



Carbon Neutrality Toolkit

Supporting policymakers to make informed decisions towards the implementation of the 2030 Agenda for Sustainable Development and the Paris Agreement.





TECHNOLOGY BRIEF **CARBON CAPTURE, USE AND STORAGE (CCUS)**



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TECHNOLOGY BRIEF **CARBON NEUTRAL ENERGY INTENSIVE INDUSTRIES**



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TECHNOLOGY BRIEF **HYDROGEN**



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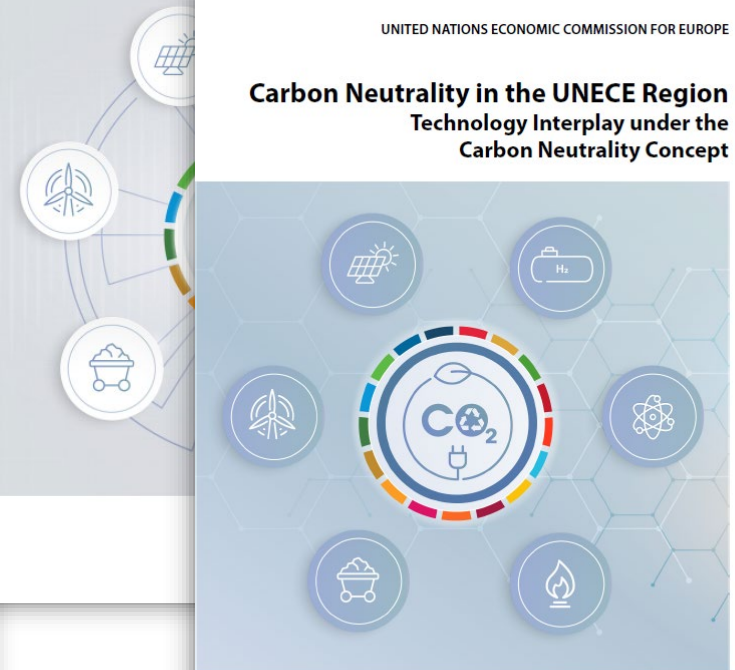
TECHNOLOGY BRIEF **NUCLEAR POWER**

UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE

Carbon Neutrality in the UNECE Region: **Integrated Life-cycle Assessment** **of Electricity Sources**

UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE

Carbon Neutrality in the UNECE Region **Technology Interplay under the** **Carbon Neutrality Concept**



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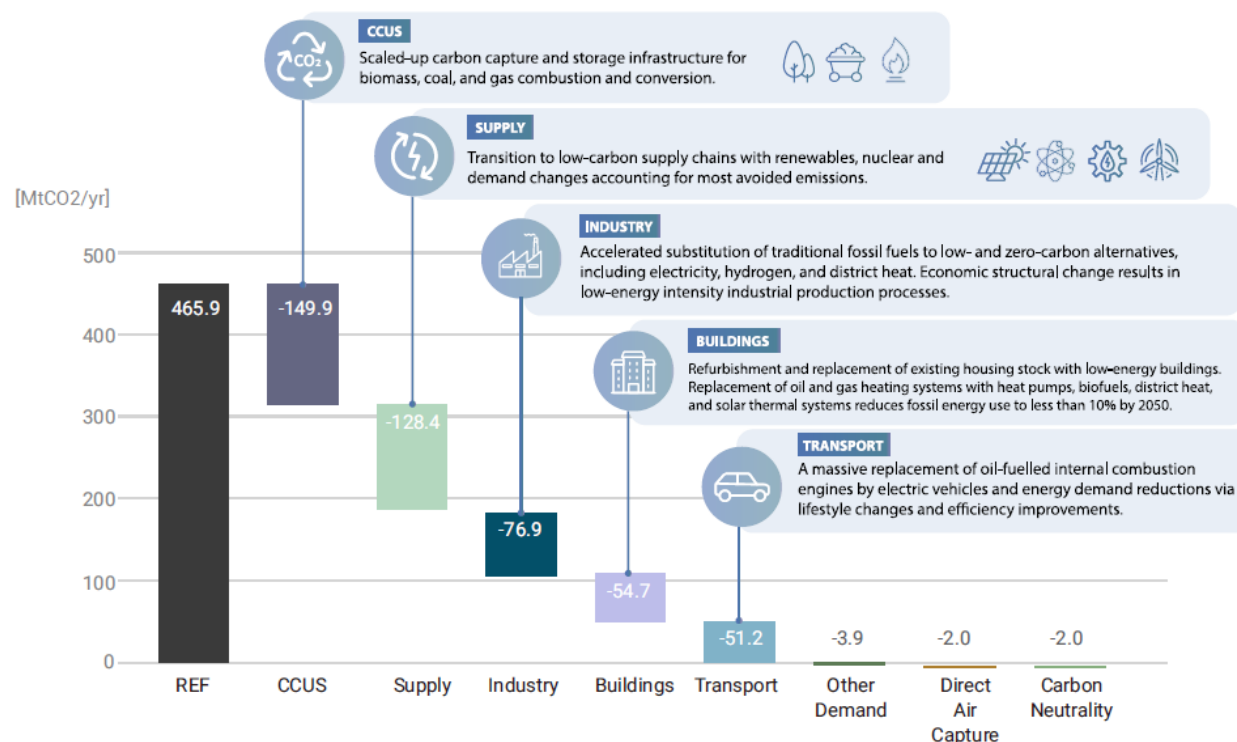
Carbon Neutral Energy System of the Future



Carbon neutrality requires comprehensive energy system transformation involving all economic sectors and society at large

How different sectors may contribute to Carbon Neutrality?

Technology interplay – supply side and demand side plus lifestyle changes



CO₂ mitigation in 2050 - Central Asia
from Reference (REF) to Carbon Neutrality Innovation (CNI)



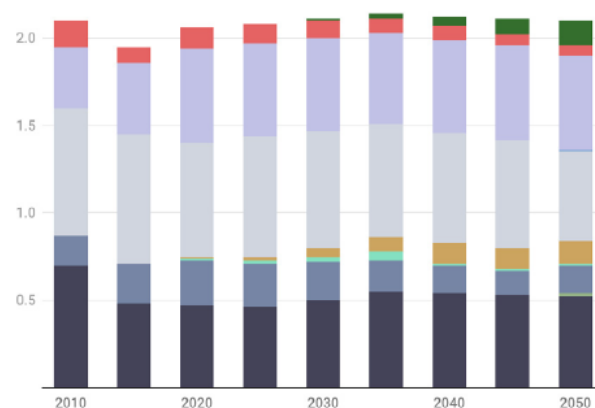
Industry

Final energy mix [EJ]

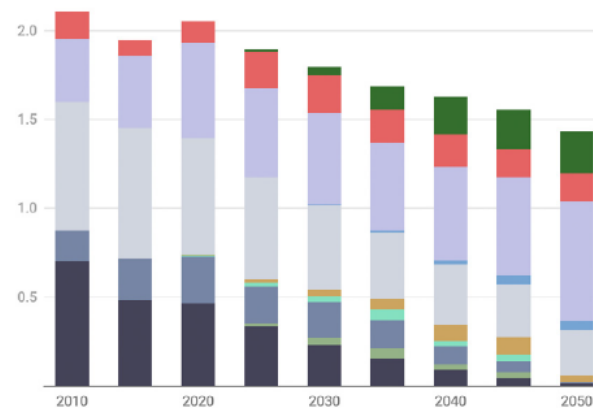
Decarbonization accomplished via

- Energy intensity reductions throughout the industrial production process, structural change and efficiency improvements
- Electrification
- Cogeneration
- Hydrogen
- CCUS

■ Coal ■ Biomass ■ Oil-Liquids ■ Bio-liquids ■ Coal-liquids ■ Gas-liquids ■ Gas ■ Hydrogen ■ Electricity ■ Heat ■ Other



Final Energy - Industry [EJ]
Reference (REF)



Final Energy - Industry [EJ]
Carbon Neutrality Innovation (CNI)

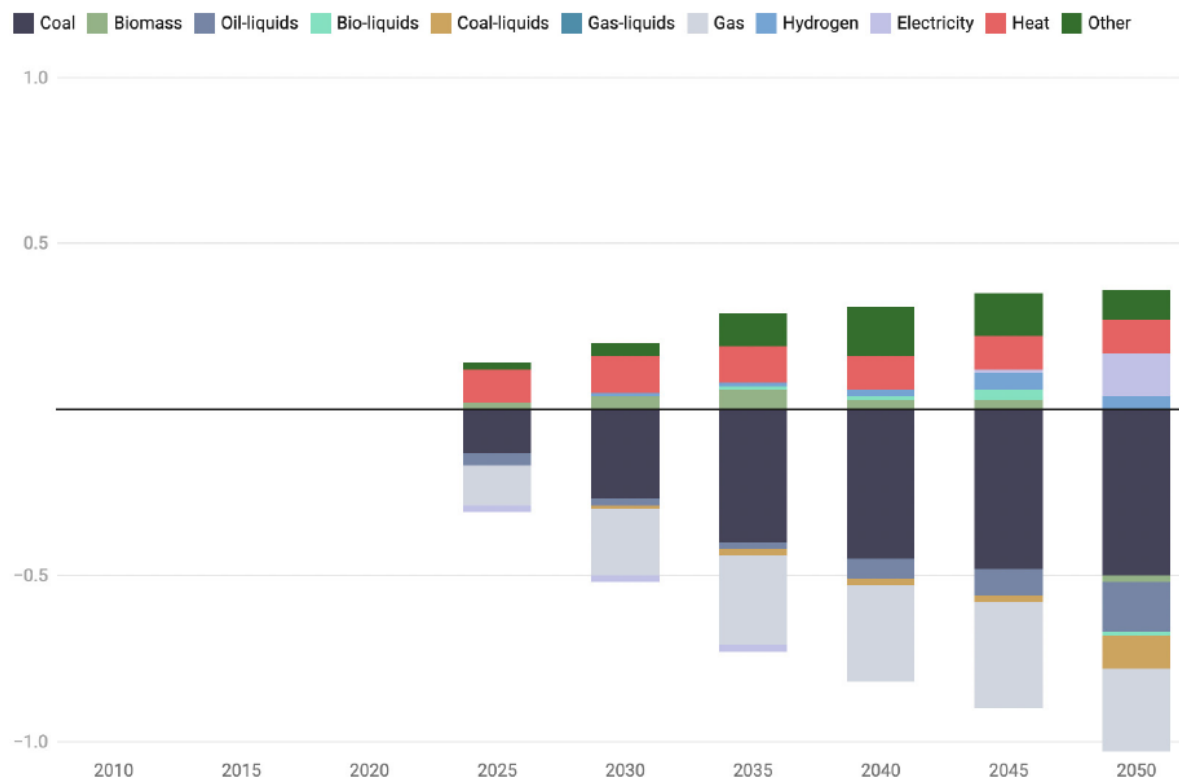


Industry

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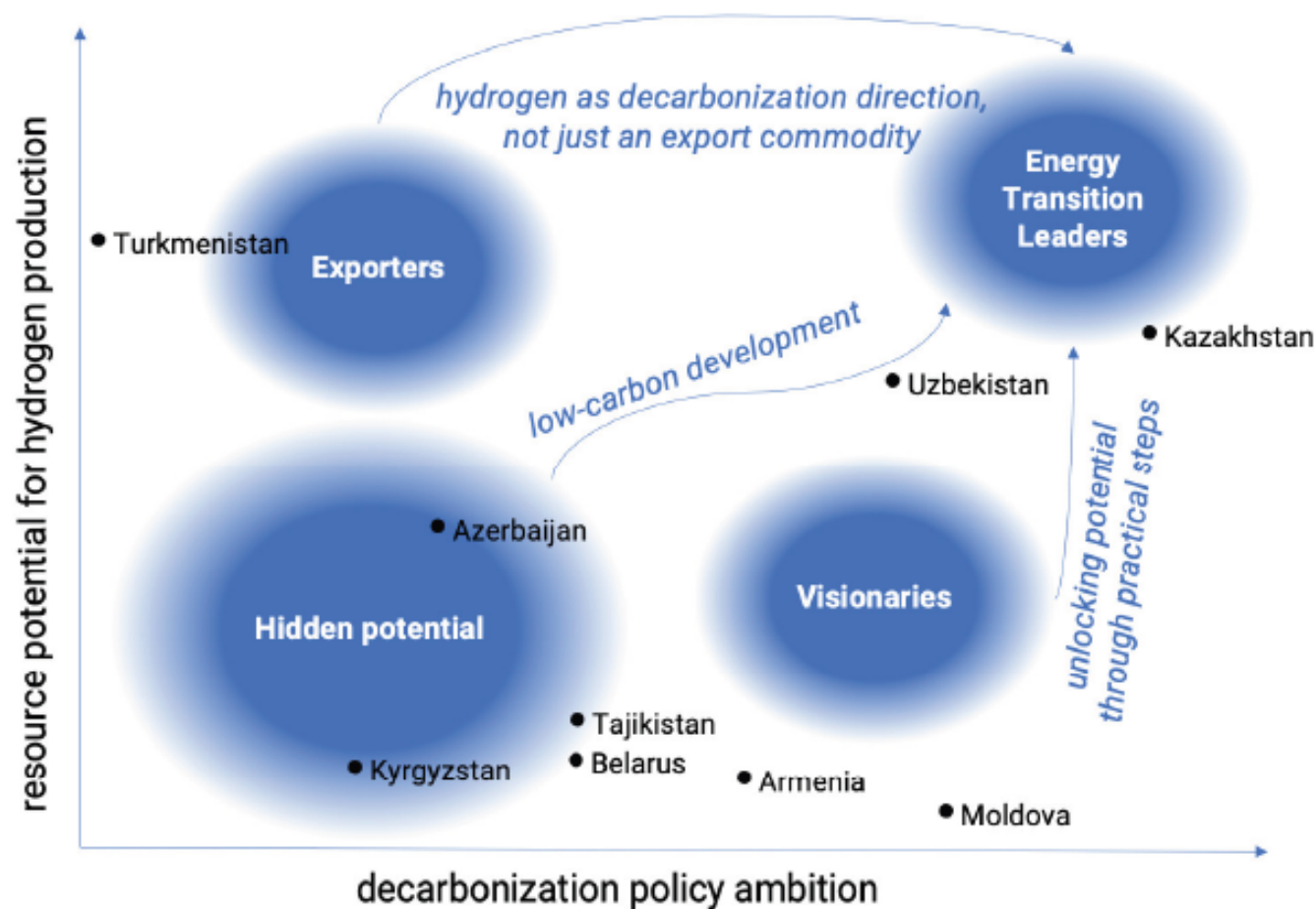


Transformation of Industry
Carbon Neutrality Innovation (CNI) vs Reference (REF) in [EJ]



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Possible typical scenario models for hydrogen economy establishment and deployment in the countries covered by the study, depending on their decarbonization policy ambition and resource potential for low-carbon hydrogen production



Source: UNECE

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Thank you!

Sustainable Energy Division

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