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# Renewable Energy Sources market in Greece

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## Contents

1.....RES Market .....	4
2. .... Installed Capacity in Different Technologies.....	4
3..... Capacity of new production licenses during the last two years .....	5
4. .... Major Investors .....	6
5. .... Major Contractors.....	6
6. .... Major Projects during the last years .....	7

## 1. RES Market

The decision for swift decarbonization of the electricity sector has profoundly led to a sharp increase in the development of RES projects in Greece during the last years. In fact, at present there is substantial untapped potential with RES accounting for approximately 35% of the electricity production, whereas, according to National Energy and Climate Plan (NECP), the target for RES technologies is to cover up to 60% of electricity production by 2030. The table below illustrates specific targets per RE technology:

**Table 1** 2030 installed capacity targets (NECP)

Technology	2030 Target [GW]
Biomass & Biogas	0.3
Hydro plants	3.9
Wind	7.0
PV	7.7
Solar	0.1
Geothermal	0.1
Total	19.0

It should be noted that the goals for some technologies are expected to change in the revised NECP. For instance, the PV target is expected to exceed 10GW and the total RES target is expected to be around 20GW (large hydro plants not included).

## 2. Installed Capacity in Different Technologies

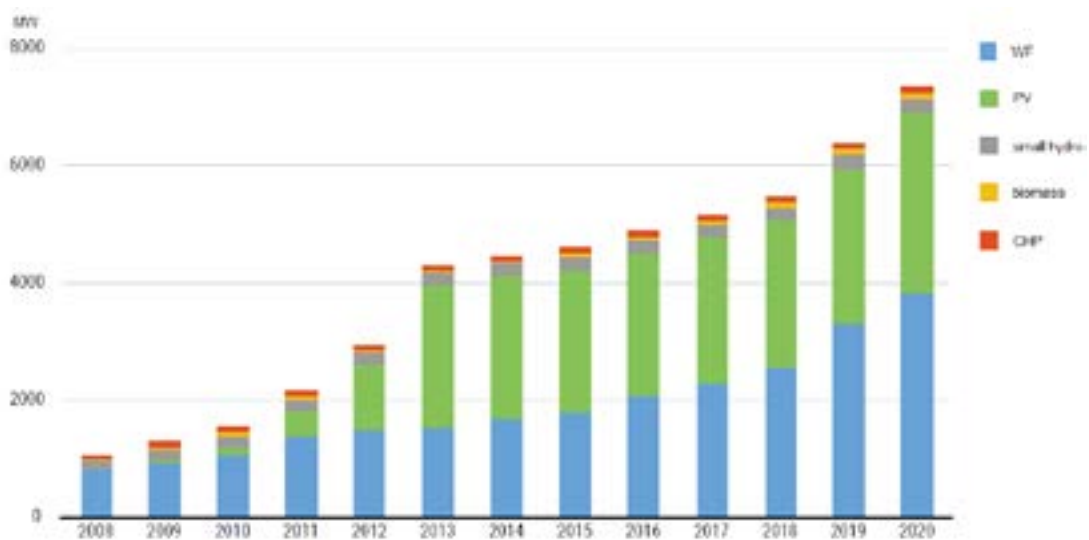
As of December 2021, the total RES installed capacity in Greece reaches **8,700MW**, with the substantial share of this capacity corresponding to Wind and solar PV. The largest share of installed capacity is covered by **Wind Parks** with **4,451MW**. A map with the distribution of the installed wind farms in Greece is illustrated in Figure 1. The wind sector in Greece presents steady growth every year and in 2021 there was an 8.2% increase in installed capacity.



**Figure 1** Spatial distribution of wind capacity

**PV Plants** accounted for **3,787MW** of installed capacity. PV plants are spread in all regions of the country with Central Macedonia (718.4MW), Thessaly (507MW) and Sterea Hellas (469.2MW) accounting for the highest installed capacity. Notably, there is significant interest in development of PV plants in Western Macedonia where PV installations with an accumulated power of 1,934MW have acquired a binding connection offer by the Greek Transmission System Operator, IPTO (Independent Power Transmission Operator).

In relation to other RES and high efficiency CHP capacities, **Biomass** plants correspond to an installed capacity of **98MW**, **small hydro plants to 246MW** and **CHP** installations have a capacity of **123MW**. The figure below illustrates the evolution in installed capacity for each technology since 2008.



**Figure 2** RES Installed capacity (2008-2020)

It should be noted that, as of December 2021, RES installations with an accumulated power of 7,519MW (wind parks 2,481MW, PV plants 4,903 MW, 135MW the rest) have acquired binding grid connection offer either by IPTO or HEDNO (Hellenic Electricity Distribution Network Operator).

### 3. Capacity of new production licenses during the last two years

During 2020-2021 the substantial investors interest on RES is reflected by the fact that the Regulatory Authority of Energy (RAE) received thousands of applications for a Certificate of Producer of Electricity and awarded more than 3,000 production licenses.

The accumulated power of these awarded licenses is around 68.1GW. More specifically, PV licensed capacity is around 56.3GW and wind farms capacity reaches 11.3GW, while the licensed capacity for the remaining technologies is around 0.5GW. Despite the fact that production license is the first and non binding step in the licensing process and a substantial portion of the licensed plants will not be constructed for various reasons, these figures alone denote the aforementioned strong interest from investors in RES development.

## 4. Major Investors

As mentioned before, the leading RES technologies are Wind Farms and PV plants. As a result, the major RES investors are interested in those two technologies. Regarding the wind farms installations, the major players are:

- **Terna Energieiaki** .....with 703MW (15.8%) installed power
- **Ellaktor** .....with 482MW (10.8%)
- **ENEL Green Power** .....with 368MW (8.3%)
- **Iberdrola Rokas** .....with 271MW (6.1%)
- **EREN** .....with 250MW (5.6%)

Concerning PV plants, the major investors are:

- **Terna Energieiaki**
- **Mytilineos Group**
- **PPC Renewables**
- **Hellenic Petroleum (HEL.PE.)**
- **AVAX**

Some other big investors are EDF, Motor Oil and Jasper Energy.

## 5. Major Contractors

Some of the major Contractors that take over the construction of the RES plants and their substations are the following:

- **Terna**
- **Mytilineos Group**
- **Ellaktor**
- **Atermon**
- **Intrakat**
- **Themeli**
- **Nostira**
- **Prenecon**
- **Airenergy**
- **Electromec and ABB (for the construction of the substations)**

## 6. Major Projects during the last years

Significant RES projects have been developing in Greece during the last years. The most prominent one, that recently completed, is the 204MW PV plant constructed in Kozani by JUWI on behalf of HEL.PE. Some of the biggest RES plants, completed or are under construction, are highlighted in the following table.

**Table 2** Major RES projects

<b>RES</b>	<b>Location</b>	<b>Investor</b>	<b>Power [MW]</b>	<b>Status</b>
PV	Kozani, Western Macedonia	HEL.PE.	204	Completed
WF	Kafireas, Euboea	Enel Green Power	154.1	Operational
WF	Ioannina	Ellaktor	90	Operational
WF	Askio, Western Macedonia	Ellaktor	72	Operational
PV	Ptolemaida, Western Macedonia	PPC Renewables	230	Under Construction
WF	Southern Euboea	TERNA	330	Under Construction



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