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Low-carbon power generation scenarios for Türkiye and the role of advanced and innovative nuclear power reactors

The climate goal requires a gradual reduction in fossil fuel use and peak emissions before 2050, together with a transition towards low-carbon energy technologies [1]. In Türkiye, the largest share of total CO2 emissions by sectoral distribution was energy-related emissions with 353.0 MtCO2 (share of 70.2% in total emissions) in 2020 [2]. The Türkiye National Energy Plan covers the period until 2035 based on the 2053 Net Zero Emission target. The plan forecasts a battery storage capacity of 7.5 GW in 2035 to reach the net-zero emission target [3]. Türkiye's Hydrogen Technology Strategy and Roadmap were announced in January 2023. This roadmap aims to support the local development of hydrogen technologies by creating a technology development support and implementation program, as well as defining a strategic action plan. According to the roadmap, the target is to achieve an electrolyser capacity of 2 GW in 2030, 5 GW in 2035, and 70 GW in 2053 [4]. In order to achieve the net-zero emission target, Türkiye should increase low-carbon energy technologies including advanced and innovative nuclear power reactors. In this context, the combined production of electricity and heat, with hydrogen as an additional energy carrier, from advanced reactors and SMRs will be evaluated using MESSAGE to achieve the net-zero emissions target.
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[2] TURKSTAT, Turkish Statistical Institute, Press Release, (2023),
Website: https://data.tuik.gov.tr/Bulten/Index?p=Greenhouse-Gas-Emissions-Statistics-1990-2021-49672
[3] Republic of Türkiye Ministry of Energy and Natural Resources, (2022), National Energy Plan
[4] Ministry of Energy and Natural Resources, (2023),Türkiye Hydrogen Technologies Strategy and Roadmap

Country OR International Organization

Türkiye

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