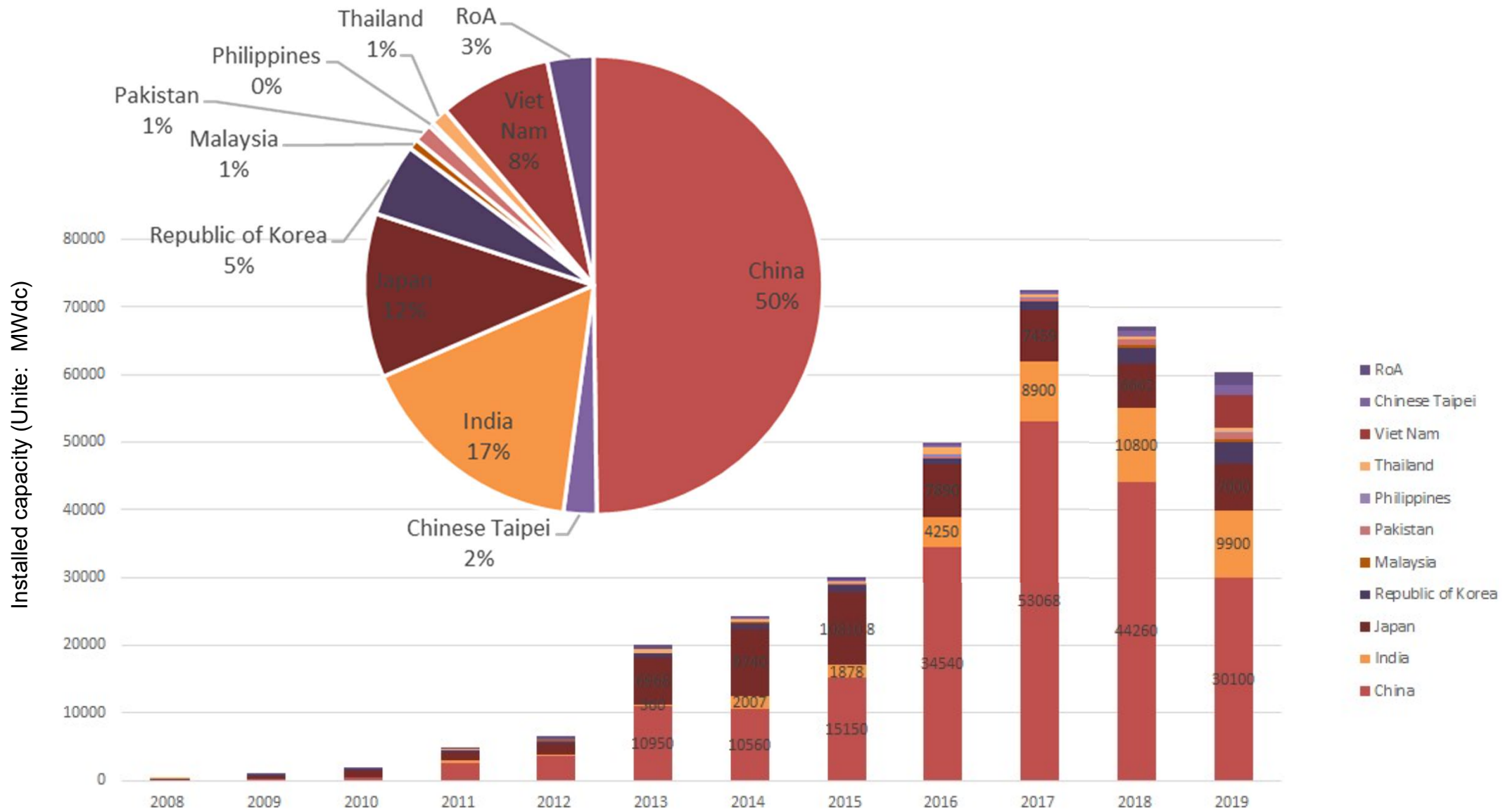
## 5 Asian countries ranked in top 10 ranking of 2019 installed capacity



TABLE 1: TOP 10 COUNTRIES FOR INSTALLATIONS AND TOTAL INSTALLED CAPACITY IN 2019

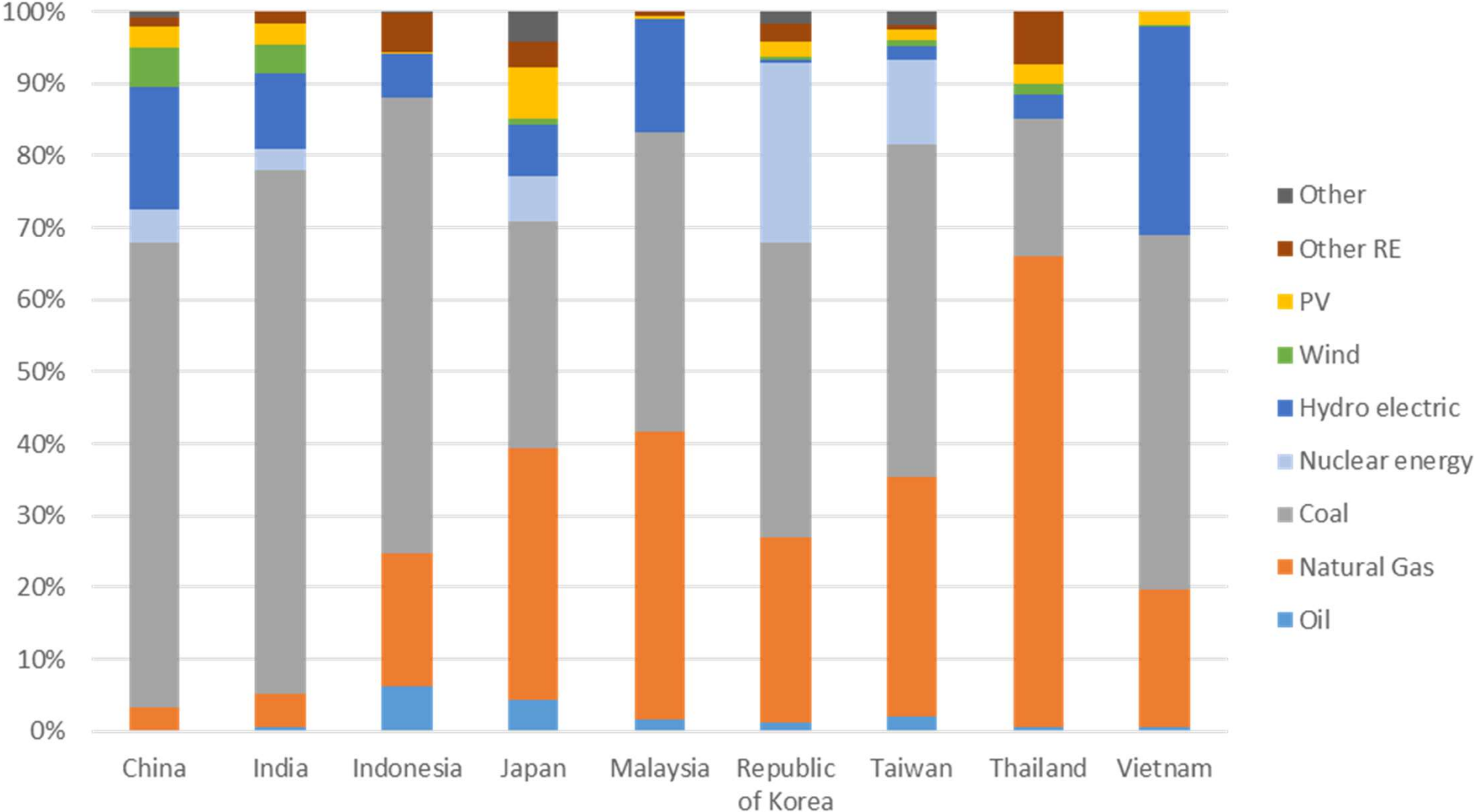
FOR ANNUAL INSTALLED CAPACITY				FOR CUMULATIVE CAPACITY			
1		China	30,1 GW	1		China	204,7 GW
(2)		European Union	16,0 GW	(2)		European Union	131,7 GW
2		United States	13,3 GW	2		United States	75,9 GW
3		India	9,9 GW	3		Japan	63 GW
4		Japan	7,0 GW	4		Germany (EU)	49,2 GW
5		Vietnam	4,8 GW	5		India	42,8 GW
6		Spain (EU)	4,4 GW	6		Italy (EU)	20,8 GW
7		Germany (EU)	3,9 GW	7		Australia	14,6 GW
8		Australia	3,7 GW	8		UK (EU in 2019)	13,3 GW
9		Ukraine	3,5 GW	9		Korea	11,2 GW
10		Korea	3,1 GW	10		France (EU)	9,9 GW

# Trends of installation capacity of Asian Countries : ~60 GW installed in 2019



Source: IEA PVPS and RTS Corporation

# Contribution of PV in the electricity mix of selected Asian countries (2019)



Source: BP Statistics 2020, compiled by RTS Corporation

# PV Market drivers in Asian countries

- Market oriented scheme from incentives
  - FIT program → more market-oriented mechanism with competitive LCOE
- Utility scale:
  - Auction: China, India, Malaysia, Japan
  - Feed-in Premium Program (planned in Japan)
- Distributed generation: Net-metering
- National Commitment on Paris agreement
  - Need to replace coal
  - National target for renewable energy or PV capacity
- RPS: obligation to use renewable energy
  - India(SRPO), South Korea (REC), Japan (44% of non-fossile electricity by 2030),
  - China (RPS 2021 after)
- Emerging drivers :demand for renewable energy by users
  - Self consumption
  - Corporate PPAs

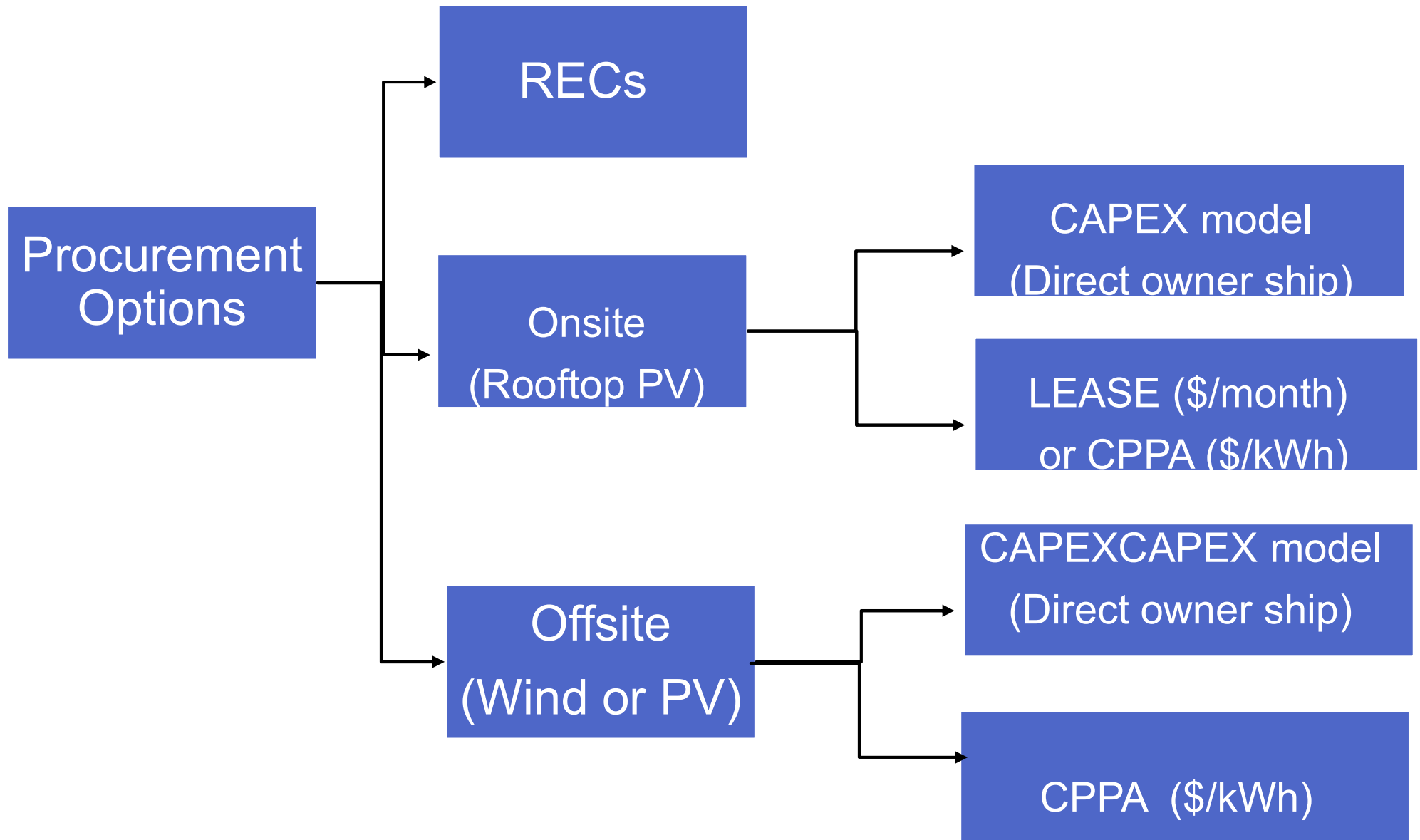


## Demand for renewable energy from companies

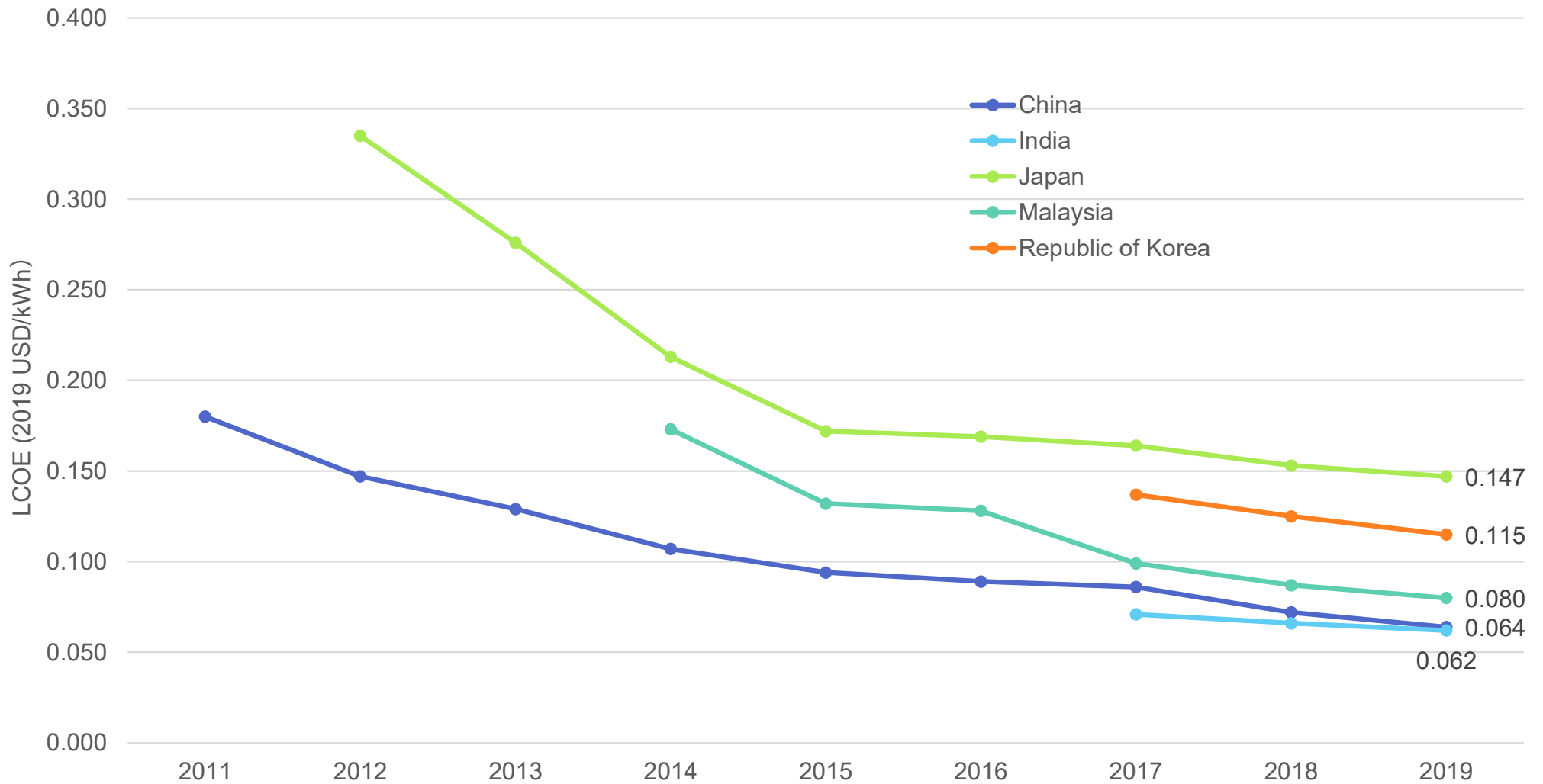
- Responsible for decarbonization
- Responding investors demand
- Rising the value of the business
- Economical advantage



# Procurement options of renewable energy

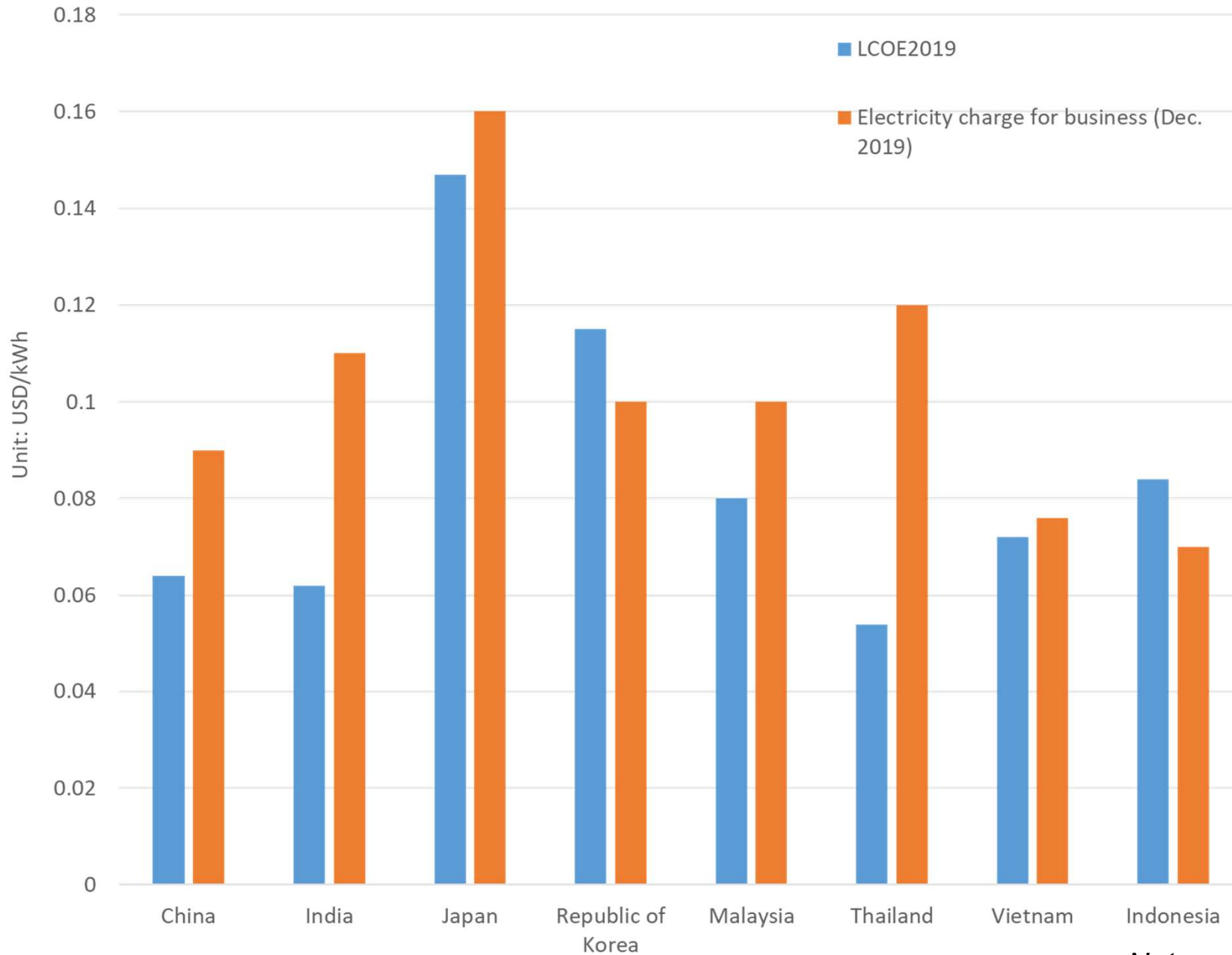


# LCOE of commercial PV in selected Asian countries, 2010-2019



Source: IRENA, "Renewable Power Generation Costs in 2019"

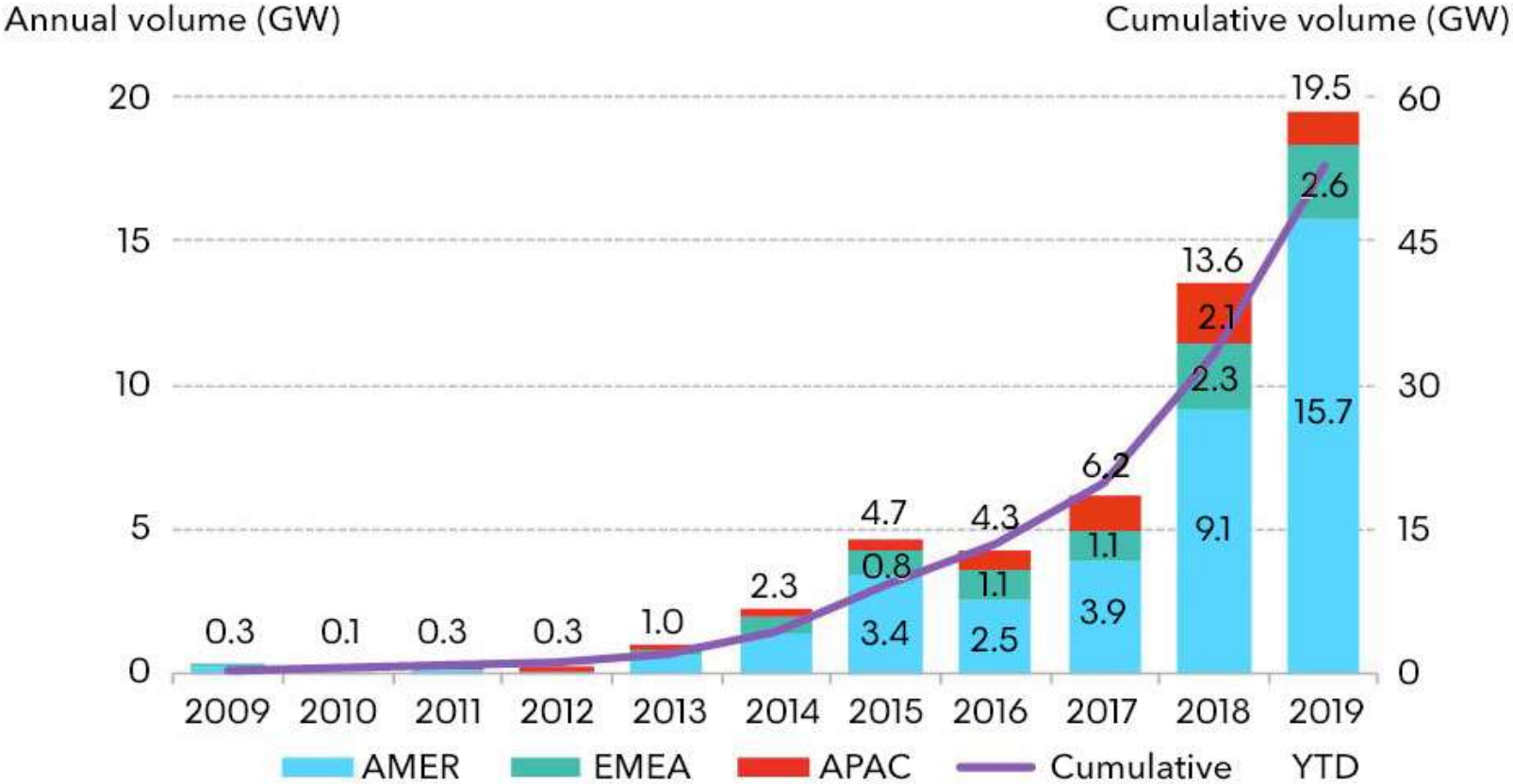
# Benchmark PV LCOE and Electricity price of selected countries in Asia



*Note: not average*

# Corporate PPA in APAC, PPA volumes does not match with the PV installed capacity

**Figure 1: Global corporate PPA volumes**



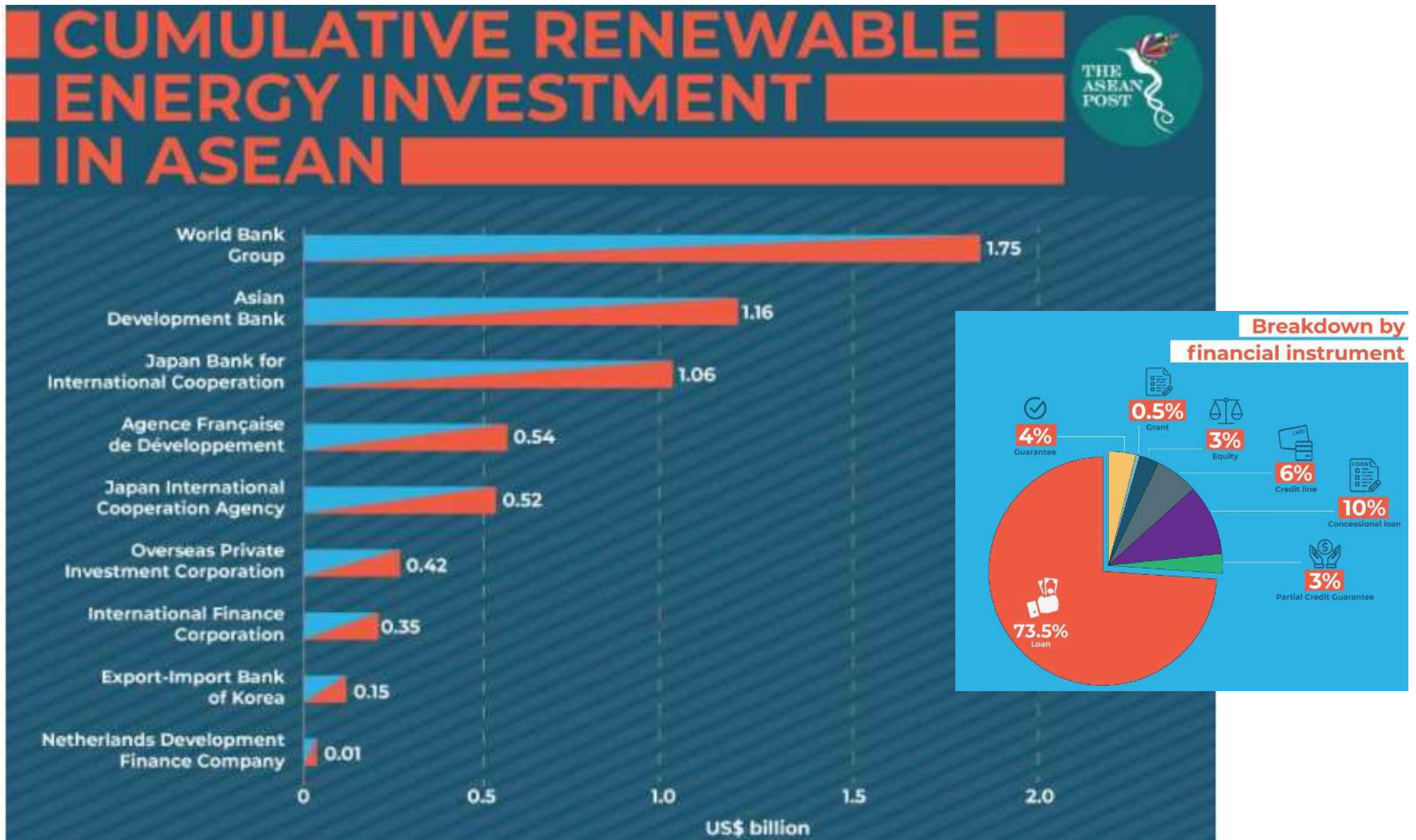
Source: BloombergNEF. Note: Data are through 2019, reported in MW DC capacity. Onsite PPAs are not included. Australia sleeved PPAs are not included. APAC number is an estimate. Pre-market reform Mexico PPAs are not included. These figures are subject to change and may be updated as more information is made available.

## Issues: Regulatory framework

- Self-consumption: Available in most countries
- Onsite Lease model : common in most countries
- CPPA: emerging but still limited, off-site PPA sometime difficult due to regulation or higher transmission fee
- Example of regulatory framework in ASEAN countries

	OPEX model (selfconsumption)	Leasing model	CPPA model	Net metering
Philippines	✓	✓	✓	✓(<=100kW)
Thailand	✓	✓	✓	(Residential only)
Malaysia	✓	✓	Not permitted	✓ (upto 1MW or 75% supply of demand)
Indonesia	✓	✓	(✓) Only Outside of PLN service	
Vietnam	✓	Under discussion	Under discussion	✓ (at the same rate with FIT)
Cambodia	✓	✓	✓	✓?
Singapore	✓	✓	✓	✓

# Issues Challenges: Finance



Source: International Renewable Energy Agency  
<https://theaseanpost.com/article/aseans-renewable-energy-challenges>

# Conclusion

- CPPA is emerging business models in Asian countries
- Benefit for both PV power suppliers and electricity
- Current major options
  - Leasing and onsite PPA as well as Self-consumption
- Issues remains
  - Regulatory barriers due to electricity market structure
  - Finance
  - Economic recovery after/with COVID-19 era



***Thank you for your kind  
attention !***

**感谢您的关注**

**끝까지 경청해 주셔서 감사합니다**

**ご清聴ありがとうございました**

Acknowledgement for the support of PVPS activities



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# RECs are available in most Asian countries

● Guarantees of Origin

● RECs

● I-RECs

● National system

