

Decarbonization Policies in South East Europe – Between Climate Change and War

European Commission Representation in Romania

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RES Developments in Greece and in SE Europe and some Observations on Energy Poverty

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Greece - Fast Forward Towards Energy Transition



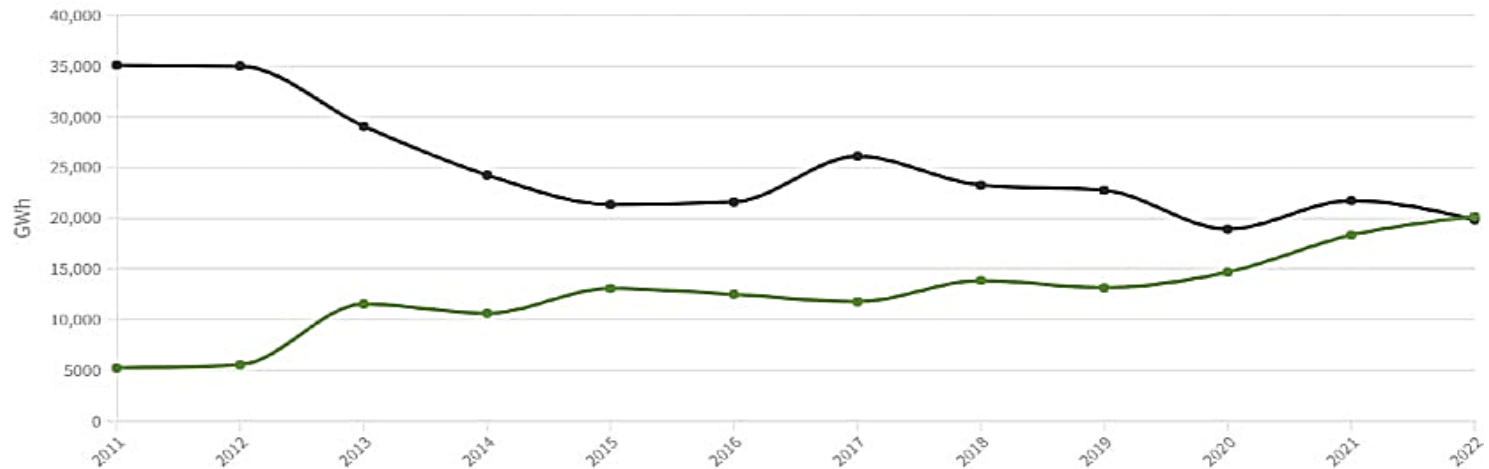
- Greece doubles capacity of renewable energy sources during four years. renewable energy plants in Greece (which now exceeds 12 GW), accounting for 50% of electricity generation
- In the last ten years, Greece has undertaken a remarkable transition. Since 2004 Greece's emissions from electricity production have fallen by 64%.
- In May 2023, renewables accounted for more than half of the country's energy mix – a new record – with 54% of total electricity demand being met by solar, wind and hydro sources.

Fossil Fuels vs Renewables

First 10 months of each year for Greece's electricity grid



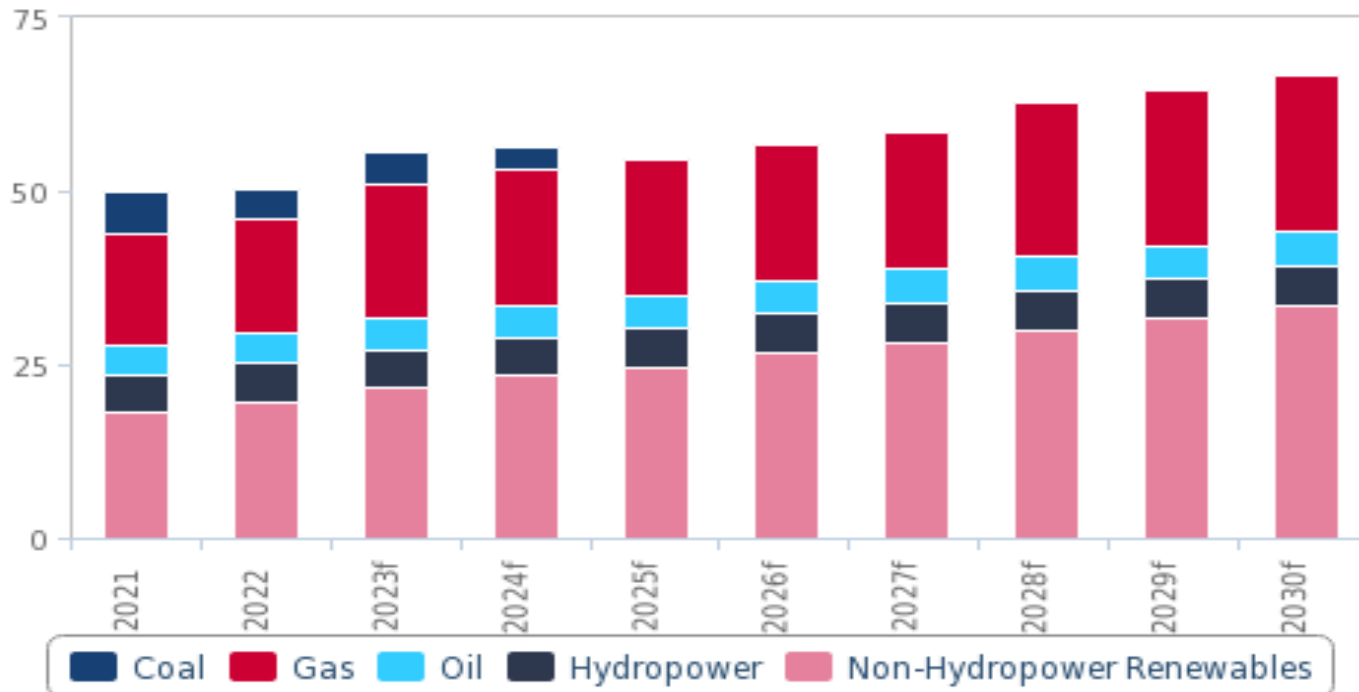
■ Fossil Fuels ■ Renewables + Large Hydro



Source: ADMIE

Greece – New Ambitious Targets














- 28 GW by 2030, aiming to achieve 80% penetration of renewables in the country’s energy mix by 2030
- National Hydrogen Strategy is also in the pipeline offshore wind farms are underway
- Greece aims to reduce total greenhouse gas emissions by 55% by 2030 and reach net zero emissions by 2050.
- Challenges: lack of adequate grid infrastructure to satisfy investor demand, RES planning that does not meet the needs of the market, low electricity prices that do not motivate new investors, low electricity demand, etc.



SE Europe - Small but Decisive Steps Towards the Energy Transition

- ❑ Green energy expansion in most countries in the region was slower than the global pace.
- ❑ Given the fact that Southeastern Europe has lagged in renewables growth until now, it is going to develop much faster in the years to come, providing investors with important returns.
- ❑ Western Balkan countries are experiencing a "boom" in solar energy investment, but their grids are lagging behind.
- ❑ Distribution systems are not ready for new energy sources. Grid expansion, energy storage and tighter regulations are just some of the ways countries are trying to combat this problem
- ❑ Renewable energy in the five EU member states in Southeast Europe – Bulgaria, Croatia, Greece, Romania and Slovenia – has been the fastest developing segment of the energy industry over the last few years and is poised to reach new heights. Mature and well developed RES Markets with special focus on wind and pv technologies
- ❑ Most West Balkan countries have a share of renewable electricity plants higher than the world's 40%. Albania and Montenegro are ranked the highest, with 96.3% and 78.9%, respectively, followed by Croatia's 72.4%. Serbia (35.1%) and Kosovo (16.7%) are the only ones below the line.

Renewable electricity generation capacity in megawatts in Southeastern Europe at end-2022

	Hydropower	Wind energy	Solar energy	Bioenergy	Geothermal energy	Total
 Turkey	31 572	11 396	9 426	1 912	1 691	55 998
 Albania	2 507	-	29	1	-	2 537
 Bosnia and Herzegovina	1 837	135	107	2	-	2 081
 Bulgaria	2 505	704	1 948	47	-	5 205
 Croatia	2 201	1 043	182	157	10	3 593
 Cyprus	-	158	464	13	-	635
 Greece	3 423	4 879	5 557	109	-	13 968
 Kosovo*	110	139	10	-	-	259
 Montenegro	697	118	26	-	-	841
 North Macedonia	689	37	94	10	-	831
 Romania	6 570	3 015	1 414	142	-	11 141
 Serbia	2 483	398	137	36	-	3 054
 Slovenia	1 174	3	632	68	-	1 878
Total	55 768	22 025	20 026	2 497	1 701	102 021

The numbers are rounded. Bioenergy are solid and liquid biofuels, biogas and renewable municipal waste.

SE Europe - The EU member states

The EU member states (Greece, Romania, Cyprus, Bulgaria and Croatia):

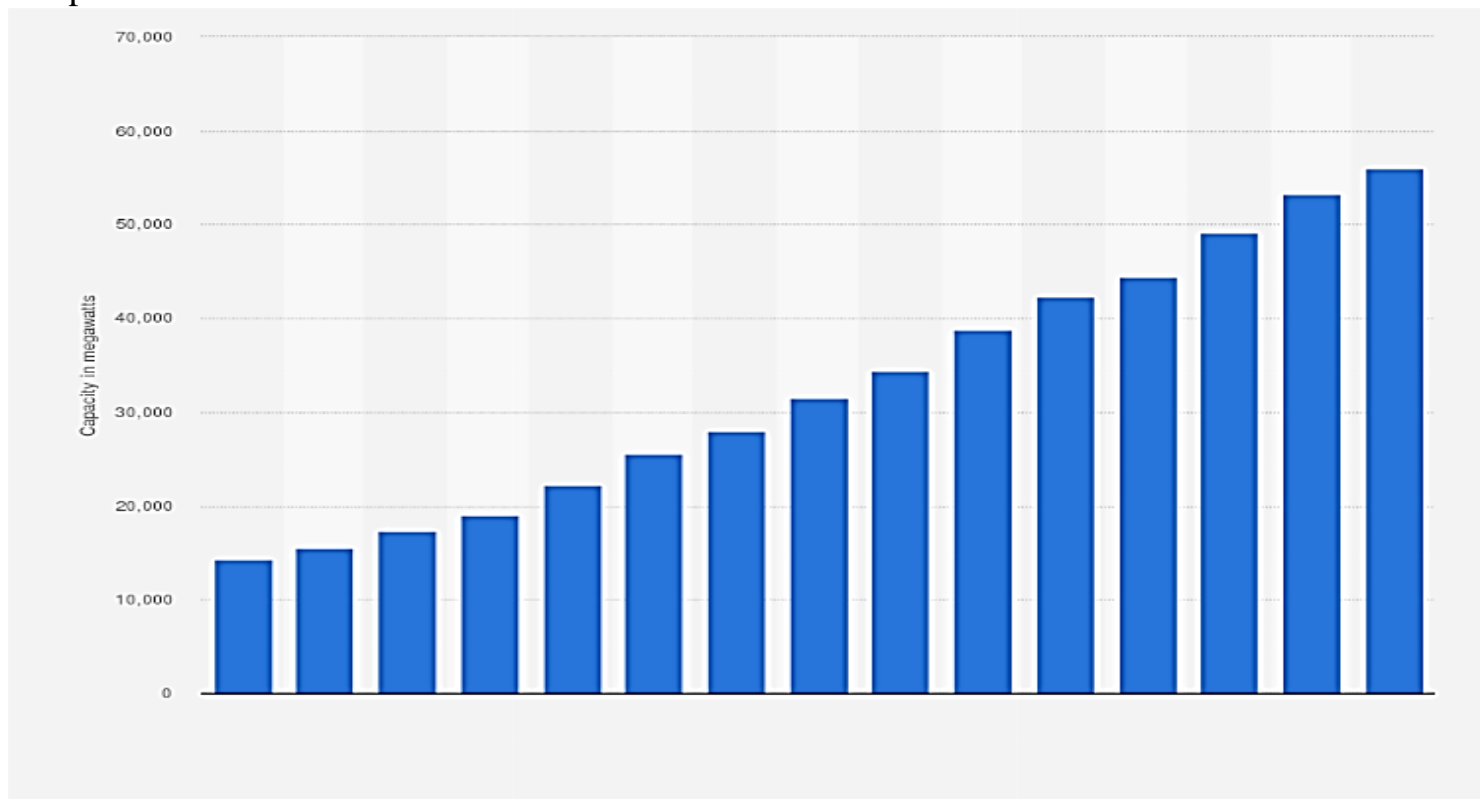
- Greece achieved a 12.1% growth in total in the renewables sector, to 12 GW. Solar power capacity spiked to 5.6 GW, compared with 4.9GW for wind.
- Romania announced plans to raise its installed solar capacity to 8 GW by 2030. The number of prosumers in Romania hit 100,000 in November while total installed capacity at the end of December is estimated at 1,400 MW.
- Bulgaria's overall renewable electricity capacity surged to 5.2 GW. The solar sector expanded by a 1.95 GW. The National Recovery and Resilience Plan of Bulgaria aims to decommission thermal capacity and invest in renewables, targeting 30,33% renewable energy by 2030 that is 2,600 megawatts of renewables.
- Cyprus: Total RES capacity reached 635 MW. Again, photovoltaics amounted for the entire rise, expanding to 464 MW. Curtailment of renewable energy in Cyprus to guarantee the stability of the electricity network. Need of energy storage.
- In Croatia, the capacity is 3.6 GW. 53.47% of total electricity production coming from renewables, primarily large hydropower plants. Goal of increasing renewable energy source connections by at least 800 MW by 2026 and 2,500 MW by 2030



- Montenegro RES installed capacity remained stable at 830 MW (Hydro including). Plans to produce up to 300 MW of new solar power by the end of 2024. By 2030, Montenegro is obligated to reach a 50% share of renewable energy in total final consumption.
- RES installed capacity in Serbia is 3.1 GW. Plan for adding 3,000 MW in the years to follow. From 2021 until this year, the number of requested connection capacity grew from a large 3.8 GW to 20 GW, while Serbia has 8 GW electricity installed capacity in total.
- Bosnia 2.1 GW RES installed capacity. BiH affirmed its target to achieve a 43.6 per cent share of renewables in gross final consumption by 2030
- Albania RES installed capacity reached 2.5 GW. Albania produces almost all of its energy from hydropower. Only 30 MW coming from PV
- North Macedonia had no growth in total renewables, remaining at 831 MW (mainly Hydro). North Macedonia has committed to a coal phase-out by 2027. Plan to increase the share of renewable energy sources in its gross energy consumption to 38% by 2030
- Kosovo has 150 MW RES installed capacity (Wind & PV). Increase RES to at least 35 percent of the generation mix, reduce greenhouse gas emissions by 32 percent, and phase out at least one lignite-fired generation unit by 2031.

SE Europe - Turkey

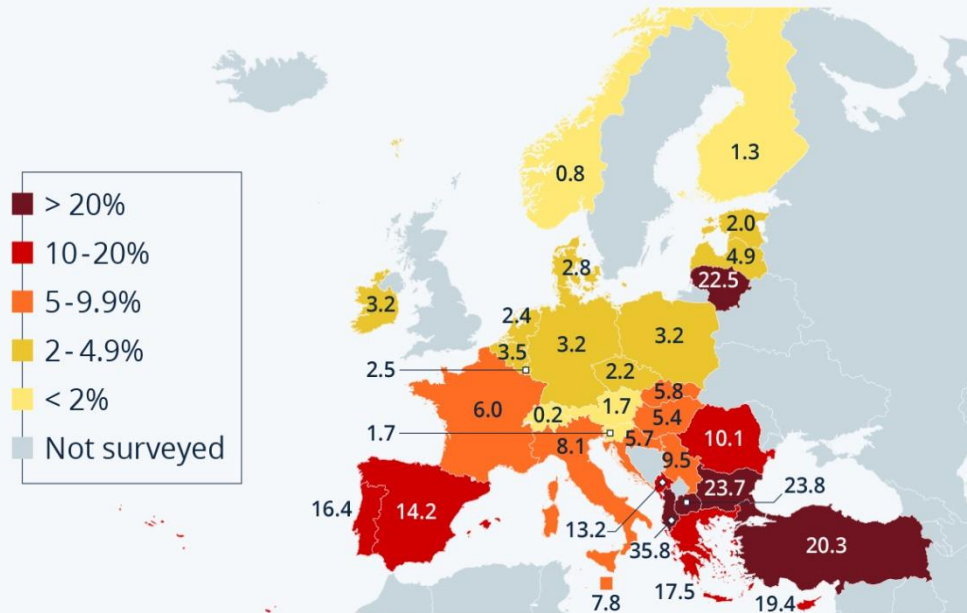
- Approximately 56% of Turkish electric power generation capacity consist of renewable energy, including hydroelectric, wind, solar, geothermal, and biomass power plants, making Turkey the fifth-largest generator of renewable energy in Europe and the 11th largest in the world.
- The government aims to increase RES share to 65% by 2035, from the current 56%
- Total renewables expanded to 56 GW. Solar power reached 9.4 GW. Wind power increased to 11.4 GW. The bioenergy has 2.5 GW, and geothermal energy, in which the country is fourth in the world, expanded to 1.69 GW.



Energy Poverty in SE Europe – Households

Energy Poverty in Europe

Share of households unable to adequately heat their homes in 2021 (in %)*

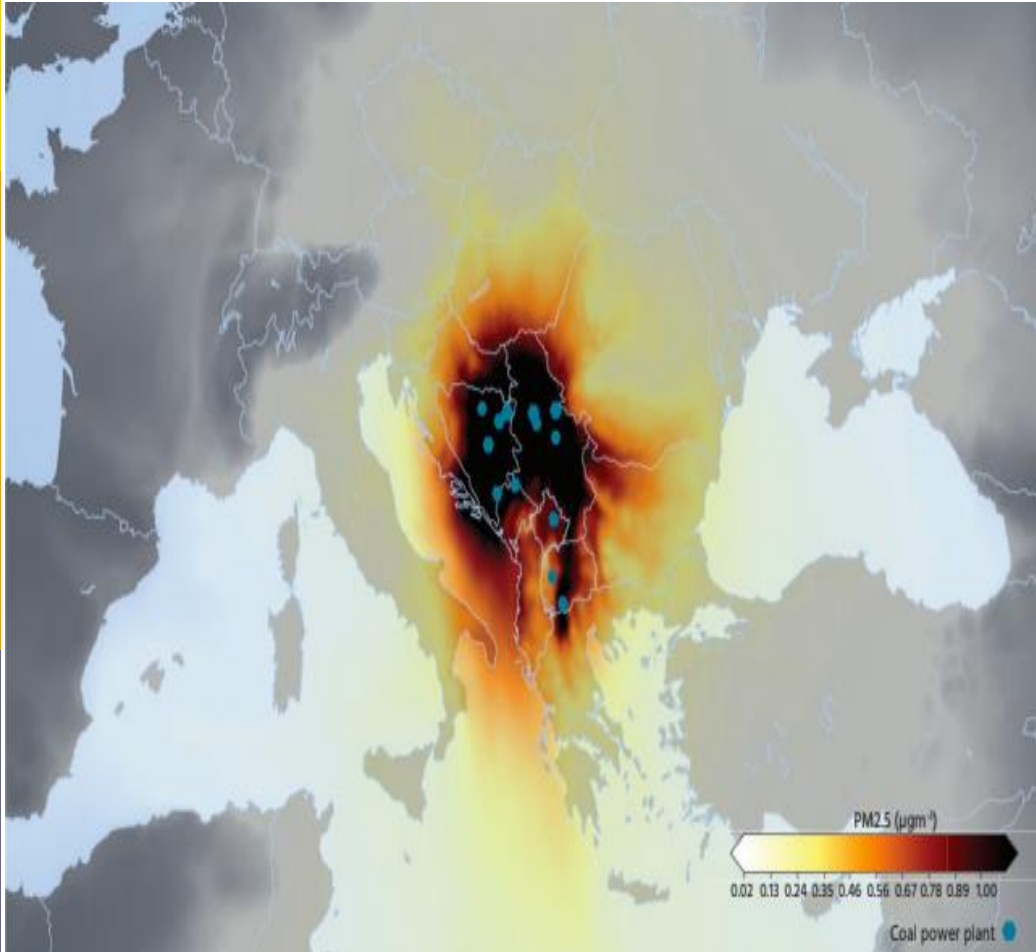


* or latest available data: 2020, 2019.

Source: Eurostat

- Between 50 and 125 million EU citizens (about 10-25%) are estimated to be affected by energy poverty.
- Inflation and energy bills have been worrying many Europeans in recent years. Across the European Union, more than 40 million people were unable to heat their home properly in 2022
- The situation is even more severe in some of the South-Eastern European (SEE) countries. It is estimated that in SEE countries about 30% of households are struggling with energy poverty.
- Poor construction materials, poor insulation and poor maintenance, old, inefficient and poorly maintained heating systems and domestic appliances
- re-settlement programs would be needed
- In SEE countries, the share of households not attached to the electricity grid is higher than in Western Europe. It is hard to address energy poverty with measures for improving energy efficiency, so alternative programs for ensuring access to electricity would be needed

Energy Poverty in SE Europe – Coal Power Plants



- 16 coal power plants in the western Balkans cause as much pollution as the 250 plants active within the European Union.
- Kostolac B in Serbia and Ugljevik in Bosnia-Herzegovina produce a quarter of all sulphur dioxide emitted by all coal plants throughout the continent.
- In 2022, dust emissions from coal plants of Bosnia and Herzegovina, Kosovo, North Macedonia and Serbia increased compared to previous years
- In SEE countries, the share of households not attached to the electricity grid is higher than in Western Europe. It is hard to address energy poverty with measures for improving energy efficiency, so alternative programs for ensuring access to electricity would be needed

Energy Poverty and Renewables

- Higher oil and gas prices forced consumers to spend more on heating and mobility, drove up the cost of electricity and high fossil-fuel prices contributed significantly to food-price increases
- How can renewables help? The last 2 years the new RES installed capacity lowered electricity prices by increasing the number of hours in which renewables supplanted more expensive fossil-fuel sources.
- Renewables since 2021 reduced wholesale electricity prices in the EU by 8 per cent in 2022 and 15 per cent in 2023. In absolute terms, these cost savings will amount to around €95 billion by the end of this year.
- Over longer timescales, renewables will not just reduce energy prices but also make them more stable.
- This shift not only brings economic benefits but also a geopolitical dividend.



**Thank you for
your attention**

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