Towards EU climate neutrality: progress, policy gaps and opportunities

Key findings and recommendations of the European Scientific Advisory Board on Climate Change

Public webinar, 22 January 2024

Professor Ottmar Edenhofer, Chair

https://climate-advisory-board.europa.eu
Context and approach
EU climate objectives in the European Climate Law

- In pursuit of the **Paris Agreement 1.5°C temperature goal:**
  - EU climate neutrality by **2050 at the latest**
  - at least 55% net reduction by **2030** compared to 1990

- Reports of the Advisory Board should inform specific tasks of the European Commission:
  - **2040 target** and indicative 2030-2050 emissions budget
    → **Advisory Board recommendations on an EU 2040 target**
  - regular assessment of **EU progress** and of the **consistency of EU and national measures** towards EU climate goals
    → **Advisory Board report on progress and consistency**
A report to take stock and advise EU policy-makers on how to make EU policies ‘fit for net zero’

- **First global stocktake**: call for accelerated action with deep, rapid and sustained GHG reductions

- Two EU policy cycles, connected but at different stages:
  - EU’s **2030 target**: Fit for 55 in place, moving to implementation
  - EU’s **climate neutrality objective**: upcoming discussions on EU’s **2040 target**, then on the **next policy framework** for post-2030

- **EU elections** in June 2024: new European Commission and European Parliament by end 2024
Policy consistency assessment based on needs, gaps and recommendations

The report identifies:

- **needs**: what needs to happen for the EU to remain on track to climate goals?

- **gaps**: are there any gaps in the current policy framework?
  - **policy gap** = no policy in place
  - **ambition gap** = policy in place but insufficiently ambitious
  - **implementation gap** = ambitious policy in place but poor implementation
  - **policy inconsistency** = policy in place is counterproductive

- **recommendations** to address these gaps
The report assess progress and policy consistency

Combining a sectoral perspective with an analysis of cross-cutting enabling conditions

Cross-cutting, enabling conditions
- Pricing emissions and rewarding removals
- Just transition and public engagement (whole-of-society approach)
- Finance and investment
- Innovation
- Governance
- Skills and capacity building

Policy consistency assessment
(based on literature reviews)

Progress assessment
(based on 80 indicators)
- Energy supply
- Industry
- Transport
- Buildings
- Agriculture
- LULUCF

Climate neutrality by 2050
Sectoral assessment framework: emissions, outcomes, levers and enablers

- **GHG emission reductions** = expected **contribution of each sector** towards -55% by 2030 and climate neutrality by 2050

- **outcomes** = main results to be achieved on the demand side and the supply side to drive emissions reductions

- **mitigation levers** = **changes that can deliver** the desired outcomes

- **enabling conditions (non-exhaustive)** = **changes that can facilitate or are crucial to** the activation of different levers (sector-specific or cross-cutting)
Sectoral assessment framework: emissions, outcomes, levers and enablers – e.g. for transport

GHG emission reductions

-92% GHG emissions by 2050 compared to 2005
(-90% compared to 1990)

outcomes

reduce demand for energy-intensive transport

mitigation levers

demand moderation
modal shift

low-emission, energy- and resource-efficient vehicle fleet

uptake of ZEVs
vehicle efficiency
fuel switches (bio, synthetic, …)

enabling conditions (non-exhaustive)

- infrastructure
- digitalisation
- sharing and circular economy
- price signals

- spatial planning
- supply chains
- skilled workforce
- innovation
- finance
Tracking sectoral progress based on indicators

We then selected indicators to track progress along the different building blocks.

- **GHG emission reductions**
  - -92% GHG emissions by 2050 compared to 2005 (-90% compared to 1990)
  - T1. total GHG emissions

- **Outcomes**
  - Reduce demand for energy-intensive transport
    - T2. total demand
    - T3. % per mode
  - Low-emission, energy- and resource-efficient vehicle fleet
    - T4. average GHG intensity of new vehicles
    - T5. % of ZEVs in new registrations
    - T6a. % of fossil fuels in total FEC
    - T6b. % of 1st biofuels

- **Mitigation levers**
  - Demand moderation
  - Modal shift

- **Enabling conditions**
  - Infrastructure
  - Digitalisation
  - Sharing and circular economy
  - Price signals
  - Spatial planning
  - Supply chains
  - Skilled workforce
  - Innovation
  - Finance
The Advisory Board structured its recommendations around policy targets and action urgency
Overall progress: EU is making progress in reducing emissions, but large gap looms post-2030

Average annual reductions (past and required to reach targets)

- 2005-2022: 61 Mt CO₂e
- 2023-2030: 141 Mt CO₂e
- 2031-2040: 171-198 Mt CO₂e

Advisory Board recommendation: -90% to -95%

Net zero

Source: Advisory Board based on GHG inventory data
Recommendations to support EU climate objectives

- Short-term actions to support a 55% reduction by 2030
- Short-term actions + additional policies to support net-zero by 2050

Source: Advisory Board based on GHG inventory data
Overall recommendation: focus on immediate implementation and continued action to achieve EU climate goals

Now or well before 2030

I. Short-term actions to support the achievement of the -55% objective by 2030 (4 recommendations)

Towards a 55% net reduction by 2030

Towards net zero by 2050

II. Short-term actions to support the achievement of the climate neutrality objective (5 recommendations)

By 2031 at the latest

III. Actions to be prepared for implementation by 2031 to support the achievement of the climate neutrality objective (4 recommendations)
The Advisory Board’s 13 key recommendations
I. Short-term actions to support -55%

Now or well before 2030

Towards a 55% net reduction by 2030

I. Short-term actions to support the achievement of the -55% objective by 2030 (4 recommendations)

Towards net zero by 2050

II. Short-term actions to support the achievement of the climate neutrality objective (5 recommendations)

By 2031 at the latest

III. Actions to be prepared for implementation by 2031 to support the achievement of the climate neutrality objective (4 recommendations)
I. Short-term actions to support -55%

Now or well before 2030

- Implement Fit for 55 fully and swiftly
- Conclude revision of the Energy Taxation Directive and other European Green Deal initiatives
- Provide stable investment outlook for renewables
- Phase out fossil fuel subsidies

By 2031 at the latest

Towards a 55% net reduction by 2030

Towards net zero by 2050

II. Short-term actions to support the achievement of the climate neutrality objective (5 recommendations)

III. Actions to be prepared for implementation by 2031 to support the achievement of the climate neutrality objective (4 recommendations)
I.a Urgently adopt and implement Fit for 55 through national measures

- Fit for 55 largely depends on national implementation
- Draft updated national energy and climate plans (NECPs) insufficiently ambitious
- Only 7 years left to 2030

→ Bring final updated NECPs in line with 2030 targets
→ Urgently adopt and implement national measures
→ European Commission should ensure full compliance of NECPs with EU laws, and enforce if necessary

Source: European Commission, EU wide assessment of the draft updated National Energy and Climate Plans (2023)
### I.b Adopt pending legislation aimed at supporting greenhouse gas reductions

**Examples of key legislative initiatives that remain to be adopted**

<table>
<thead>
<tr>
<th>Headline strategy</th>
<th>Legislative initiative</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fit for 55</td>
<td>Revision of the <em>Energy Taxation</em> Directive</td>
<td>Tabled, not yet adopted</td>
</tr>
<tr>
<td>EGD sectoral strategies</td>
<td>Regulation on the use of railway infrastructure capacity</td>
<td>Tabled, not yet adopted</td>
</tr>
<tr>
<td></td>
<td>Legislative framework on <em>Sustainable food systems</em></td>
<td>Announced, not yet tabled</td>
</tr>
<tr>
<td>Other</td>
<td><em>Net-Zero Industry Act</em></td>
<td>Tabled, not yet adopted</td>
</tr>
<tr>
<td></td>
<td>Revision of the <em>electricity market design</em></td>
<td>Close to adoption</td>
</tr>
</tbody>
</table>

→ **Adopt ambitious revision** of the *Energy Taxation Directive*

→ **Conclude** legislative process on other pending initiatives

*Source: Advisory Board*
I. Short-term actions to support -55%

II. Short-term actions to support net-zero

III. Prepare for implementation by 2031

**I.c Provide stable investment outlooks for renewable energy**

- Several **bottlenecks** hinder deployment of renewables (e.g. permits, supply chains, grid)
  - Adopt **pending legislation** (Net Zero Industry Act, electricity market reform) *(cf. previous recom.)*
  - Rapidly implement **recent legislation** (RED III, REPowerEU, EU Action plan for grids)
  - Provide **stable support mechanisms** for renewables, offer a long-term **market outlook**, and find a balance between least-cost solutions and technological **innovation**

**Deployment of renewables need to accelerate significantly**

- Solar PV: x4 increase
- Wind power: x2 increase

Source: Eurostat, Fit for 55 and REPowerEU scenarios
I.d Urgently and fully phase out fossil fuel subsidies, in line with existing commitments

Member States should set clear plans to urgently and fully phase out fossil fuel subsidies – as they committed to do.

Subsidies for vulnerable households should be redirected towards well-targeted interventions that do not undermine the incentive to reduce emissions.

EU state aid rules should be made consistent with the EU climate goals.

Source: OECD fossil fuel subsidy tracker, European Commission state of the energy union (2023)
II. Short-term actions to support net-zero

Towards a 55% net reduction by 2030

I. Short-term actions to support the achievement of the -55% objective by 2030 (4 recommendations)

Towards net zero by 2050

II. Short-term actions to support the achievement of the climate neutrality objective (5 recommendations)

Now or well before 2030

By 2031 at the latest

III. Actions to be prepared for implementation by 2031 to support the achievement of the climate neutrality objective (4 recommendations)
II. Short-term actions to support net-zero

Now or well before 2030

I. Short-term actions to support the achievement of the -55% objective by 2030
(4 recommendations)

Towards a 55% net reduction by 2030

a. Align EU policies with a **phase-out of fossil fuels**
   (by 2040 for public electricity and heat generation)

b. Assess and address **socio-economic impacts** of climate policies

c. Align the **common agricultural policy** with climate objectives

d. Target deployment of carbon capture and utilisation or storage, hydrogen, and bioenergy towards activities with no or limited alternatives

e. Support **public and private climate investments**

By 2031 at the latest

III. Actions to be prepared for implementation by 2031 to support the achievement of the climate neutrality objective (4 recommendations)
II.a Make EU policies fully consistent with the climate neutrality objective and phase-out of fossil fuels

**Make existing policies fully consistent with the phase out of fossil fuels**

- To achieve climate neutrality:
  - **Sharp decline** in all fossil fuels use by 2050
  - **Full phase out** in electricity by 2040

- Some EU **policies inconsistent with phase-out**: EU Taxonomy, proposed Gas Directive, Regulation on trans-European energy networks (TEN-E)

  → **Align** these policies with climate neutrality and fossil fuel phase-out

**Ensure consistency of new policies**

- European Climate Law requires that **all** relevant draft measures are **checked for consistency** with climate neutrality

- Consistency check done for **many but not all** relevant measures (e.g. delegated acts)

  → **European Commission should check consistency of all relevant measures**, including delegated and implementing acts
II.b Systematically assess socio-economic impacts of climate policies to ensure a just and fair transition, and effective implementation

• Climate action has **many benefits and co-benefits**. It can also have **regressive** socio-economic impacts

• Such impacts need to be adequately addressed to ensure a **just and fair transition**

  ➔ **Assess** more structurally the socio-economic **impacts of climate policies** ex-ante (before) and ex-post (after)

  ➔ These assessments should:
    - consider **specific contexts**
    - be **transparent** and include **public consultations**
    - reinforce **synergies** between social and climate policies
    - help design **compensatory measures** (e.g. Social Climate Fund, Just Transition Fund)
    - help improve climate policy **narratives**
II.c Provide stronger incentives for climate action in the agricultural sector and food system

- Weak incentives to reduce agriculture emissions
  - Better align common agricultural policy with climate objectives, including by shifting support from GHG-intensive (e.g. livestock) to lower-emission activities
  - Encourage healthier, more plant-based diets
  - Develop a strategy for a just transition of the food system

Source: Advisory Board based on GHG inventories, European Commission scenarios and Advisory Board advice for a 2040 reduction target
II.d Better target the deployment of carbon capture and use (CCU), carbon capture and storage (CCS), hydrogen, and bioenergy

- **CCU/CCS**: not yet proven at scale, expensive and risks to lock in fossil fuels
- **Hydrogen**: inefficient (green hydrogen) or dependant on fossil fuels + CCS (blue hydrogen)
- **Bioenergy**: raising sustainability concerns (e.g. decreasing carbon sink and biodiversity)

→ EU policies in support of CCU/CCS, bioenergy and hydrogen should better **target applications with no, or very limited, other mitigation options**
II.E Better drive the required increase in public and private investments in climate mitigation

- Concerted effort required from **public and private sectors** to:
  - reorient existing investments
  - increase total investments (+60%)

→ **Better track spending of EU budget**, including harmful spendings

→ **Consider continuation of common debt approach** under the Recovery and Resilience Facility (*)

→ **Address risks and funding gaps to boost the supply of bankable climate mitigation projects**

(*) The RRF is part of EU’s temporary stimulus package providing EU grants and loans to support reforms and investments in Member States
III. Actions to prepared for implementation by 2031

Now or well before 2030

I. Short-term actions to support the achievement of the -55% objective by 2030 (4 recommendations)

Towards a 55% net reduction by 2030

Towards net zero by 2050

II. Short-term actions to support the achievement of the climate neutrality objective (5 recommendations)

By 2031 at the latest

III. Actions to be prepared for implementation by 2031 to support the achievement of the climate neutrality objective (4 recommendations)
III. Actions to prepared for implementation by 2031

Now or well before 2030

I. Short-term actions to support the achievement of the -55% objective by 2030
(4 recommendations)

Towards a 55% net reduction by 2030

Towards net zero by 2050

II. Short-term actions to support the achievement of the climate neutrality objective
(5 recommendations)

By 2031 at the latest

a. Strengthen governance and compliance frameworks
b. Make EU emissions trading systems fit for net zero
c. Address energy and material demand
d. Expand emissions pricing to all major sectors (especially agriculture/food and LULUCF) and incentivize carbon removals
III. Prepare for implementation by 2031

III.a Strengthen the EU frameworks on climate governance and compliance

**EU Regulation on the Governance** of climate action:
- Establish a **review process for national long-term strategies**, similar to National Energy and Climate Plans (NECPs)
- Strengthen **consistency** between NECPs and long-term strategies
- Strengthen requirements for **permanent multi-level energy and climate dialogues**

**European Climate Law:**
- Make establishment of **national climate advisory bodies** mandatory (only optional today)

**Compliance framework:**
- Strengthen **compliance mechanisms** for sectors under the Effort Sharing and LULUCF Regulations
III.b Make the two EU emissions trading systems fit for net zero

**EU ETS**

→ Provide **clarity** on functioning when cap for stationary installations will go to **zero** (2039)

→ Develop **alternatives to free allocation** for sectors exposed to carbon leakage but not yet covered by CBAM

**EU ETS 2 for buildings and road transport**

→ Post-2030: aim for a **higher carbon price**, consistent with the **climate neutrality objective**

→ **Converge** carbon price with the EU ETS over time to improve cost-effectiveness and avoid distortions

→ Provide well-provisioned and targeted **measures to address adverse socio-economic impacts**
III.c Pursue more ambitious reductions in energy and material demand through new and strengthened policies

- **Demand-side measures** vs “supply-side only”: faster reductions, higher co-benefits, lower trade-offs
- EU demand-side measures have been **lacking or ineffective**
  - Stronger policies needed to **reduce energy and material demand**, through efficiency and behavioural changes

Source: Advisory Board based on Eurostat energy balances, the Energy Efficiency Directive, and the Advisory Board advice for a 2040 reduction target

Source: Advisory Board based on EEA data and the 8th Environment Action Programme
III.d Expand GHG pricing to all major sectors and provide incentives for carbon removals

- Insufficient incentives for climate action in these sectors:
  - **Agriculture and LULUCF**: consider **pricing emissions and rewarding removals**, considering these sectors’ specificities (e.g. monitoring challenges, permanent vs. non-permanent carbon removals)
  - **Fossil fuel industries**: consider expanding EU ETS and CBAM to **fugitive CH₄ emissions**

Source: Advisory Board based on GHG inventories, European Commission scenarios and Advisory Board advice for a 2040 reduction target
Summary overview of the Advisory Board’s key recommendations

Towards a 55% net reduction by 2030

- Implement Fit for 55 fully and swiftly
- Conclude revision of the Energy Taxation Directive and other European Green Deal initiatives
- Provide stable investment outlook for renewables
- Phase out fossil fuel subsidies

Towards net zero by 2050

- Align EU policies with a phase-out of fossil fuels (by 2040 for public electricity and heat generation)
- Assess and address socio-economic impacts of climate policies
- Align the common agricultural policy with climate objectives
- Target deployment of carbon capture and utilisation or storage, hydrogen, and bioenergy towards activities with no or limited alternatives
- Support public and private climate investments

Now or well before 2030

By 2031 at the latest

- Strengthen governance and compliance frameworks
- Make EU emissions trading systems fit for net zero
- Address energy and material demand
- Expand emissions pricing to all major sectors (especially agriculture/food and LULUCF) and incentivize carbon removals