



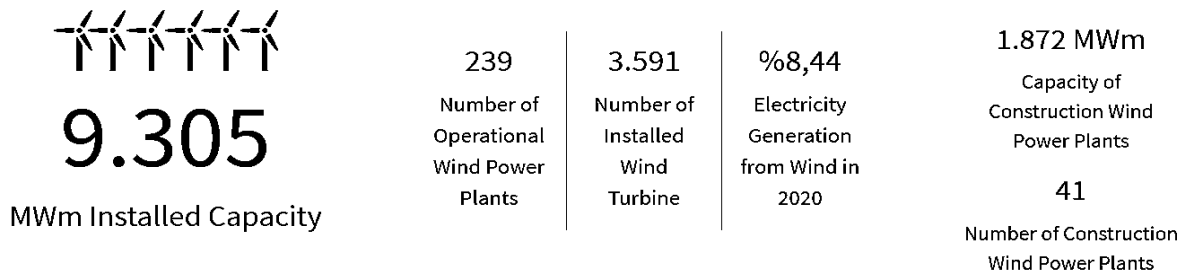
**MINISTRY OF FOREIGN AFFAIRS
OF DENMARK**
The Trade Council

WIND ENERGY MARKET IN TURKEY

Prepared by the Trade Council of Denmark in Istanbul, Turkey / 2021



➤ WIND ENERGY MARKET IN TURKEY



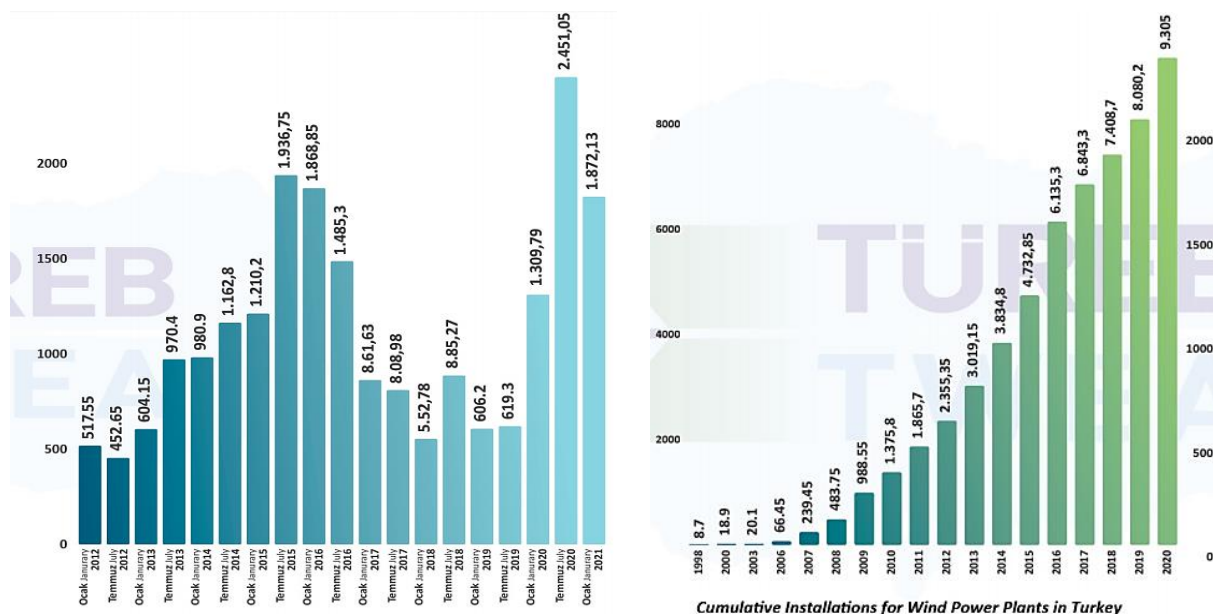
- Turkey has reached a position where nearly 63% of its electricity produced throughout 2020 was produced from local and renewable resources.(including hydro power)
- With 1.224 MW new capacity in 2020, Turkey's cumulative installed wind power capacity reached 9.305MW.
- In 2020, the total electricity generation from wind has been 24.486.679 MW which equals to 8.44% of the total electricity generation.
- In terms of renewable energy installed capacity, Turkey ranks 6th in Europe and 13th in the world.
- The country was also ranked among the top five countries in Europe in terms of large scale production plants for wind turbine equipment.

Turkey performed well on wind energy in 2020:

- It built 1.2 GW of new wind energy capacity last year and now has 9.3 GW of wind energy installed, which produces 9 per cent of the electricity Turkey consumes.
- 79 companies active in 15 different cities operate in the Turkish wind industry, employing 18,000 people.
- And 75 per cent of manufacturers export their components all over the world.

Despite the covid-19 pandemic in 2020, 1.224 MW was added to the system which corresponds to 15.16% increase in total installation. With this increase, Turkey's cumulative installed wind power reached 9,305 MW.

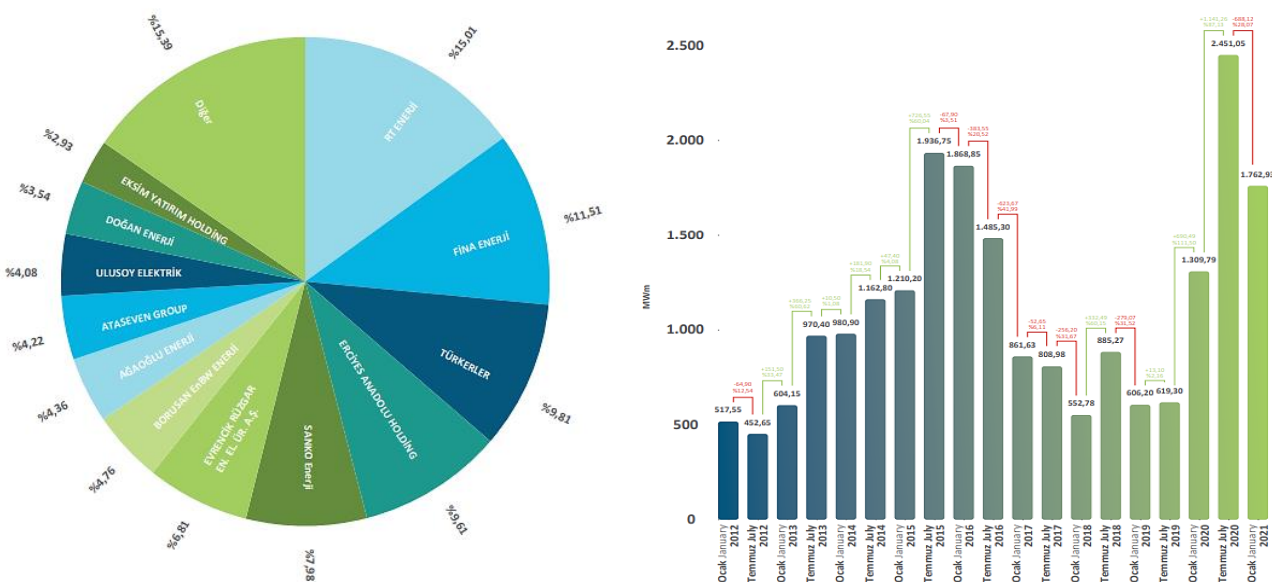
In 2020, the total electricity generation from wind has been 24.486.679 MWh which equals to 8.44 percent of the total electricity generation. In April wind energy peaked, meeting 10.36% of the total electricity generation in Turkey.



Source: Turkish Wind Energy Association; January 2021 Report.

In addition, 41 wind farms within the significant capacity of 1.872,13 MW are still under construction¹. The top 5 companies in the wind power plants under construction are respectively; RT Energy, Fina Energy, Türkerler, Erciyes Anadolu Holding and Sanko Energy.

Source: WPP's under construction according to investors, Turkish Wind Energy Association; January 2021 Report.

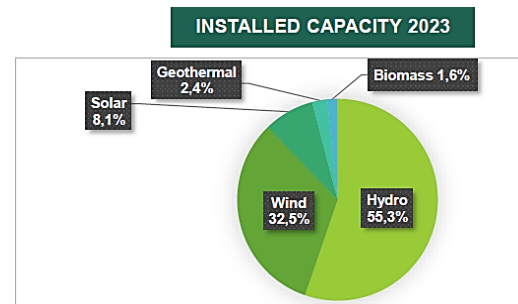


¹ Turkish Wind Energy Association; www.tureb.com.tr



From a sustainable perspective, the country targets producing 50% of its electricity from renewables. Volume of installed capacity of wind power will thereby reach 37,5 percent by 2023.

TARGETS FOR RENEWABLE INSTALLED CAPACITY (MW)		
Source	2019	2023
Hydraulic	32,000	34,000
Wind	10,000	20,000
Solar	3,000	10,000
Geothermal	700	1,500
Biomass	700	1,000



- The Turkish renewable energy market had total revenues of \$7.9bn in 2019, representing a compound annual growth rate (CAGR) of 19.7% between 2015 and 2019.
- The performance of the market is forecast to decelerate, with an anticipated CAGR of 10.1% for the five-year period 2019-2024, which is expected to drive the market to a value of \$12.8bn by the end of 2024.
- Turkey's wind capacity and equipment production has grown to the extent that it now ranks as one of the 10 biggest markets globally.



Wind energy is the most dynamic and lucrative market for local and international investors with more than 7500 MW in notable capacity additions every year.

Turkey ranked among the top five European countries that invested the most in wind energy with its over 1 billion euros (\$1.19 billion) of land wind energy investments in 2020, WindEurope's report showed.

➤ INCENTIVES AND SUPPORT MECHANISMS

TURKEY'S NEW RENEWABLE ENERGY SUPPORT SCHEME (YEKDEM)

Previously, Turkey operated with the so-called FIT system (Feed-in-tariff), as a power purchase guarantee, which was granted to license and unlicensed renewable energy investors in line with the Turkish Government's support policy for renewable energy resources. It started in 2011 and was due to end on 31 December 2020. It was extended to 30 June 2021 to accommodate delays to projects under construction caused by the COVID-19 pandemic.

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- The previous YEKDEM scheme has played an instrumental role in building significant momentum and addressing the concerns of all stakeholders, while contributing to a giant leap in Turkish renewable energy capacity with impressive investments in almost all types of renewable energy sources.

The Turkish Presidency published a decree in 2021 on the new renewable energy resources support mechanism which introduces the highly-anticipated feed-in tariff scheme that will apply to renewable energy power plants becoming operational between 1 July 2021 and 21 December 2025 (inclusive).

With the Decree, Turkey introduces the **new YEKDEM scheme**, addressing the long-awaited need for foreseeability, predictability and bankability for upcoming renewable investments in the region. The new scheme is a 10-year Feed-in Tariff with 5-year local content incentives

The new YEKDEM scheme shifts the currency of previously US Dollar (USD)-denominated feed-in tariff and domestic components incentive payments to Turkish Lira (TRY), whilst still capping the price based on USD.

Chart: YEKDEM Prices (Excluding Domestic Components Incentive)

Type of Power Plant		Previous YEKDEM Price (USD/kWh)	New YEKDEM Price (TRY/kWh)	Change in the YEKDEM Price ¹
Hydroelectric		0.073	0.40	- 25%
Wind		0.073	0.32	- 40%
Geothermal		0.105	0.54	- 30%
Biomass	Landfill gas or waste tyre processing facility	0.133	0.32	- 67%
	Biomethanisation generation facility	0.133	0.54	- 44%
	Thermal disposal facility	0.133	0.50	- 49%
Solar		0.133	0.32	- 67%

¹ Calculated based on the USD-to-TRY exchange rate as at 30 January 2021, which was USD/TRY: 7.31.

Summary of the tariff (currency rate as of January 28, 2021 per year):

- Price of RES Supporting Mechanism, TL kurus/kWh: 54 TL/ kWh (around USD 0.0732/ kWh) for 10 years.
- Domestic manufacturing contribution share, TL kurus/kWh: 8 TL/ kWh (around USD 0.0108/ kWh) for 5 years.



OTHER SUPPORTING INCENTIVE SCHEMES

Support Measures	General Investment Incentive Scheme	Regional Investment Incentive Scheme	Large Scale Investment Incentive Scheme	Strategic Investment Incentive Scheme
VAT Exemption	✓	✓	✓	✓
Customs Duty Exemption	✓	✓	✓	✓
Tax Reduction		✓	✓	✓
Social Security Premium Support (Employer's Share)		✓	✓	✓
Income Tax Withholding Support *	✓	✓	✓	✓
Social Security Premium Support (Employee's Share) *		✓	✓	✓
Interest Support **		✓		✓
Land Allocation		✓	✓	✓
VAT Refund				✓

➤ RENEWABLE ENERGY ZONE (RE-ZONE / YEKA)

New Investment Model for Renewables, YEKA (Renewable Energy Designated Areas) to boost the wind energy market in Turkey aims:

- to use renewable energy resources much more efficiently and effectively by identifying renewable energy zones on public, treasury, or private-owned territories;
- to realize the renewable energy investments much more rapidly;
- to manufacture renewable energy equipment in Turkey;
- to use locally-manufactured equipment/components; and
- to contribute to research and development activities through technology transfer.

THE FIRST YEKA TENDER (2017)

The first YEKA tender for 1-GW wind power plants with local manufacturing and research and development (R&D) requirements, **which is the largest-ever wind power auction in Turkey's history, took place in August 2017.**



A Siemens Gamesa Renewable Energy-led consortium, which includes Turkerler and Kalyon Enerji holdings, has won a \$1-billion wind energy tender, offering the lowest price to the state with \$3.48 cents per kWh.

The consortium has also signed an energy purchase agreement for 15 years starting from the date of signature. An overall 1 GW needs to be ready in the subsequent 36 months after the licence. The project is on hold due to financial issues.

- The consortium must build a wind turbine factory in Turkey with the capacity of at least **150 units of 2.3 MW per year up to 21 months** after the contract was signed.
- There are a **65% domestic content** requirement and rules for the hiring of local workforce.
- At least **80% of expenses for R&D within the country** must be covered by the consortium.
- A budget of **\$5-million has been designated for R&D** over one decade, with 50 full-time employees.
- The plant must be set up **within 21 months** following the agreement.
- It is possible (and encouraged) to cooperate with the country's so-called techno-cities and technology centres for start-up innovations.

YEKA TENDER PLANS FOR 2021

Up to \$3 billion in renewable energy financing could be extended throughout 2021 to support the continuation of clean energy capacity in Turkey, the director at Garanti BBVA Investment Banking and Finance, Emre Hatem, said in an interview.

YEKA tenders, totaling 1,000 MW in capacity for regions across the country, would constitute a significant part of new projects in 2021.

Turkish Minister of Energy and Natural Resources Fatih Donmez said that the country will stage another four YEKA tenders for solar and wind capacities (with 2,000 MW each) by the end of 2021.

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➤ G2G RELATION BTW TURKEY & DENMARK ON OFFSHORE WIND (2020-2022)

- 1200 MW capacity YEKA tender on 23rd of October 2018 has been postponed due to immature tender conditions.

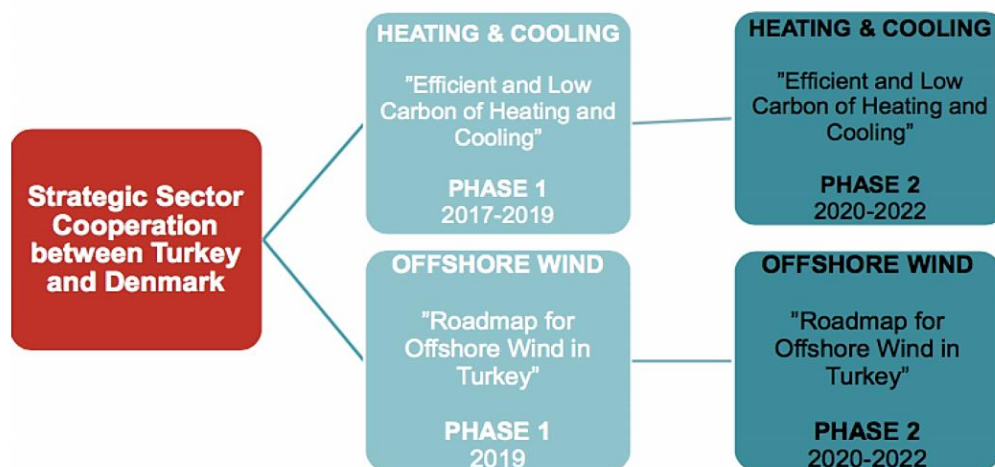


Offshore wind market in Turkey has the potential to play a substantial part of meeting energy demand in Turkey as initial assessments show great offshore wind potential along the Turkish coast. However, successful offshore wind development requires long term planning and investment by stakeholders.

Within this framework, **Danish Energy Agency** and **Turkish Ministry of Energy and Natural Resources** have signed a bilateral agreement in March 2019 to develop "Roadmap for Offshore Wind in Turkey".

The **second phase** covering 2020-2022 have been approved that will focus on sharing Denmark's experience in this sector, detailing the preparation of tenders and infrastructure and other related topics.

Strategic sector cooperation (SSC) between Turkey and Denmark: Heating and Offshore Wind:



PHASE 2 OUTPUTS:

1. Tender design and procedures (2020- First half of 2021).
 - Best practices and lessons learned on the Danish one-stop-shop model.
 - Consenting procedures, permits and licenses.
2. Financial framework (Second Half of 2021).
3. Port facilities and infrastructure (First Half of 2021).

- Study initiated in cooperation with COWI, a report from the study will be delivered in June 2021. The study will consider infrastructure development for 2 selected ports in Turkey for Offshore Wind development.

4. Roadmap for offshore wind in Turkey. (2021-2022).

➤ FAIRS

WINDBABA Brings Wind Energy Stakeholders together at EIF.

EIF is preparing to guide the sector with sessions in 2021 where the stakeholders of the wind sector will be brought together, in which solutions will be sought for today's problems in the wind energy sector and future trends will be discussed.

The foyer area, where the leading companies in the wind energy sector will have the opportunity to introduce their products, will be the scene of new collaborations of industry professionals who are physically distant from each other due to the pandemic.



If the circumstances permit, EIF 14th World Energy Congress and Fair will be held in ANFAŞ International Congress and Fair Center between 13-15th October 2021.

➤ SOURCING

According to the WindEurope – Wind Energy and Economic Recovery Report 2020, Turkey is named as the 5th largest sourcing country in Europe with active 12 production sites for wind turbines, blades and towers.

- 6 factories producing tower
- 4 factories producing blades
- 2 factories producing on molding



Siemens-Gamesa, Enercon, TPI, Nordex and GE have wind turbine components manufacturing facilities in İzmir.

Wind energy equipment manufacturing is defined as the priority sector so the investors can benefit from **5th region incentives**

➤ **OPPORTUNITIES FOR DANISH COMPANIES**

▪ **UNIQUE LOCATION**

As the **intersection point of Europe**, Central Asia and Middle East, Turkey is a gate to these regions. More energy transformation projects will be adopted in the Middle East and North Africa Region. Thanks to geographical and cultural proximity, Turkey can be used as a **hub** to those growing markets.

▪ **SKILLED LABOUR FORCE**

▪ **COMPONENT SOURCING**

Turkey is advanced in producing components of wind energy industry; with the new YEKA investment model, which promotes local industry, Turkey will increase its capacity even more in the near future. For emerging markets around Turkey, energy components can be produced in Turkey.

- A Great number of government incentives.
- Partnership and production opportunities with Turkish Companies.
- Strategic Sector cooperation Project and government-to-government cooperation between Turkey and Denmark on offshore and onshore wind will create the framework for business development for Danish companies.

▪ **PARTNERSHIPS WITH TURKISH COMPANIES**



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