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Regional Divergence in the Development of Renewable Energy in the European Union*

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Abstract

The change of the EU electricity sector towards sustainability and decarbonisation has become a key building block of EU climate policy, as well as of the energy plans of member states. While the growth of renewable energy sources (RES) is acknowledged as a major prerequisite for decreasing reliance on fossil fuels and ensuring the achievement of ambitious decarbonization targets, there are great differences between Western European countries (EU-15) and Central and Eastern European (CEE) states. This article delivers an empirical analysis of the speed, regularity and size of RES deployment in all the EU, based on harmonized Eurostat time series for 2004–2023. These properties, including the intensity of growth, average annual rate of growth and evenness index were computed for all member states thus making it possible to compare scale as well as stability. These results indicate that the share of energy from renewable sources in gross final energy consumption increased by 32.9 p.p. in the EU-15, almost twice the 18.7 p.p. observed in the CEE region, as well as higher annual growth rates (1.73 vs. 0.98 p.p./year) and more temporal stability (KT = 0.94 vs. 0.91). The best ones turned out to be Denmark, Sweden and Austria with fast-paced and uniform development; the relative leaders in the CEE group were, in turn, Lithuania, Croatia and Poland. The findings also demonstrate that despite the rapid increase in the growth rate of RES in the CEE region after 2011, the long-standing stronghold of the fossil fuels and increased volatility are continuing to hinder the catch-up with Western Europe. These results call for differentiated, regionally adapted policy frameworks to achieve a fair energy transition across the EU. The study adds to the empirical record of structural and temporal patterns in renewable energy deployment, as well as serving as a resource for ongoing scholarly discussion and policy considerations in the next phase in Europe's decarbonization agenda.

Keywords: renewable energy, decarbonization, European Union, energy transition, regional

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