CLEAN AIR TASK FORCE

Clean Air Task Force recommendations to the European Investment Bank

EIB Climate Bank Roadmap 2026-30: Strengthening the EU's climate action toolbox through strategic sustainable finance

Clean Air Task Force (CATF) appreciates the opportunity to provide input on the EIB Group Climate Bank Roadmap Phase 2 and the accompanying Energy Sector Orientation. As a public, policy-driven bank with a strong balance sheet and AAA credit rating, the European Investment Bank (EIB) is uniquely positioned to support the European Union (EU) in its clean transition. Phase 2 of the Climate Bank Roadmap offers an opportunity to double down on vital funding for climate action, while being more strategic in selecting priority areas for support.

Climate change arguably remains the most urgent challenge of our time. Record-breaking temperatures month after month and increasingly deadly and economically devastating climate disasters demonstrate that decisive and sustained action is still needed to cut planet-warming emissions. While other priorities for public funding and support have emerged, addressing climate risks remains a precondition for sustaining a prosperous and safe society. **It is therefore crucial that the EIB maintains a high level of ambition in financing climate action.** This is well in line with Political Guidelines for the 2024-2029 European Commission and EU policy generally, to stay the course on the legally binding decarbonisation objectives set out in the European Green Deal. Moreover, it supports other EU objectives like economic growth and competitiveness by stimulating structural transformation towards an innovative, value-adding, and resource-efficient economy.

Within the broader climate finance umbrella, **the EIB should provide more meaningful support to a broader range of clean energy generation pathways and other climate-protecting technologies**. While the Climate Bank Roadmap 2021-2025 commits to supporting various innovative low-carbon technologies, including carbon capture and storage (CCS), nuclear fission and fusion, EIB funding for these projects has lagged in practice. More specifically, only one or two projects in each of these categories have been granted EIB support. Given that these technologies are either indispensable or have strong value propositions, they are deserving of EIB support and funding. A broad suite of clean technologies that are commercially available is needed to cater to diverse national and regional contexts, and to maximise the chances of a successful clean transition overall.

As also stated in the 2024-2029 Political Guidelines, 'reaching climate neutrality by 2050 will require a wide range of innovative technologies, in areas from mobility to energy'. This has also been reaffirmed by the European Commission's Communication on the EU's 2040 climate target and the Clean Industrial Deal Communication, and operationalised through legislation like the Net-Zero Industry Act. On energy specifically, the Commission states that 'All zero and low carbon energy solutions (including renewables, nuclear, energy efficiency, storage, CCS, CCU, carbon removals, geothermal and hydro-energy, and all other current and future net-zero energy technologies) are necessary to decarbonise the energy system by 2040.' **As an EU 'policy taker', the EIB should ensure that this technology-open approach is reflected in its lending policy and practice.**

More specifically, **the EIB should endeavour to allocate meaningful support to:**

- **Clean firm energy generation pathways like next-generation geothermal, nuclear fission, and fusion energy** – These pathways can complement weather-dependent energy sources to guarantee an uninterrupted clean energy supply 24/7, lowering the system cost overall, reducing the need for unabated fossil fuel back-up generation, and sustaining regions with fewer weather-dependent energy resources.
- **Climate-protecting technologies like carbon capture and storage and clean hydrogen** – These technologies are needed to address hard-to-abate, often unavoidable process emissions from heavy industry and transport, and can enable the production of essential low-carbon products. In the case of Direct Air Capture and Bio-CCS, these are needed to remove carbon from the atmosphere and enable carbon neutrality – and eventually net-negative emissions.

See below for further information on individual technologies and specific considerations for their financing.

Innovative clean technologies with lower technology readiness levels – but breakthrough innovation potential – require particular consideration. According to the International Energy Agency, 35% of the emission reductions needed to reach net-zero will come from technologies that are not yet available on the market. A public bank like the EIB has a role to play in accelerating the development and deployment of these technologies by providing long-term, patient capital. Innovative climate technologies often struggle to acquire sufficient levels of financing from commercial banks prioritising short-term profit generation. Moreover, fiscally constrained national governments are often unable to address this market failure on their own. The EIB can support both by taking on part of the investment risk. The Draghi report on the future of European competitiveness has urged the EIB to 'take on more and larger high-risk projects', 'making greater use of the EIB Group's own financial firepower'.

Moreover, **funding for clean industrial clusters co-locating multiple decarbonisation technologies and infrastructure is particularly important** as it allows for:

- Shared infrastructure economics reducing unit costs through aggregated demand
- Portfolio risk diversification across multiple industrial emitters
- Coordinated permitting and regulatory compliance streamlining project development
- Regional economic development benefits supporting just transition objectives

The EIB could potentially finance cluster development packages, providing integrated solutions for industrial decarbonisation.

Clean firm energy generation pathways

Nuclear fission can make a significant contribution to the EU's climate, energy security and clean tech leadership objectives. As a technologically mature zero-carbon energy source with a number of other advantages, it can supplement weather-dependent renewable energy sources in guaranteeing a reliable provision of large amounts of low-carbon electricity. Beyond electricity generation, nuclear energy lends itself well to other applications such as district heating and other process heat industries. Advanced reactors raise the prospects for the role of nuclear fission even higher: their enhanced flexibility and operating characteristics can offer potentially shortened project timelines, more investible projects, and expanded application possibilities.

In recent years, spurred by increased attention to import dependencies, energy supply reliability, and energy cost, several EU Member States have announced extensions of the operating lives of existing nuclear reactors, as well as new builds. About half of the Member States are already making use of nuclear energy in pursuit of their decarbonisation and energy supply objectives, with installed nuclear capacity expected to increase, as laid out in the European Commission's 2025 Nuclear Illustrative Programme (PINC). Globally, 31 countries, many of them European, have committed to tripling nuclear energy capacity by 2050 as a way of reaching the net zero and leading financial institutions as well as major energy users have pledged to support that effort.

Thus far, securing affordable financing has been a significant barrier to nuclear energy expansion. Nuclear energy projects are often characterised by long construction timelines during which there is no incoming revenue and the interest on borrowed funds compounds significantly. This is further exacerbated by the perception of high political, market price, and construction risk among private banks and investors who ask for hefty risk premiums. The result is a high cost of capital, elevated construction costs (CAPEX)[1] and overall project costs – ultimately undermining the economic viability of nuclear energy projects and raising the cost of electricity for end users[2].

These costs have escalated in recent decades, especially in the West, largely due to the loss of know-how after a decades-long halt in nuclear construction. However, as the industry regains competence and European component suppliers scale up production, construction timelines are expected to shorten and the cost of components to fall, lowering overall costs. Economy of scale achieved through an orderbook model – a series of standardised, repetitive builds or 'learning by doing' – can significantly cut nuclear project costs and accelerate timelines. Recent builds in the United States and United Arab Emirates have already seen a 30% cost reduction between consecutive units, demonstrating the value of standardisation and capitalising on lessons learnt.

However, unlocking the full potential of nuclear energy will require new financing instruments lowering short-term risks – thereby lowering the cost of capital – and sharing long-term rewards. Public investment will be required to de-risk at least several units, until the industry increases the delivery confidence by completing projects on time and on schedule, at which point risks and associated premiums will decline significantly. Patient capital is needed particularly during

[1] Contrasting with relatively low operational (OPEX) and decommissioning costs.

[2] Read more about the challenges of financing nuclear energy projects and potential risk-sharing models, applied to the case of Poland, in a dedicated CATF briefing memo.

construction, extending the timeline for returns beyond the typical 20-year payback period and aligning more closely with a 60- to 80-year lifetime of an average nuclear plant.

Given a strong value proposition and increased momentum for nuclear energy in the EU and beyond, the EIB should facilitate access to financing by providing clear guidance on support options to potential nuclear project developers. Notably, the Bank should prioritise nuclear power generation investments that help unlock private capital by providing construction risk-sharing financing tools. An example of good practice is a Regulated Asset Base (RAB) model, recently implemented by the UK and being considered by several EU Member States.

Moreover, the EIB's programme for corporate Power Purchase Agreements (PPAs), under which the Bank supports companies in long-term purchasing of electricity generation, must be expanded to all forms of demonstrably clean electricity generation, including nuclear fission. The European Commission has committed to working with the EIB on promoting PPAs in a technology-neutral manner, as stated in the Action Plan for Affordable Energy and the Nuclear Illustrative Programme – which should include nuclear.

In addition, the EIB should closely collaborate with the European Industrial Alliance on Small Modular Reactors (SMRs) in order to help develop the SMR value chain in Europe. Flexible loan guarantees covering up to 70% of capital costs for SMR factories can be particularly relevant for de-risking investment in next-generation nuclear capacity.

Find more information on nuclear energy here.

Next-generation geothermal energy technologies are deserving of public support and investment as they could tap into a zero-carbon, energy-dense, renewable energy source for both heat and electricity, available everywhere with minimal land use. More specifically, Enhanced Geothermal Systems (EGS), closed-loop geothermal systems (AGS), and superhot rock geothermal systems represent promising pathways that require both demonstration funding and long-term project finance.

- **Enhanced geothermal systems and closed-loop geothermal systems** have advanced considerably, with multiple projects underway globally that could inform scalable applications in the EU. These projects need targeted investment in testbeds, drilling innovations, and risk-sharing financial instruments.
- **Superhot rock geothermal** is a next-generation energy generation pathway that makes use of deeper, higher temperature geothermal resources. As such, it is applicable to a wide range of geologies and could be harnessed anywhere in Europe. With significant public investment leading to successful proof-of-concept, superhot rock energy could become a competitive clean firm energy production at gigawatt-scale that could be sited across Europe in the 2040s. It has the potential to deliver more than 5–10 times the energy output of conventional geothermal per well, and to do so at a globally competitive cost, but requires high-risk, capital-intensive pilot projects. The EIB should make use of its financial risk tolerance to support these early demonstrations and help crowd in private capital.

The EU is endeavouring to make better use of geothermal energy in achieving its climate, economic, and security objectives. Notably, the European Commission has committed to putting forth an EU Action Plan on Geothermal Energy, as also urged by the European Parliament and the Council. In this context, the EIB Group should contribute to the common effort by making use of its early-stage innovation support mechanisms to advance project development, drilling and materials testing, and scale-up – filling a notable financing gap in geothermal innovation.

Find more information on advanced geothermal energy technologies here.

Fusion energy is a promising potential clean firm energy source that the EU could leverage in boosting its energy security, achieving technological leadership, and reaching its climate targets. Commercial deployment of fusion energy could unlock abundant supplies of energy for clean electricity generation and fuels production, as well as stabilise grids and lower energy costs. Fusion energy technology has seen a number of scientific and technical breakthroughs in recent years, as well as an influx of private capital. However, further public support is needed to stimulate more investment and develop and commercialise the technology as fast as possible.

With the European Commission set to publish the EU's first ever Fusion Strategy in 2025, the EIB should help accelerate technological developments in fusion by supporting the related startup ecosystem in Europe. Developing and commercialising fusion will require strong Public-Private Partnerships (PPPs). Indeed, the Draghi report on the future of European competitiveness recommended setting up a PPP to promote a rapid, economically viable commercialisation of fusion energy. The only EIB-funded project so far with direct implications for fusion energy was a research consortium, not the type of PPP model needed to support commercial fusion energy deployment. The project relied on EUROfusion co-financing from Euratom and EU Member States, which would not necessarily be an option for a private fusion energy company. Fusion energy startups should therefore be better supported in Phase 2 of the Climate Bank Roadmap implementation.

Fusion differs from nuclear fission in several key characteristics, therefore the EIB should use separate, bespoke criteria for screening fusion energy projects. The European Joint Undertaking for ITER and the Development of Fusion Energy could serve as a technical partner to the Bank, supporting the assessment of individual fusion projects.

Find more information on fusion energy here.

Other key climate-protecting technologies

Carbon capture and storage (CCS) technologies will be necessary for achieving climate neutrality by 2050, as shown by nearly all modelling scenarios[3], both to rapidly reduce carbon emissions as well as to remove CO_2 from the atmosphere. Notably, in all scenarios highlighted by the European Scientific Advisory Board on Climate Change (ESABCC) in their advice on the EU 2040 climate target, CCS provides carbon removals and plays a significant role in reducing emissions from industrial processes and fossil fuels. Their analysis finds that up to 490 million

[3] Intergovernmental Panel on Climate Change, Working Group III's Contribution to the Sixth Assessment Report (2022)
European Commission – In-depth analysis in support of the Commission Communication (2018/773) A Clean Planet for all: A European long-term strategic vision for a prosperous, modern, competitive and climate neutral economy (2018)
International Energy Agency – CCUS in Clean Energy Transitions (2020)
DNV – Pathway to Net Zero Emissions (2021)

tonnes of CO_2 may need to be captured and stored by 2050. The European Commission's Industrial Carbon Management Strategy lays out an ambitious plan for scaling up CO_2 capture, utilisation, and storage to align with the EU's 2040 climate target, targeting an annual CO_2 injection capacity of at least 250 million tonnes per year in the European Economic Area (EEA) by 2040. In sum, there is no climate neutrality in Europe without CCS.

However, while over 87 CCS projects are in varying stages of development across the EU, current rates of CCS deployment are far below those in modelled pathways limiting global warming to 1.5°C or 2°C. Importantly, there are no operational commercial-scale CO_2 storage sites in the EU. With the Net Zero Industry Act mandating 50 Mt CO_2/year storage capacity by 2030 and only 35 Mt capacity expected from announced projects, urgent action is needed to close the investment gap. This is particularly crucial in the 2030-2040 period, when the deployment should be at its fastest, as laid out in the International Energy Agency's pathway to net zero.

The prevailing policy instrument incentivising decarbonisation across the power and industrial sectors remains the EU Emissions Trading System (EU ETS) carbon price. While, in principle, deploying CCS to mitigate future payments of higher carbon prices should yield a compelling business rationale over the medium to long term, the reality is more challenging. For project deployment in the current context, revenue streams, or equivalent contractual arrangements, must be sufficient to cover the full costs associated with CO_2 capture, transportation, and storage, as well as costs associated with financing the projects.

Currently, the fundamental economic barrier to advancing CCS in the EU at scale arises from the disparity between the costs required for capture, transport, and storage infrastructure and the relatively low prevailing EU ETS price – currently around €70/tCO_2. CATF analysis[4] shows that levelized costs of CCS value chains in Europe can range from 67 to 286 €/tCO_2. Layered onto this, volatility and uncertainty regarding the trajectory of the EU carbon price in the years ahead continue to act as a deterrent for near-term private sector investment. The business case challenges are exacerbated by the 5–13-year development timelines for CCS projects, creating significant financing risks that private markets cannot adequately price and leading to higher interest rates for project financing. As a consequence, without additional financial de-risking measures, the pace of CCS deployment in Europe risks falling well short of what is needed to enable robust industrial decarbonisation.

While successful projects like Northern Lights and Porthos demonstrate the viability of state-supported CCS development, many EU Member States, particularly in Central and Eastern Europe, lack the fiscal capacity for similar interventions. Additional financial incentives are required to provide a business case for developments in the near term, ensuring the technology and its supporting infrastructure is scaled up in time. The EIB should significantly expand its CCS portfolio beyond a single investment to catalyse the industrial-scale deployment the EU needs, while looking ahead towards climate neutrality by helping to scale novel technologies that are especially risk-intensive and underfinanced such as Direct Air Capture and Storage (DACCS) – which will be required to realise net-negative emissions but must begin to be scaled now.

Find more information on carbon capture and storage technologies here.

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[4] CATF analysis from forthcoming update to the European CCS Cost Tool (2025)

Clean hydrogen and hydrogen-based fuels will be an essential tool for the decarbonisation of hard-to-electrify sectors like heavy industry and transport. Hydrogen will also remain a critical feedstock for industrial purposes. However, due to its energy-intensive nature and challenging properties, it must be deployed in a sensible manner. Notably, its use should be prioritised for sectors that need it most – those that already use hydrogen or that have few other energy-efficient or cost-effective decarbonisation alternatives: refining and chemicals production, steel production, shipping, and aviation.

Investment in renewable hydrogen should concentrate on regions that have made significant progress in decarbonising their electricity grids. Producing hydrogen on grids with high carbon intensity will reduce the climate benefits of building clean power. Additionally, investment should be refocused and prioritised in developing the next generation of electrolyser technology, as there is little to differentiate current technologies from established electrolyser manufacturers, which have an overcapacity compared to demand.

While renewable hydrogen is not available in sufficient quantities to meet the demand in Europe, EU Member States and their industries must be empowered to make use of a full array of clean hydrogen production pathways based on proven technologies (such as steam methane reforming or auto-thermal reforming with installed carbon capture and storage technology) to rapidly ramp up clean hydrogen production capacity.

Given the integrated nature of hydrogen into existing industrial processes that require deep decarbonisation, as well as the co-dependency of clean hydrogen production on other technologies like CCS, clean firm power, and expanded electrification, any funding for clean hydrogen projects should not be taken in isolation and instead should be streamlined around priority industrial sites, implementing infrastructure and coordinating regulations in tandem with the other required critical decarbonisation technologies.

Additionally, importing and transporting hydrogen to its demand centres will require significant infrastructure build out. The most efficient pathways must be assessed and chosen carefully before investments in such projects are made. Public resources should be leveraged to prioritise the most promising and cost-effective technologies first, recognising that, while option value is important, so is avoiding expensive investments in infrastructure that is inherently inefficient or unlikely to be used.

Find more information on clean hydrogen here.

About Clean Air Task Force

Clean Air Task Force (CATF) is an international non-profit organisation working to safeguard against the worst impacts of climate change by catalysing the rapid development and deployment of low-carbon energy and other climate-protecting technologies. With 25 years of internationally recognised expertise on climate policy and a fierce commitment to exploring all potential solutions, CATF is a pragmatic, non-ideological advocacy group with the bold ideas needed to address climate change. Visit cleanairtaskforce.org and follow @cleanairCATF