



The Electric Power System TURKEY

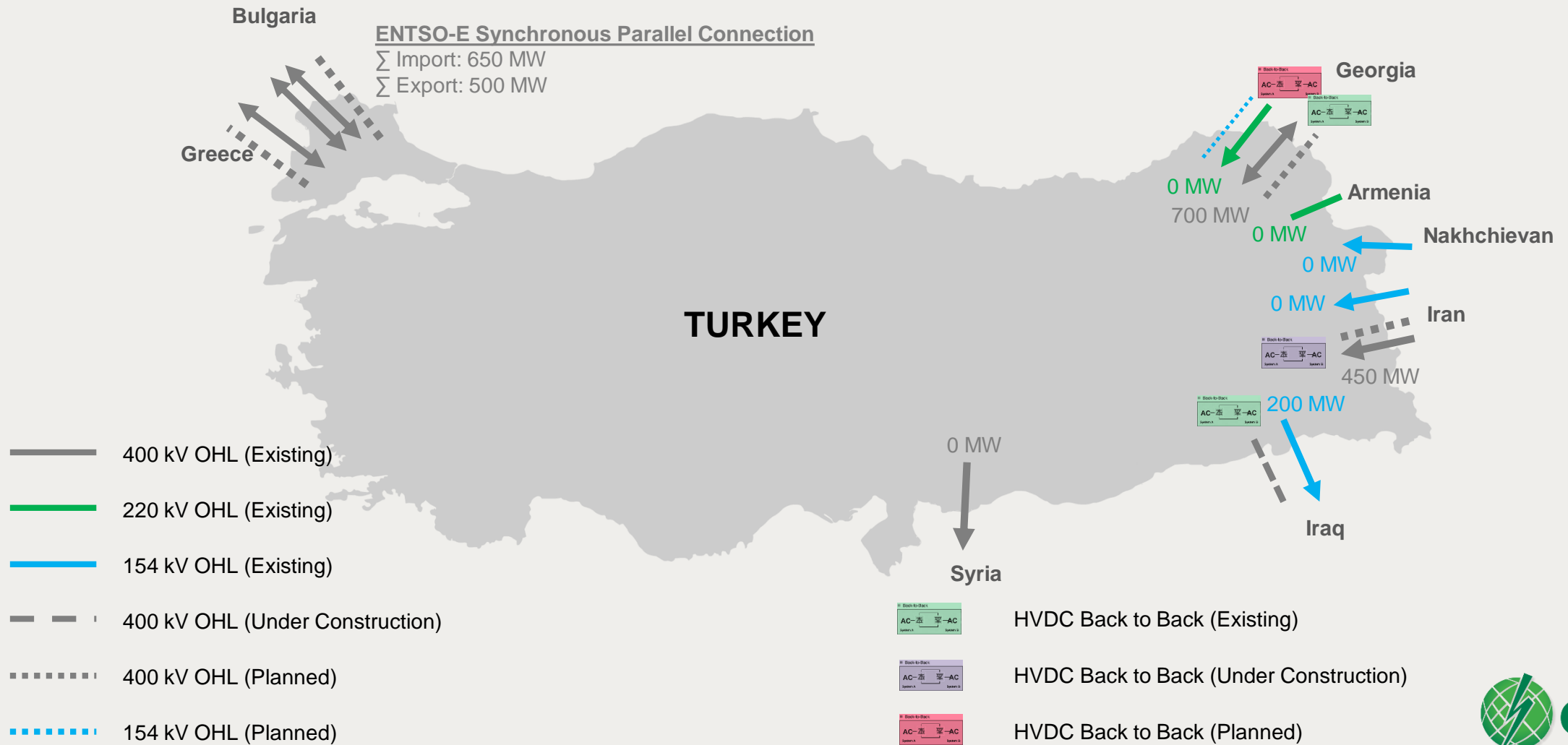


cigre
Turkey

Basic Facts (as of 2019)

- Area: 814.578 km²
- Population: 83.154.997
- Number of electricity consumers: 44.958.326
- TSO: 1
- DSOs: 21
- Peak load: 45.324 MW
- Failure Index for 400 kV OHL: 0,711
- Failure Index for transformers: 0,158

Global map of the grid and its interconnections



Grid Facts & Characteristics (as of 2019)

- Transmission Grid: $> 36\text{kV}$
- Distribution Grid: $\leq 36\text{ kV}$

SUBSTATIONS

Voltage (kV)	#
400	173
220	1
154	1.068
66	10
TOTAL	1273(189.172 MVA)

TRANSMISSION LINES

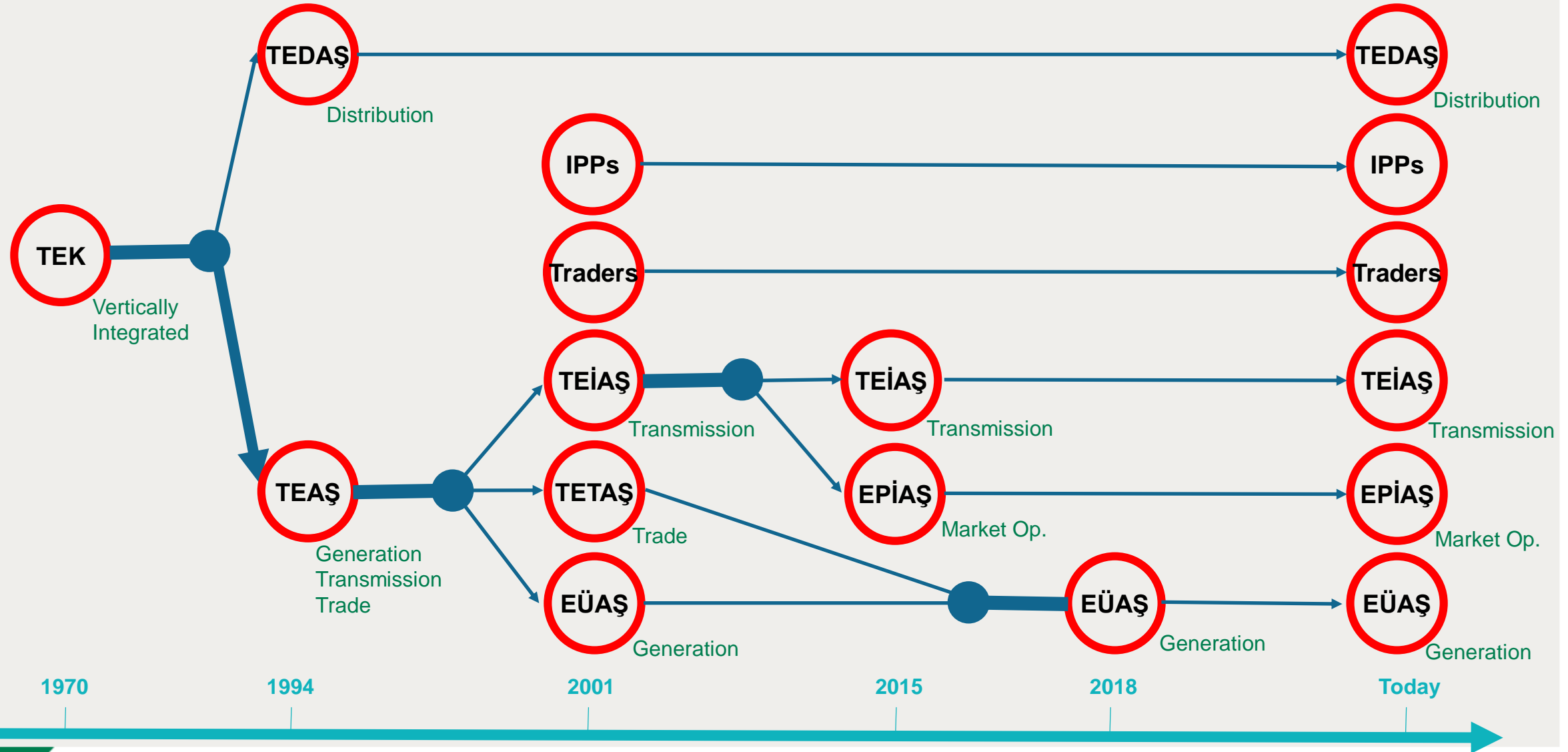
Voltage (kV)	km
400 (OHL)	23.847
220 (OHL)	85
154 (OHL)	45.460
66 (OHL)	10
400 (Underground cable)	48
154 (Underground cable)	429
400 (Subsea cable)	16
TOTAL	70.034

Information of TSO

- TEIAS (Turkish Electricity Transmission Corporation)
- Sole owner of the transmission grid
- Serving 814.578 km²
- <http://www.teias.gov.tr>



Structure of electrical power system



Operation & Maintenance of TSO



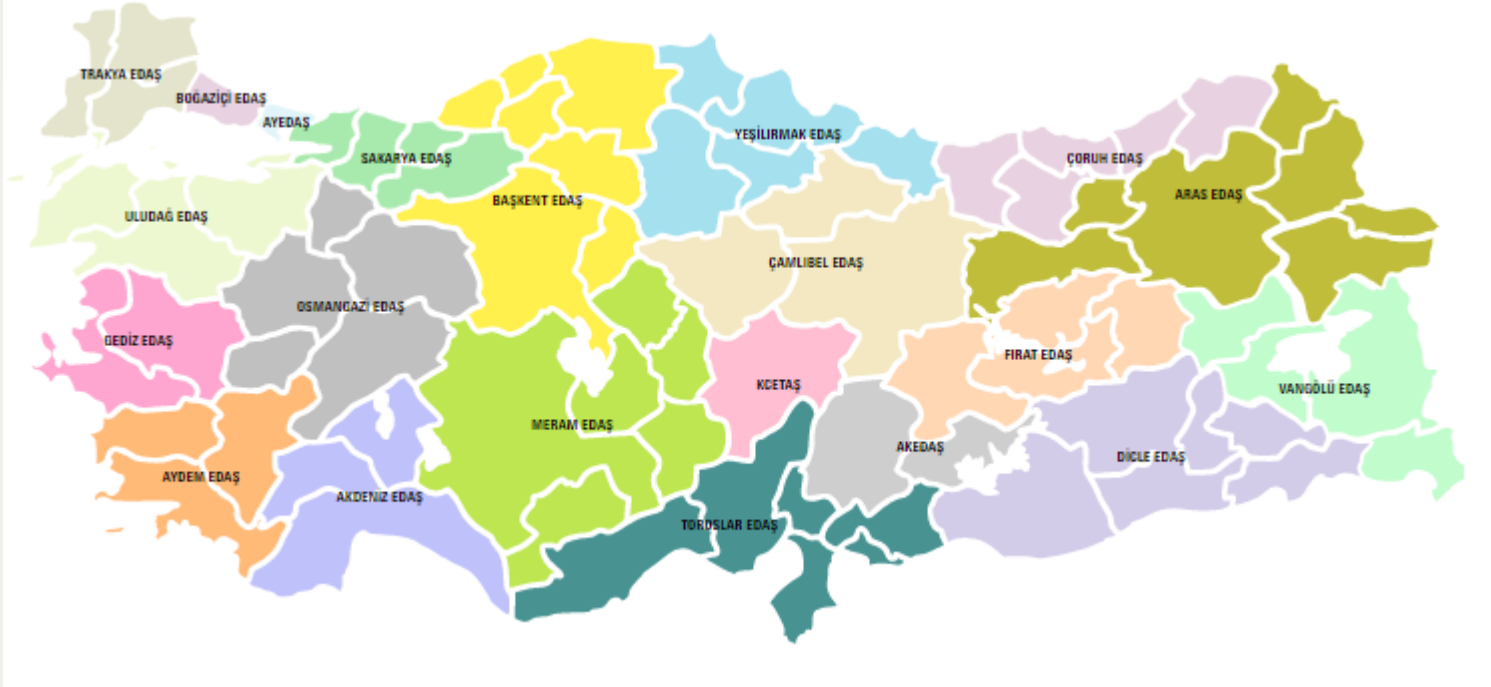
22 Regional Offices

Dispatching of TSO



1 National Control Centre (Ankara)
9 Regional Control Centres

DSOs

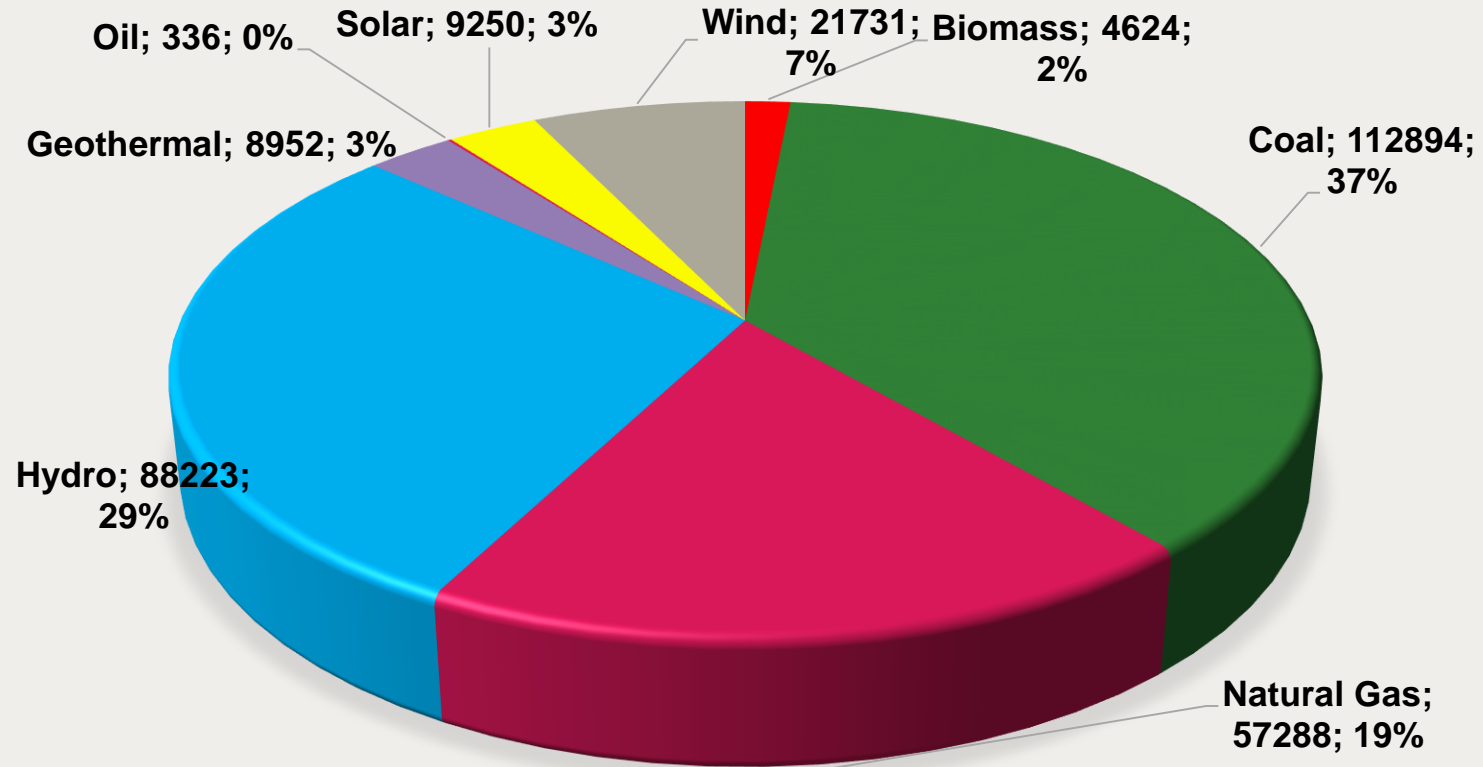


21 Private DSOs
(Ownership belongs to TEDAS)

Installed Capacity with reference to Primary Resources (2019)

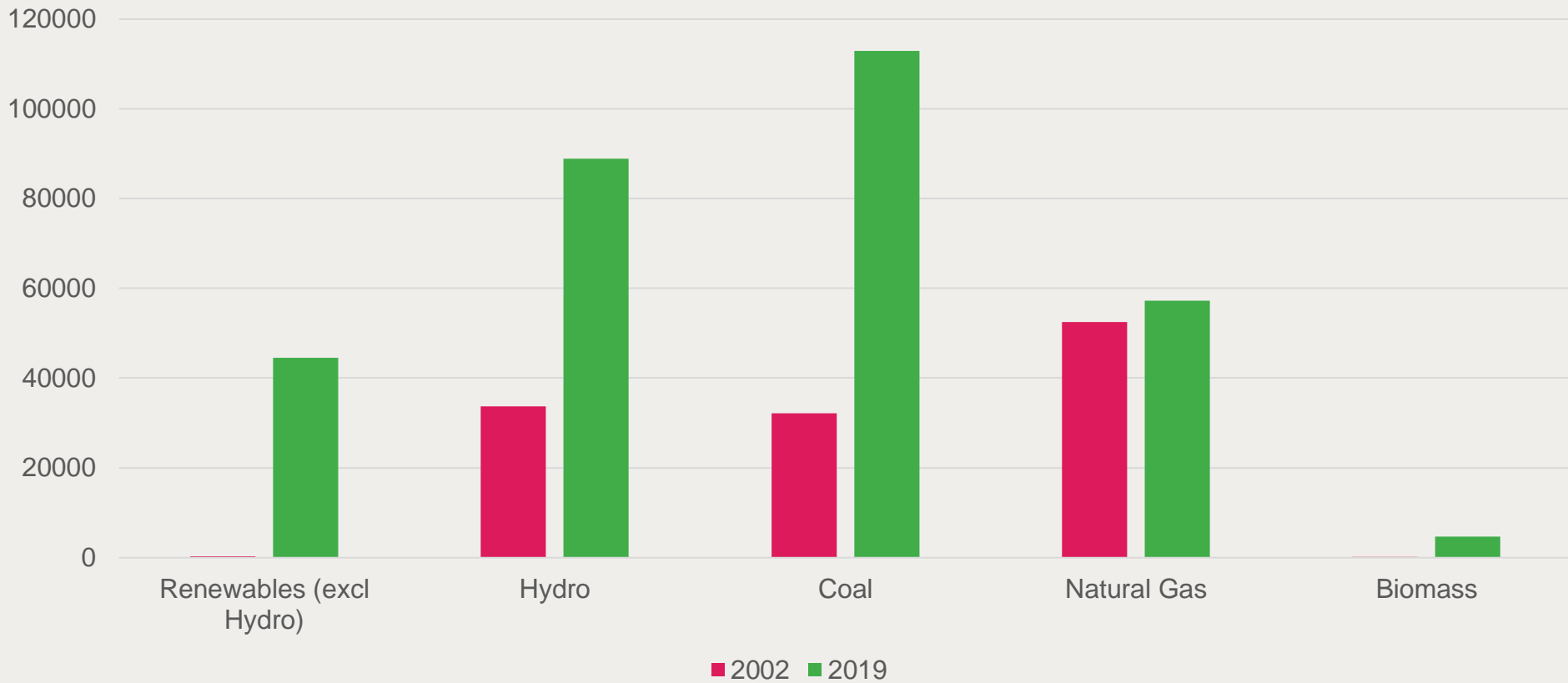
RESOURCES	INSTALLED CAPACITY (MW)	(%)
IMPORT COAL	8.966,85	9,82
COAL+ASPHALTITE	1.215,80	1,33
LIGNITE	10.101,0	11,07
NATURAL GAS	25.904,25	28,38
FUEL OIL	311,68	0,34
SOLID FUEL+LIQUID FUEL	0,00	0,00
LIQUID FUEL+NATURAL GAS	0,00	0,00
BIOMASS	1.163,34	1,27
GEOHERMIC	1.514,67	1,66
HYDRAULIC DAMS	20.642,52	22,62
HYDRAULIC STREAM	7.860,55	8,61
WIND	7.591,17	8,23
SOLAR	7.995,20	6,57
TOTAL	91.267,03	100,00

Energy Production with reference to Primary Resources (2019)

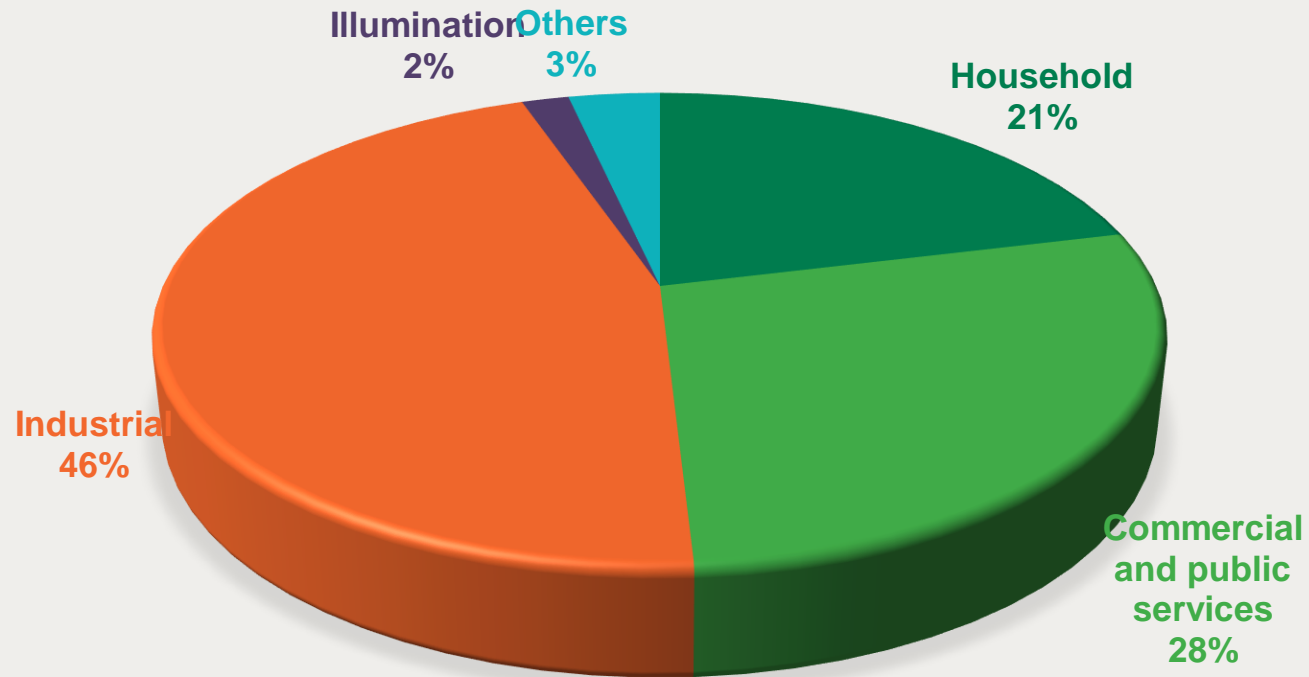


TOTAL: 303.897,6 GWh

Development of Generation (GWh)

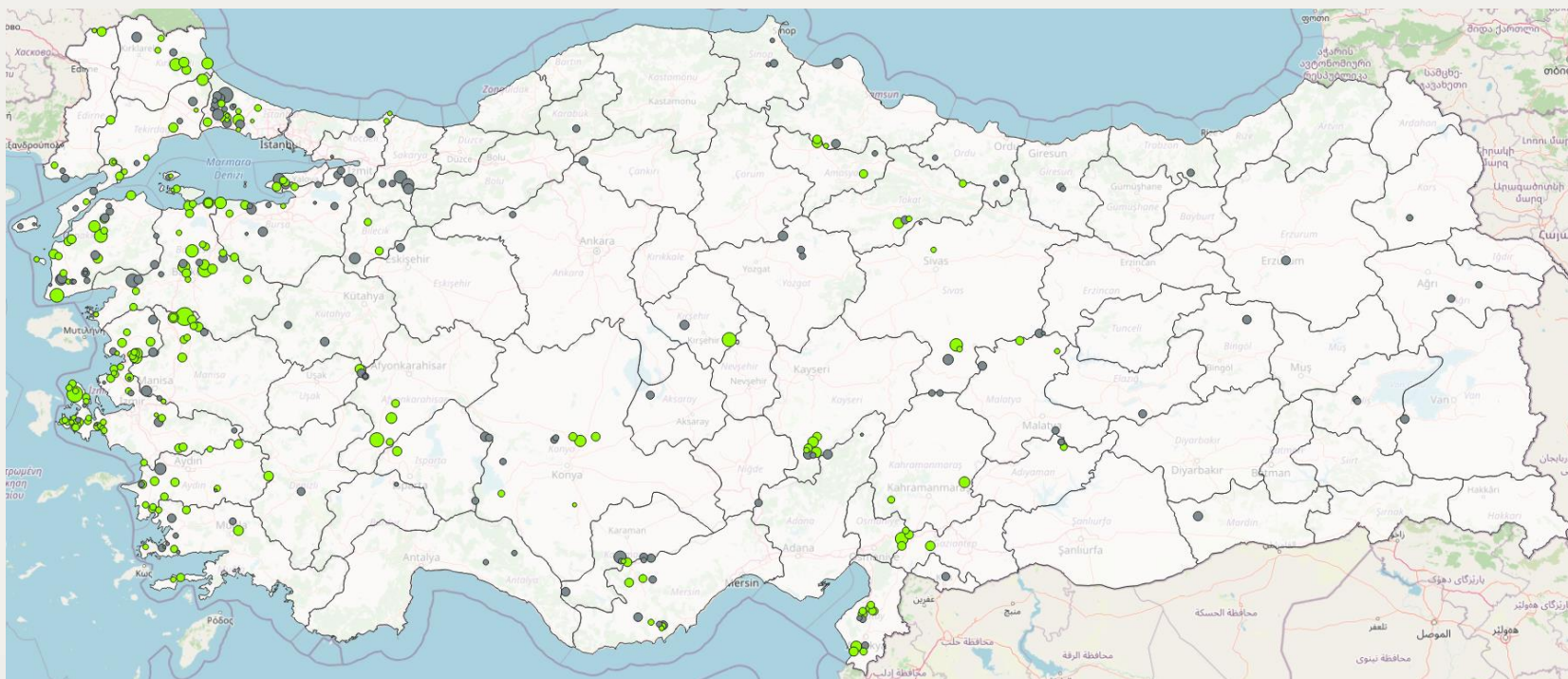


Consumption per Customer Groups (2018)

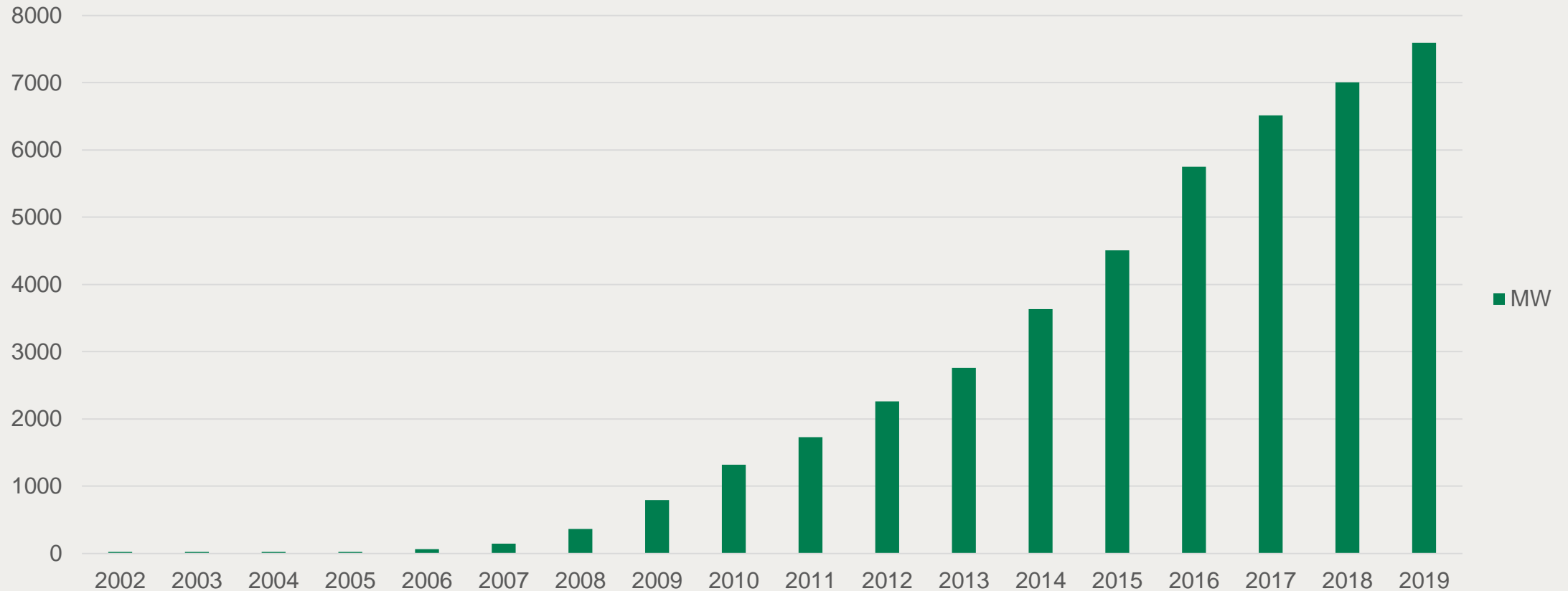


Total Net Consumption: 258.232,2 GWh

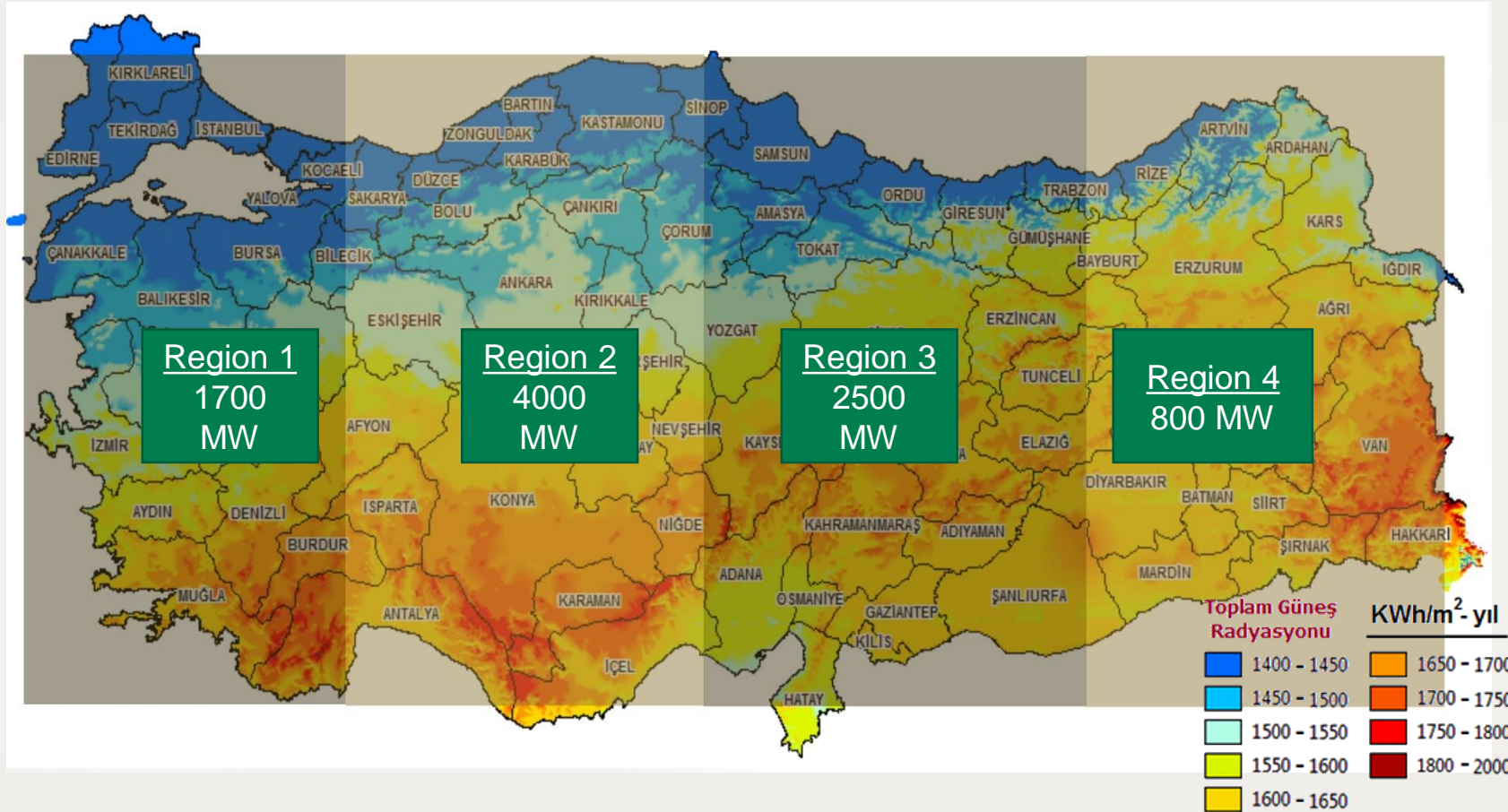
Location of Wind PPs (Sept 2020)



Development of Wind PPs (Installed Capacity)



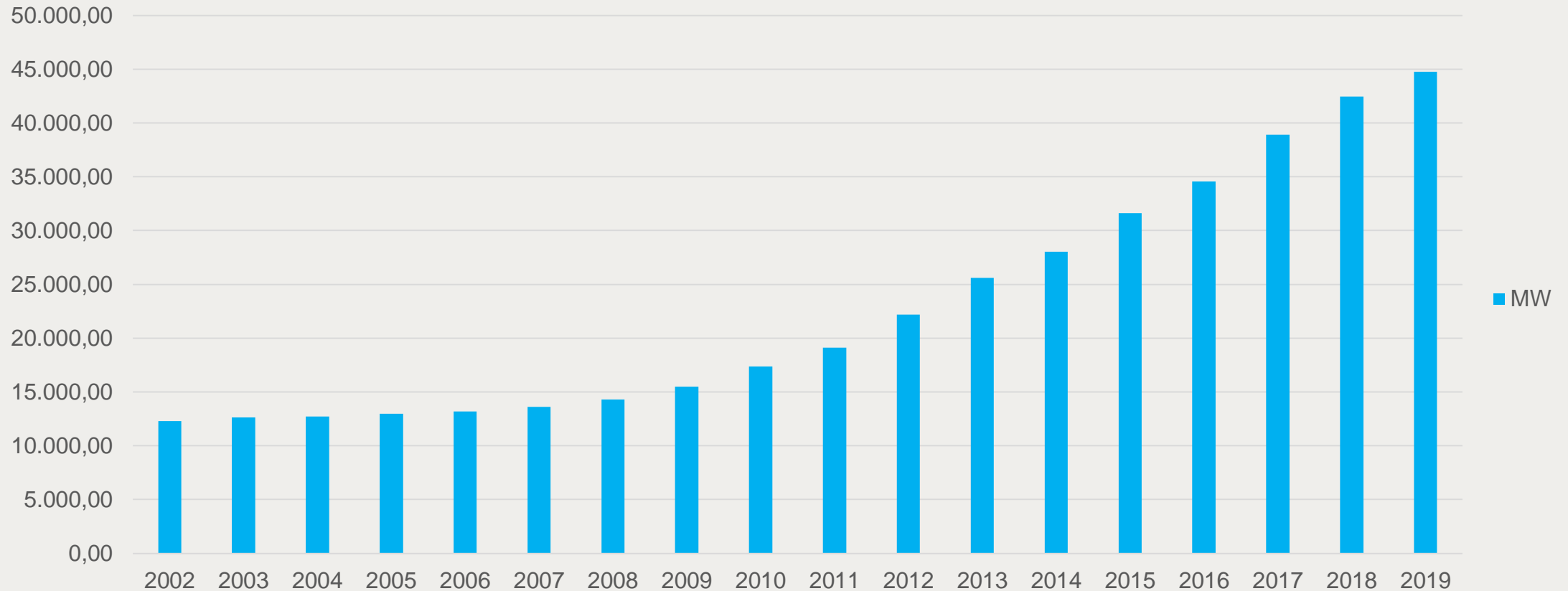
Location of Solar PPs (Existing+Permitted)



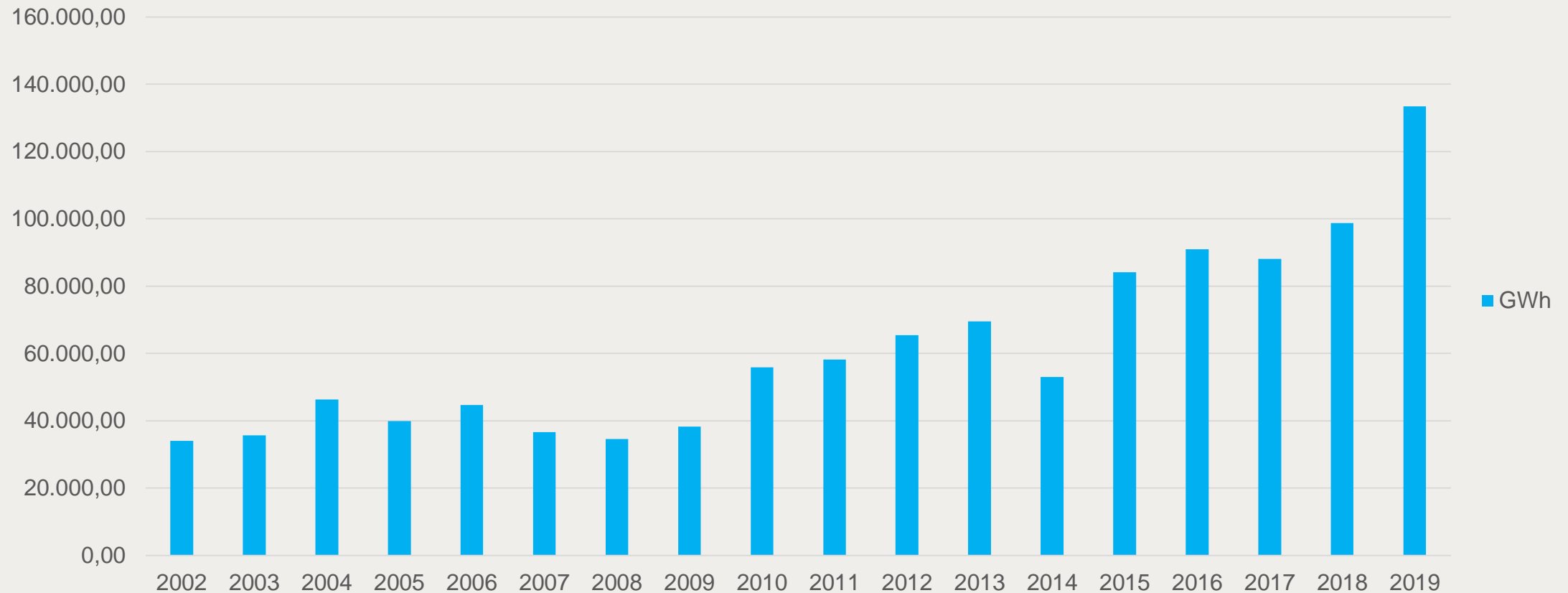
Development of Solar PPs (Installed Capacity)



Development of RES PPs (Installed Capacity)



Development of RES PPs (Generation)



Price trend for consumers

	2017		2018		2019	
	Second Half (Kuruş/kWh)	First Half (Kuruş/kWh)	Second Half (Kuruş/kWh)	First Half (Kuruş/kWh)	Second Half (Kuruş/kWh)	First Half (Kuruş/kWh)
Industry	26,3	30,2	44,1	48,1		
Household	41,3	45	55,2	53,8		

Milestones of Turkish Electricity Market

2001

- Electricity Market Law numbered 4628 was published.

2006

- Market Financial Settlement Center (PMUM) at TEIAS started to operate the balancing mechanism.
- Imbalances started to be settled as night, day and peak time period.

2009

- Balancing and Settlement Regulation was published on 1st December of 2009.
- Day Ahead Planning was being used for day ahead trading and balancing activities.
- Balancing Power Market is being used for real-time balancing. Imbalances started to be settled hourly.

2011

- Day Ahead Market came in to force on 1st December of 2011
- Daily advance payments, collateral mechanism and renewable energy resources support mechanism started to be implemented.

2013

- Electricity Market Law numbered 6446 was published. Law numbered 4628 was renamed as “Law on the organization and duties of Energy Market Regulatory Authority”

2015

- In accordance with the Electricity Market Law, a new liberal company called EPIAŞ (Electricity Markets Operating Incorporate Company) which will operate day ahead market, intraday market and settlement of these markets, was established.
- EPIAŞ started to operations in **1st of September 2015**. After this date TEIAS is responsible only balancing of power market.

Power Balance (2019)

	GWh
Generation	303.897,56
Consumption	303.320,40
Import	2.211,51
Export	2.788,67
Transmission losses	5.585,21

Energy exchanges with neighbours (2019)

Country Interconnector	Import (GWh)	Export (GWh)
Bulgaria Maritsa East 3-Hamitabat 1 Maritsa East 3-Hamitabat 2	1.960,6	120,7
Greece Nea Santa-Babaeski	3,9	2.667,8
Georgia Hopa-Batum	----	----
Georgia Borçka-Ahıska	247,0	0,2
Iran Khoy-Başkale	----	----
Iran Doğubayazıt-Bazargan	----	----
Nahcievan Iğdır-Babek	----	----
Syria Birecik-Halep	----	----
Armenia Kars-Gumri	----	----
Iraq Karkey-Zakho	----	----

Specific Aspects of Turkish Electricity Market

- Market Operator (EPIAS)

<http://epias.com.tr>

- Day-Ahead Market
- Intraday Market
- Transparency Platform

<https://seffaflik.epias.com.tr/transparency/index.xhtml>

- Transmission System Operator (TEIAS)

- Real-time Balancing Market
- Ancillary Services Market

