Science advice for a clean and fair energy transition: A challenge and a call for action

European Commissio

A SYSTEMIC APPROACH TO

IN EUROPE

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Research an Innovation

How the Group of Chief Scientific Advisors works



The Group of Chief Scientific Advisors as of March 2022



Nicole Grobert Chemistry (Germany)



Eva Zažímalová Biochemistry (Czech Republic)



Éva Kondorosi Biology (Hungary)



Maarja Kruusmaa Biorobotics (Estonia)



Alberto Melloni History (Italy)



Eric F. Lambin Geography (Belgium)



Nebojsa Nakicenovic Energy Economics (Austria)



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Carina Keskitalo Former Member (Sweden)



Rolf–Dieter Heuer Former Chair (Germany)



Recommendation 0

Design EU energy policy clearly aimed towards achieving climate neutrality and sustainability, leaving no one behind.

Use a holistic approach to maximise synergies and avoid trade-offs and barriers across technologies, regulatory and market measures, and social and behavioural changes.

EU pathway to prosperity & climate neutrality Fit for 55 package under EGD



Recommendation 1

Develop flexible, efficient, and resilient EU energy systems for delivering clean, accessible, and affordable energy services by integrating decarbonised energy sources, electrification and the use of blue and green hydrogen.

- *R&I is critical for system transformations, increasing the efficiency and integrating sustainability and circularity.*
- Support investments in integration of infrastructures and general-purpose technologies, including energy generation, transmission, storage, and end-use systems;
- Developing demand-side solutions as well as energy production at locality and increased efficiency (PVs, heat pumps, fuel cells, EVs, built environment improvements, and other innovations).

Disruptive Innovations



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Source: Grubler et al., 2018

Disruptive Innovations



The World in 2050 Nakicenovic

Source: Grubler et al., 2018

2021 #8

Recognise the roles of all actors and stakeholders in creating an *inclusive and participatory environment* that incentivises and supports low-carbon energy choices.

- Incentivise energy efficiency and reduce of energy use while ensuring sufficient services for all;
- Support direct participation and innovation among all actors and stakeholders from the public and private sectors to individuals and households, at local, national, European and international levels;
- **Redistribute the additional revenue** created by energy and carbon pricing to support low-income groups and promote sustainable energy systems.



GCSA Statement on energy prices in Europe

europa.eu/!9Mu44c

Reacting to high energy prices should involve immediate support for households at risk of energy poverty along with upfront investments to increase the share of low-carbon, less *import-dependent, and more* affordable and reliable energy the long term.

Billion USD 350 World Total 304 300 250 200 150 123 100 69 58 57 53 48 50 2013 2011 2012 2014 2015 2016 2017 2018 2019 2020

Global and EU Investments in Renewables

Source: RSR REN21 2021

Support a coordinated combination of policies, measures and instruments, including carbon pricing as a driving force, to shape an effective, consistent and just regulatory system.

- Use a coordinated combination of regulatory measures and incentives to drive the European energy transition;
- Set standards for emissions and energy efficiency that are rooted in real performance rather than on idealised tests;
- Tackle possible rebound effects at multiple levels, including with the price of carbon, and carefully consider them when evaluating trade-offs between economic growth and ecological sustainability.



Horizon Europe - New European Bauhaus Nexus Report

Conclusions of the High-Level Workshop on 'Research and Innovation for the New European Bauhaus' jointly organised by DG R&I and JRC



The report sketches a vision for 10 billion in a sustainable, inclusive and aesthetic way and a R&I roadmap for the built environment and land use, and behavioural change

- Biogenic carbon storage: Buildings and Cities as Carbon Sinks;
- Ending waste: Policies and Practices in a Circular Construction Economy;
- Enhancing biodiversity: Eco-systemic Decision-making in Design;
- Engaging people and their communities: User-Centred and articipatory Design;
- Fair and Just transitions: Equity and Empowerment for Disenfranchised;







Thank you

naki@iiasa.ac.at



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Source: Grubler et al., 2018

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