

MW100 Turkey

Turkey power generation evolution and top 100 players by capacity

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KEARNEY



Evolution of power generation industry

Turkey's power generation industry has significantly evolved in the past 15 years



In the past 15 years power generation capacity has more than doubled in Turkey, and the source of power has diversified with new wind, solar, geothermal, and biomass capacities

Significant capacity additions in the past 15 years

- In the past 15 years, capacity additions have been seen across all major energy sources; hydroelectric and natural gas power plant additions accounted for half of total additions.

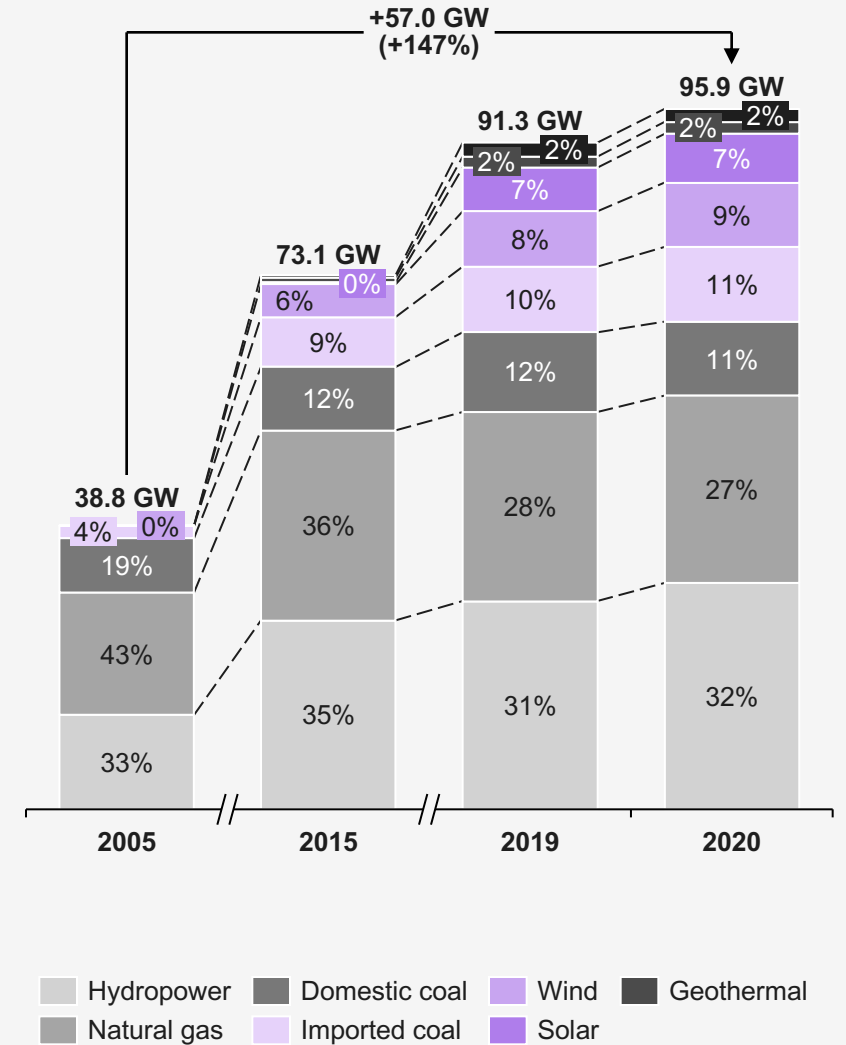
Capacity additions continued in 2020

- The power generation industry added 4.6 GW of capacity in 2020, mainly driven by renewable energy with the support of state-led incentives.
- The capacity additions in hydroelectric and wind power plants accounted for 80% of the total additions in the previous year

Natural gas capacity has been decreasing due to unfavorable market conditions for three years

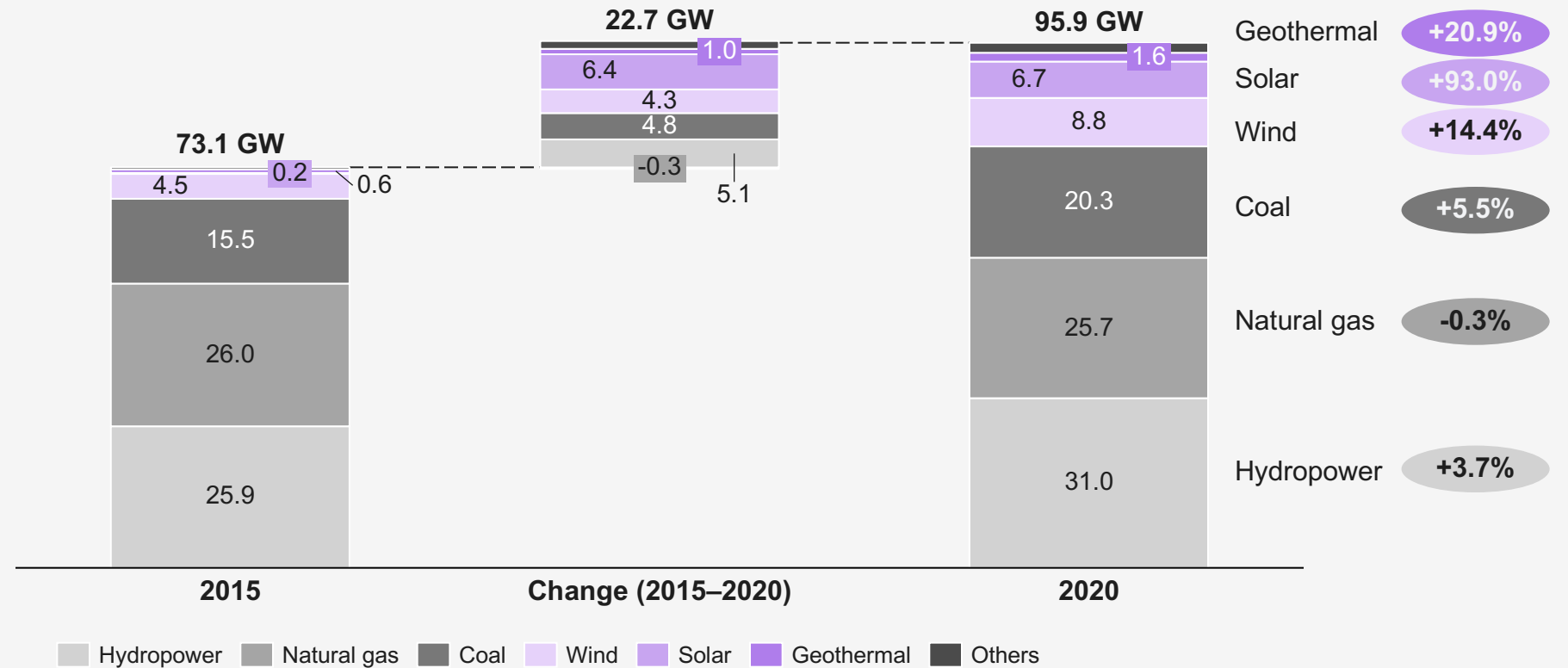
- With the sharp increase of capacity over the years, electricity prices have plummeted forcing some natural gas power plants to shut down

Turkey power generation capacity by source (GW)



In the past 5 years, capacity additions have been driven by renewable energy sources

Energy capacity additions in the past 5 years (GW)



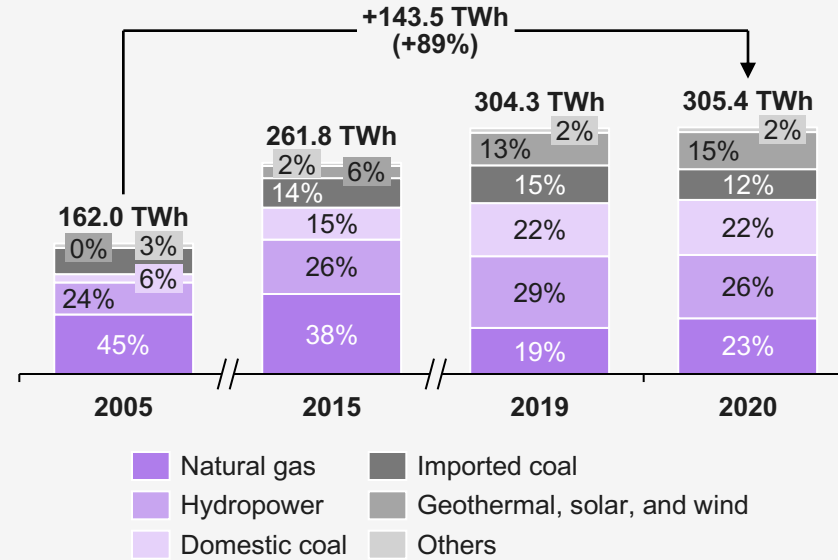
Power generation capacity has increased >30% in the past 5 years

- Total share of renewables in total capacity addition is 78%
- Natural gas capacity is the only declining category
- Last year more than 300 MW of biomass capacity was installed, which corresponds to a 54% capacity increase
- Similar levels of capacity additions are expected in the coming years, with renewable energy being the main contributor of capacity additions

Sources: TEİAŞ, EPDK, EPIAŞ, ETKB, EÜAŞ, TÜİK; Kearney analysis

Electricity generation has nearly doubled in 15 years. Energy transition to renewable energy supports Turkey's goals to shift into domestic sources of energy in the long term.

Turkey electricity generation by source (TWh)



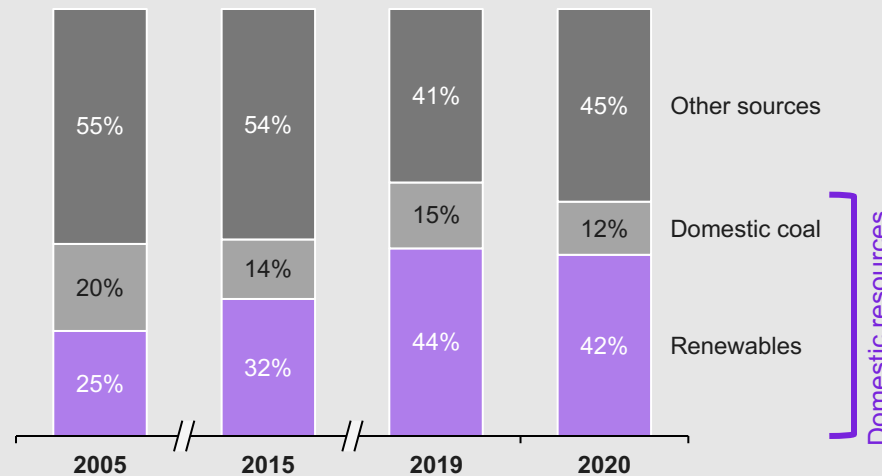
Electricity generation has nearly doubled in the past 15 years

- 2020 electricity generation was 305 TWh, comparable to the 2019 level.
- The share of geothermal, solar, and wind energy has more than doubled in the past 5 years.

Energy generation from natural gas increased by 22.3% compared to last year

- Due to seasonal drought in 2020, energy generation from hydropower energy decreased by 12.1% and it has been balanced with 22.3% increase in natural gas.

Share of renewables in electricity generation (TWh)¹



Total renewable energy generation is consistently increasing

- With significant capacity additions and state-led incentives, total generation of renewable energy has increased.
- The decrease in renewable energy share in 2020 is due to seasonal drought.

Natural gas power plants increased its capacity utilization in 2020 compared to 2019

- Natural gas power plants increased capacity utilization (average utilization is calculated as 31%) compared to 2019 (25%) to compensate lower electricity generation from hydropower.

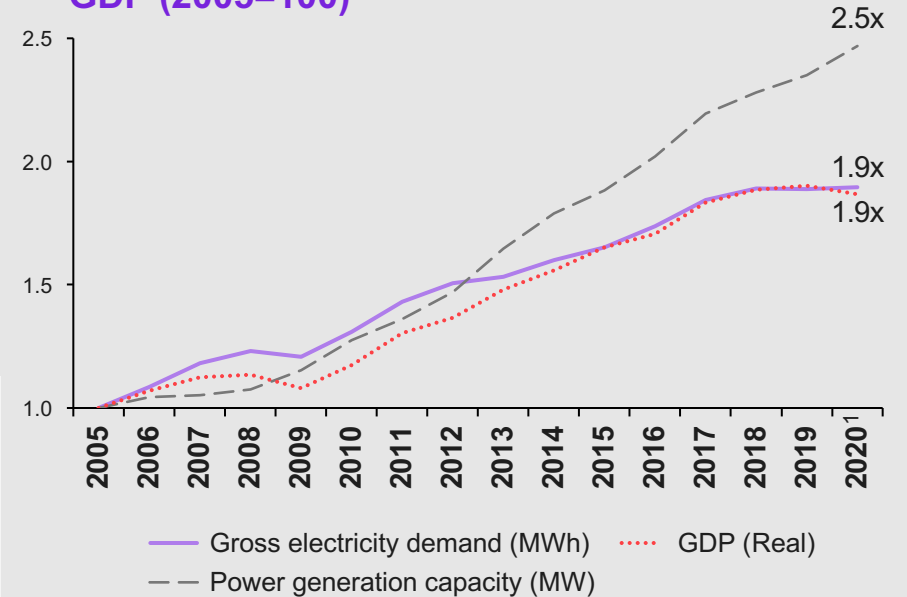
¹ Renewables include hydropower, geothermal, solar, and wind. Sources: TEİAŞ, EPDK, EPIAŞ, ETKB, EÜAŞ, TÜİK; Kearney analysis

Electricity demand has closely followed GDP trajectory and an upward trend in recent years despite the COVID-19 lockdowns in 2020

Electricity demand has doubled in 15 years

- In line with the GDP growth, electricity demand and power generation has nearly doubled in parallel with the growth in GDP.

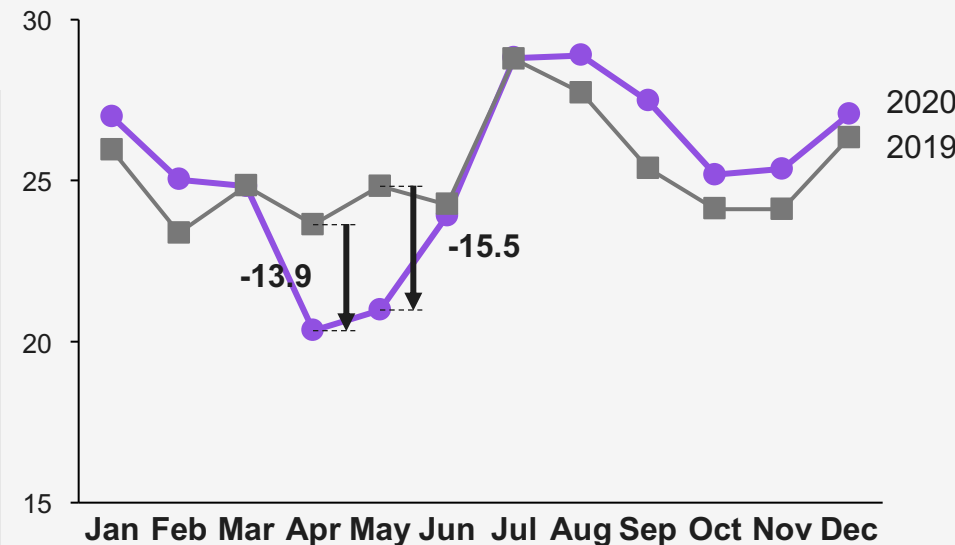
Evolution of electricity demand, capacity, and GDP (2005=100)



Electricity demand has been affected during lockdown period

- 2020 electricity demand dropped almost 15% compared to 2019's demand in April and May due to full lockdowns measures.
- The decline in demand is mainly driven by factory shutdowns in major industries (for example, automotive).

Comparison of electricity demand during lockdown period (TWh)



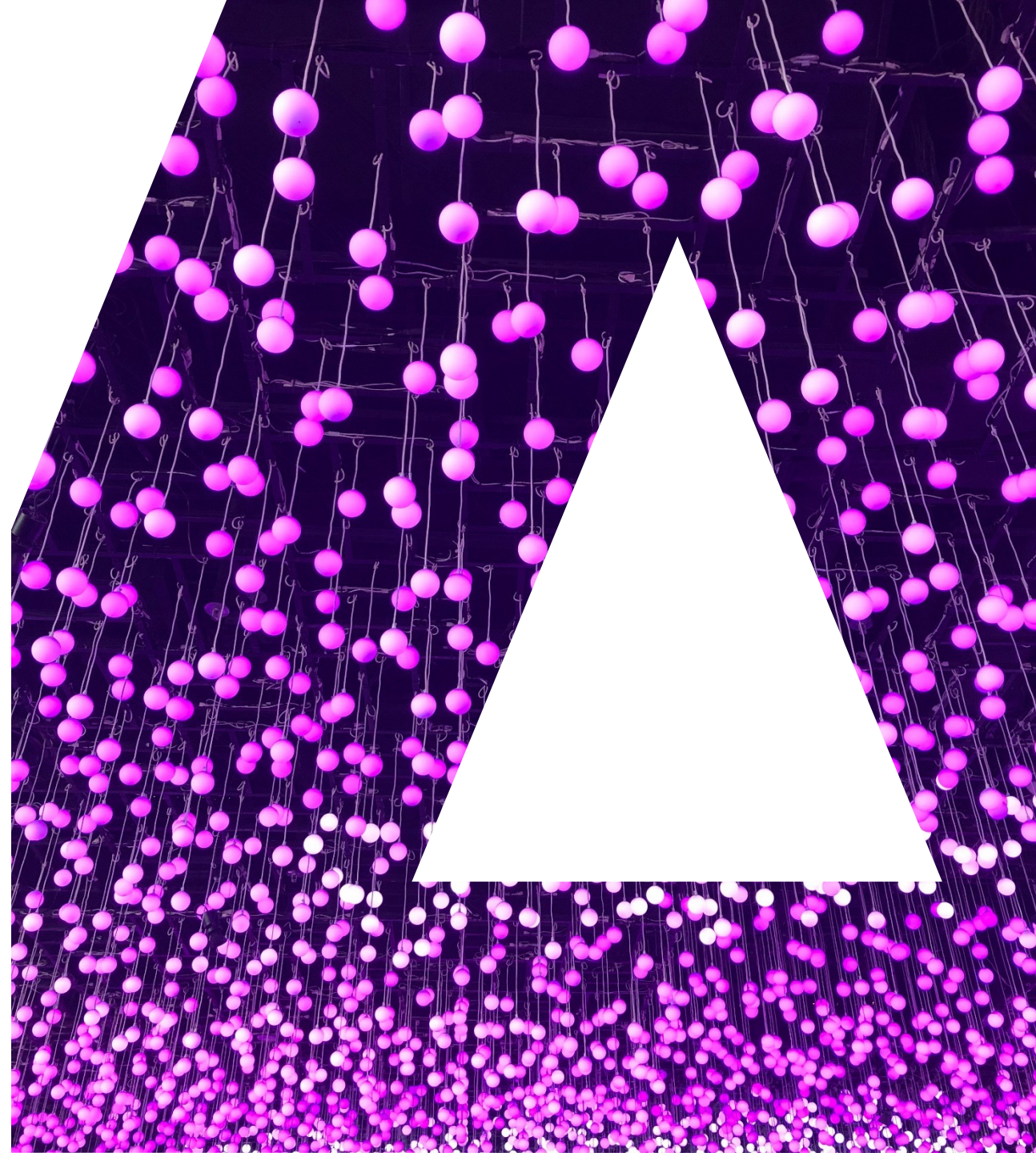
After the first lockdown restrictions, electricity demand has returned to the expected level

- Electricity demand increased 20% in June after the completion of the first lockdown period. It closed the year with higher demand than 2019, despite the second lockdown period in the last quarter of 2020

¹ 2020 GDP is calculated considering Q1, Q2, Q3 values.
Sources: TEİAŞ, EPDK, EPIAŞ, ETKB, EÜAŞ, TÜİK; Kearney analysis

Top power generation players in Turkey by capacity

We have compiled more than 83% of the power generation capacity of Turkey and identified the top 100 players



Methodology of the study

Power generation capacity data was compiled as of December 31, 2020.

1

Turkey's Energy Market Regulatory Authority (EPDK/EMRA) data was used as a basis in data compilation.

2

Only power plants with a license issued by EPDK were considered in the study (as most of the solar power plants were installed under the unlicensed distributed generation regulation, solar capacities are lower than the market actuals).

3

Only power plants located within Turkish borders were included in the study.

4

Power plants that are currently in construction stage were excluded from the study or partially included (for those that partially commenced operation).

5

Allocation of power generation capacity to groups/companies was completed based on equity stake of each group/company.

6

Consolidation of power plants to groups/companies was completed based on information gathered from groups/companies, their websites, and from general news sources.

7

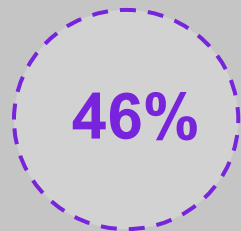


Summary results of the study

EÜAŞ, the state-owned generation company, still tops the list, despite a long history of privatizations in the Turkish energy markets.

- EÜAŞ holds 22% of total capacity of Turkey.
 - High-capacity concentration of EÜAŞ enables the company to stabilize the electricity supply in market to ensure no outages and stable prices.
- ENKA is largest private-sector player with 4% of total capacity share.
- Enerjisa, Eren Enerji, and Çelikler Holding follow ENKA and EÜAŞ in the top 5.

The top 10 players hold nearly half of market capacity.



Capacity share of top 10 players



Capacity share of top 100 players

Overall top 10

Rank		Companies	Capacity (Mwe)
2020	2019		
1	1	EÜAŞ	20,981
2	2	ENKA	3,830
3	3	Enerjisa	3,608
4	4	Eren Enerji	2,818
5	5	Çelikler Holding	2,737
6	6	Cengiz Enerji	2,715
7	7	Limak Enerji	2,576
8	8	Aydem Enerji	1,964
9	9	İÇDAŞ	1,669
10	10	Bilgin Enerji	1,577

Top 10 players across segments

Natural gas (CCGTs)

Rank		Companies	Capacity
2020	2019		
1	1	EÜAŞ	4,988
2	2	ENKA	3,830
3	3	Enerjisa	1,583
4	4	Aksa Enerji	1,047
5	17	HABAŞ	1,043
6	5	ACWA Power	927
7	6	Ak Enerji	904
8	7	Limak Enerji	900
9	8	Bilgin Enerji	887
10	9	GAMA Holding	853

Coal

Rank		Name	Capacity
2020	2019		
1	1	Eren Enerji	2,790
2	2	Çelikler Holding	2,530
3	3	EÜAŞ	2,424
4	4	İÇDAŞ	1,605
5	5	Anadolu Birlik Holding	1,527
6	6	Diler Holding	1,200
7	9	Aydem Enerji	945
8	10	STEAG GMBH	673
9	11	Alarko Holding	660
10	12	Cengiz Enerji	660

Hydroelectric

Rank		Name	Capacity
2020	2019		
1	1	EÜAŞ	13,377
2	3	Cengiz Enerji	1,432
3	2	Enerjisa	1,353
4	6	Limak Enerji	1,113
5	4	Aydem Enerji	852
6	5	Özaltın Enerji	658
7	7	Sanko Enerji	548
8	8	Doğuş Enerji	535
9	9	Kolin	512
10	10	IC İçtaş Enerji	427

Wind

Rank		Name	Capacity
2020	2019		
1	2	Polat Enerji	606
2	1	Güriş Holding	579
3	4	Borusan ENBW Enerji	544
4	3	Demirer Holding	434
5	6	Eksim Enerji	415
6	5	Bilgin Enerji	370
7	8	Akfen	349
8	7	Fina Enerji	346
9	13	Doğan Enerji	239
10	23	Fernas Enerji	239

Source: Kearney analysis

Top 100 players in power generation

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Full list



List of top 100 groups/companies in the Turkish electricity generation industry based on capacity (1/4)

Rank 2020	Rank 2019	Companies	Natural gas	Domestic coal	Imported coal	Domestic or Imported coal	Fuel oil	Others	Hydroelectric	Wind	Geothermal	Biomass	Solar	Total installed capacity
1	1	EÜAŞ	4,988	2,424	-	-	-	175	13,377	17	-	-	-	20,981
2	2	ENKA	3,830	-	-	-	-	-	-	-	-	-	-	3,830
3	3	Enerjisa	1,583	450	-	-	-	10	1,353	211	-	-	-	3,608
4	4	Eren Enerji	-	-	2,790	-	-	-	-	-	-	28	-	2,818
5	5	Çelikler Holding	-	2,530	-	-	-	-	27	-	181	-	-	2,737
6	6	Cengiz Enerji	610	-	660	-	-	13	1,432	-	-	-	-	2,715
7	7	Limak Enerji	900	536	-	-	-	-	1,113	-	14	-	13	2,576
8	8	Aydem Enerji	-	945	-	0	-	-	852	160	7	1	-	1,964
9	9	İÇDAŞ	-	1,605	-	-	-	-	4	60	-	-	-	1,669
10	10	Bilgin Enerji	887	-	-	-	-	-	321	370	-	-	-	1,577
11	11	Anadolu Birlik Holding	-	1,527	-	0	-	-	-	3	-	3	-	1,532
12	12	Aksa Enerji	1,047	270	-	-	-	-	-	96	-	-	-	1,413
13	14	Diler Holding	-	-	1,200	-	-	-	38	-	-	-	-	1,238
14	15	Ak Enerji	904	-	-	-	-	-	292	28	-	-	-	1,224
15	17	GAMA Holding	853	-	-	-	-	-	130	118	-	-	-	1,100
16	45	HABAŞ	1,043	-	-	-	54	-	-	-	-	-	-	1,097
17	18	Kolin	-	510	-	-	-	-	512	-	-	-	-	1,022
18	21	İC İçtaş Enerji	-	536	-	-	-	-	427	-	-	-	-	963
19	20	ACWA Power	927	-	-	-	-	-	-	-	-	-	-	927
20	23	Güriş Holding	-	-	-	-	-	-	107	579	235	-	-	922
21	22	Alarko Holding	163	-	660	-	-	-	87	-	-	-	-	910
22	16	OYAK Şirketleri	108	-	641	-	0	137	-	-	-	21	1	908
23	13	Ciner Holding	379	433	-	-	-	-	-	-	-	-	7	819
24	24	Baymina Enerji	798	-	-	-	-	-	-	-	-	-	-	798
25	28	Sanko Enerji	-	-	-	-	0	-	548	178	70	-	-	796

List of top 100 groups/companies in the Turkish electricity generation industry based on capacity (2/4)

Rank 2020	Rank 2019	Companies	Natural gas	Domestic coal	Imported coal	Domestic or Imported coal	Fuel oil	Others	Hydroelectric	Wind	Geothermal	Biomass	Solar	Total installed capacity
26	25	RWE-Turcas	776	-	-	-	-	-	-	-	18	-	-	794
27	19	Unit	519	-	-	-	-	-	218	-	-	-	-	737
28	27	STEAG GMBH	-	-	673	-	-	-	-	60	-	-	-	733
29	30	Akfen	-	-	-	-	-	-	236	349	-	-	96	681
30	29	Özaltın Enerji	-	-	-	-	-	-	658	-	-	-	-	658
31	26	Zorlu Enerji	84	-	-	-	-	-	119	135	305	-	-	643
32	32	Polat Enerji	-	-	-	-	-	-	-	606	-	-	-	606
33	33	Borusan ENBW Enerji	-	-	-	-	-	-	49	544	-	-	9	602
34	31	Doğuş Enerji	-	-	-	-	-	-	535	-	-	-	-	535
35	34	BİS Enerji	486	-	-	-	-	-	-	-	-	-	-	486
36	37	Eksim Enerji	-	-	-	-	-	-	63	415	-	-	-	478
37	35	ODAŞ Enerji	140	330	-	-	-	-	7	-	-	-	-	477
38	39	Doğan Enerji	-	-	-	-	-	-	202	239	-	-	-	440
39	36	Demirer Holding	-	-	-	-	-	-	-	434	-	-	-	434
40	53	Fernas Enerji	-	-	-	-	-	-	169	239	-	-	8	416
41	38	TÜPRAŞ	216	-	-	-	(0)	170	-	-	-	-	-	386
42	40	ENTEK	112	-	-	-	-	-	266	-	-	-	-	377
43	42	İzdemir Enerji	-	-	370	-	-	-	-	-	-	-	-	370
44	41	Gülsan Holding	37	-	-	-	-	-	319	-	-	-	-	356
45	72	Ansaldo Energy	346	-	-	-	-	-	-	-	-	-	-	346
46	43	Fina Enerji	-	-	-	-	-	-	-	346	-	-	-	346
47	70	Yıldırım Holding	104	-	-	-	-	-	157	76	-	-	-	337
48	44	Çolakoğlu Metalurji	123	-	190	-	-	-	-	-	-	-	-	313
49	52	Türkerler Holding	-	-	-	-	-	-	121	111	78	-	-	309
50	46	Kipaş Holding	43	-	8	-	-	9	38	-	209	1	-	307

List of top 100 groups/companies in the Turkish electricity generation industry based on capacity (3/4)

Rank 2020	Rank 2019	Companies	Natural gas	Domestic coal	Imported coal	Domestic or Imported coal	Fuel oil	Others	Hydroelectric	Wind	Geothermal	Biomass	Solar	Total installed capacity
51	49	Ayen Enerji	-	-	-	-	-	-	169	130	-	-	-	299
52	47	Şişecam Topluluğu	285	-	-	-	-	-	-	-	-	-	-	285
53	50	SOCAR	229	-	-	-	0	-	-	51	-	-	3	283
54	48	AGE Enerji	206	-	-	-	-	-	73	-	-	-	-	278
55	54	Erciyes Anadolu Holding	-	-	-	-	-	-	204	56	-	-	0	260
56	65	Kalyon Enerji	-	-	-	-	-	-	174	-	-	-	82	256
57	67	Yeşilyurt Enerji	234	-	-	-	-	-	-	-	-	-	-	234
58	64	Sancak Enerji	-	-	-	-	-	-	-	228	-	-	-	228
59	69	Alto Holding	-	-	-	-	-	-	-	223	-	-	-	223
60	+100	Energo-Pro	-	-	-	-	-	-	220	-	-	-	-	220
61	57	Naksan Enerji	48	145	-	-	-	-	-	-	-	-	-	193
62	59	Dost Enerji	-	-	-	-	-	-	-	185	-	-	-	185
63	61	Ece Tur	-	-	-	-	-	-	16	168	-	-	-	185
64	60	Ünal Şirketler Grubu	-	-	-	-	-	-	185	-	-	-	-	185
65	62	Tektuğ Elektrik	-	-	-	-	-	-	155	25	-	-	-	180
66	66	Enda Enerji Holding	-	-	-	-	-	-	101	64	8	-	-	172
67	75	Ağaoğlu Enerji	-	-	-	-	-	-	20	130	-	12	-	163
68	91	Yılsan Yatırım Holding	-	-	-	-	-	-	111	-	-	-	-	111
69	68	Aksa Akriklik	145	-	-	-	-	-	-	-	-	-	-	145
70	71	Rönesans Holding	-	-	-	-	-	-	144	35	-	-	-	179
71	73	Erdem Holding	-	-	-	-	-	-	13	124	-	-	-	137
72	74	Bades Elektrik	136	-	-	-	-	-	-	-	-	-	-	136
73	76	Türkiye Şeker Fabrikaları	40	-	-	-	14	79	-	-	-	-	-	133
74	82	Beyçelik Gestamp Yenilenebilir Enerji	-	-	-	-	-	-	-	129	-	-	-	129
75	77	ITC Entegre Atık	-	-	-	-	-	-	-	-	-	125	-	125

List of top 100 groups/companies in the Turkish electricity generation industry based on capacity (4/4)

Rank 2020	Rank 2019	Companies	Natural gas	Domestic coal	Imported coal	Domestic or Imported coal	Fuel oil	Others	Hydroelectric	Wind	Geothermal	Biomass	Solar	Total installed capacity
76	58	Palmet Enerji	123	-	-	-	-	-	-	-	-	-	-	123
77	79	Statkraft	-	-	-	-	-	-	122	-	-	-	-	122
78	80	Özdoğan Enerji	-	-	-	-	-	-	122	-	-	-	-	122
79	55	Göлтаş Enerji	-	-	-	-	-	12	102	-	-	-	-	114
80	83	Arsan Group	-	-	-	-	-	-	110	-	-	-	-	110
81	+100	Greeneco Enerji	-	-	-	-	-	-	-	-	105	-	-	105
82	84	Zafer Şirketler Grubu	-	-	-	-	-	-	20	84	-	-	-	104
83	85	Çalık Enerji	-	-	-	-	-	-	29	72	-	-	-	101
84	63	Kardemir	-	-	-	78	-	-	21	-	-	-	-	99
85	86	Gaziantep OSB Elektrik	97	-	-	-	-	-	-	-	-	-	-	97
86	+100	MÖN İnşaat Enerji	-	-	-	-	-	-	66	30	-	-	-	96
87	89	Çanakçı HES	-	-	-	-	-	-	92	-	-	-	-	92
88	90	Kale Enerji	-	-	-	-	-	-	58	28	-	-	-	86
89	+100	Yıldızlar Enerji	-	-	-	-	-	-	55	25	-	-	-	80
90	94	Batıçim Batı Enerji	-	-	-	-	-	9	69	-	-	-	-	78
91	95	Edincik Enerji	-	-	-	-	-	-	-	77	-	-	-	77
92	+100	RT Enerji	-	-	-	-	-	-	-	77	-	-	-	77
93	87	Ortadoğu Enerji	-	-	-	-	-	-	-	21	-	54	-	75
94	97	Orya Enerji	-	-	-	-	-	-	74	-	-	-	-	74
95	96	Yüksel Enerji	-	-	-	-	-	-	74	-	-	-	-	74
96	+100	Peker Enerji	-	-	-	-	-	-	47	27	-	-	-	74
97	+100	Nokta Yatırım Holding	-	-	-	-	-	-	38	35	-	-	-	73
98	+100	Kıvanç Enerji	-	-	-	-	-	-	23	48	-	-	-	71
99	+100	Akbaş Holding	10	-	-	-	-	-	35	25	-	-	-	70
100	98	MB Holding	-	-	-	-	-	-	-	-	68	-	-	68

Thank you

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