The Electric Power System

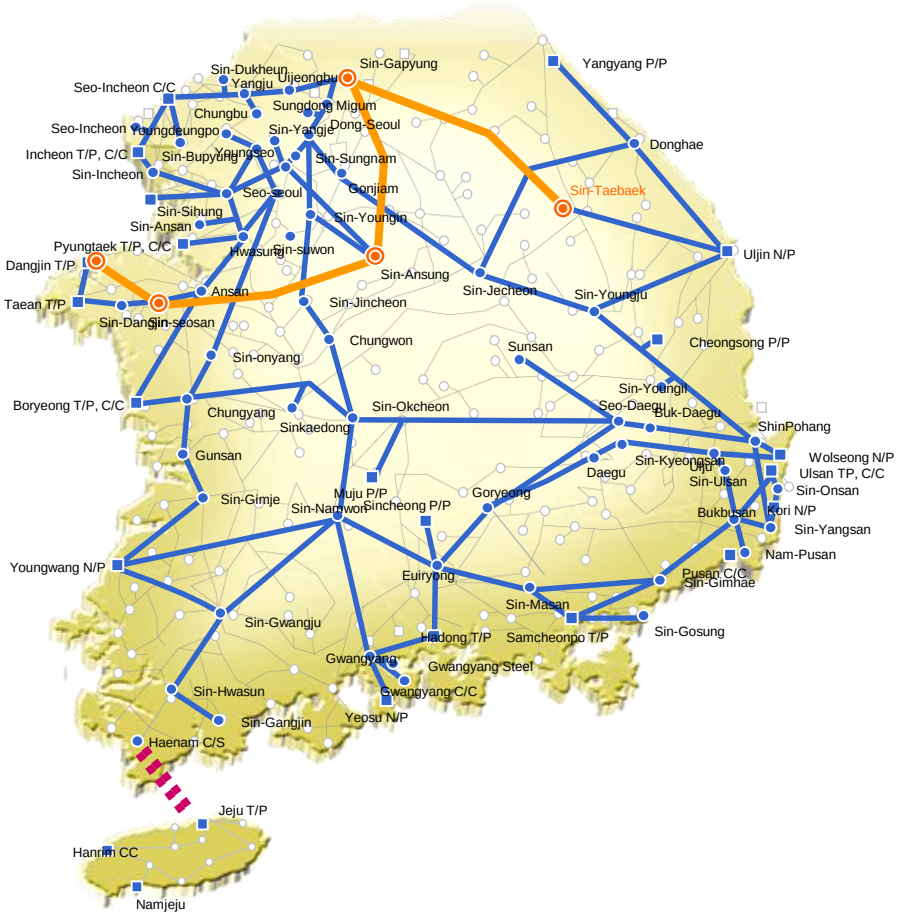
- Republic of Korea -

Basic facts

- Area : 49,720㎢
- Population : 51,465,228(2014)
- Number of electricity consumers : 21,209 thousand
- Number of TO(Transmission Owner) : 1(KEPCO)
- Number of ISO : 1(KPX)
- Number of DSO : 1(KEPCO)
- Peak load : 77,295(2014)
- Average interruption of electricity : 10.9 min(2014)

Global map of the grid and of its interconnections

- Interconnectors with:
  - No interconnection between other countrys



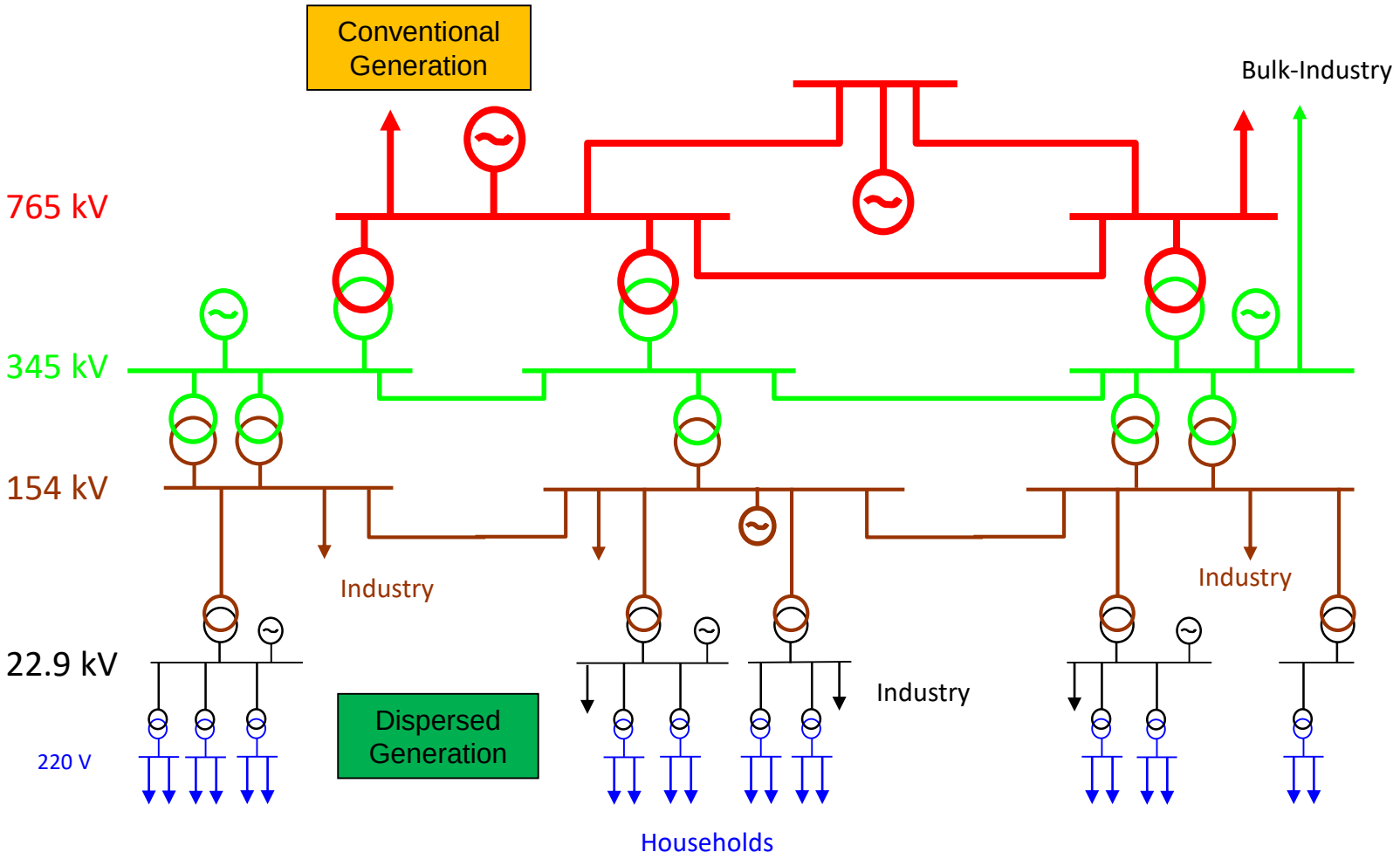
Grid facts and characteristics

- The electricity grid in Korea is sub-divided into transmission grids (EHV, HV, DC) and distribution grids (medium and low voltage)

	Voltage Level	Total length	Responsibility
Extra High Voltage	765kV	1,014 km	KPX
Extra High Voltage	345 kV	9,369 km	KPX
High Voltage	154 kV	22,440 km	KPX
Medium Voltage	66kV	144 km	KEPCO
Low Voltage	22.9kV	452,572 km	KEPCO

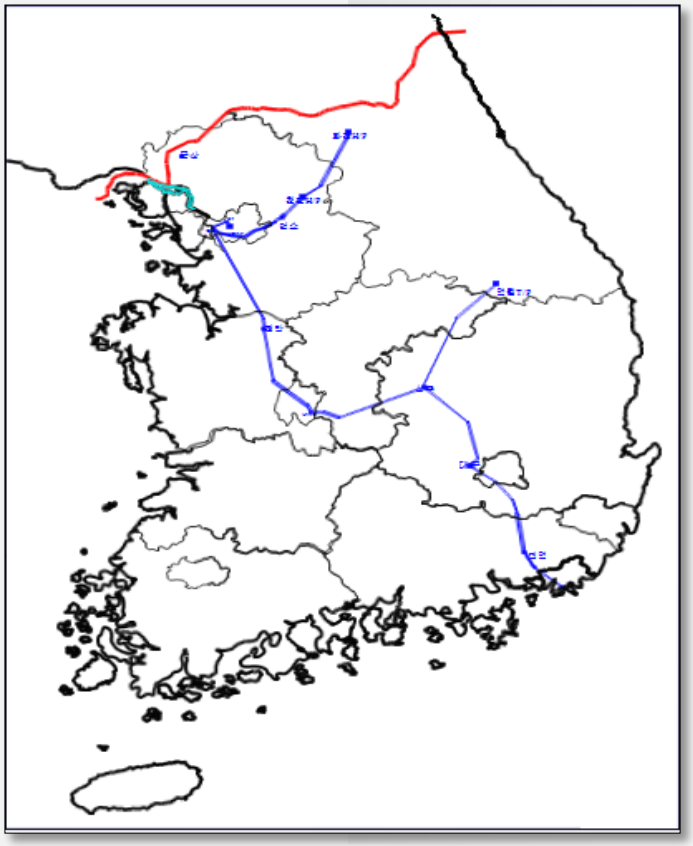
	Voltage Level	Total length	Responsibility
DC	180kV	231 km	KPX

Structure of electrical power system

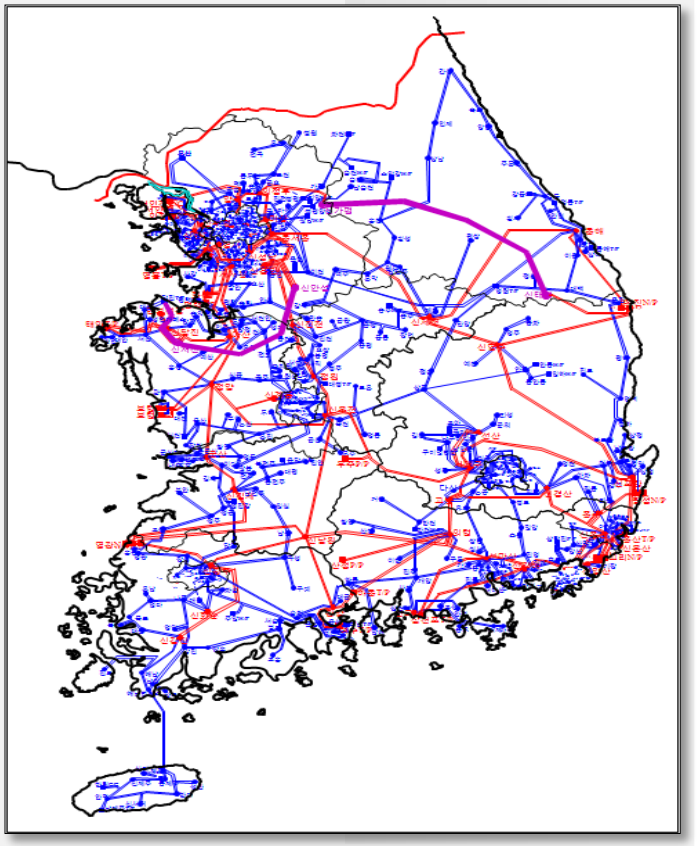


Map of the high voltage grid

1960's



Present



Information on ISO, TO & DSO

- Name : KEPCO(TO&DSO), KPX(ISO)
- Network length (C-Km) : 485,770
- Served area (km^2) : 49,720
- website: http://www.kepco.co.kr,
  http://www.kpx.or.kr

Cooperation of ISO, TO and DSO

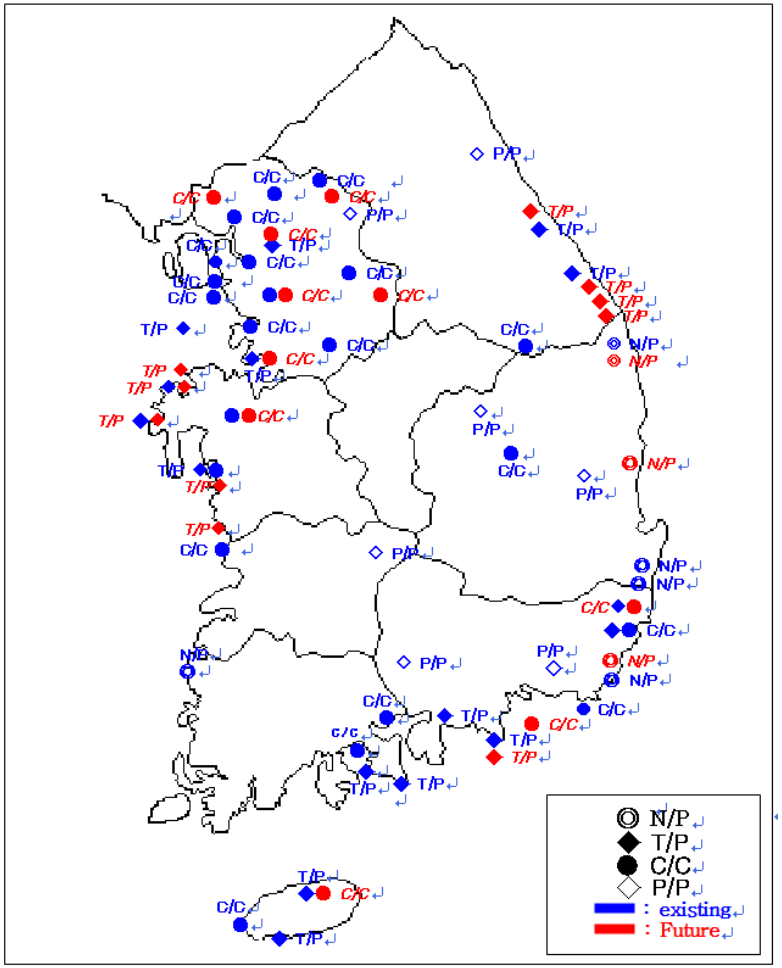
- Transmission System
  - ISO builds transmission operations and planning
  - TO implements the planning builted by ISO

- DSO(KEPCO)
  - DSO builds distribution operations and planning, and implements the planning

Responsibilities of ISO, TO and DSO

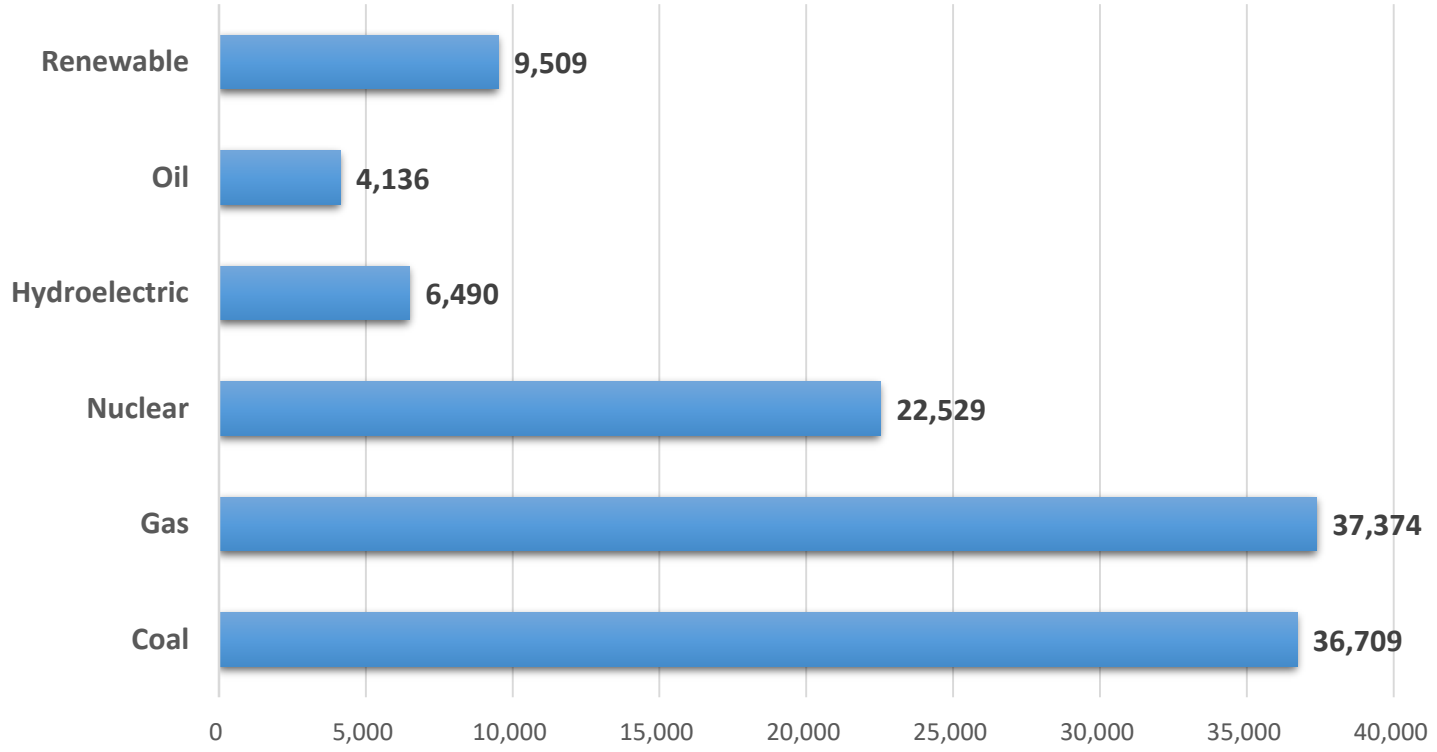
- ISO(KPX)
  - Responsible for maintaining the generation and the transmission system reliabilities
- TO(KEPCO)
  - Responsible for maintain the transmission asset
- DSO(KEPCO)
  - Responsible for distribution system qualities

Power structure of the country



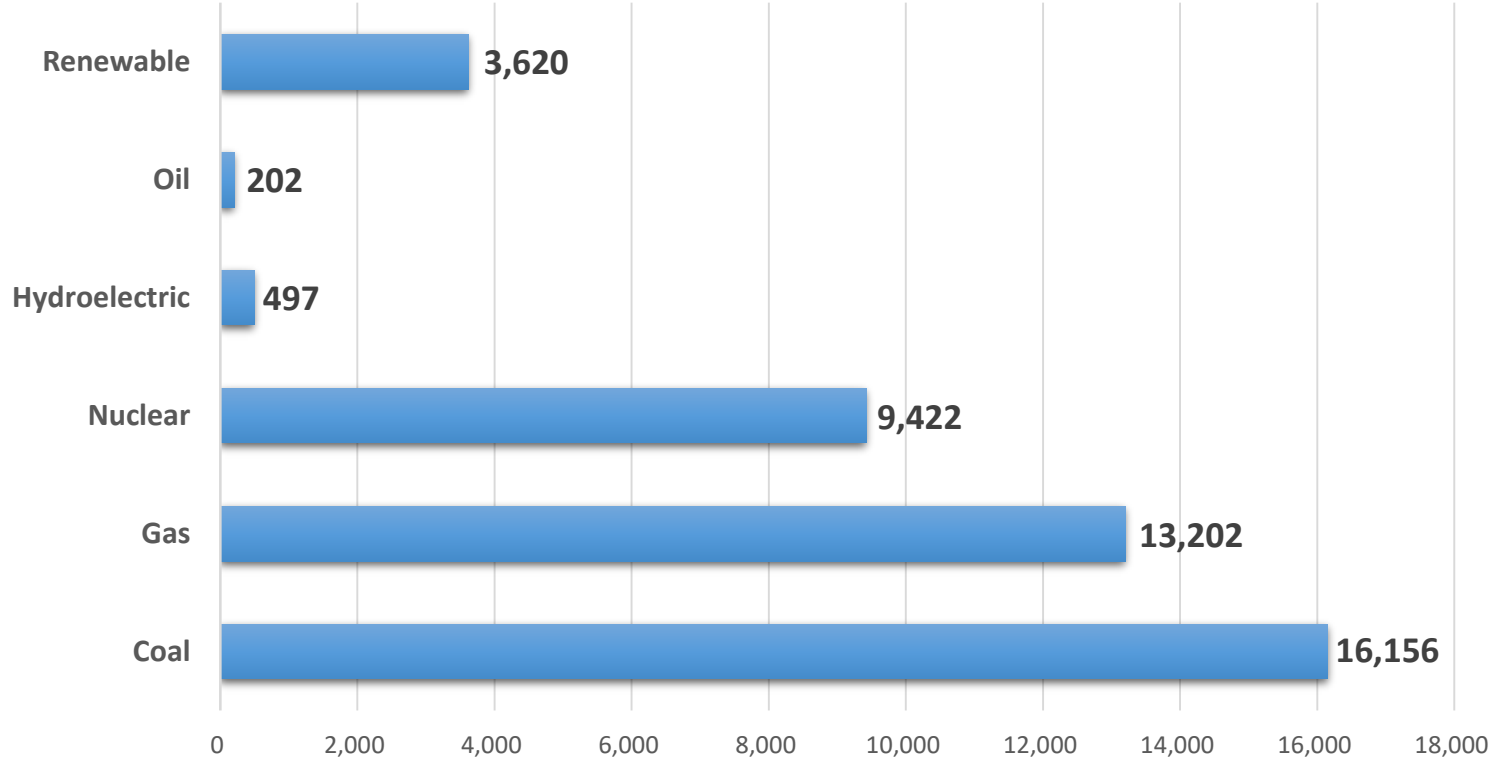
Installed capacity with reference to primary resources

- Installed capacities (MW), 2018

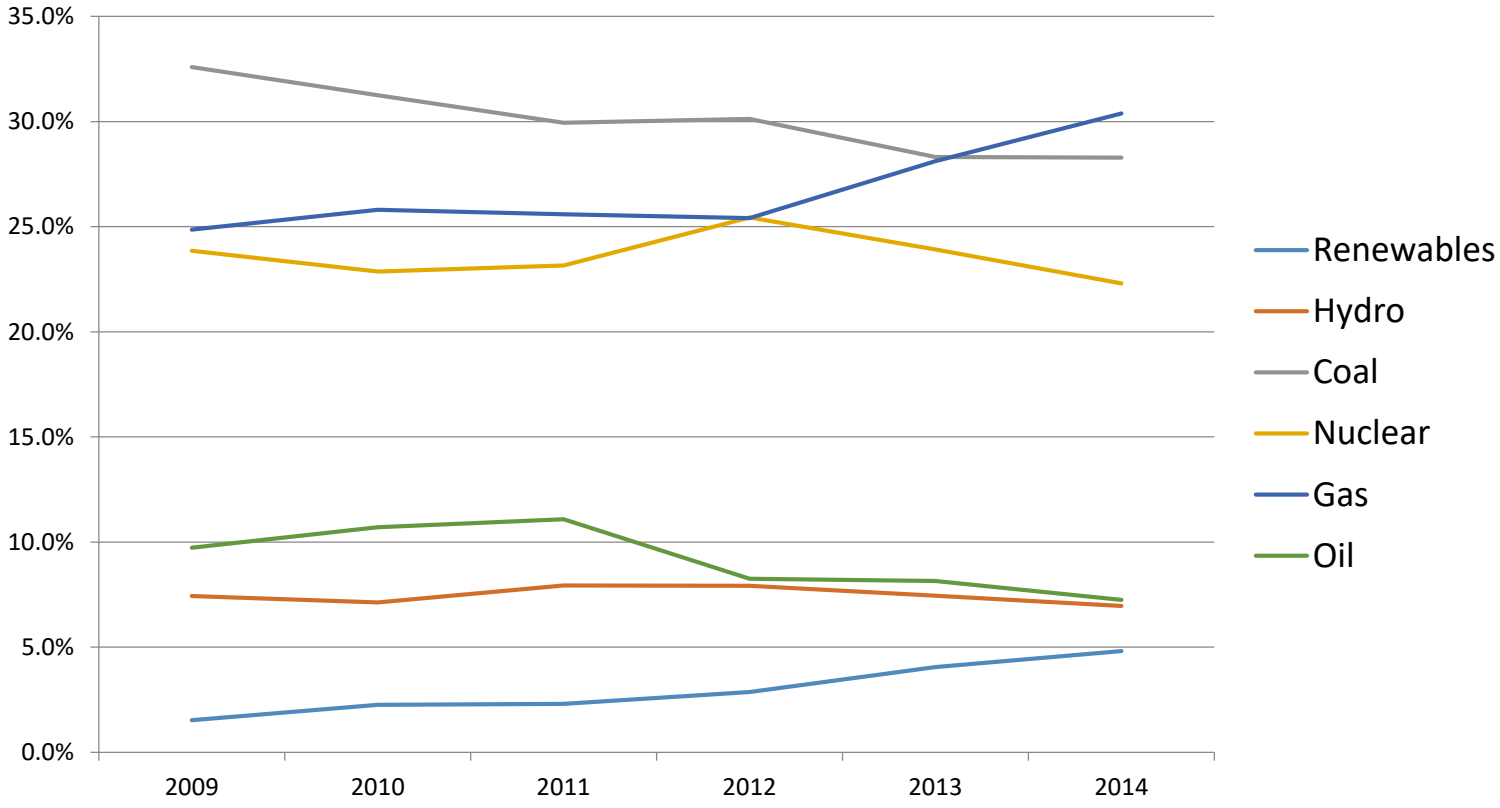


Energy production with reference to primary ressources

- Electricity generated (TWh), year

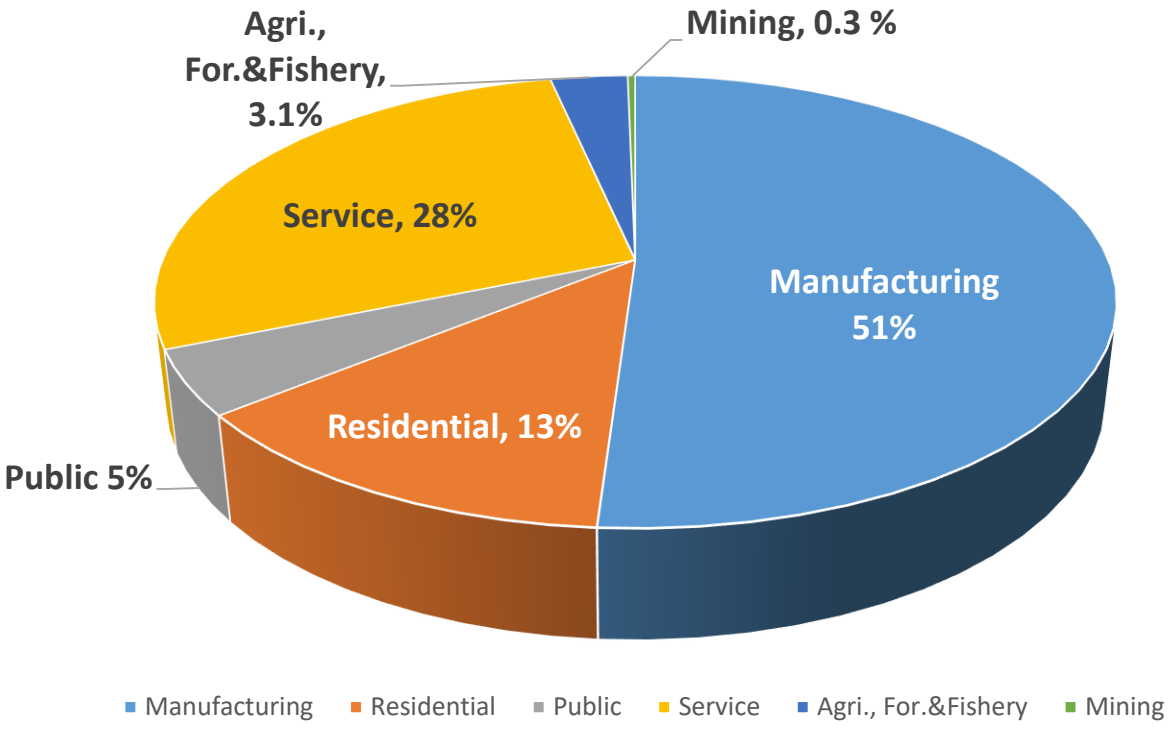


Development of generation capacity since 2009

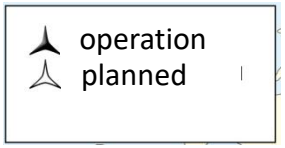


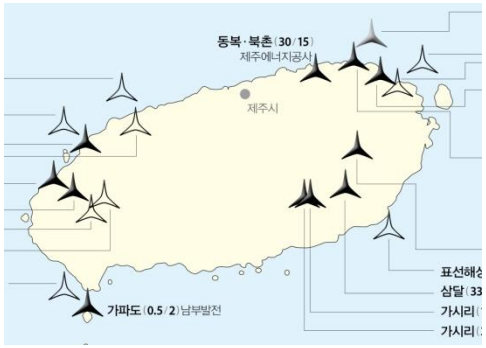
Comsuption

Power comsuption by consumer groups, 2017

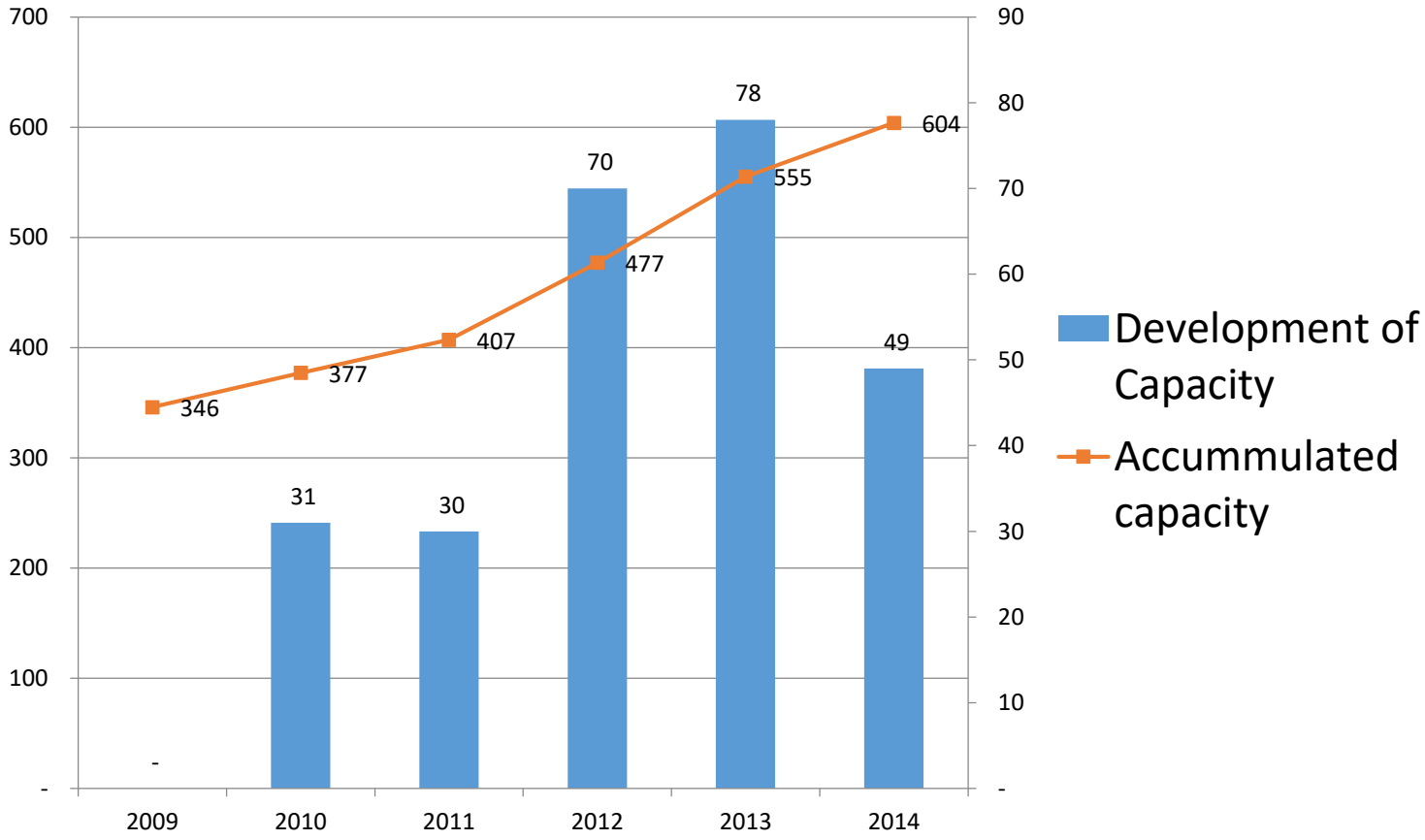


Location of renewable energy sources

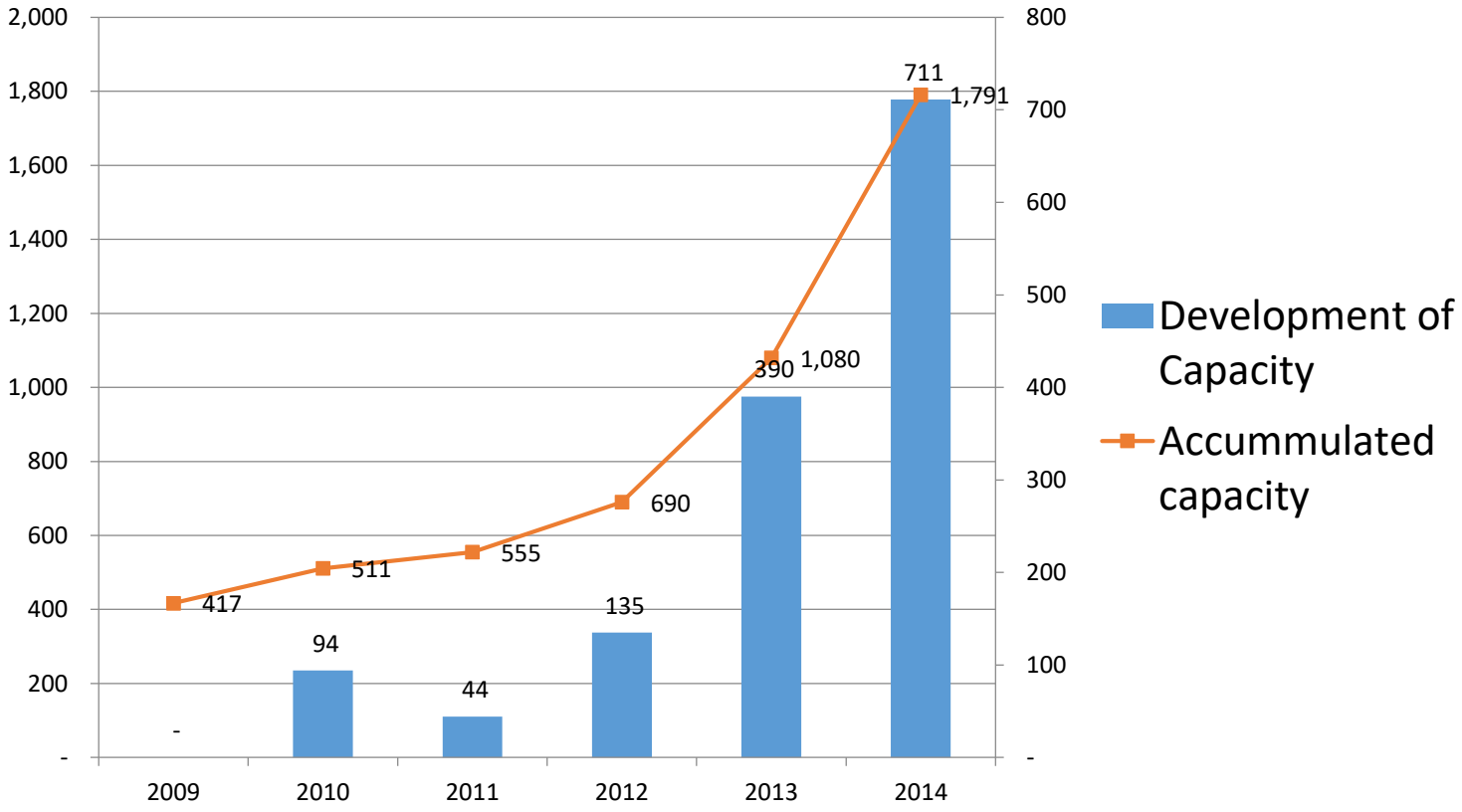




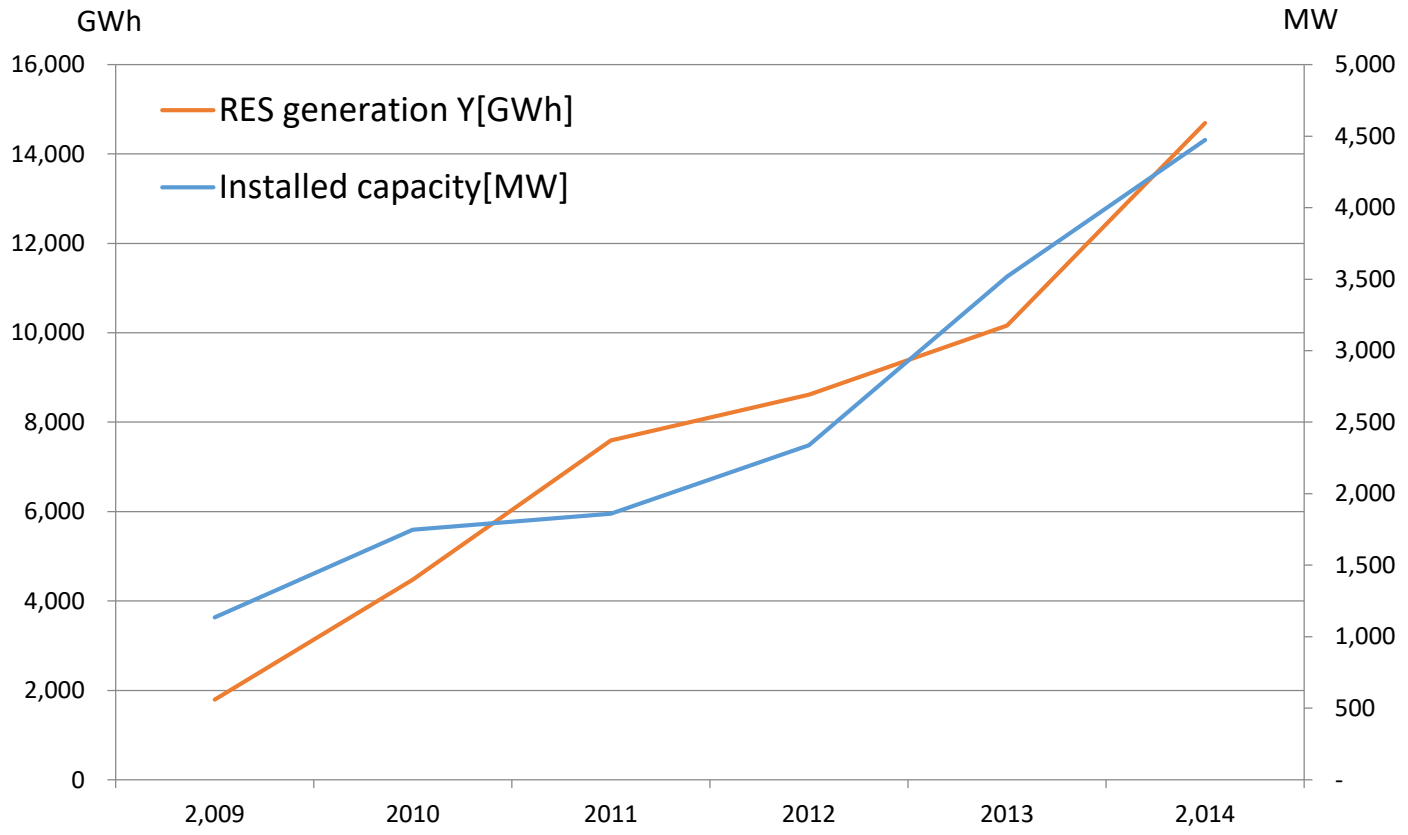
Development of wind power



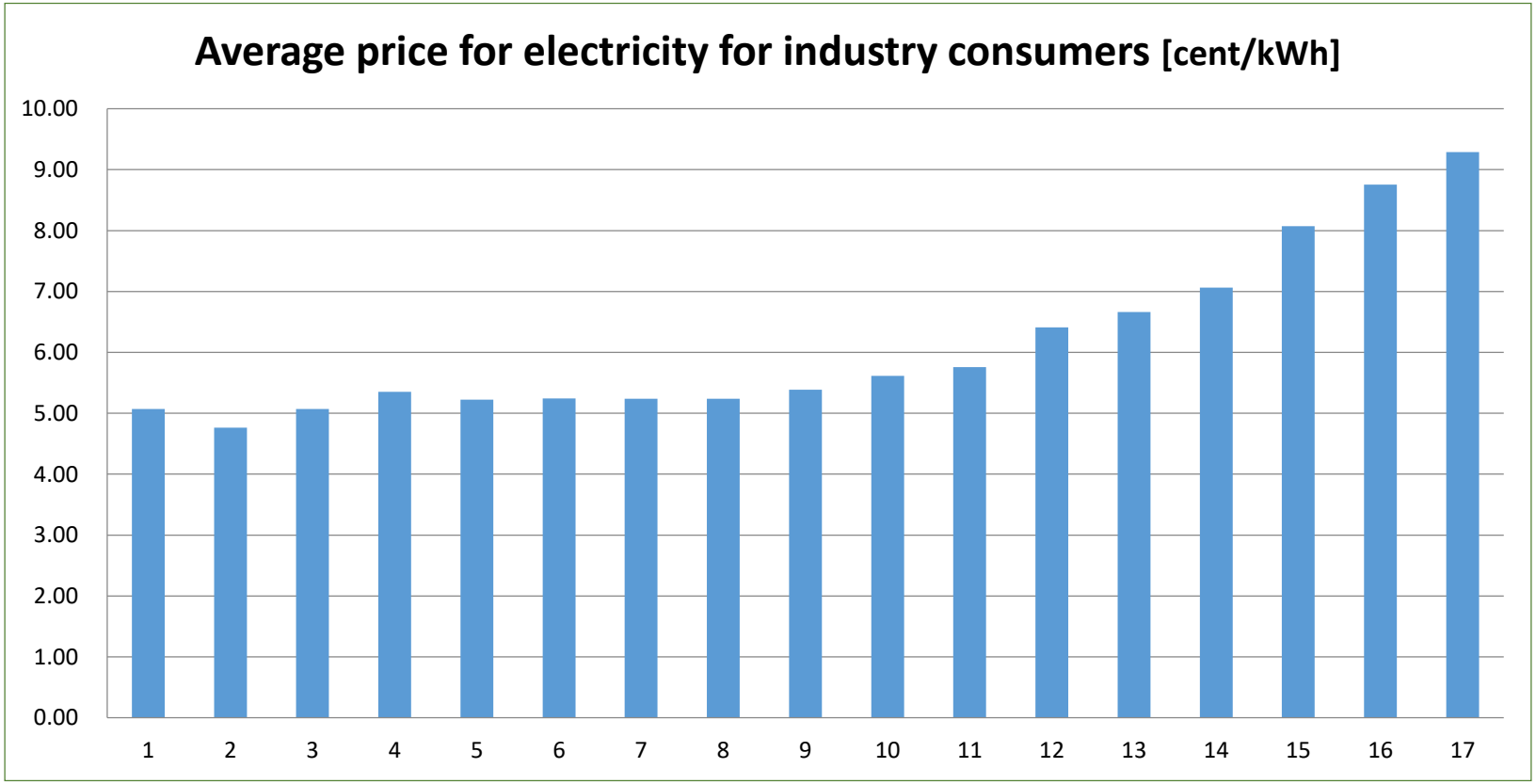
Development of photovoltaic power



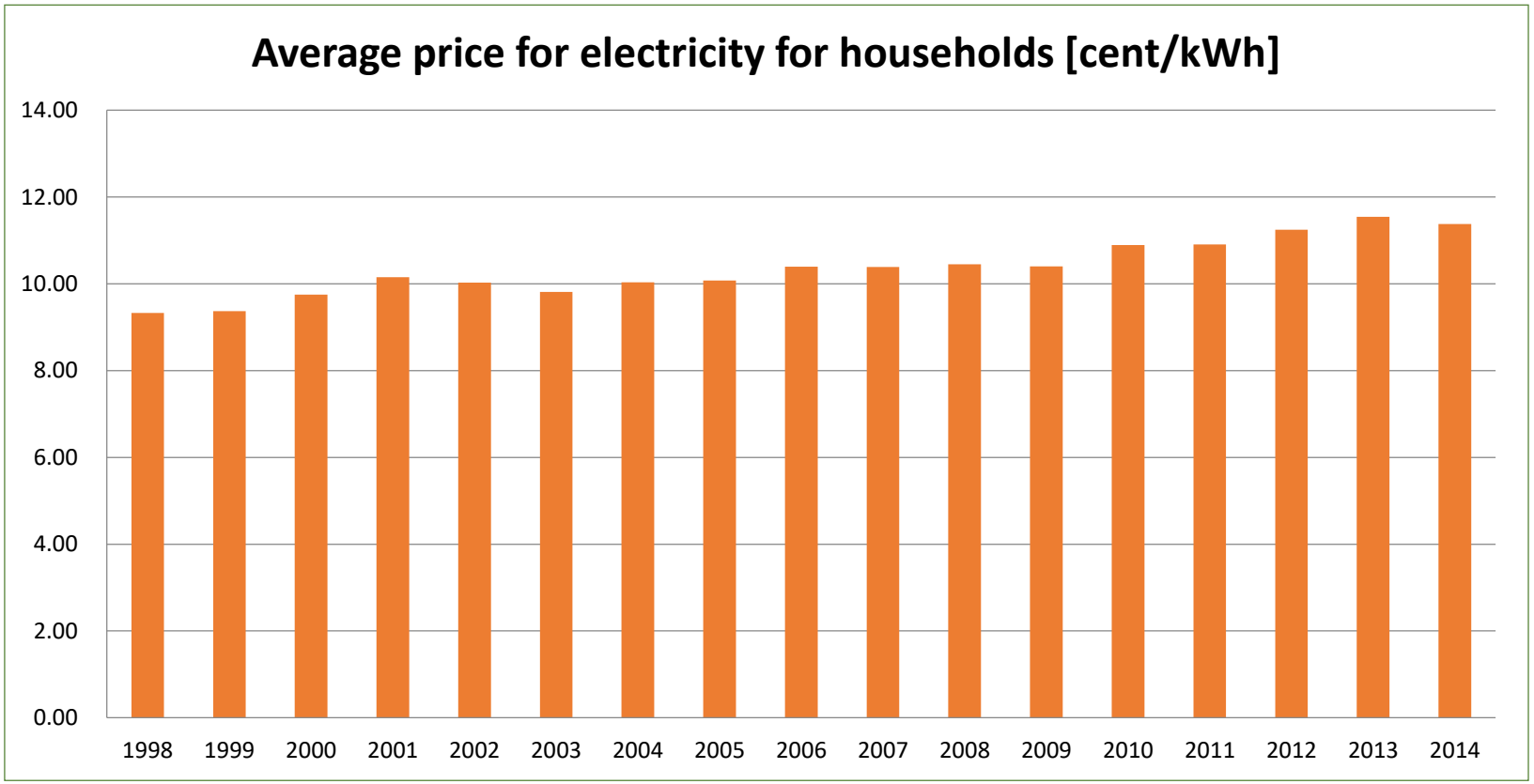
RES installed capacity and production since …



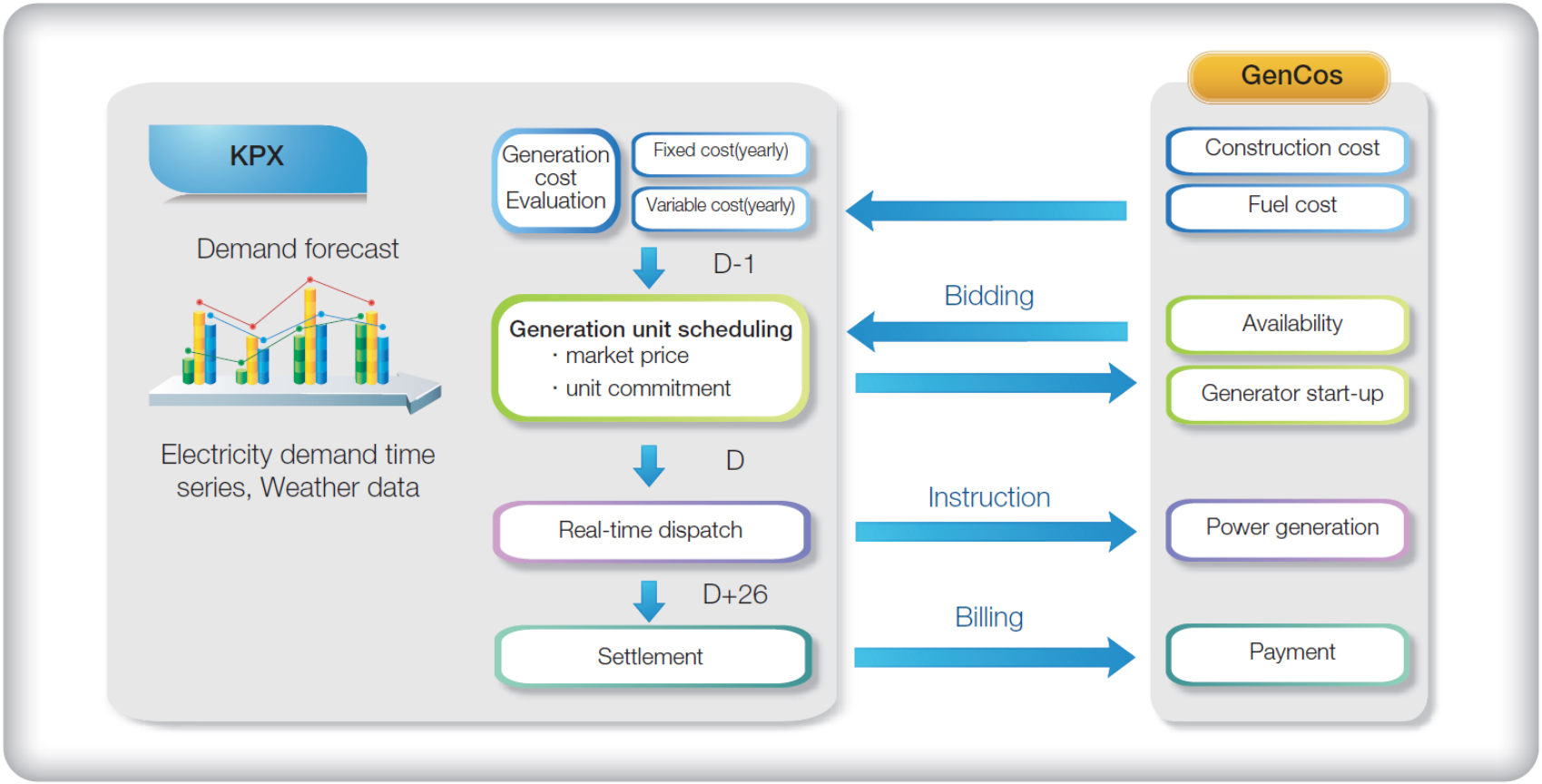
Price development for industry consumers



Price development for households



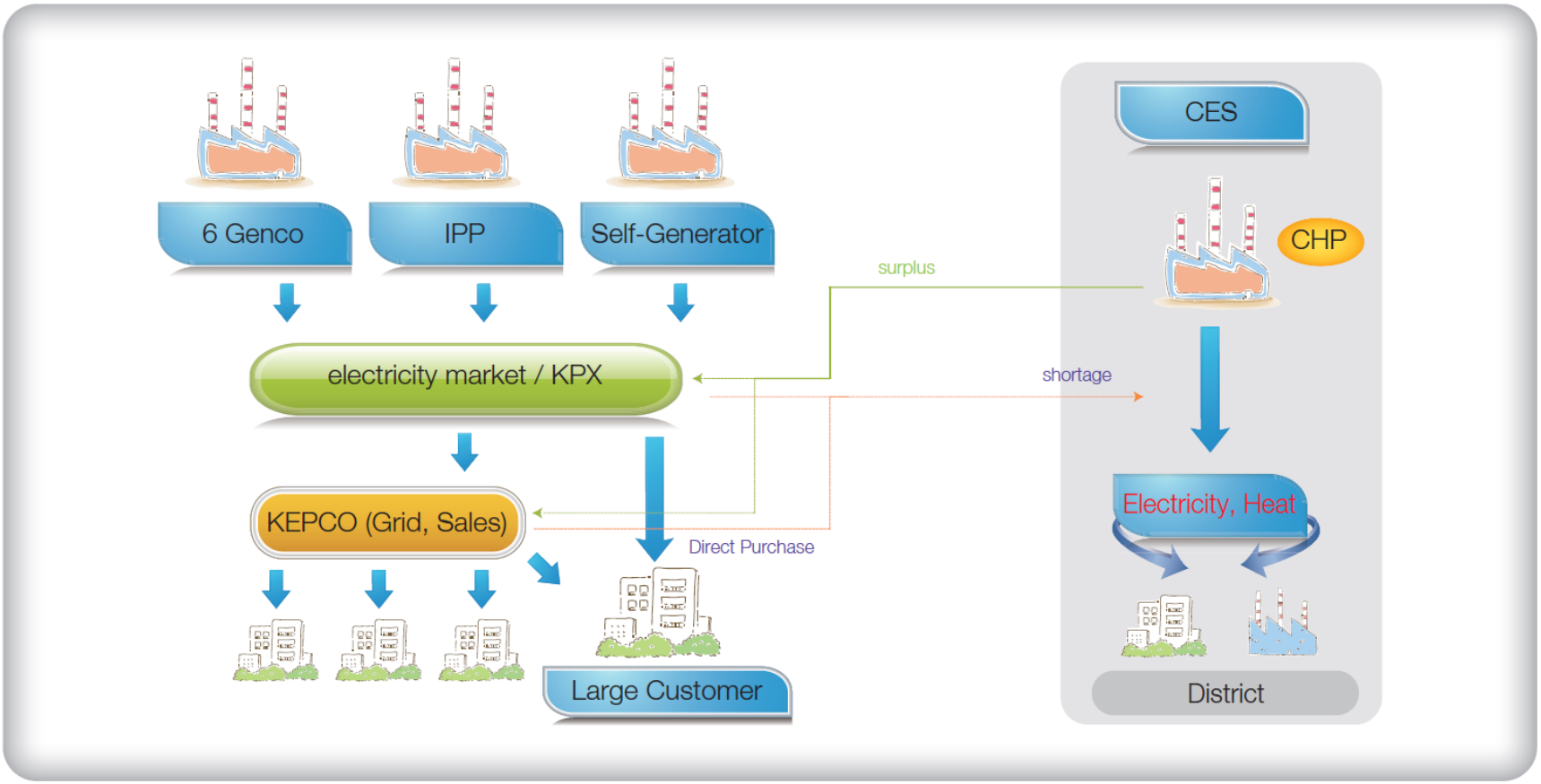
Energy exchanges in ….



Power balance in 2014

- Generation : 521.97(TWh)
- Consuption : 503.7(TWh)
- Losses : 18.27(TWh)

Electricity market organisation



Specific aspects of the electricity market

- Cost Based Pool (CBP)
- Compulsory Power Pool
- A Day Ahead Market
- Uniform Pricing
- Capacity Payment (CP)
- Ancillary Service Fee