

European Scientific Advisory Board on Climate Change
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Director General, Directorate General for Energy (DG ENER) of the European Commission

Mr Stephen Quest,
Director-General, Joint Research Centre (JRC)

Potsdam, 15 March 2023

Subject: Recommendations on a harmonised EU energy system-wide cost-benefit analysis

Dear colleagues,

In the framework of Regulation (EU) 2022/869 of the European Parliament and of the Council of 30 May 2022 on guidelines for trans-European energy infrastructure ('TEN-E Regulation'), the European Scientific Advisory Board on Climate Change (the 'Advisory Board') would hereby like to provide an advice on methodologies for a harmonised energy system-wide cost-benefit analysis (CBA) at EU level.

The role of the Advisory Board is to give independent scientific advice on how to ensure coherence between the EU measures and the EU climate policy objectives. As energy supply and use represent 77 % of the EU's total greenhouse gas emissions, it is critical that the EU's energy network development support and drive the transition towards renewable-based and efficient energy systems while avoiding further lock-ins into fossil infrastructure. It should also safeguard the resilience of the EU's energy infrastructure to the unavoidable impacts of climate change.

To prepare its recommendations, the Advisory Board met with, and analysed publications from, ACER, ENTSO-E, ENTSO-G, the European Commission, and the scientific community. It analysed in particular the draft 4th ENTSO-E Guideline for Cost Benefit Analysis of Grid Development Projects, published on 15 December 2022. ENTSO-G's preliminary draft single-sector Cost-Benefit Analysis methodology could not be specifically considered as it was only published on 28 February.

The Advisory Board found that the ten-year network development plan (TYNDP) process does not sufficiently address the transformational changes and rapid reductions in greenhouse gas emissions that are necessary to achieve the EU's climate neutrality and climate resilience targets by 2050. This observation pertains to the entire TYNDP process, in particular the scenario development, system needs assessment and cost-benefit analysis (CBA), as well as the subsequent selection of Projects of Common Interest (PCI) and Projects of Mutual Interest (PMI).

To address this weakness, the Advisory Board recommends that priority be systematically given to full decarbonisation, energy efficiency, and infrastructure resilience, in particular through **rapid and wide-spread electrification combined with demand-side flexibility**. This requires ENTSO-E, ENTSO-G, DG Energy, and ACER to enhance:

1. **integration** of their work within and across TYNDP cycles,
2. **consistency** between the CBA methodologies,
3. **transparency** of tools and processes,
4. respective **capacities and capabilities**.

As regards CBA methodologies for energy infrastructure projects, the Advisory Board recommends that these:

1. adequately account for **all** relevant **greenhouse gas emissions**,
2. assess **climate adaptation** costs, benefits, and measures,
3. apply appropriate **scenarios and sensitivities**,
4. ensure granular **net-present value** assessment,
5. take into account project **implementation feasibility and social aspects**,
6. capture expected benefits of **renewable energy** integration, and
7. adequately assess **multi-sectorial dynamics** to identify the **most beneficial solutions**.

You will find our detailed recommendations in the attached document. We prompt you to consider these recommendations in your ongoing and future work relevant to the TYNDP/PCI-PMI processes, including the CBA methodologies.

We look forward to meeting with your teams to present our recommendations and remain at your disposal to answer any question that might arise.

Best regards,



Professor Dr. Ottmar Edenhofer

Chair of the European Scientific Advisory Board on Climate Change