

## Athens electricity policy

Greece's annual mean temperature has clearly been increasing: for 2001-2015, most meteorological stations reported mean annual temperatures were higher than for 1961-2000. In the past two decades, the average rate of warming was 0.047°C per year - 0.011°C above the world average.

By the end of the century, Greece's mean air temperature is expected to be 3-4.5°C higher than during the 1961-1990 reference period, with marked seasonal disparities. Under a high-emissions scenario, temperature increases in summer (+5.4°C) and autumn (+4.7°C) are projected to be higher than in spring (+3.9°C). Warming is expected to be more pronounced in continental regions than in the islands for all seasons except autumn, during which season the temperature rise is expected to be more uniform across the country.

According to Greece's risk assessment report, higher temperatures are expected to present electricity supply risks. Warming can not only reduce the efficiency of thermal power plants but increase their need for cooling water. Rapid rises in peak electricity demand for cooling during extreme heat events may prompt failures, as happened in 2017 and 2021 when escalating power demand during heatwaves resulted in several power outages despite Public Power Corporation (PPC) preparation efforts.

Furthermore, sea level increases due to global warming are projected to continue throughout the 21st century, with the water level rising 0.2-2 metres by 2100. Greece's coastal areas are home to most of the country's socioeconomic activity as well as key energy infrastructure such as electricity transmission lines. As 21% of its total shoreline has a medium or high level of vulnerability to sea level rises, energy infrastructure in coastal areas could be adversely affected by shoreline retreat.

The Northern Aegean region is expected to have the mildest decrease in precipitation, while the Eastern Peloponnese and all other regions are projected to experience a stronger decline. Less precipitation, combined with higher temperatures, is likely to reduce power generation output. According to Greece's latest UNFCCC communication, this fall in electricity output may require the country to install additional generation capacity.

Although Greece is not exposed to tropical cyclones, storms challenge its energy sector, as exemplified by April 2019 storms that provoked power outages, first in central Athens and then in several suburbs of east Athens and Piraeus.<sup>1</sup> Damage from high windspeeds can be compounded by heavy rains, such as during the September 2020 storm that hit Western Greece, causing power outages and flooding and affecting both energy supply and transport.

Greece's national climate policies clearly address energy sector climate resilience. The National Adaptation Strategy (NAS), developed by Greece's Ministry of Environment and Energy and endorsed by its parliament in 2016, includes the energy sector as one of 15 target areas and offers a list of possible actions and measures. NAS formulation was based on stakeholder consultations and the national climate impact assessment

published by the Climate Change Impacts Study Committee of the Bank of Greece in 2011.

Thirteen Regional Adaptation Action Plans (RAAPs) complement NAS activities by applying NAS goals, principles and priorities - and potential sectoral adaptation measures - to particular regional circumstances, priorities and needs. The RAAPs include regional climate change impact assessments and tailored actions based on region-specific climate impacts and vulnerabilities. They also identify ways to adapt energy infrastructure to climate change and to smooth the peaks associated with higher energy demand for cooling in the housing and tourism sectors.

In 2017, the Ministry of Environment and Energy submitted a proposal to support NAS and RAAP implementation to the EU LIFE Programme, the European Union's funding instrument for environmental and climate action. The LIFE-IP AdaptInGR project provides Greece with human and financial resources to help it implement adaptation actions by 2026, including those related to the energy sector.

Furthermore, to enable Greece to formulate and implement energy sector adaptation policies, the LIFE-IP AdaptInGR project is currently analysing the 13 RAAPs to identify necessary national-level actions. It also aims to assess current adaptation measures in energy legislation, strategies, plans and funding tools to identify progress, difficulties, knowledge gaps, strengths, opportunities and priorities for action.

Compared with the NAS, actions for climate resilience in the energy sector are less highlighted or rarely mentioned in national energy policies and laws such as the National Energy and Climate Plan, Law No.3855/2010 on Measures to Improve Energy Efficiency in End Use, Energy Services and Other Provisions, and Law No.4001/2011 on the Operation of Electricity and Gas Energy Markets for Exploration, Production and Transmission Networks of Hydrocarbons.

Reassess the need for investments in fossil fuel infrastructure, taking into account the risk of stranded assets and the need to direct limited capital to investments supporting the energy transition.

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