

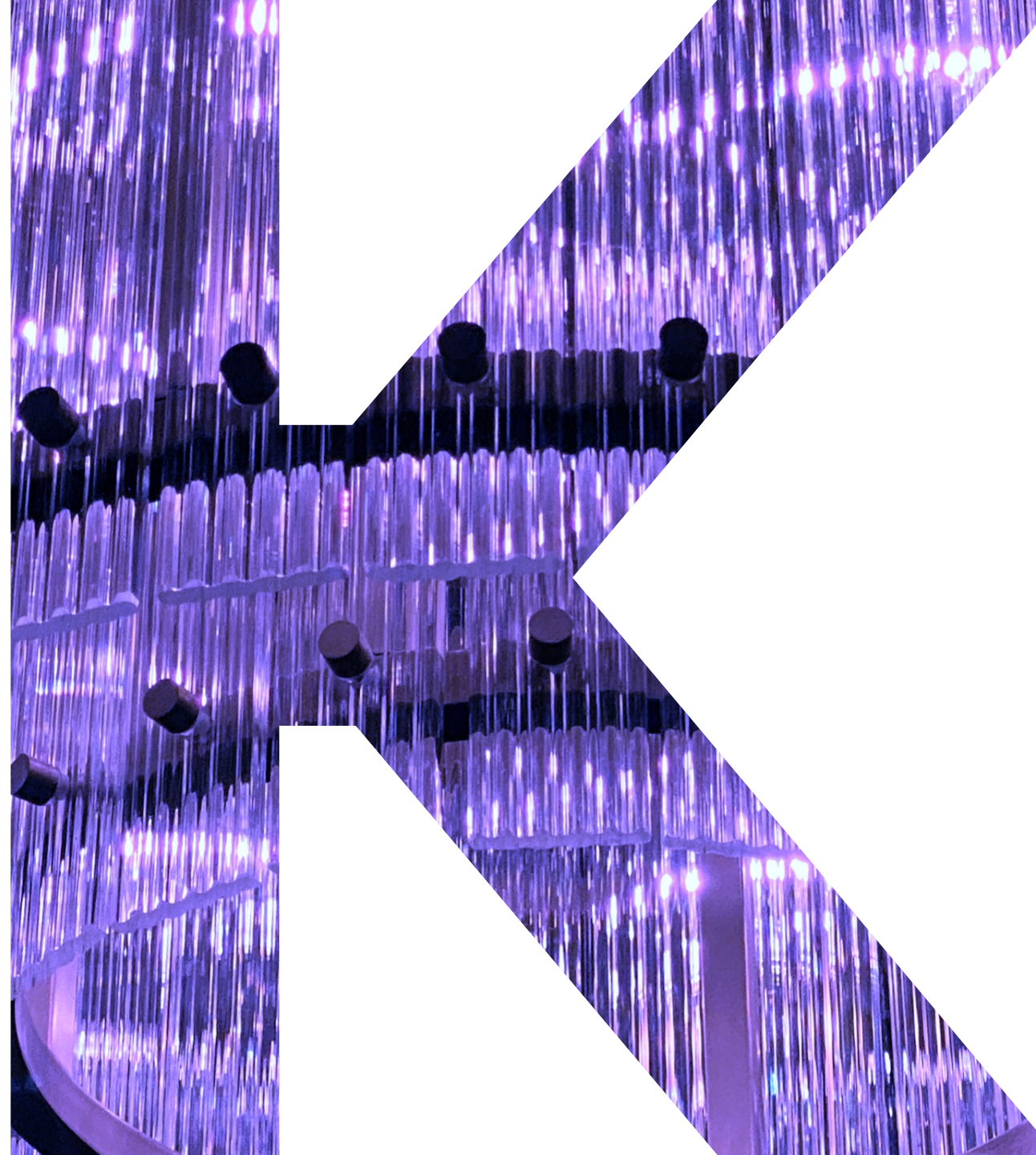
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**Turkey power generation evolution and
top 100 players by capacity**

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Onur Okutur
Eda Öksüz

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. 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 2021

- The power generation industry added an **additional 3.9 GW in 2021**, mainly driven by renewable energy.

Energy transition has been a key source of capacity additions

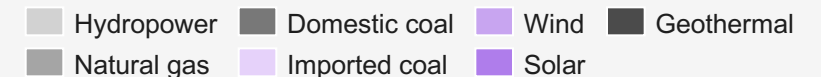
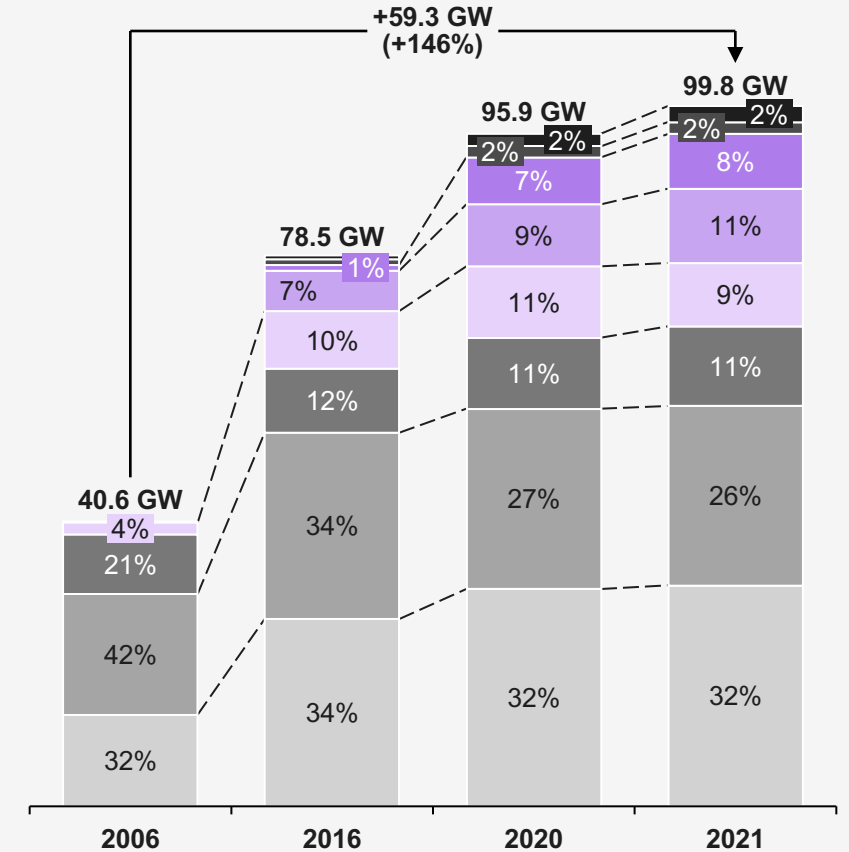
- Hydroelectric, wind, and solar power plant capacity additions totaled **3.7 GW in 2021**, accounting for **87% of total additions.**

Natural gas capacity has been decreasing due to unfavorable market conditions for 3 years

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

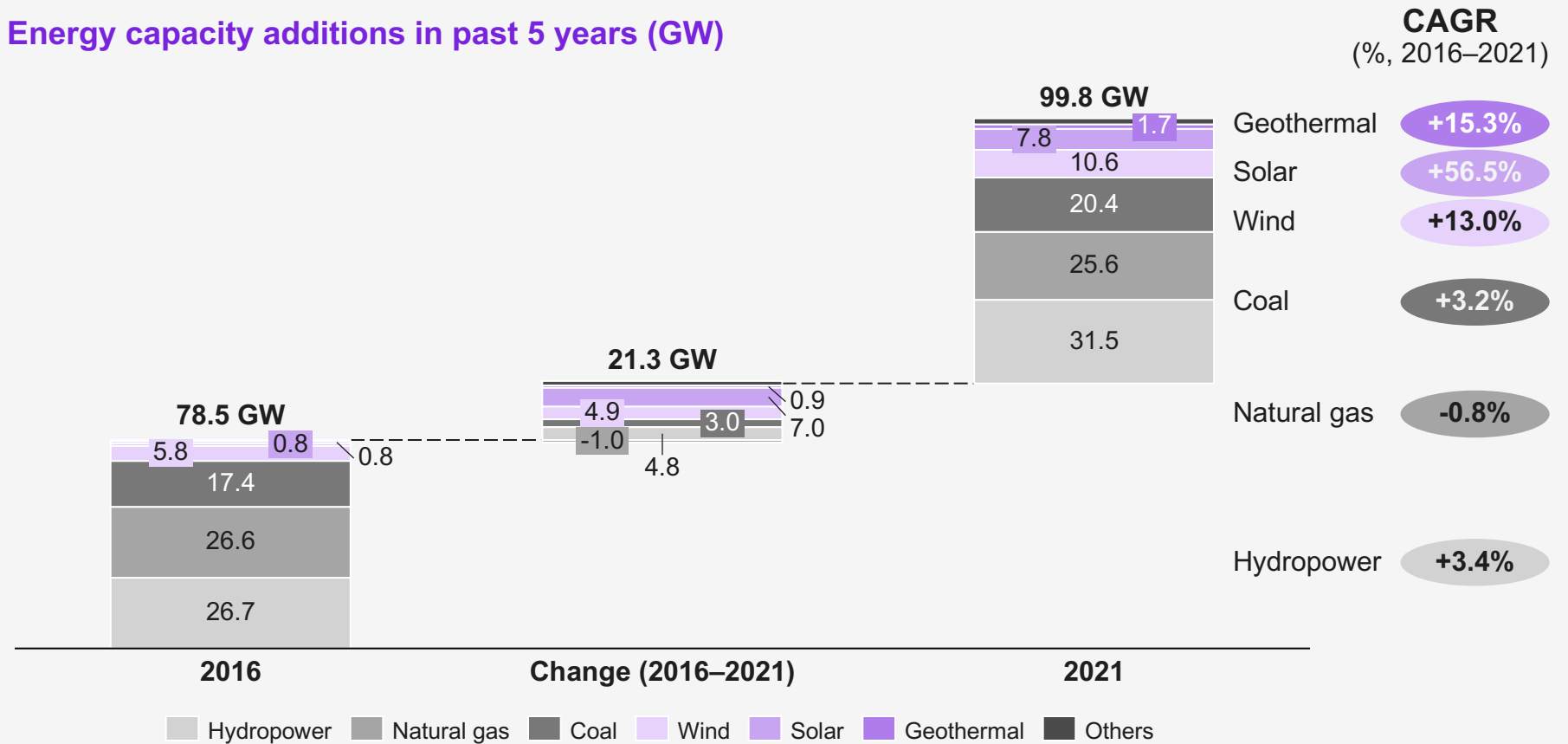
Sources: TEİAŞ, EPDK, EPIAŞ, ETKB, EÜAŞ, TÜİK; Kearney analysis

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 past 5 years (GW)



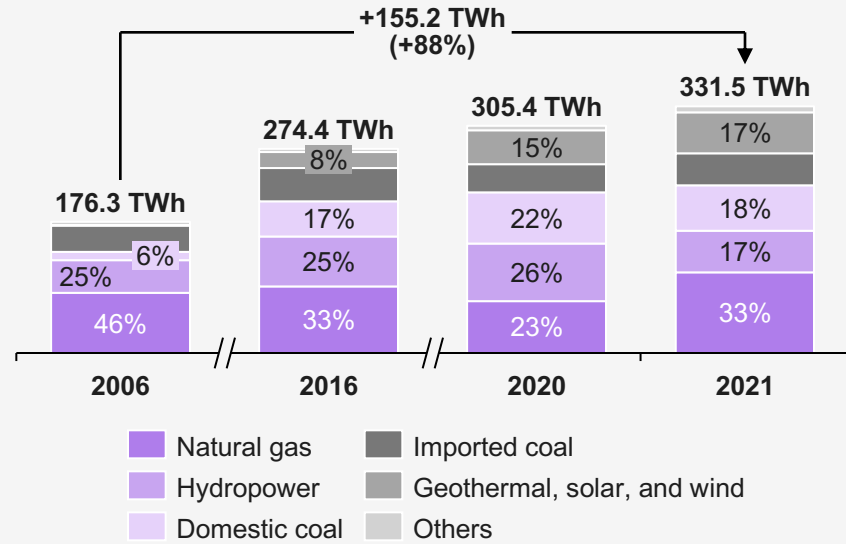
Power generation capacity has increased more than 25% in the past 5 years

- The total share of renewables in **total capacity addition is 78%**.
- Natural gas capacity is the **only declining category**.
- Solar power has the **largest increase in capacity** over the previous 5 years, with a total capacity increase of **6.8 GW**.
- Similar levels of capacity additions are expected in the coming years, with **renewable energy** being the **main contributor** of capacity additions.

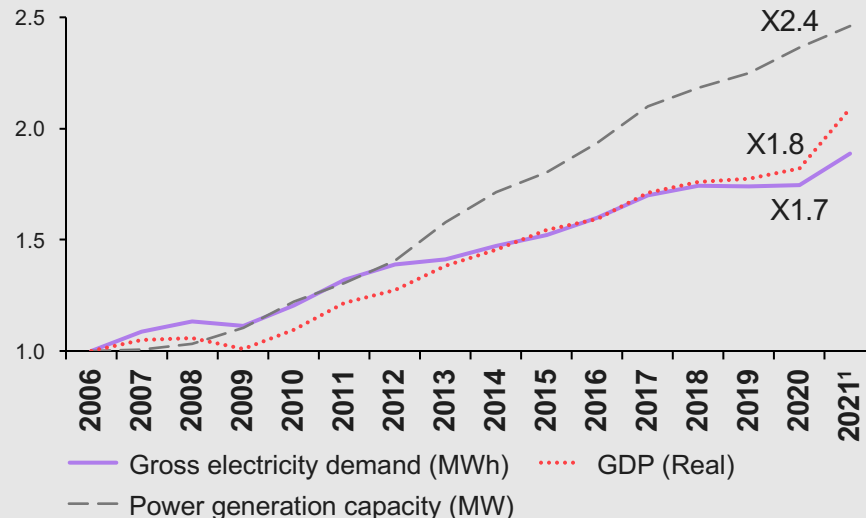
Sources: TEİAŞ, EPDK, EPIAŞ, ETKB, EÜAŞ, TÜİK; Kearney analysis

Electricity generation has nearly doubled in 15 years. Demand has closely followed GDP trajectory.

Turkey electricity generation by source (TWh)



Evolution of electricity demand, capacity, and GDP (2006 = 100)



¹ 2021 GDP is calculated considering Q1, Q2, and Q3 values
Sources: TEİAŞ, EPDK, EPIAŞ, ETKB, EÜAŞ, TÜİK; Kearney analysis

Electricity generation has nearly doubled in 15 years

- 2021 electricity generation has been 332 TWh, in parallel to 2020 level.
- The share of **geothermal, solar, and wind energy** is more than **doubled** in the past 5 years.

Energy generation from natural gas increased by 56% compared to last year

- Due to **seasonal drought** in 2021, energy generation from **hydropower decreased by 29%** and it has been balanced with a **56% increase in natural gas**.

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**.

Energy transition to renewable energy supports Turkey's goals to shift into domestic sources of energy in long term.

Renewable capacity has almost doubled in the past 5 years

- Capacity additions in **solar and wind power** plants are significant and make up more than **66% of additions**.

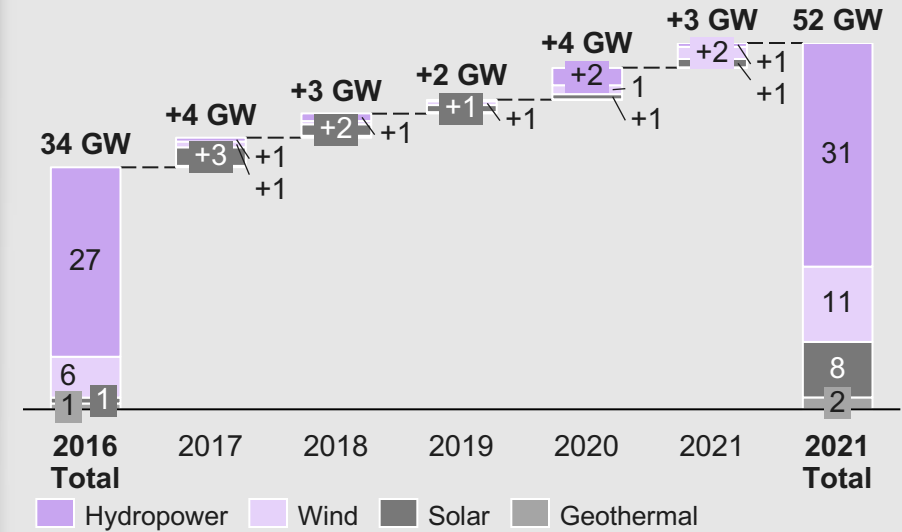
Total renewable energy generation is consistently increasing

- With **significant capacity additions** and **state-led incentives**, total generation of renewable energy has **more than doubled** in the past 15 years.
- The decrease in renewable energy share in 2021 is due to seasonal drought.

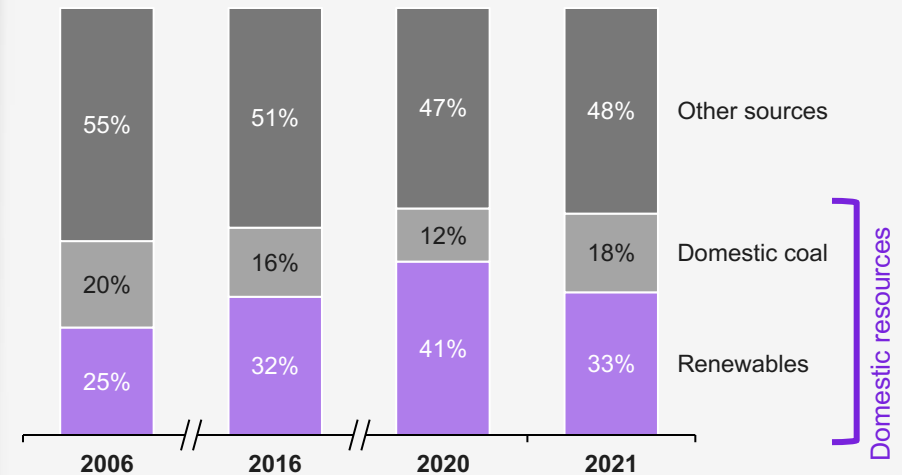
The share of domestic sources is increasing

- With increases in **renewable energy-sourced** production and decreases in natural gas power plant production, the share of domestic sources is increasing.

Renewable energy capacity additions in the past 5 years (MW)



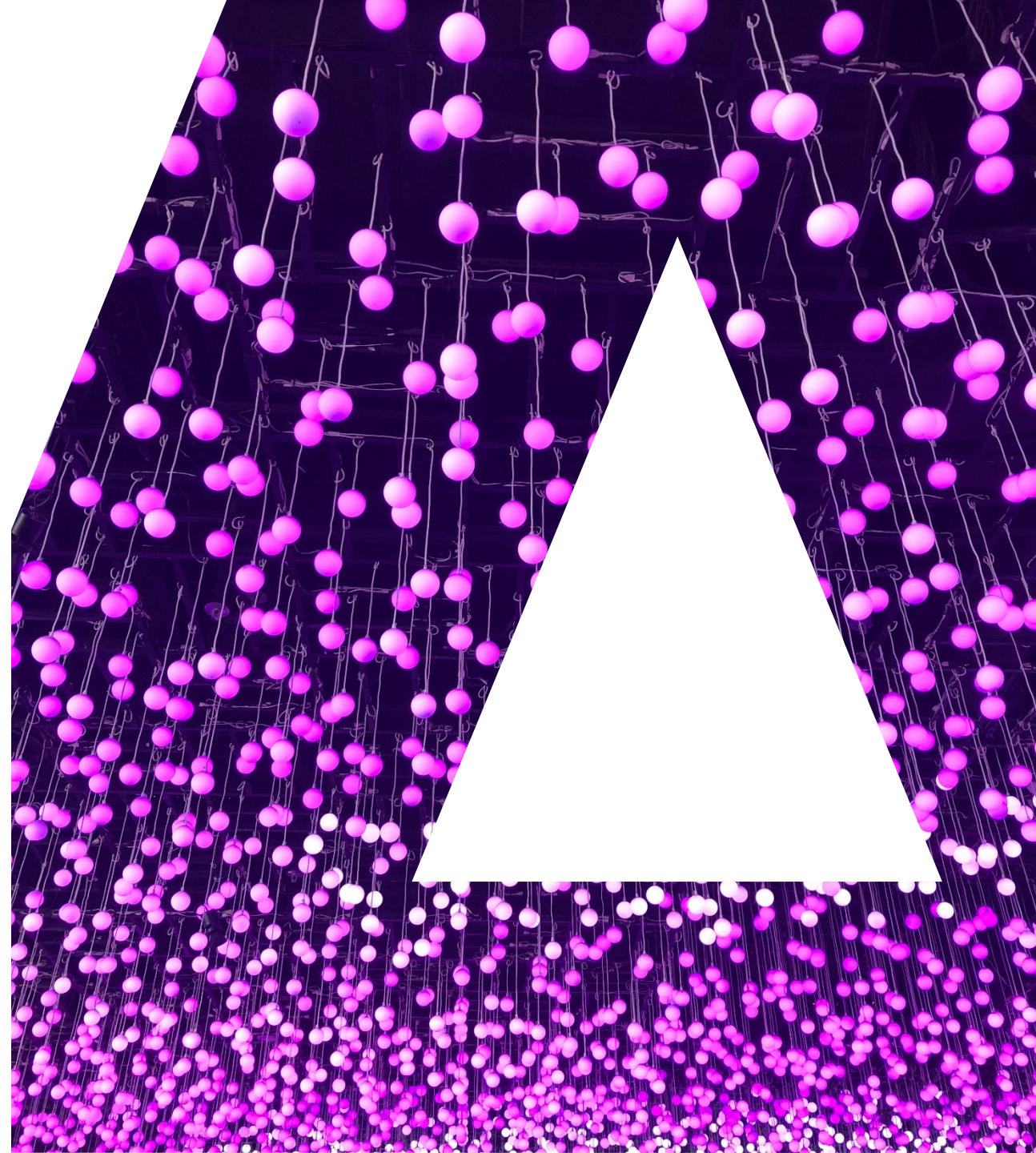
Share of renewables in electricity generation (TWh)¹



¹ Renewables include hydropower, geothermal, solar, and wind.
 Note: Percentages may not resolve due to rounding.
 Sources: TEİAŞ, EPDK, EPIAŞ, ETKB, EÜAŞ, TÜİK, Kearney analysis

Top power generation players in Turkey by capacity

We have compiled more than 82% of the power generation capacity in Turkey and identified the top 100 players



Methodology of the study

Power generation capacity data was compiled as of December 31, 2021.

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 the 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

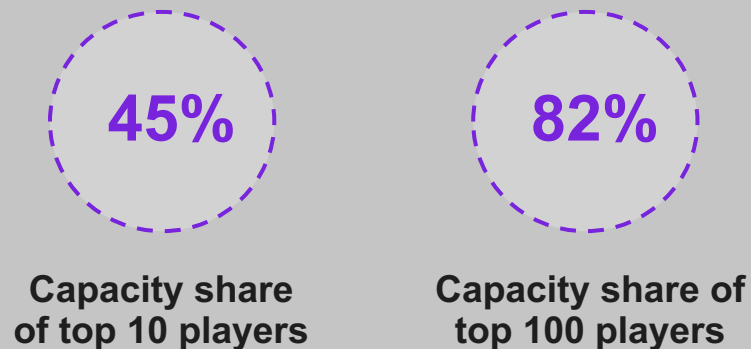


Summary results of the study

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

- EÜAŞ holds 21% of total capacity in Turkey.
 - The high-capacity concentration of EÜAŞ enables the company to stabilize the electricity supply in market to ensure no outages and stable prices.
- ENKA is the largest private-sector player with 4% of total capacity share.
- Enerjisa, Eren Enerji, and Cengiz Holding follow ENKA and EÜAŞ in the top 5.

The top 10 players hold nearly half of market capacity



Capacity: top 10

Rank		Companies	Capacity (Mwe)
2021	2020		
1	1	EÜAŞ	21,243
2	2	ENKA	3,969
3	3	Enerjisa	3,607
4	4	Eren Enerji	2,818
5	6	Cengiz Enerji	2,779
6	5	Çelikler Holding	2,769
7	7	Limak Enerji	2,576
8	8	Aydem Enerji	2,017
9	9	İÇDAŞ	1,669
10	10	Bilgin Enerji	1,639

Generation: top 10

Rank	Companies	Generation (TWh)
2021		
1	EÜAŞ	56.20
2	Enerjisa	16.60
3	Limak Enerji	11.05
4	ENKA	10.71
5	İÇDAŞ	10.30
6	Çelikler Holding	9.67
7	Diler Holding	8.00
8	Aydem Enerji	7.49
9	Aksa Enerji	7.36
10	Anadolu Birlik Holding	6.81

Top 10 players across segments

Natural gas (CCGTs)

Rank		Companies	Capacity (Mwe)
2021	2020		
1	1	EÜAŞ	4,735
2	2	ENKA	3,969
3	3	Enerjisa	1,583
4	4	Aksa Enerji	1,047
5	5	HABAŞ	1,043
6	6	ACWA Power	927
7	7	Akenerji	904
8	8	Limak Enerji	900
9	27	Palmet Enerji	893
10	9	Bilgin Enerji	887

Coal

Rank		Companies	Capacity (Mwe)
2021	2020		
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	1,508
6	6	Diler Holding	1,200
7	7	Aydem Enerji	945
8	8	STEAG GMBH	673
9	9	Cengiz Enerji	660
10	10	Alarko Holding	660

Hydroelectric

Rank		Companies	Capacity (Mwe)
2021	2020		
1	1	EÜAŞ	13,892
2	2	Cengiz Enerji	1,444
3	3	Enerjisa	1,353
4	4	Limak Enerji	1,113
5	6	Özaltın Enerji	908
6	5	Aydem Enerji	852
7	7	Sanko Enerji	548
8	8	Doğuş Enerji	535
9	9	Kolin	512
10	16	Energo-Pro	470

Wind

Rank		Companies	Capacity (Mwe)
2021	2020		
1	1	Polat Enerji	633
2	3	Borusan ENBW Enerji	624
3	2	Güriş Holding	543
4	5	Eksim Enerji	430
5	8	Fina Enerji	425
6	24	Türkerler Holding	424
7	4	Demirer Holding	419
8	6	Bilgin Enerji	370
9	7	Akfen	349
10	10	Doğan Enerji	300

Top 100 players in power generation

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Full list



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

Rank 2021	Rank 2020	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	4,735	2,424	-	-	-	175	13,892	17	-	-	-	21,243
2	2	ENKA	3,969	-	-	-	-	-	-	-	-	-	-	3,969
3	3	Enerjisa	1,583	450	-	-	-	10	1,353	211	-	-	-	3,607
4	4	Eren Enerji	-	-	2,790	-	-	-	-	-	-	28	-	2,818
5	6	Cengiz Enerji	610	-	660	-	-	13	1,444	13	-	-	40	2,779
6	5	Çelikler Holding	-	2,530	-	-	-	-	27	-	213	-	-	2,769
7	7	Limak Enerji	900	536	-	-	-	-	1,113	-	14	-	13	2,576
8	8	Aydem Enerji	-	945	-	-	-	-	852	213	7	1	-	2,017
9	9	İÇDAŞ	-	405	1,200	-	-	-	4	60	-	-	-	1,669
10	10	Bilgin Enerji	887	-	-	-	-	-	382	370	-	-	-	1,639
11	11	Anadolu Birlik Holding	-	1,508	-	-	-	-	-	3	-	3	-	1,513
12	12	Aksa Enerji	1,047	270	-	-	-	-	3	99	-	-	-	1,419
13	13	Diler Holding	-	-	1,200	-	-	-	38	-	-	-	-	1,238
14	14	Akenerji	904	-	-	-	-	-	292	28	-	-	-	1,224
15	15	Gama Enerji A.Ş.	853	-	-	-	-	-	130	118	-	-	-	1,100
16	16	HABAŞ	1,043	-	-	-	-	-	-	-	-	-	-	1,043
17	17	Kolin	-	510	-	-	-	-	512	-	-	-	-	1,022
18	18	İC İctaş Enerji	-	536	-	-	-	-	427	-	-	-	-	963
19	21	Alarko Holding	163	-	660	-	-	-	87	-	-	-	21	930
20	19	ACWA Power	927	-	-	-	-	-	-	-	-	-	-	927
21	30	Özaltın Enerji	-	-	-	-	-	-	908	-	-	-	-	908
22	20	Güriş Holding	-	-	-	-	-	-	99	543	260	-	-	902
23	76	Palmet Enerji	893	-	-	-	-	-	-	-	-	-	-	893
24	25	Sanko Enerji	-	-	-	-	-	-	548	271	70	-	-	889
25	23	Ciner Holding	379	433	-	-	-	-	-	-	-	-	7	819

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

Rank 2021	Rank 2020	Companies	Natural gas	Domestic coal	Imported coal	Domestic or imported coal	Fuel oil	Others	Hydroelectric	Wind	Geothermal	Biomass	Solar	Total installed capacity
26	22	OYAK Şirketleri	4	-	641	-	-	137	-	-	-	21	1	803
27	26	RWE-Turcas	776	-	-	-	-	-	-	-	18	-	-	794
28	27	Unit	519	-	-	-	-	-	218	-	-	-	-	737
29	28	STEAG GMBH	-	-	673	-	-	-	-	60	-	-	-	733
30	33	Borusan ENBW Enerji	-	-	-	-	-	-	49	624	-	-	8	681
31	29	Akfen	-	-	-	-	-	-	236	349	-	-	92	677
32	32	Polat Enerji	-	-	-	-	-	-	-	633	-	-	26	659
33	31	Zorlu Enerji	84	-	-	-	-	-	119	135	305	-	-	643
34	49	Türkerler Holding	-	-	-	-	-	-	121	424	78	-	-	622
35	56	Kalyon Enerji	-	-	-	-	-	-	174	-	-	-	446	620
36	48	Çolakoğlu Metalurji	377	-	190	-	-	-	-	-	-	-	-	567
37	34	Doğuş Enerji	-	-	-	-	-	-	535	-	-	-	-	535
38	38	Doğan Enerji	-	-	-	-	-	-	202	300	-	-	-	501
39	36	Eksim Enerji	-	-	-	-	-	-	63	430	-	-	-	493
40	35	BİS Enerji	486	-	-	-	-	-	-	-	-	-	-	486
41	60	Energo-Pro	-	-	-	-	-	-	470	-	-	-	-	470
42	40	Fernas Enerji	-	-	-	-	-	-	195	255	-	-	20	469
43	46	Fina Enerji	-	-	-	-	-	-	-	425	-	-	-	425
44	42	ENTEK	112	-	-	-	-	-	310	-	-	-	-	421
45	39	Demirer Holding	-	-	-	-	-	-	-	419	-	-	-	419
46	55	Erciyes Anadolu Holding	-	-	-	-	-	-	204	135	-	-	68	407
47	41	TÜPRAŞ	-	-	-	-	388	-	-	-	-	-	-	388
48	43	İzdemir Enerji	-	-	370	-	-	-	-	-	-	-	-	370
49	44	Gülsan Holding	37	-	-	-	-	-	323	-	-	1	-	360
50	45	Ansaldo Energy	346	-	-	-	-	-	-	-	-	-	-	346

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

Rank 2021	Rank 2020	Companies	Natural gas	Domestic coal	Imported coal	Domestic or imported coal	Fuel oil	Others	Hydroelectric	Wind	Geothermal	Biomass	Solar	Total installed capacity
51	37	ODAŞ Enerji	-	330	-	-	-	-	7	-	-	-	-	337
52	50	Kipaş Holding	43	-	8	-	-	9	38	-	209	1	-	307
53	51	Ayen Enerji	-	-	-	-	-	-	169	130	-	-	-	299
54	47	Yıldırım Holding	56	-	-	-	-	-	157	76	-	-	-	289
55	52	Şişecam Topluluğu	284	-	-	-	-	-	-	-	-	-	-	284
56	53	SOCAR	229	-	-	-	-	-	-	51	-	-	3	283
57	54	AGE Enerji	206	-	-	-	-	-	73	-	-	-	-	278
58	67	Ağaoğlu Enerji	-	-	-	-	-	-	20	236	-	14	-	270
59	58	Sancak Enerji	-	-	-	-	-	-	-	249	-	-	-	249
60	57	Yeşilyurt Enerji	234	-	-	-	-	-	-	-	-	-	-	234
61	59	Alto Holding	-	-	-	-	-	-	-	223	-	-	-	223
62	61	Naksan Enerji	48	145	-	-	-	-	-	-	-	-	-	193
63	62	Dost Enerji	-	-	-	-	-	-	-	185	-	-	-	185
64	63	Ece Tur	-	-	-	-	-	-	16	168	-	-	-	185
65	64	Ünal Şirketler Grubu	-	-	-	-	-	-	185	-	-	-	-	185
66	-	Universal Wind	-	-	-	-	-	-	-	182	-	-	-	182
67	65	Tektuğ Elektrik	-	-	-	-	-	-	155	25	-	-	-	180
68	66	Enda Enerji Holding	-	-	-	-	-	-	101	64	8	-	-	172
69	68	Yılsan Yatırım Holding	-	-	-	-	-	-	111	43	12	-	-	165
70	69	Aksa Akrilik	21	-	124	-	-	-	-	-	-	-	-	145
71	70	Rönesans Holding	-	-	-	-	-	-	144	-	-	-	-	144
72	-	Anatolia Holding	-	-	-	-	-	-	-	120	-	-	19	139
73	71	Erdem Holding	-	-	-	-	-	-	13	124	-	-	-	137
74	72	Bades Elektrik	136	-	-	-	-	-	-	-	-	-	-	136
75	101	Akış Enerji	-	-	-	-	-	-	-	131	-	-	-	131

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

Rank 2021	Rank 2020	Companies	Natural gas	Domestic coal	Imported coal	Domestic or imported coal	Fuel oil	Others	Hydroelectric	Wind	Geothermal	Biomass	Solar	Total installed capacity
76	75	ITC Entegre Atık	-	-	-	-	-	-	-	-	-	129	-	129
77	74	Beyçelik Gestamp Yenilenebilir Enerji	-	-	-	-	-	-	-	129	-	-	-	129
78	77	Statkraft	-	-	-	-	-	-	122	-	-	-	-	122
79	78	Özdoğan Enerji	-	-	-	-	-	-	122	-	-	-	-	122
80	79	Göлтаş Enerji	-	-	-	-	-	12	102	-	-	-	-	114
81	73	Türkiye Şeker Fabrikaları	42	-	-	-	6	65	-	-	-	-	-	113
82	80	Arsan Group	-	-	-	-	-	-	110	-	-	-	-	110
83	98	Kıvanç Enerji	-	-	-	-	-	-	23	50	-	-	35	108
84	82	Zafer Şirketler Grubu	-	-	-	-	-	-	20	86	-	-	-	105
85	81	Greeneco Enerji	-	-	-	-	-	-	-	-	105	-	-	105
86	83	Çalık Enerji	-	-	-	-	-	-	29	72	-	-	-	101
87	102	Oltan Köleoğlu Enerji	-	-	-	-	-	-	-	-	-	99	-	99
88	85	Gaziantep OSB Elektrik	97	-	-	-	-	-	-	-	-	-	-	97
89	86	MÖN İnşaat Enerji	-	-	-	-	-	-	66	30	-	-	-	96
90	93	Yeşil Global Enerji	-	-	-	-	-	-	-	42	-	54	-	96
91	87	Çanakçı HES	-	-	-	-	-	-	92	-	-	-	-	92
92	89	Yıldızlar Enerji	-	-	-	-	-	-	55	35	-	-	-	90
93	-	Pakmem Elektrik	-	-	-	-	-	-	-	90	-	-	-	90
94	88	Kale Enerji	-	-	-	-	-	-	58	28	-	-	-	86
95	-	İstaç	-	-	-	-	-	-	-	-	-	86	-	86
96	96	Peker Enerji	-	-	-	-	-	-	47	36	-	-	-	83
97	109	Karesi Enerji	-	-	-	-	-	-	-	80	-	-	-	80
98	-	Melike Tekstil	-	-	-	-	-	-	79	-	-	-	-	79
99	90	BATIENERJİ (BATIÇİM)	-	-	-	-	-	9	69	-	-	-	-	78
100	91	Edincik Enerji	-	-	-	-	-	-	-	77	-	-	-	77

Thank you

Onur Okutur

Principal
onur.okutur@kearney.com
+90 530 234 1060
Istanbul, Turkey

Eda Öksüz

Consultant
eda.oksuz@kearney.com
+90 537 591 63 70
Istanbul, Turkey

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