

The Electric Power System

- Thailand -

Basic facts

- ❑ Area: 513,000 km² (198,000 sq mi),
- ❑ Population: 66,188,503 (2017)
- ❑ Number of electricity consumers (2017):
22.51 million households
- ❑ Number of TSOs: 1
- ❑ Number of DSOs: 2
- ❑ Peak load (May 2017): 30.30 GW
- ❑ Average interruption of electricity (2017):
104.44 minutes / delivery points / year



Location of **Thailand** (green)
in [ASEAN](#) (dark grey)

sources : Thailand National Statistical Office,
Electricity Generating Authority of Thailand (EGAT),
Metropolitan Electricity Authority (MEA),
Provincial Electricity Authority (PEA),
Energy Policy & Planning Office (EPPO)

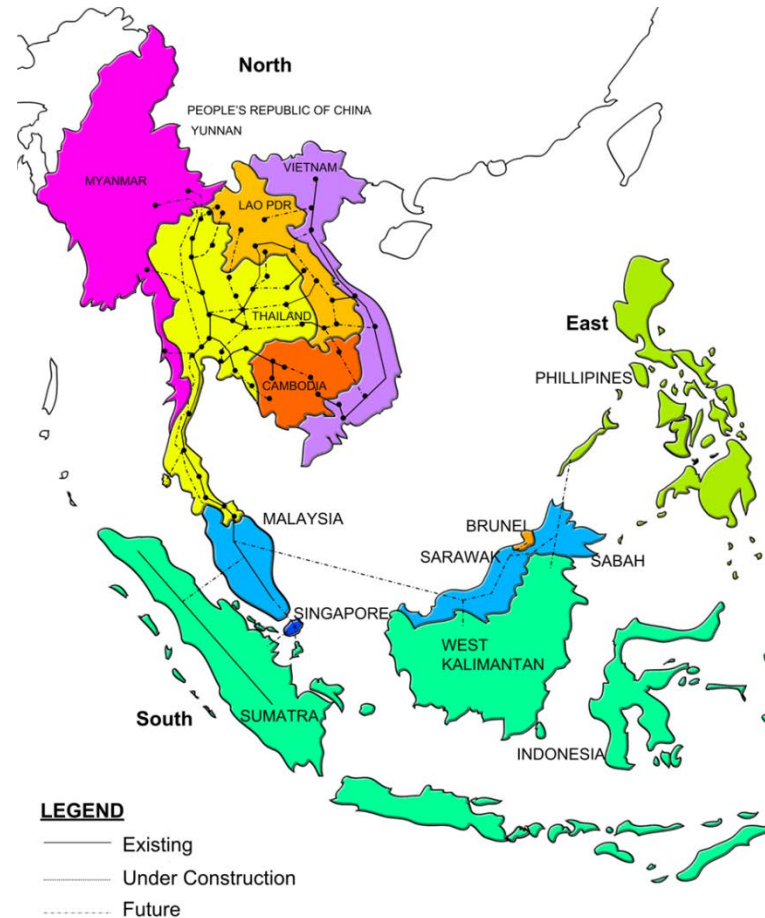




Global map of the grid and of its interconnections

Interconnectors with:

- Cambodia
- Lao PDR
- Malaysia
- Myanmar (future)





Grid facts and characteristics

The electricity grid in Thailand is sub-divided into transmission grids (maximum voltage) and distribution grids (high, medium and low voltage)

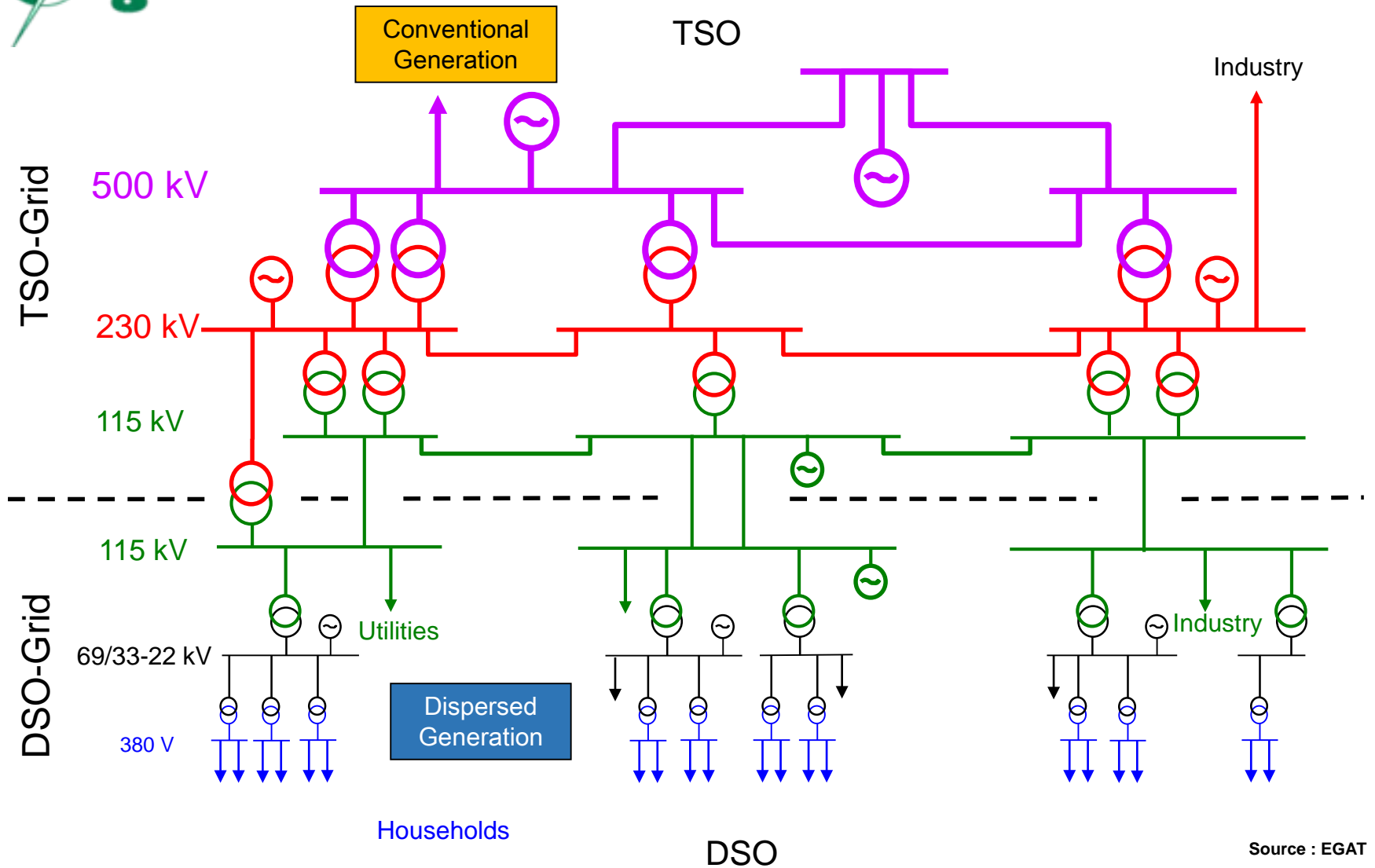
Voltage Level	Total length (Circuit-km)	Responsibility
500 kV	5,831	TSO
230 kV	14,423	TSO
115 kV	13,089	TSO
115-69 kV	14,050	DSO
22-33 kV	327,743	DSO
220 – 380 V	492,615	DSO
Total	852,497.51	

Sources: EGAT, MEA, PEA (2016)





Structure of electrical power system



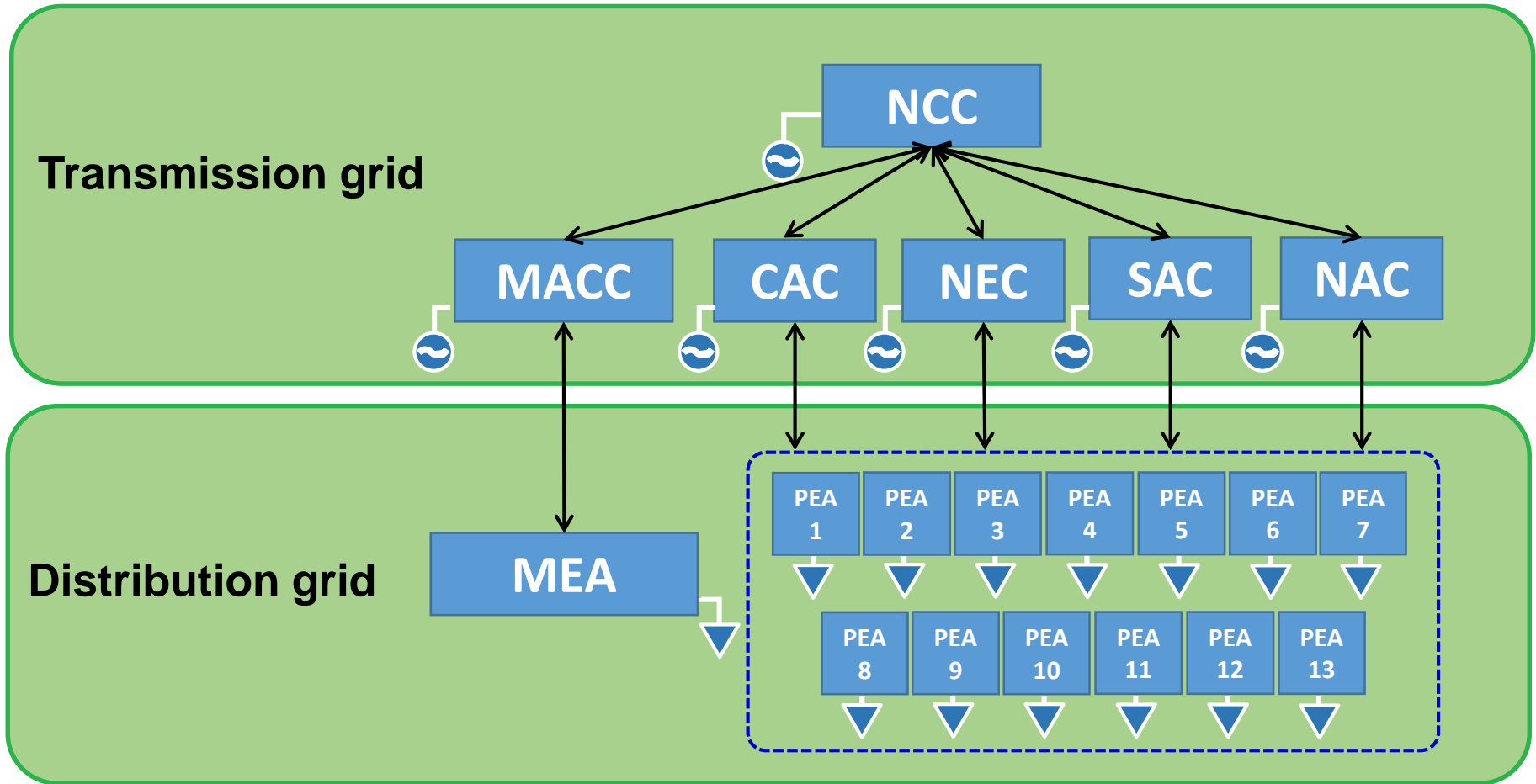
Information on TSO(s)



	EGAT
Network length [km] (500 kV)	5,831
Network length [km] (230 kV)	14,423
Served area [km ²]	513,115
Annual transmission [TWh]	189
Share load [%]	100

website: <http://www.egat.co.th>

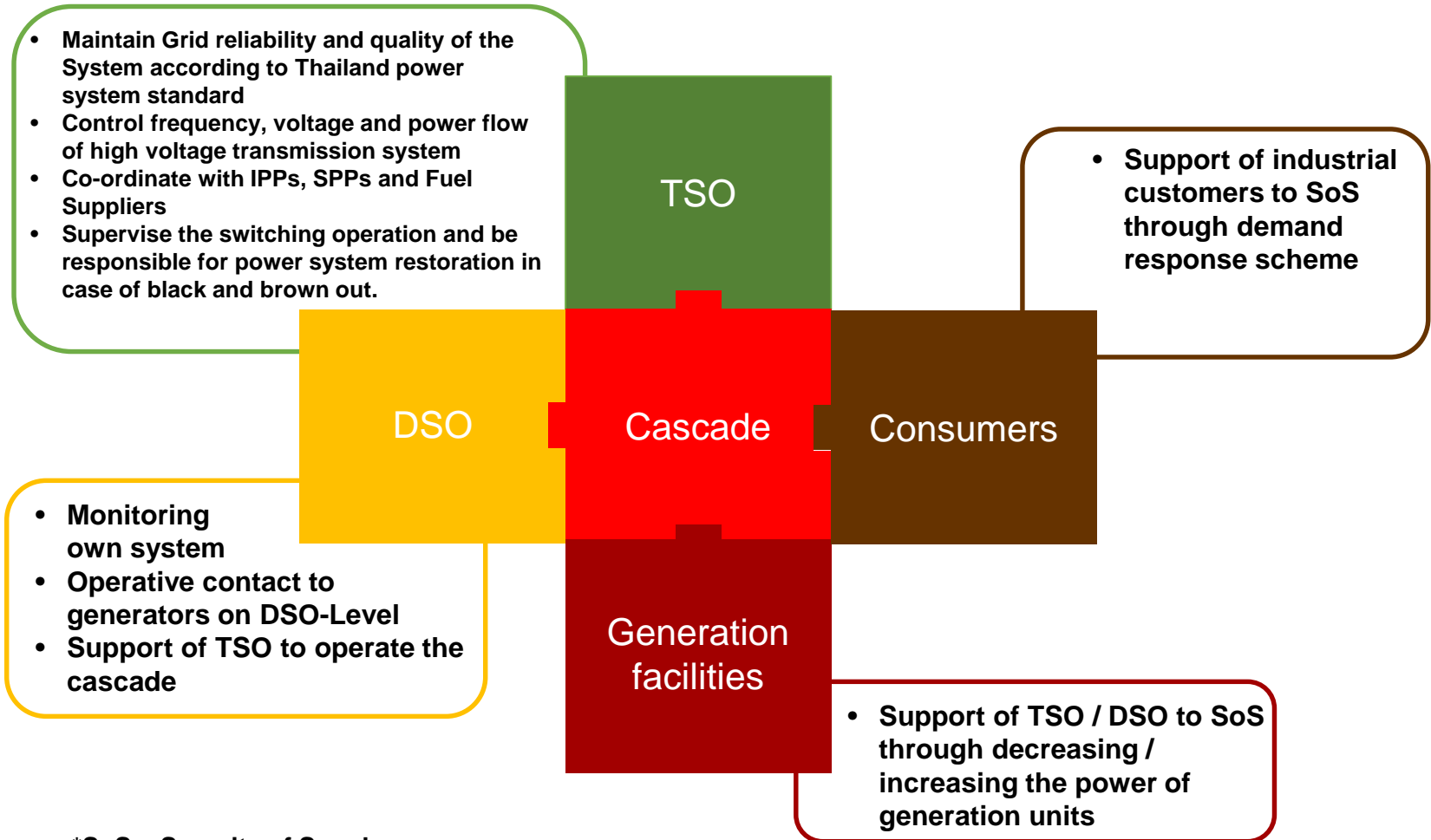
Cooperation of TSO and DSO



 Generation  Load



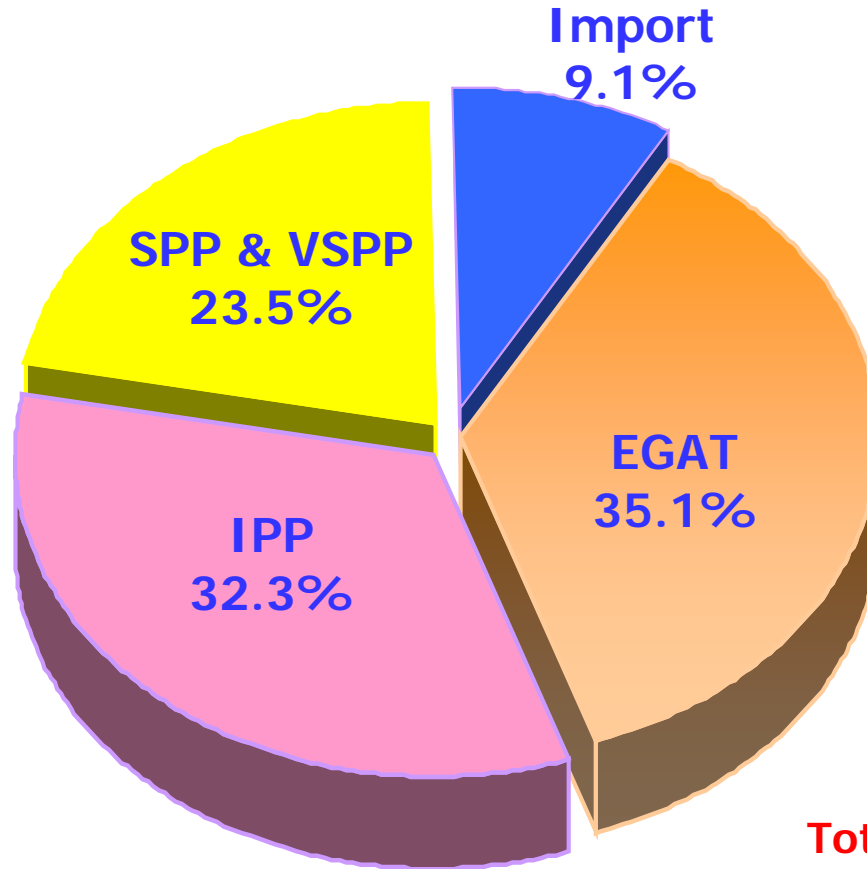
Responsibilities within the cascade



*SoS = Security of Supply



Power structure of the country



Total Installed Capacity

48,211.3* MW

Remarks: * As of 2017

- EGAT : Electricity Generating Authority of Thailand
- IPP : Independent Power Producer
- SPP : Small Power Producer
- VSPP : Very Small Power Producer

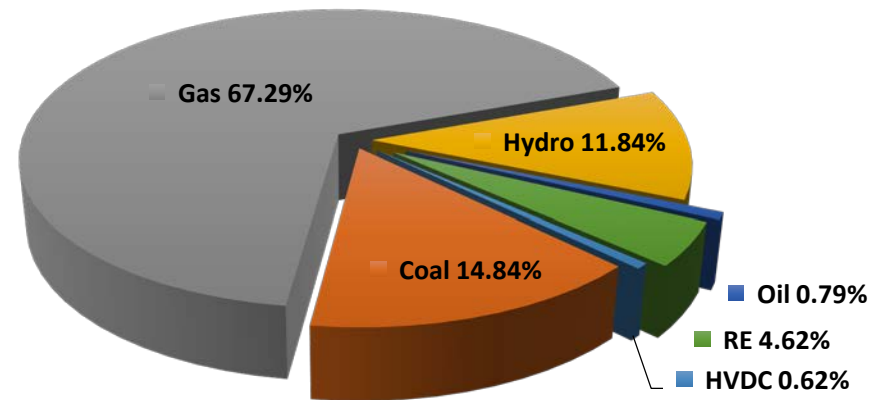




Installed capacity with reference to primary resources

Installed capacities (48,211.33 MW), Year 2017

- Coal 7,155.0 MW
- Gas 32,439.1 MW
- Hydro power 5,706.7 MW
- Oil 380.8 MW
- Renewable 2,229.7 MW
- EGAT-TNB 300.0 MW



Source: Power System Control and Operation Division /EGAT





Energy production with reference to primary resources

☐ Electricity generated 188.9 TWh, Year 2017

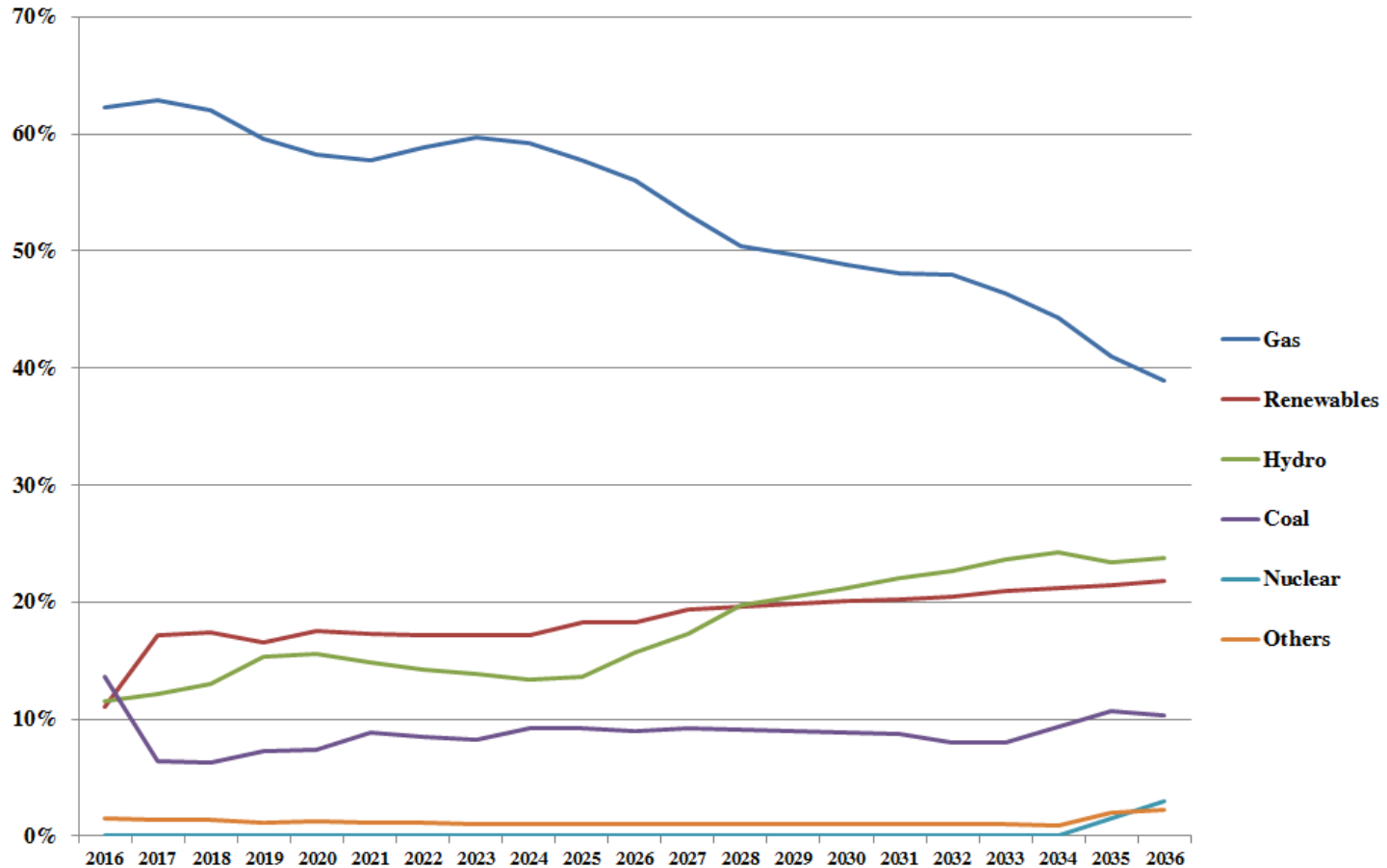
➤ Coal	44.5	TWh
➤ Gas	120.3	TWh
➤ Hydro power	16.3	TWh
➤ Nuclear	-	
➤ Oil	0.1	TWh
➤ Renewable	5.7	TWh
➤ Others	2.0	TWh

Source: Power System Control and Operation Division /EGAT

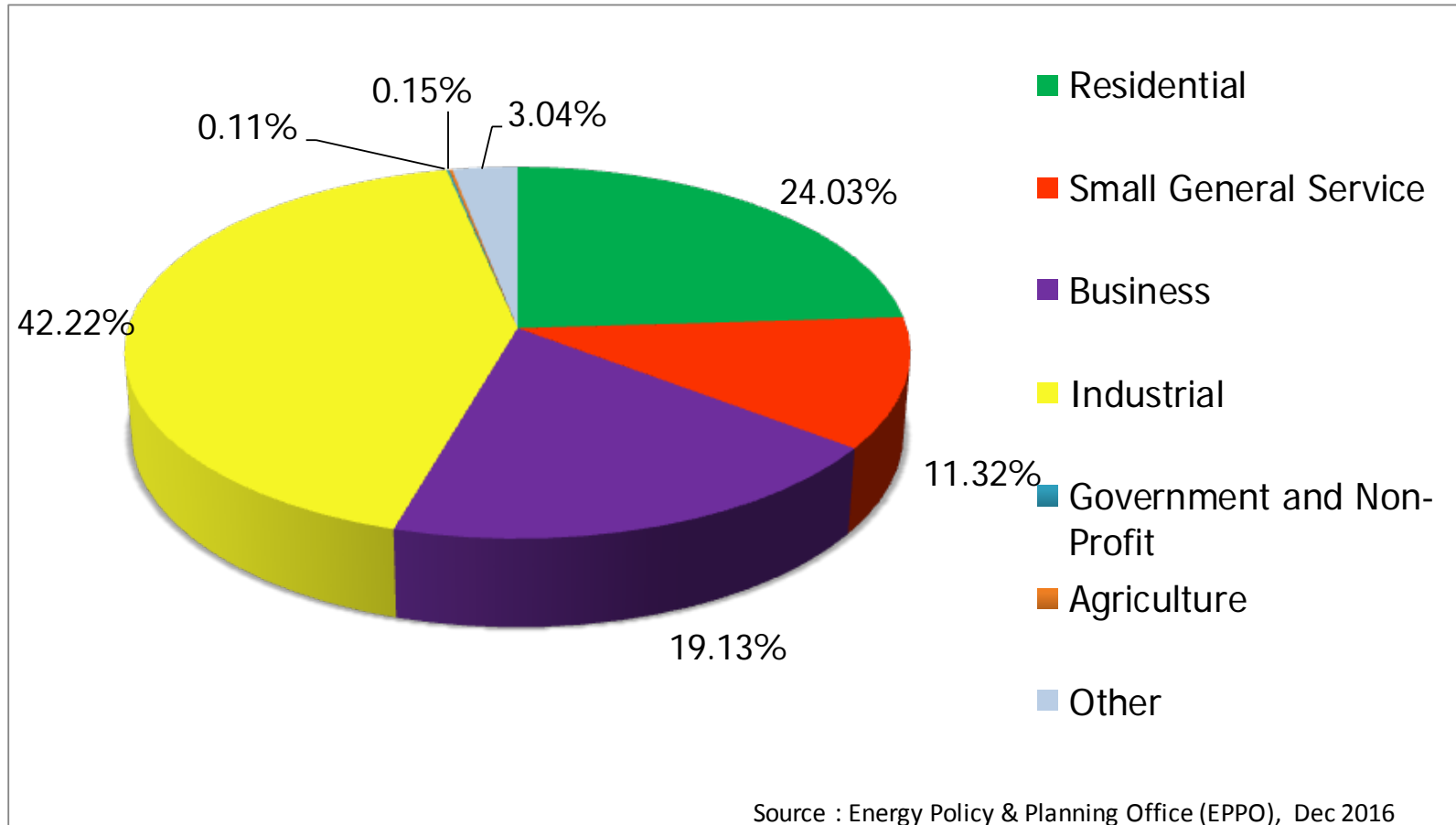




Development of generation capacity since 2016 (share of primary energy)

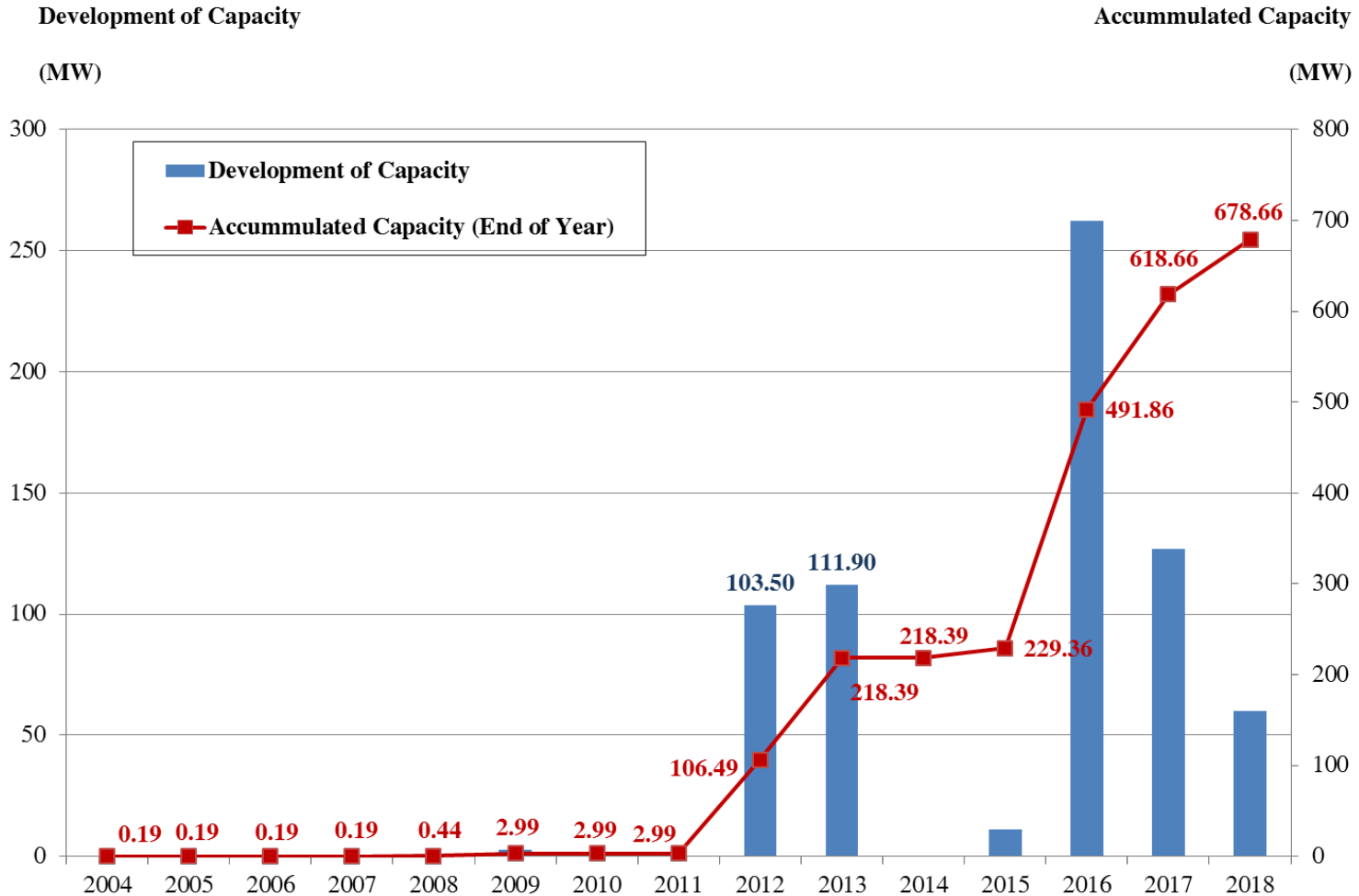


Consumption per customer groups



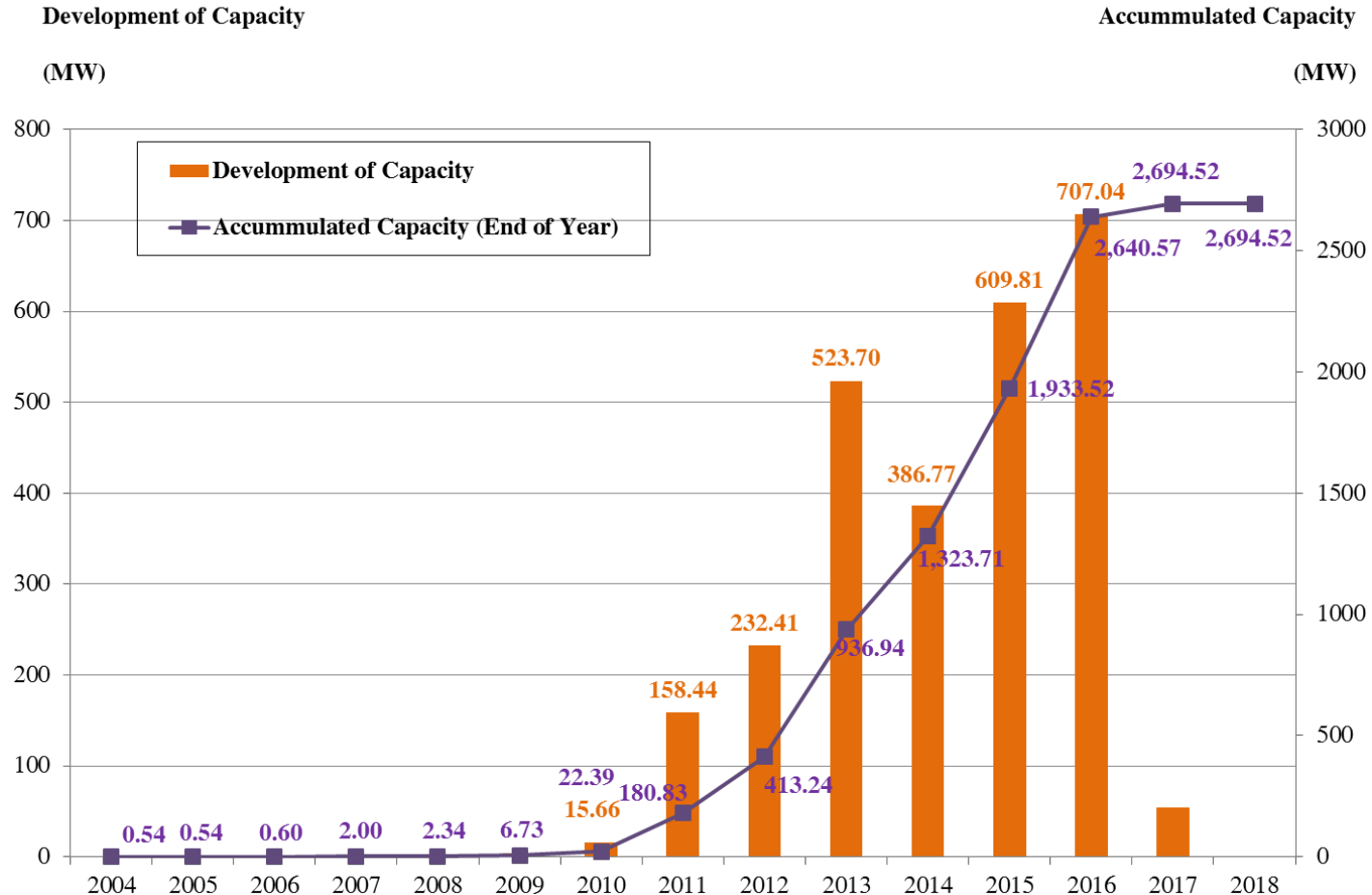


Development of wind power



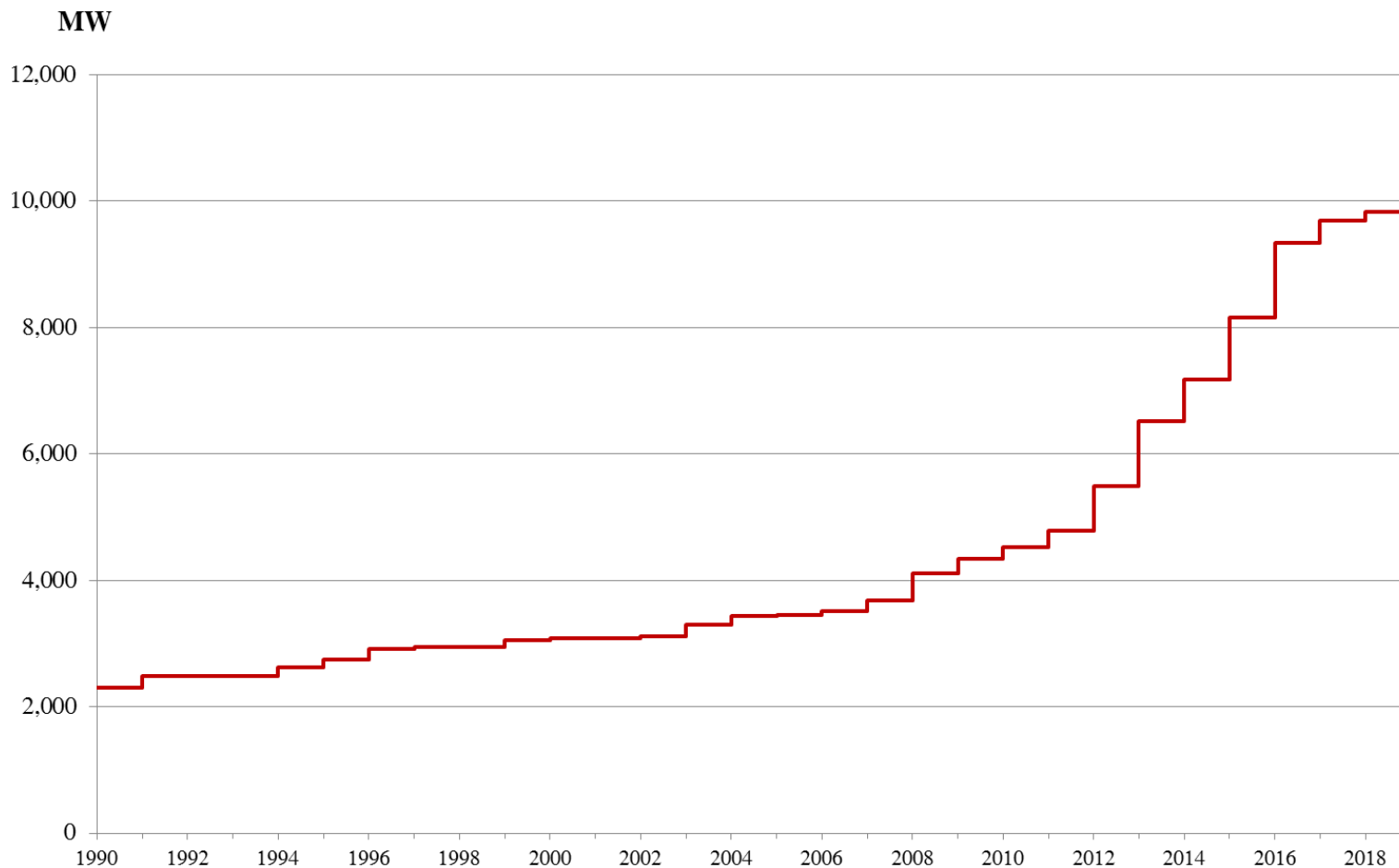


Development of photovoltaic power





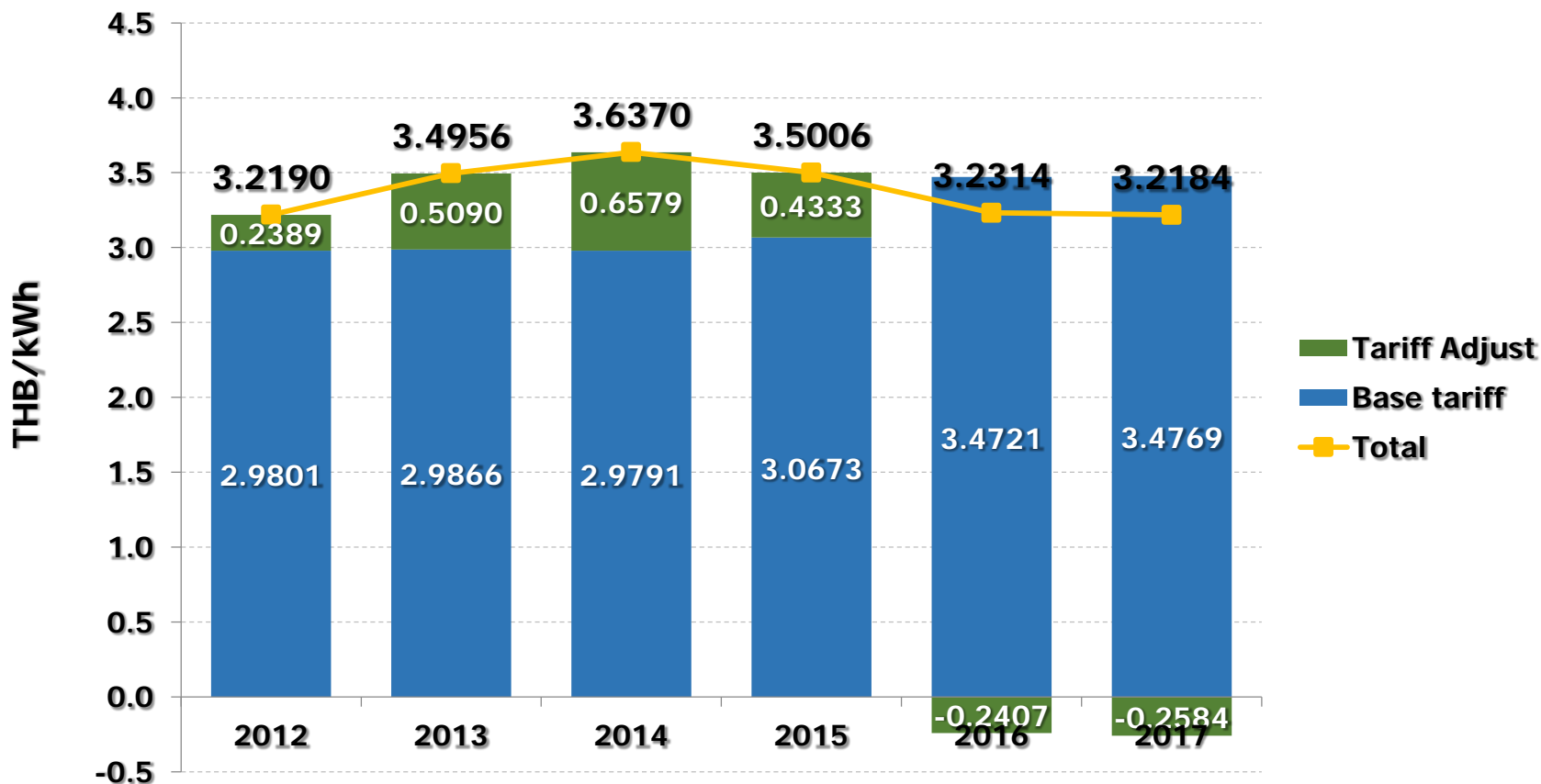
RES installed capacity since 1990





Price development for industry consumers

Average price of electricity for industry consumers [THB/kWh], exclusive of VAT



Average price of electricity for industry consumers from 2012 to 2017 ; the base tariff and the actual Ft

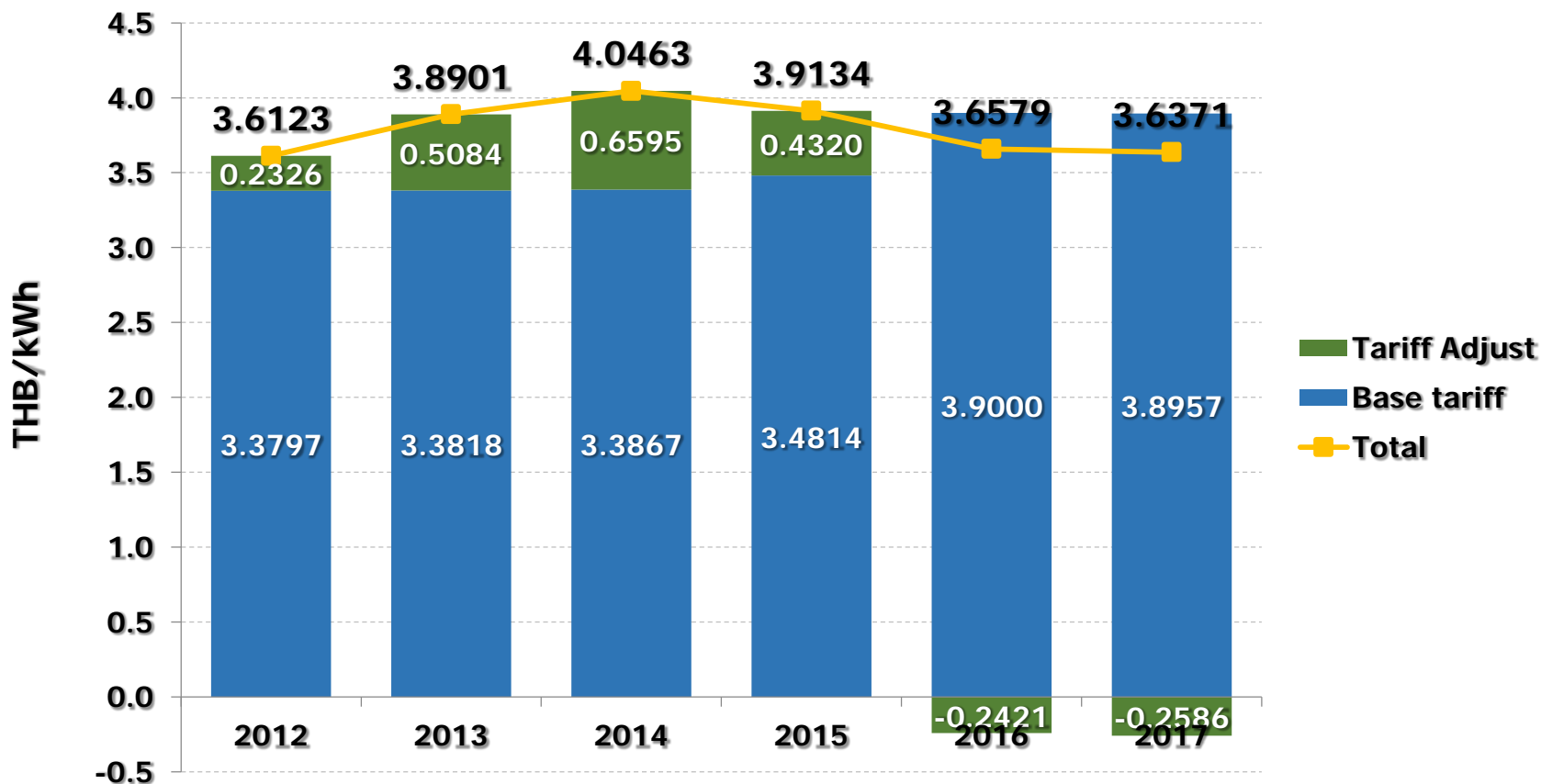
Sources : EGAT, EPPO





Price development for households

Average price of electricity for households [THB/kWh], exclusive of VAT



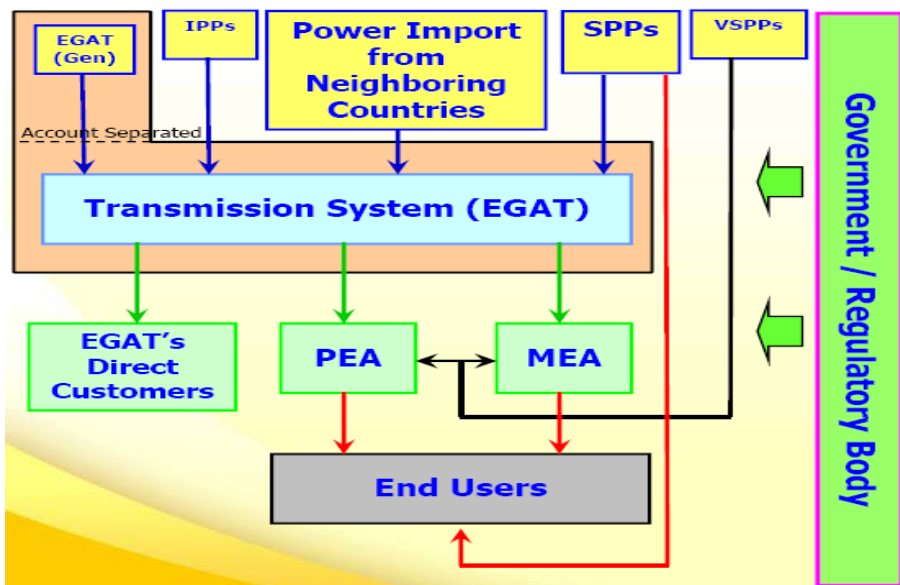
Average price of electricity for household sector (total average ≤ 150 kWh and > 150 kWh) from 2012 to 2017 ; the base tariff and the actual Ft

Sources : EGAT, EPPO





Electricity market organisation



- Thailand Electricity Market is enhanced single-buyer
- EGAT takes the role of single-buyer and oversee main transmission system including major part of generation

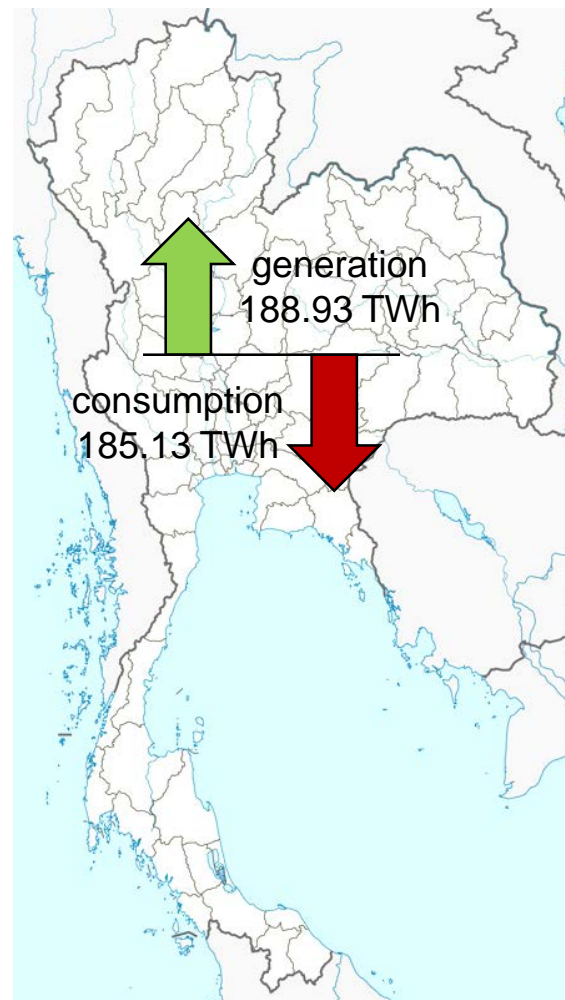
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Power balance in 2017

- ❑ Generation 188.93 TWh
- ❑ Consumption 185.13 TWh
- ❑ Difference ~3.80 TWh





Approximate Energy Exchanges



Values in GWh, Jan 2017 – Dec 2017

Source: Power System Control and Operation Division/EGAT

