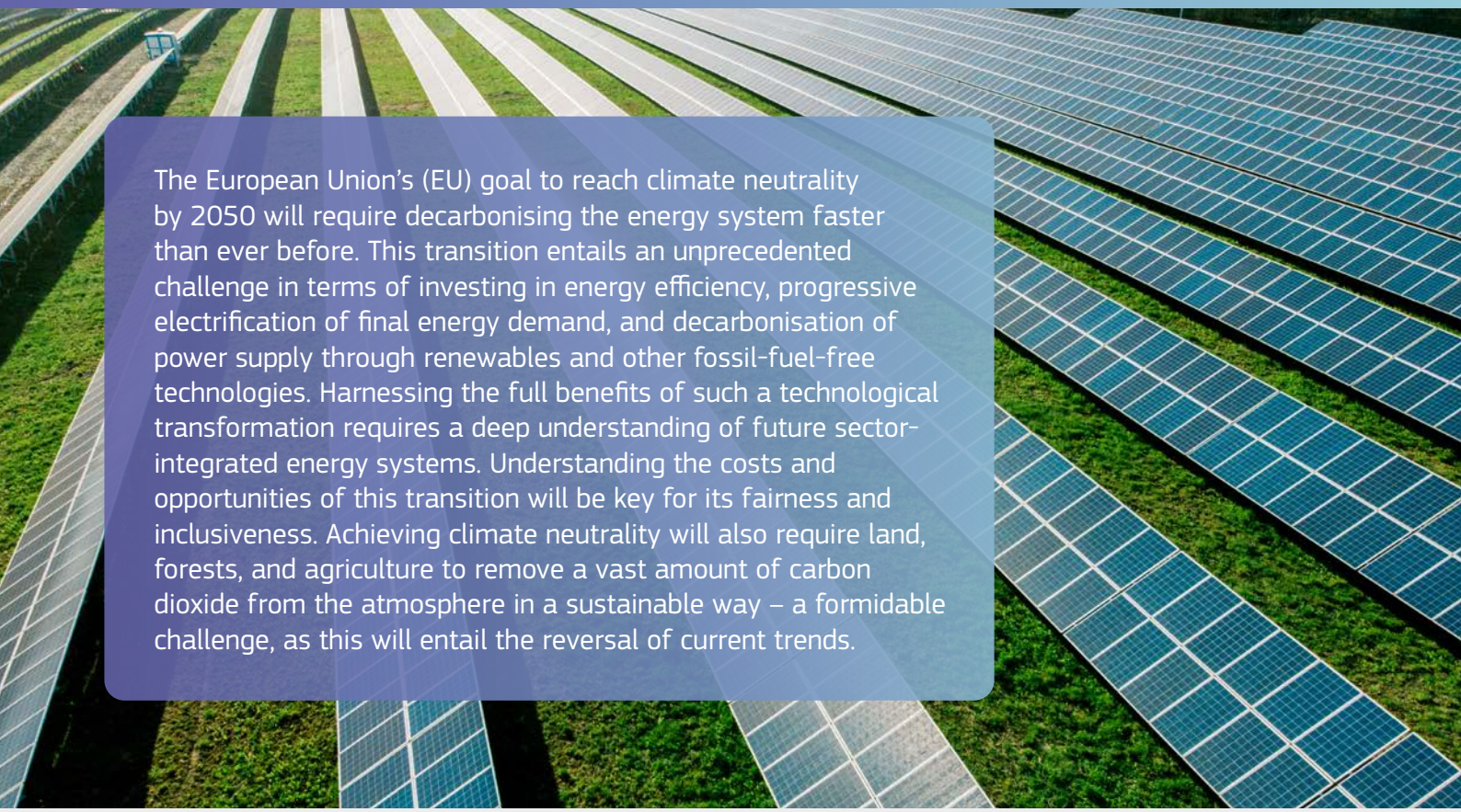
European Commission

JRC PORTFOLIO 08

PATHWAYS TO CLIMATE NEUTRALITY THROUGH LOW-CARBON ENERGY AND LAND-USE MANAGEMENT



The European Union's (EU) goal to reach climate neutrality by 2050 will require decarbonising the energy system faster than ever before. This transition entails an unprecedented challenge in terms of investing in energy efficiency, progressive electrification of final energy demand, and decarbonisation of power supply through renewables and other fossil-fuel-free technologies. Harnessing the full benefits of such a technological transformation requires a deep understanding of future sector-integrated energy systems. Understanding the costs and opportunities of this transition will be key for its fairness and inclusiveness. Achieving climate neutrality will also require land, forests, and agriculture to remove a vast amount of carbon dioxide from the atmosphere in a sustainable way – a formidable challenge, as this will entail the reversal of current trends.

The portfolio aims to:

Steer a range of energy and land-based policies towards the climate neutrality objective while considering the energy-related, environmental, and socio-economic constraints and opportunities

Provide scientific input to an updated vision for EU climate policies

Pave the way towards the 2040 and 2050 decarbonisation milestones, building on progress towards 2030 goals

Joint Research Centre

Delivering on anticipation, integration and impact of EU policies

- integrating energy, economy, agriculture and forest ecosystem and other land-use management components into an updated analytical toolbox enabling the development of integrated scenarios,
- analysing system costs, investment needs and socio-economic implications of the different climate, energy and land use policies and strategies,
- providing model baselines for further analysis of new policy proposals integrating the national energy and climate plans and the Common Agriculture Policy strategic plans and evaluations,
- making a direct contribution to the Commission's Impact Assessment of the 2040 Climate Target Plan through the development and economic assessment of integrated greenhouse gas (GHG) emission reduction scenarios,
- monitoring the progress of global climate commitments by providing GHG emission estimates based on atmospheric observations, and independent science-based global emission inventories,
- analysing pathways towards balancing agriculture, forestry and other land use emissions and removals and the sector's climate neutrality by 2035, including evaluating the risk from climate change impacts.

Main partners

Partner DGs

AGRI, CLIMA, ECFIN, ENER, ENV, ESTAT, GROW, INTPA, MARE, MOVE, REGIO, RTD, TAXUD

Selected stakeholders

EEA, ECMWF, ICOS-ERIC, IIASA, IPCC, UNFCCC, WMO

Climate neutrality
Low-carbon energy
Decarbonisation
Greenhouse gas emissions
Climate neutrality objectives
Energy transition
Carbon sequestration
Climate stability
Agriculture
Forestry
Economy

Time frame

The portfolio has three main time horizons: analyses of the options for 2040 climate targets (which will be the bridge between the agreed 2030 climate objectives and the climate neutrality goals in 2050), assessment of progress towards the 2030 decarbonisation targets, and of the land-sector climate neutrality goals for 2035.

Find out more

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https://joint-research-centre.ec.europa.eu/jrc-research-portfolios/climate-neutrality

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