BELLONA’S ROADMAP 2024-2029

Climate infrastructure, science-based policy making and well-functioning markets for a net-zero Europe

MAY 2024
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A green and just transition: Europe leading the way to a climate-friendly industry

As an international non-profit organisation that believes in a just and democratic green transition, Bellona Europa celebrates the European Elections as a vital showcase of democracy. Recent events—notably the illegal invasions of Ukraine by Russia—have taught us how a lack of democracy tends to go hand in hand with a complete disregard for our common good, which itself often coincides with climate inaction. We must protect democracy with all necessary means, to safeguard the care for our planet and those who live on it.

The 2024 European Elections will kick-off the new mandate of the next European Commission and Bellona Europa intends to continue being a trust-worthy, solution-oriented voice, outlining the path that needs to be taken by the next European Commission to continue on the path set out by the EU Green Deal. The consequences of climate change and the economic costs of inaction are being witnessed globally. Reaching the European target of being the first climate neutral continent by 2050 is not an ideological choice, but a necessity.

While the Von der Leyen Commission’s mandate was responsible for proposing and negotiating the policy files that put the European Union on track to reach its 2050 climate target, the next mandate – which runs from 2024 to 2029 – will need to follow up and deliver. This phase will arguably be even more important than the last one, and it is imperative that the EU ensure long lasting and systemic change, turning the Green Deal into reality. We must not only talk the talk, but also walk the walk.

In the past five years, the EU has sought to position itself at the forefront of a green and just transition, with the world looking at Europe as a pioneer of climate action. COP28 showed that the world is ready to transition away from fossil fuels: Europe must lead and drive this process further. Recently, the political debate has shifted towards a narrative of European industries being the biggest losers of EU climate policy, with calls for an ‘Industrial Deal’ to retain their competitiveness. The reality is much more nuanced. Climate targets must be reached with industries leading this shift and becoming global leaders and winners of low carbon production. As the world’s biggest single market, Europe must lead the race to the top, leveraging its economic pull to ensure climate impact is key criterion to determine the value and quality of goods and services, and ensuring its transitioning industries can compete in the global market. A Green Industrial Deal has the potential to help with this, as long as the green transition remains at the very core of its design, in order to prepare our industries for what’s coming.

However, this will only happen if the European institutions and national governments implement the right policies to support this change and make it beneficial for industry, workers, and, vitally, our climate. In this Roadmap, Bellona Europa identifies the deployment of Climate Infrastructures, robust science-based policy-making, and well-functioning markets for a net-zero world as three crucial areas for the next Commission to prioritise and set out some key recommendations on how to use the next EU cycle to further strive towards climate neutrality and beyond, ensuring the EU provides global leadership on climate change. As keen climate advocates, Bellona Europa will be there to continuously push for greater ecological understanding, providing solution-oriented advice, and helping to deliver a just, democratic, and green transition.

Jonas Helseth,
Director Bellona Europa
1. Deployment of Climate Infrastructure

Infrastructure continues to form the backbone of a green and just transition. Since the European Green Deal in 2020, significant steps in the right direction have been made. Now, as Europe moves from planning to implementation, the next European Commission will have to be one of action if we are to succeed in getting Europe on the path to net-zero by 2050.

To reach such objectives, crucial infrastructure including clean energy networks – especially electricity grids – and CO₂ transport and storage will need to be deployed rapidly and extensively. By doing so, the European Union will manage to reach its climate objectives while at the same time enhancing European businesses and industries’ competitiveness while creating jobs and growth across the economy.

These types of investments support value chain creation and can provide an economic stimulus far beyond the value derived from the infrastructure itself. This is crucial for Europe to deliver on Bellona’s vision for Europe to become the largest market globally for low-carbon products – from renewable electricity through carbon-neutral steel and possibly even carbon-negative cement production – but for this to become a reality, infrastructure is a prerequisite.

However, implementation of legislation and real-world deployment remain the primary challenge. The Fit-for-55 package set the legislative framework to put the EU on track towards climate neutrality, but now these targets must be put into action. This is particularly true for climate infrastructure, which often has long lead times and require secure, long-term investment horizons.

For most of the climate-related challenges Bellona Europa works on, infrastructure rises as a solution. This spans the crucial and system-wide deployment of power grids, which renewables depend on. The decarbonisation of some harder-to-abate industrial emissions depend on Carbon Capture and Storage (CCS), with a CO₂ transport and storage infrastructure network being made available. This infrastructure is also crucial to enable the necessary, but limited, deployment of Carbon Dioxide Removals (CDR) in line with the EU’s aim of going beyond climate neutrality, towards net-negative emissions after 2050. Infrastructure is also crucial to accommodate the targeted deployment of Hydrogen. Only with robust and comprehensive climate infrastructure, an economy based on clean products can, and will, thrive.

Optimising public goods with climate impact

The green and just transition again highlights a main shortcoming of our economic system: the failure to sufficiently reward investments in common-good economic activities and infrastructure. While well-functioning markets are crucial, markets alone cannot deliver emission reductions at the pace and scale required.

Strategic infrastructure investments – roads, railways, broadband networks, and sewage systems – have and continue to create the conditions allowing European economies to grow and thrive. The same mindset must be adopted in the daunting fight against climate change.

Grids empower the future of renewables

Replacing carbon-intensive energy sources with renewable electricity is key to reducing emissions. Developing a transmission and distribution system that enables an efficient dispatch and use of renewable electricity will be vital to achieve this. Electrification of end-uses in sectors such as transport, residential heating and industrial processes, must go hand-in-hand with a renewables-based energy system.
Transitioning to decentralised renewable electricity in Europe requires upgraded grid infrastructure and flexible, non-fossil energy storage. Cross-border electricity connections are crucial for increasing energy security and integrating renewables, allowing for electricity exchange and continent-wide balancing of variable renewable electricity generation.

**Capture it, move it, and store it. CCS infrastructures from A to Z**

**Access to CO₂ infrastructure for hard-to-abate industries that will have to rely on Carbon Capture and Storage (CCS) to tackle some of their process emissions** is essential for the future of Europe’s ability to reach net-zero by 2050.

There have been significant steps taken as part of the Von der Leyen Commission since 2019, including the Industrial Carbon Management Strategy (ICMS) published at the start of 2024. The next Commission will have to focus on the implementation and follow-through of the initiatives and accompanying legislation set out in the Strategy. Most importantly, the Communication mentions plans to propose legislation to regulate cross-border CO₂ infrastructure, crucial for addressing human and environmental risks, addressing liability, and reducing associated investment uncertainties currently hindering deployment.

**Support mechanisms, both financial and non-financial, are of crucial importance, as are clear regulatory frameworks and market conditions.** While the ICMS proposes a series of such mechanisms, there remains a need for clear indications of financial support measures and timelines for implementation.

At the same time, CCS must not be used as a way to delay climate action, nor to justify the continued or expanded extraction of fossil fuels and should be primarily developed for key industrial sectors which necessarily generate CO₂ as part of the production process (see the [Bellona & E3G CCS Ladder](#)).

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**Hydrogen infrastructure: key for sectors with no other decarbonisation pathway**

Hydrogen networks are needed to connect hydrogen production areas with industrial clusters. The deployment of targeted infrastructure will be crucial to ensure that hydrogen can be used in priority sectors that have no alternatives to decarbonise. However, the deployment of hydrogen infrastructure shouldn’t be used as a lifeline for fossil gas infrastructure, therefore projects for blended fossil gas and hydrogen mix should be discouraged. When it comes to “hydrogen-ready” pipelines, a clear definition touching upon retrofitting requirements and timelines must be developed to make them fit the purpose.

Hydrogen will be essential for the decarbonisation of the chemical and steel sectors, as well as long haul aviation and shipping. However, this will require enormous amounts of renewable electricity. **It is therefore crucial to ensure both the deployment of additional renewable capacity, to avoid the cannibalisation of the power sector’s broader transition, and the maximisation of direct electrification wherever possible, since it is usually the more efficient decarbonisation solution.**

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1. Emissions that arise from industrial processes involving chemical or physical transformations other than fuel combustion.
2. Science-Based Robust Policy Making

The credibility of Europe’s climate response is determined by our commitment to the best-available evidence and science.

Every climate measure implemented today must be compatible with the goal of reaching climate neutrality by 2050 and net-negative thereafter. This cannot be a high-level principle easily circumvented by ambiguity and misinformation – it must be a science-based, robust and steady-fast commitment to emissions reduction at the pace and scale required by the Paris Agreement, supplemented by realistic quantities of permanent carbon removal to counterbalance a minimal amount of residual emissions.

Principles such as “Energy Efficiency First” and “Do No Significant Harm” continue to be vital, but are only as good as their operationalisation, supported by credible and cast-iron commitments in legislative and policy frameworks to ensure their implementation. The EC mandate 2019 – 2024 has seen several attempts to misuse such terms and several developments that harmed the credibility of climate policies.

To name a well-known example of this trend, labelling unabated fossil gas as sustainable activity under the EU Sustainable Finance Taxonomy contradicted experts' opinion and departed from the science-based criteria at the very basis of Sustainable Finance Taxonomy. The risk of ignoring scientific data while accounting for carbon emissions has been also observed in the Carbon Removal Certification Framework and other biomass-related legislation, where the full lifecycle emissions may be underestimated, especially due to the zero rating of biomass emissions, which are counted as zero in spite of the warming effect of dumping CO₂ into the atmosphere and scientific advice highlighting the ‘carbon payback period’ of biomass combustion.

In the next mandate 2024 – 2029, the EC of implementation, this observed pattern must be stopped, and a firm basis in science re-affirmed.

Carbon accounting

The crucial implementation of the European Green Deal, hinges on a clear and transparent rule book for assessing the climate benefits of technologies, processes, and policy changes. This does not mean a one-size-fits-all approach to lifecycle analysis, it means a robust, technology – and sector specific approach to policy development, protecting against greenwashing and over-reliance on any one climate solution. Unfortunately, there is no silver bullet for the climate crisis. Every solution must be assessed on its realistic climate mitigation impact, its ability to be deployed in a timely manner, and its impacts on the broader climate and energy systems.

Robust carbon accounting systems are vital for the accurate and transparent assessment of the benefit and trade-offs of deploying any climate solution. Concerted efforts are made to oversell the climate attributes of many different solutions, in particular those which involve complex supply chains or assumptions. These must be continuously monitored and evaluated to eliminate pervasive greenwashing and encourage honest dialogue.

Pathways to 2040 and beyond

The Von der Leyen Commission anticipated the need to reduce net emissions by 90% by 2040, compared to 1990 levels. The upcoming European Commission will be tasked with proposing these targets and incorporating them into the Climate Law. For this to happen, the full range of solutions need to be considered and transparently evaluated.

Firstly, a fully decarbonised electricity sector well-before 2040 must be deployed as renewable energy will be one of the main drivers to reach climate targets. Funding towards Renewable Energy Systems (RES) and grids will be particularly important to decarbonise the electricity sector, avoiding having to pay higher prices down the road due to current inaction. Frontloading of investments in climate technologies will also be needed. Clear investment plans and infrastructure development are needed, ensuring funds will be directed towards climate solutions that tackle carbon
emissions in the most efficient way, leaving no space for damaging offsets that might damage the EU’s climate objectives and credibility on the global stage.

As for carbon removals technologies, their deployment will be necessary to make Europe climate-neutral by 2050 and net-negative thereafter. However, to reach 2040 targets, **CDR must be only a supplement to fast and deep emissions reductions measures.** The updated Climate Law needs to reflect a Carbon Dioxide Removals (CDR) supply deficit for the foreseeable future and limit dependence on such technologies and practices to reach climate goals, while recognising their contribution. Importantly, **ambitious targets need to be set with a clear separation between emission reductions, permanent carbon removals and temporary land/ecosystem-based sequestration.**

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3. Well-Functioning Market for a Net-Zero World

Well-functioning markets require policy which sets out the right conditions to encourage the production and consumption of sustainable goods and services while increasingly discouraging polluting activities.

Financing a green and just transition

Currently, the European economy still disproportionately favours high-emitting economic activities over the sustainable solutions we need to reach net-zero by 2050. To address these market failures, the EU has several crucial policy tools in place. The recently reformed EU Emission Trading System (ETS) and the phasing-out of the allocation of free allowances under this instrument will strengthen carbon price signals in Europe, finally applying the “Polluters Pay Principle”. At the same time, with the Carbon Border Adjustment Mechanism (CBAM), EU industries will be protected from the risk of carbon leakage and European partner countries will be encouraged to decarbonise their economies. If implemented correctly, these policy tools will pave the way for the breakthrough of a low carbon economy within and beyond Europe. Moreover, revenues coming from these instruments will need to be allocated to effective climate action both in the EU and in third countries.

Private investments towards sustainable activities will also play a crucial role. For this to happen, a credible Sustainable Finance Taxonomy, should play a key role. Nevertheless, the current Taxonomy misses the mark and should be strengthened with clear scientifically based definitions and criteria to credibly label activities as being sustainable.

The next Commission mandate must ensure the climate credibility of these policy initiatives, which are crucial for enabling the green and just transition.

Market for low-carbon products

If we want to succeed in reducing carbon emissions, it is crucial to create lead-markets for low-carbon products, while reducing the demand for highly polluting ones and set forward a holistic strategy to promote the uptake of low-carbon products that considers both supply and demand-side initiatives. For example, the building and construction sector account for more than a third of the EU’s emissions. Even though there have been efforts to improve energy efficiency of buildings and to decarbonise power generation, emissions associated with the production of building materials, so-called ‘embodied emissions’, remain insufficiently addressed, and decarbonising the supply of construction materials alone isn’t enough. Public buyers should play a key role, by leveraging their purchasing power and setting ambitious sustainability criteria. The EU Sustainable Finance Taxonomy could be used for this purpose and should be reviewed to include embodied carbon in its criteria for construction.

Strong CO₂ price signals for a market economy that works for people and climate

A market economy that works for the people is one that addresses persistent market failures of inadequately accounting for the environmental, climate and social ramifications of continued GHG emissions. These market failures include the insufficient pricing of CO₂ emissions which undermines the incentive for businesses to shift towards cleaner processes and reducing emissions. Volatility in CO₂ prices under the EU ETS makes them susceptible to economic fluctuations, also weakening its price signal overall. For a CO₂ market that works, emissions need to be priced effectively over the long-term, providing investment certainty and enabling behavioural changes in industries.

As the allowances start to run out, the CO₂ price goes up, and pressure to cut emissions increases, industrial stakeholders will seek to find shortcuts. While carbon removals will be necessary to counterbalance residual emissions, some of which may be covered by the EU ETS, the Commission should carefully evaluate the full suite of options to minimise those residual emissions and to separately develop the deployment of CDR. Rushing to include removals
into the EU ETS could send the wrong signal to the industry that a shortcut may be on the horizon.

Furthermore, in this nascent stage of CO₂ capture and storage, the market is vulnerable to domination by a few key players. For CO₂ storage markets to work, it is crucial to enable competition and prevent monopolistic practices, which will otherwise only benefit incumbents. This will also serve to encourage innovation and create economies of scale reducing the price of technological abatement.

With concerted efforts, a robust and equitable transition can be ensured. CO₂ markets need to adequately price carbon, leveraging those revenues to encourage climate competitiveness and innovation to those key sectors of European industry.

**Not just a slogan: ensuring a just transition**

As with any major economic shift, such as the industrial revolution, the green transition will also inevitably bring about both economic winners and losers. Sudden changes can place significant burdens on society, particularly as we move away from a carbon-centric economy. This is why it is essential that the green transition happens in a rapid, yet structured, and fair manner so that people and regions currently dependent on emission-intensive activities are not left behind on our way to net-zero.

Ensuring a socially just transition is crucial, to avoid perpetuating inequalities on the path to net zero emissions, gaining public support for climate policies, while ensuring transparency and support for the transition. To do so, workers need to be upskilled, reskilled and directed towards emerging green sectors - such as renewable energy, electromobility, hydrogen, CO₂ transport and storage, and all accompanying infrastructures - where skills remain valuable and in relatively short supply. Only with social backing can the transition to a greener economy benefit both the planet and the people living on it.
BELLONA’S RECOMMENDATIONS

Shaping the Industry of Tomorrow: Industrial Decarbonisation

Industry is a crucial component of the European economy, directly providing thousands of high-quality jobs, however it is also one of the main contributors to climate change. The energy-intensive nature of many industrial activities, coupled with CO₂-emitting chemical processes, means that they are a major source of GHG emissions. To meet the EU’s climate change targets, industry must decarbonise via electrification, deploying renewable energies, increasing energy and material efficiency, transitioning to alternative feedstocks where possible, and tackling its unavoidably generated CO₂ through abatement technologies such as Carbon Capture and Storage (CCS).

1. Electrify whatever can be electrified, leaving hydrogen only to no-regret sectors

Renewable electricity is the most efficient and quickest way to cut carbon emissions and it will play a crucial role in decarbonising many industrial processes. **Efficiently dispatching and utilising renewable electricity is vital for rapidly reducing emissions**, especially as electrification gains traction while we transition to a more renewables-based energy system. While many sectors already employ proven electrification technologies, expanding direct electrification where feasible is essential for achieving climate neutrality.

**Recommendations:**

- **Promote rapid electrification across all sectors** and ensure stable funding and incentive frameworks to electrify industries.
- **Adopt an ambitious Heat Pump Action Plan** to ensure the uptake of direct electrification in residential and industrial heat provision.
- **Replace carbon-intensive energy sources with direct use of renewable electricity wherever possible.**
- **Adopt an Electrification Action Plan** with clear targets for electrification of final energy use across the EU and include targets on electrification in the Energy Governance Regulation.

2. Support CO₂ transport and storage infrastructure deployment for targeted CCS application

**For harder-to-abate industries and processes** like cement, lime, steel, chemicals, and waste to energy (WtE), where CO₂ is necessarily generated as part of the process, **achieving full decarbonisation depends on the targeted deployment of Carbon Capture and Storage (CCS) technologies** to capture and permanently store CO₂, which cannot be significantly reduced through alternative means.
Recognised by the European Commission in the 2024 Industrial Carbon Management Strategy (ICMS) as crucial for achieving 2040 and 2050 climate targets, CCS has become a necessity, and is urgently needed to enable full industrial decarbonisation. To do so, the development of a CO₂ transport and storage value chain requires substantial upfront investments in cross-border infrastructure, necessitating de-risking and financing mechanisms at both EU and national levels. This will drive innovation and economies of scale, ultimately fostering a self-sufficient market for industrial decarbonisation. It is crucial to ensure accessibility to the necessary CO₂ transport and storage infrastructure for landlocked, remote, and vulnerable regions, in the spirit of a just transition and a European single market.¹

Recommendations

- **Propose a regulatory and coordination framework** for the cross-border, open-access, interoperable, and multi-modal transport of CO₂ with transparent pricing and adequate oversight and planning mechanisms, in line with the ICMS.
- **Enable a fast, efficient, coherent development of CO₂ transport infrastructure** (including in ports) and geological storage capacity through targeted public and private investments.
- **Prioritise public funding** for sectors where CCS can result in high climate value without hindering other more efficient decarbonisation pathways and avoiding a fossil fuel lock-in.
- **Establish clear standards determining CO₂ stream quality and transport conditions** as well as around liability and carbon accounting concerning potential CO₂ emissions occurring along the CCS and CCU value chains.
- **Accelerate the timeline for developing the investment atlas of potential CO₂ storage sites** as indicated by the European Commission in the ICMS.
- **Foster the exchange of best practices for accelerated permitting procedures** for CCS deployment without compromising environmental, health and safety aspects.
- **Ensure fair access to CO₂ infrastructure** for emitters in regions located away from the main CO₂ transport and storage hubs.
- **Promote the inclusion and engagement of local communities, local and/or regional authorities, industries and workers in co-creation of governance rules for CO₂ infrastructure.**

3. Low-carbon markets development: demand-side initiatives

To advance industrial decarbonisation, Europe must foster a market which demands products with minimal climate damage. Boosting demand for such low-carbon products in a way that pulls on all available decarbonisation levers can thus serve as an incentive to invest in the necessary infrastructure needed to deploy the technologies. With such market conditions, industrial producers can then invest in whichever climate solution they deem most appropriate, from material efficiency to alternative production processes, or even CO₂ capture and storage.

Recommendations

- **Establish a science-based methodology for low-carbon products** to accurately account for their embodied carbon based on their whole lifecycle emissions.
- **Revise the EU procurement rules** to include mandatory sustainability criteria.
- **Support the establishment of private buyers’ alliances** of European companies to quickly scale demand for green materials.
- **Assess and establish incentives for upstream producers** of low-carbon products and downstream users of low-carbon end-products.

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¹ See the Strategy paper developed by the Just Transition Platform, available [here](#).
Powering the Transition: Shifting the Energy System from Fossils to Renewables

The global shift towards a sustainable energy system requires a significant transformation in our energy consumption and production practices. It is key to reshape the current fossil fuels-based system to one that efficiently allocates the scarce renewable resources available. The EU championed the inclusion of ambitious language on renewables, efficiency, and a fossil fuel phase-out at COP28, underlining the importance of an energy sector predominantly free of fossil fuels well before 2050. Now is the time to work on achieving these objectives at home to provide global leadership on climate change.

1. Deploying and strengthening electricity grids is crucial for energy transition

A robust grid network, both for the transmission and distribution of electricity, is essential for the EU to achieve its climate goals and support the increasing electrification of end-uses. With a shift from fossil-based centralised power systems to more decentralised renewable energy systems, the infrastructure must also change and adapt. **Interconnecting electricity across European borders is crucial for enhancing energy security and maximising renewable energy integration.** By investing in appropriate infrastructure, EU Member States can rely on neighbouring countries, both within the EU and outside of it, to exchange electricity as needed. This will help balance the variable outputs of renewable sources like solar and wind.

**Recommendations**

- **Implement the Grid Action Plan** to enable the improvement, digitalisation and expansion of grid infrastructure.
- **Address the bottlenecks that are slowing down grid deployment**: slow permitting, lack of skilled workforce, and inadequate manufacturing supply chains of components and critical raw materials.
- **Develop financing strategies** that overcome the severe funding challenges that are currently present around grid infrastructure.
- **Align energy regulators’ mandates with broader decarbonisation goals**.

2. Enhancing Storage, Flexibility, and Real-Time Energy Matching through energy integration

As the energy transition progresses, widespread infrastructure upgrades are critical for supporting energy storage and flexibility to effectively integrate variable wind and solar energy. Increasing flexibility helps accommodate renewable energy variability, ensuring a reliable power supply. However, current approaches often fail to align supply and demand across time and location, leading to discrepancies in carbon accounting versus actual grid conditions. **Proper Granular Accounting synchronises renewable energy production with consumption, prioritising accessible energy sources and incentivising storage and demand-response solutions.**

**Recommendations**

- **Put in place strong support for flexibility measures** such as demand side response and storage to ensure the energy system can deal with increasing supply of variable renewable energy.
- **Ensure that the proposed flexibility assessment methodology** from the Electricity Market Design Reform is incorporated to future policy and network planning.
- **Introduce Granular Accounting** requirements in renewable energy policies and targets to better align markets with the grid’s physical and economic realities, as well as the fluctuations in supply and demand.
- **Adopt mechanisms such as 24/7 guarantees of origin** to match flexible consumption with renewable electricity generation in real time.
3. Prioritising hydrogen with a system efficiency perspective

As a clean burning fuel, hydrogen also has the potential to decarbonise and be used for many purposes. However, **hydrogen production is often very inefficient, requiring much more energy than direct electrification alternatives** (see Figure below). The process of producing green hydrogen incurs significant energy losses due to electricity transmission and conversion losses during electrolysis, compression, and storage. **Because renewable electricity is limited, hydrogen should be allocated most efficiently, to sectors that do not have other decarbonisation options.** At the same time, a full life cycle assessment based on real life data is needed to ensure that blue hydrogen can contribute to decarbonising industry in the short- to medium-term. It is crucial to avoid using averages, such as country averages for methane emissions, for this assessment or allowing the use of offsets to compensate for the emissions associated with hydrogen production.

![Changing energy form makes you lose energy along the value chain](image)

**Source:** Department of Energy, “Sustainable hydrogen as a fuel of the future.”

**Recommendations**

- **Use public funds only for essential hydrogen infrastructure** connecting demand sectors without alternative decarbonisation solutions with production locations, excluding blending or “hydrogen-ready” projects without a concrete timeline and plan to switch from fossil gas to hydrogen or hydrogen derivatives.
- **Develop an EU hydrogen import framework** that ensures a holistic approach to sustainable development well beyond the most optimal allocation of scarce renewables and thorough emissions accounting to incorporate measures and safeguards necessary for a comprehensive and just transition, particularly in prospective exporting countries.
- **Keep the role of hydrogen realistic** in infrastructural planning policies and processes such as TYN-DP, PCIs and AFIR.
- **Adopt a delegated act on low-carbon hydrogen** in line with the EU climate mitigation ambition of reaching carbon neutrality by 2050, this includes:
  - Thoroughly and transparently account for methane leakage in the hydrogen life cycle analysis.
  - Ensure CO₂ capture rates are real, and not accounting tricks.
  - Account for the climate footprint of the electricity along the process.
  - Ensure the uptake of blue hydrogen does not hamper the phase-down of fossil gas while complementing and not hindering the development of a green hydrogen economy.
  - Prohibit carbon offsets and ensure real GHG mitigation is happening on the ground.
Carbon Accounting: Accurately Tracking our Climate Progress

Meeting climate targets on paper means measuring real life climate impact

How we measure and account for carbon and other greenhouse gas emissions is the basis for how we track progress towards climate change mitigation efforts. **Carbon accounting focuses on measuring emissions and removals on the one hand and recognising climate action on the other.** It serves to ensure that we are being honest about the climate impact of our economic activities and that our climate targets are not only about ticking boxes but about physically stopping the climate crisis in its tracks.

The need to, both, **massively cut emissions and increase the amount of CO₂ removed from the atmosphere** is clear. With the European Commission’s communications on the EU’s 2040 climate target and the Industrial Carbon Management Strategy bringing the role of carbon capture technologies and carbon removal processes into the spotlight, work remains to ensure these are properly accounted for and genuinely contribute towards climate action rather than delaying it or providing a new loophole for European emitters.

1. Establish ambitious and transparent climate targets

To reach climate neutrality by 2050 and net-negative thereafter, the **EU must develop the right tools and instruments to operationalise this target**, as well as develop intermediary targets based on the best available science. A clear definition of “climate neutrality” needs to be outlined to better identify which activities are likely to continue emitting GHGs after the 2050. These so-called “residual emissions” must be minimised and neutralised with removals, and the sooner we identify them, the better. Ambition must be expressed in the form of a 2040 climate target which gets as close to the 2050 finish line as possible, noting that those final emissions are likely to be the hardest to eliminate.
Recommendations

- **Define the EU’s climate neutrality target.** by exploring which emissions are so difficult to eliminate that a residual amount may still persist by 2050 and how those residual emissions may be effectively counterbalanced.

- **Establish intermediary targets** which are **ambitious and transparent**, going beyond 90% net emission reductions by 2040.

- **Establish separate targets for emission reductions, ecosystem restoration, and permanent carbon removal,** to ensure that the overwhelming share of the EU’s climate mitigation up to 2050 is achieved by reducing emissions in the first place.
  - Ensure these differentiated targets adds up to the net emission reduction above 90% compared to 1990 levels, as recommended by the European Scientific Advisory Board on Climate Change.
  - Ensure a transparent design of the individual contribution of these targets to ensure that the overwhelming majority of the EU’s climate efforts are driven by emission reductions.

2. Incentivise climate action on its genuine merits

The EU’s climate targets provide essential direction for the economy, yet effective policies are needed to deter climate damage and promote cleaner alternatives. **Reliable monitoring and reporting of climate impacts are crucial**, especially if the European Commission has its eyes set on emissions trading as the primary tool. Without trustworthy carbon accounting systems, accurate attribution of climate impacts is unlikely, thus hindering progress. Moreover, there is a tendency to exaggerate environmental credentials for marketing purposes, leading consumers to settle for marginal improvements instead of demanding transformative change.

Recommendations

- **Develop transparent methodologies** to account for the full lifecycle impact of economic activities, which is spearheaded by input from the scientific community and scrutinised by civil society.

- **Ban misleading environmental claims**, such as those dependent on the purchase of offsets, and ensure the EU and its Member States fairly incentivise climate action.

3. Capturing and Recycling CO₂? Only if its climate integrity is ensured!

Decarbonisation pathways driven by Carbon Capture and Utilisation (CCU), do not always translate into clear climate benefits due to the energy requirement of CCU processes and unclarity around the origin and the “fate” of the CO₂, which is usually rereleased into the atmosphere, resulting only in delayed emissions. The **climate integrity of CCU solutions must be ensured** if the solution is to be considered to contribute towards climate change mitigation efforts.

Recommendations

- **A full GHG lifecycle assessment for CO₂ utilisation** is needed on a case-by-case basis.

- **Utilisation must be targeted to applications with little to no alternatives.** CCU processes involve significant energy losses, usually coming on top of the losses associated with hydrogen production.

- **The renewable energy used to make CCU products should be additional** to the renewable energy deployed to contribute to the energy transition.

- CCU products aiming to store CO₂ for millennia require robust monitoring and verification to be recognised as permanent.
Embodied Carbon: A Silent Driver of Climate Change

Addressing emissions from buildings’ entire lifecycle is key to reducing emissions

The building and construction sector account for more than a third of the EU’s emissions. Emissions go beyond the operation of the building, electricity and heating and cooling – they start even before the construction has begun. Embodied carbon in buildings accounts for all the emissions from the extraction of raw materials to the end of life, including the manufacturing of cement, steel, aluminium, timber, glass, and all construction phases.

‘Whole-life carbon’ emissions consider both the operational and the embodied carbon emissions in a building’s lifecycle. Great efforts have been made in reducing operational emissions, embodied emissions remain insufficiently addressed. Nevertheless, work remains to be done to fully tackle the emissions from the building sector, including those embodied in materials.

1. Decarbonise construction products

Most embodied carbon emissions originate from the product phase before the building is even operational. The largest share of embodied carbon comes from the manufacturing of construction products, followed by emissions stemming from construction activities. Therefore, a robust policy framework and successful implementation is crucial.

The standard manufacturing process of cement (and therefore concrete) and steel are responsible for large CO₂ emissions. Mechanisms that promote emissions reductions, while taking into account the potential environmental or performance trade-offs and the timeline needed to achieve said reductions, are crucial.
Recommendations

- **Ensure the implementation of whole-life carbon (WLC) requirements** as outlined in the Energy Performance of Buildings Directive (EPBD).

- **Set strong environmental requirements for cement** in the Construction Products Regulation (CPR) acquis well before the deadline set in the ESPR.

- **Leverage CPR’s disclosure requirements** to improve data collection on embodied carbon levels, in order to set ambitious thresholds in National WLC Roadmaps.

- **An Ecodesign (ESPR) Delegated Act to tackle steel emissions** should be done in a way that retains the value of the steel product for as long as possible, prioritises the use of secondary steel where necessary while still incentivising the production of low-carbon steel.

### 2. Create lead-markets for low-carbon products

It is not enough to decarbonise the supply of construction materials, **demand-side initiatives have a key role to play to enable the creation of markets for low-carbon products**, while reducing the demand for highly polluting ones.

**A holistic strategy to promote the uptake of low-carbon products that considers both supply and demand-side initiatives is key.**

Recommendations

- **Harness the purchase power of public buyers** by setting mandatory green public procurement (GPP) criteria, at both sectoral and EU-level legislation, potentially linking to ambitious requirements to be developed in the CPR.

- **Propose and revise specific legislation on GPP**, like the Public Procurement Directive, and the Clean Vehicles Directive.

- The upcoming **revision of the Taxonomy climate mitigation criteria** for construction and manufacturing must **include embodied carbon considerations**. This clearly marks what a sustainable building is towards investors, stimulating demand for low-carbon buildings and construction materials.

### 3. Looking at the full picture: reduce emissions beyond materials

While construction products represent the largest share of emissions of a building during its lifecycle, other phases can be tackled to reduce the overall embodied carbon of the building.

Recommendations

- **Promote zero-emission construction sites (ZECS)**. Empower and enable local authorities to take up electric machinery in construction works.

- **Prioritise renovation** over new buildings to reduce the carbon footprint of the whole building stock.

- **Engage stakeholders** in the design phase as most of whole-life carbon is a direct result of the way the building is design – including the end-of-life emissions.
Rethinking our Economy and Society for a Real Green and Just Transition

1. Finance: direct more capital towards a net-zero Europe

Financing the green transition is one of the most urgent aspects that the next European Commission needs to face. Not only must capital be mobilised and diverted towards renewable energy systems (RES) and low-carbon technologies, but existing capital should shift from fossil-based activities towards low-carbon initiatives. This will avoid lock-in effects and stranded assets while developing markets for low-carbon technologies which can substantially contribute to the net-zero objectives of the EU. To enable this shift, it is crucial to set a clear and science-based definition of which activities substantially contribute towards these objectives.

Recommendations:

- Mobilise additional public capital towards the development of RES and low-carbon projects and technologies.
- Shift current public capital from fossil-based activities towards low-carbon initiatives.
- Ensure that private capital is directed towards RES and low-carbon projects and initiatives, dis-incentivise investments towards fossil-based activities.
- Immediate and complete phase-out of all public funding to fossil-based projects and initiatives where they do not address energy poverty or just transition.
- Enable clear and transparent science-based classification and categorisation mechanisms for determining when projects contribute substantially to the European net-zero objectives.
  - Revise the EU Sustainable Finance Taxonomy to ensure that only those activities that substantially contribute to the net-zero targets are financed. This means excluding fossil gas and including criteria that consider the embedded emissions in construction products.
- Ensure that the new Multiannual Financial Framework (MFF) from the years 2027-2034 allocates enough funds to climate policies and minimises funds which are not compatible with the EU’s net-zero targets.

2. Economy: pricing carbon effectively

Market failures jeopardise overall efforts to minimise the worst impacts of climate change, which the EU has rightfully chosen to prioritise. Yet, the current economic system still favours fossil-based activities over low-carbon ones. This is especially true when the real cost of climate change is not fully accounted for, leading to continued use and dependence on fossil-based activities. Even with the EU having the world’s largest Emission Trading System (ETS) and with the advent of a Carbon Border Adjustment Mechanism (CBAM), more must be done to ensure that market actors are given a carbon price signal which is sufficiently predictable and high, ensuring activities are priced effectively considering the products’ life-cycle emissions and the cost of climate inaction. This is in turn will allow changes in production and consumption patterns, while providing long-term certainty for investors to take on climate action and discouraging them from investing in the fossil-based economy.
Recommendations:

- **Implement a CBAM that accounts for all life-cycle emissions of CBAM-related products.** To do so, the European Commission must develop secondary legislation on the matter which:
  - Expands the scope of CBAM to include all sectors currently provided with free allowances under the EU ETS, as they are at the greatest risk of so-called “carbon leakage”.
  - Includes the indirect emissions of all CBAM sectors, including iron and steel, aluminium, and hydrogen.
  - Develops a methodology for the calculation of embedded emissions that includes all emissions disaggregated from any potential offsets or reductions elsewhere in the system.

- **Ensure that the revenues coming from the CBAM and EU ETS are spent on effective climate action both within the European Union and abroad.** The revenues spent on industrial decarbonisation must be designed in a credible way and leave no room for greenwashing. By doing so, these measures must take into account criteria such as climate impact, system effects, timing, scalability and the “Do Not Significant Harm” principle. Moreover, effective verification measures must be put in place to track progress and course correct should this be necessary.

3. **Ensuring a just transition**

The green transition, bringing a sudden but necessary economic shift, must prevent leaving behind regions and people reliant on the fossil-based economy for their livelihoods. The principle of a ‘just transition’ underscores the need to address the social aspects of the green transition by engaging communities, offering skill development (re- or upskilling), and facilitating job retention alongside the emergence of green employment opportunities. Regions and workers economically relying on so-called hard-to-abate industries are particularly vulnerable and should benefit from EU support, for example in the development of CO2 infrastructure which can decarbonise those industries while maintaining livelihoods.

Recommendations:

- **Ensure that the social aspect** of the green transition is included in the implementation of green policies to avoid exacerbating social inequalities.

- **Include community engagement requirements** when realising renewable and low-carbon projects, such as grid developments and CO2 infrastructure. Stakeholders involved in this process must actively engage and involve the wider public and communities that are most impacted. This needs to be done recognising that each community is unique, with distinct experiences, priorities, and modes of engaging with public institutions; there is no one-size-fits-all approach to community engagement.

- **Ensure that public engagement takes place** as early as possible during or before the planning phase of project development. This includes both scientifically sound information transfer as well as a two-way consultation process.

- **Explore synergies between CCS and Just Transition** policy and funding frameworks to increase public support and economic feasibility of CCS projects in the Just Transition Territories.6

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6 See the Just Transition Territories, Just Transition Fund 2021-2027, European Commission [here](#).
Bellona Europa is an independent, non-profit organisation that meets environmental and climate challenges head-on. We are result-oriented and have a comprehensive and cross-sectoral approach to assess the economics, climate impacts and technical feasibility of necessary climate solutions. To do this, we work with civil society, academia, governments and polluting industries.

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