

## **Public consultation on the European Investment Bank Energy Lending Policy**

The Global CCS Institute welcomes the opportunity to share its views and input to the European Investment Bank (EIB) public consultation on its Energy Lending Policy. This consultation comes at a critical time in Europe's energy transition to a net-zero emission economy by mid-century. The consultation is a unique opportunity for the EIB to align its lending policies with Europe's strengthened climate ambition while supporting European economies and industries to remain competitive. The EIB Energy Lending Policy should reflect the ambition of the European Commission's proposal for a long-term strategy for a climate neutral economy and support the targets set for 2030 in the Clean Energy for all Europeans package. The Institute recognises the important role of the EIB in supporting the EU's climate goals and Europe's energy transition. To strive towards a climate neutral EU economy, the EIB should continue to support the three pillars of the EU energy policy: security of energy supply, competitiveness and sustainability.

**Therefore, the Institute strongly supports that EIB's Energy Lending Policy should:**

- Cease support of unabated fossil fuel sources of emissions
- Embrace a technology neutral approach and support clean energy investments in technologies such as carbon capture and storage and relevant infrastructure
- Support the innovation - that is bringing a technology ready for commercial deployment - of carbon capture and storage technologies through de-risking projects and explore opportunities to collaborate with other policy instruments like the Innovation Fund
- Continue to support research and development into new carbon capture and storage technologies

**EIB should avoid investments towards unabated fossil fuel sources of emissions.** The Institute shares EIB's "technology neutral" approach and its support towards a "no regret approach" to fossil fuels projects to avoid CO<sub>2</sub> emissions lock-in. In the light of the review of the current Energy Lending Policy, it is important to have a level-playing between different technologies and clean energy sources, including carbon capture and storage (CCS), which will have a critical role in supporting the decarbonisation of Europe's energy system. Technologies like CCS have the potential to deliver major new energy and innovation opportunities alongside economic benefits in Europe.

The European Commission vision for Europe's long-term climate strategy has included CCS as one of the seven building blocks that will enable a transition to a climate neutral economy. In the various scenarios put forward in the vision for the EU long-term strategy, the contribution of carbon capture ranges from 52 MtCO<sub>2</sub> to 606 MtCO<sub>2</sub>, making a strong case that CCS has a role to play in supporting Europe's path to a climate neutral economy. The important role of CCS is also reflected in the recent IPCC SR15 report where three of the four pathways include CCS and bioenergy with CCS (BECCS) as necessary mitigation technologies.

**To achieve Europe's ambitious climate and energy targets, all solutions and mitigation options will be needed to tackle the decarbonisation challenge and ensure a cost-effective and sustainable energy transition.** Alongside renewables, energy efficiency and other mitigation measures, CCS will support the decarbonisation of the electricity system and other hard-to-abate sectors including cement and steel production. It can also facilitate the production of decarbonised energy and secure a sustainable, affordable and reliable energy supply. CCS can provide flexibility in generation, balance intermittent

renewable generation and effectively meet demand response in an increasingly renewable electricity grid. CCS can also be an enabler and source of negative emissions with BECCS.

**Gas is expected to continue to be part of Europe’s energy mix in decades to come<sup>1</sup>. CCS can deliver a cost-effective decarbonisation pathway for natural gas processing and decarbonise gas supply with the production of hydrogen from Steam Methane Reforming (SMR).** The large industrial-scale production of hydrogen from natural gas will be complementary to electrolysis, given its current costs, demand and supply constraints.

**With its new Energy Lending Policy, the EIB can help to set up a stable and predictable policy framework to drive investment in low-carbon technologies and clean energy solutions like CCS.** The scale-up of CCS deployment will require significant investment in capture, transport and storage infrastructure. The Institute believes that the EIB should prioritise investments that will bring value to European economies and societies. In addition to its role as a climate mitigation technology, CCS technologies have the potential to generate value across the economy by creating new industries, retaining and creating employment. CCS can also support the creation of a new energy economy with hydrogen.

The EIB has an important role to play to tackle some of the challenges around innovative technologies like CCS that require access to capital given high upfront costs for project development and deployment. Given that CCS is still in early market development in some countries, the EIB can play an important role in providing capital support and reduce risk exposure of certain projects.

## About the Global CCS Institute

The Global CCS Institute is an international think-tank backed by governments, industry and NGOs and represented in seven countries. The organisation works to accelerate the deployment of CCS, a proven technology endorsed by science and academia including support from the IPCC and the IEA. The technology will be pivotal to meeting international climate change targets, providing energy security and decarbonising industry.

To deliver this, the Institute works to achieve these key goals:

- Building knowledge – through the collation of data, and dissemination of up-to-the-minute information
- Shifting the narrative – by communicating the case for CCS across countries and constituencies in compelling and contemporary ways
- Enabling investment – by collaborating with members to create a confident policy environment for the next wave of CCS facilities.
- Providing trusted advice – the Institute is an impartial organisation that seeks to advise and educate policymakers and stakeholders about CCS

The Institute’s input to this submission builds on its extensive experience and expertise in policy, legal and regulatory matters related to CCS. The Institute has strong knowledge of CCS technologies and CCS facilities both in Europe and globally. The organisation also actively engages with a variety of stakeholders including policymakers, governments and financial institutions to inform policy developments related to CCS.

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<sup>1</sup> <https://www.iea.org/weo2018/>

## General questions

**Q1: Do paragraphs 15-27 above provide a reasonable characterisation of the long-term energy transformation? Are there additional dimensions that the Bank should consider when reviewing its Energy Lending Policy?**

In the document put forward by the EIB, it is evident that Europe and the rest of the world are confronted by a changing global energy system. Significant transformations of the global energy sector will be required to successfully achieve the long-term climate targets agreed under the Paris Agreement, this while ensuring access to energy and security of supply. Against this backdrop, there is the need to undertake a comprehensive approach to clean energy and decarbonisation efforts both in the power sector and the rest of the energy sector. An approach that will be technology-neutral and allow clean energy sources to support other decarbonisation efforts and work hand-in-hand to further integrate renewables in the grid. To deliver a decarbonised energy system in the timeframe required, electrification will need the support of other decarbonisation strategies including CCS.

According to the IEA 2018 World Energy Outlook, energy-related CO<sub>2</sub> emissions rose by 1.7% and are predicted to continue to grow in 2018.<sup>2</sup> Natural gas will surpass coal in 2030 to become the second-largest fuel in the global energy consumption. The EIB has also highlighted that in the IEA's Sustainable Development Scenario (SDS) and New Policies Scenario (NPS) the demand for natural gas is expected to grow. In Europe, gas is an important feed for several sectors of the economy, both in industry and households.

The full decarbonisation of the energy system will require considerable amounts of renewable energy electricity paired with gas, needed for flexibility, energy security and high temperature industrial heat. Decarbonised gas and hydrogen production from SMR with CCS can underpin a cost-effective energy system and significantly reduce the carbon footprint of natural gas processing. Currently, around 50% of hydrogen globally is produced from natural gas through SMR and only 2% is produced from electrolysis of water.<sup>3</sup>

Hydrogen has the potential to support the transition towards a sustainable energy supply. It offers a wide-variety of applications and can decarbonise electricity production, industry and transport. In sectors where electrification is not feasible or the costs implications too high, hydrogen can play an important role to enable large scale emission reductions.<sup>4</sup> Working alongside hydrogen via electrolysis, the production of hydrogen from natural gas using SMR will deliver fast decarbonisation given its ability to scale-up rapidly and deliver high volumes of hydrogen. Hydrogen via electrolysis will need some time to ramp up related infrastructure and renewable generation capacity while bringing down related costs in order to meet future hydrogen demand. Hydrogen by means of SMR offers a sustainable energy supply while accelerating the pace of the energy transition.<sup>5</sup> In addition, there can be significant cost reduction opportunities as some of the existing gas infrastructure can also be repurposed to transport and supply hydrogen and/or CO<sub>2</sub> in the case of CCS.

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<sup>2</sup> <https://www.iea.org/weo2018/>

<sup>3</sup> <https://www.iea.org/weo2018/>

<sup>4</sup> <https://www.theccc.org.uk/2018/11/22/hydrogen-is-a-credible-option-for-the-future-the-uk-must-now-prepare-for-the-key-decisions-on-zero-carbon-energy/>

<sup>5</sup> <https://www.topsectorenergie.nl/sites/default/files/uploads/TKI%20Gas/publicaties/20180514%20Roadmap%20Hydrogen%20TKI%20Nieuw%20Gas%20May%202018.pdf>

Energy-intensive industries in Europe will need a reliable source of feedstock and heat for production processes to remain competitive in the global market. There is an opportunity to provide decarbonised gas and zero-carbon hydrogen and a secure energy supply.

There are several projects underway in Europe that showcase the potential of CCS in hydrogen production. The H21 North of England<sup>6</sup> project aims to decarbonise 14% of UK heat. The H2M project (Vattenfall, Equinor, Gasunie) in the Netherlands aims to convert a gas fired power plant to hydrogen with CCS.

CCS is a proven and safe technology in commercial operation for over 40 years. There are currently 23 commercial large-scale CCS facilities around the world: 18 in operation, 5 in construction, plus 20 in various stages of development. In Europe, only two CCS projects are in operation, both in Norway. It is clear that CCS can effectively contribute in mitigating emissions and support the energy transition. In the context of the current review of EIB's Energy Lending Policy, the Institute believes that EIB should recognise that the role of CCS in the energy transition and ensure that it receives equal consideration in its energy investments. This will reinforce EIB's current technology-neutral approach.

**Q2: As set out in Box 1, the Bank believes it has a robust framework to ensure that energy projects being financed are compatible with long-term climate targets. Do you agree? Are there areas where the Bank can improve?**

In the provided document, Box 1 explains the Bank's framework clearly and succinctly. It is understood that there is a split between lending for two groups of projects: (1) 70% for those that contribute towards the Bank's corporate target for climate action (renewable energy and energy efficiency) and (2) 30% for those that are aligned with long term climate targets (i.e. gas infrastructure, gas-fired power generation).

Although it is not mentioned which category CCS would fall into, long-term climate targets is the most obvious as this relates to infrastructure projects. Based on figures quoted in Paragraph 7, this category represents approximately EUR 4.05B of lending per annum. Considering that the average cost of a large-scale CCS project is between EUR 0.7B and EUR 1B (Zero Emissions Platform, 2011)<sup>7</sup> there is potential for the fund to make a significant contribution towards CCS projects. This can be in the form of investments towards capture facilities or transport and storage infrastructure. It is well understood that, in the presence of a policy framework to support CCS, shared transport and storage infrastructure can significantly diminish the cost of CCS projects (Pale Blue Dot, 2018)<sup>8</sup> as well as project risks – such as storage liability and the interdependency risk between capture and storage operators – which in turn facilitates access to debt financing for capture projects. Shared transport and storage networks are at the core of the Northern Lights project in Norway, the Rotterdam (PORTHOS) project in the Netherlands and the Acorn project in the UK.

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<sup>6</sup> <https://northerngasnetworks.co.uk/h21-noe/H21-NoE-23Nov18-v1.0.pdf>

<sup>7</sup> <http://www.zeroemissionsplatform.eu/library/publication/165-zep-cost-report-summary.html>

<sup>8</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/677721/102\\_51BEIS\\_CO2\\_TS\\_Business\\_Models\\_FINAL.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/677721/102_51BEIS_CO2_TS_Business_Models_FINAL.pdf)

Per the safeguards featured in Box 1, CCS projects are, by default, low emissions and will meet the Bank's EPS criteria. As for the carbon price set by the Bank, the 'High' and 'Central' values are in line with what is forecasted for CCS projects over the same period (Irlam, 2017).<sup>9</sup>

**Q4: How can EIB reinforce its impact towards ensuring affordability, addressing social and regional disparities and support a just energy transformation?**

CCS can help to support a cost-effective energy transition by providing an affordable and reliable energy supply. It can also support a just transition for all with the economic growth opportunities offered by the deployment of CCS bringing jobs, maintaining existing industries and creating new industries.

There is considerable value that can be achieved as a result of the deployment of CCS. By investing in the CCS sector, EIB can ensure that the energy transformation allows fossil-fuel dependent industries to decarbonise their energy sectors without compromising the jobs and livelihoods.

In terms of regional disparities, some countries' economies will be highly dependent on existing fossil fuel resources, including natural gas and coal. If CCS is deployed more broadly across the region, these resources can continue to be utilized, thereby maintaining economic stability in these countries.

CCS projects, which are challenging to develop, not least because the development of CCS facilities is capital intensive and also perceived as high risk by equity investors. Since risks drive the cost of capital, this results in projected returns being lower than investors' hurdle rates. The EIB can help to improve conditions by qualifying CCS projects for concessional finance (interest rate subsidies) or impact finance, which will significantly reduce the cost of capital or provide capital that may not be available in this sector, thereby improving the return of CCS projects.

**Theme 4: Securing the infrastructure needed during the transformation**

**Q13: In light of the long-term nature of the network development plans, which type of projects should the Bank focus upon? In addition to PCIs, should the Bank prioritise newer investment types, for instance in digital technologies?**

According to the EIB, projects of common interest (PCIs) are key cross border infrastructure projects that link the energy systems of EU countries. They are intended to help the EU achieve its energy policy and climate objectives: affordable, secure and sustainable energy for all citizens, and the long-term decarbonisation of the economy in accordance with the Paris Agreement.

Two of the key risks that inhibit the rate of deployment of CCS facilities are storage liability and the cross-chain risk (the interdependency risk that arises between capture and storage operators in a disaggregated CCS chain). There is wide consensus that, to address these risks, governments must play a key role in implementing a regulatory framework to enable shared transport and storage infrastructure or being actively engaged in their development either through outright government ownership or in collaboration with the private sector (e.g. public private partnerships).

A shared transport and storage network (STSN) will also provide additional benefits such as economies of scale, that will greatly reduce the cost of transporting and storing CO<sub>2</sub>. Further to this, STSN that

<sup>9</sup> <http://decarboni.se/sites/default/files/publications/201688/global-ccs-cost-updatev4.pdf>

spread across countries will catalyse the CCS market, especially in the context of hub and cluster models as well as single capture facilities occurring within relative proximity of the network.

**Q14: What is your view on the investment needed in gas infrastructure to meet Europe’s long-term climate and energy policy goals, while completing the internal energy market and ensuring security of supply? What approach could strike the right balance to prevent the economic risk of stranded assets?**

CCS can play a pivotal role in ensuring that gas infrastructure is environmentally and economically viable throughout, and beyond, the transition period. Subject to further technical qualification, existing natural gas infrastructure could be repurposed to transport CO<sub>2</sub> or hydrogen; this has been explored for numerous projects around the world including H21 North of England and Acorn projects<sup>10</sup>.

Careful planning will be needed to ensure the adaptation of the infrastructure. To ensure a cost-efficient and secure low-carbon energy system, investments will be required to support decarbonisation efforts. Investment in gas infrastructure will be needed, one that will be key to carry renewable gas and zero-carbon hydrogen produced by natural gas with SMR and CCS.

In terms of investment, EIB could provide funding for readiness of existing pipelines. Further, the Bank could also help to fund future pipeline projects under stringent conditions that ensure these are compatible with the transport of either hydrogen or CO<sub>2</sub>.

**Q15: Should the Bank refrain from supporting hydrocarbon production, in addition to exploration? If so, should gas be treated the same as oil? Within and outside the EU?**

Most published climate and energy scenarios assume there will be continued use of hydrocarbons within and outside the EU<sup>11</sup>. However, it is important to note that there should be no investments in unabated fossil fuel emission sources. This establishes CCS is an important part of a cost-competitive climate mitigation portfolio and offers a solution to decarbonise the use of hydrocarbons, which means it has an important role to play in the energy transition.

In the power sector, hydrocarbon fuelled power plants will deliver different services. For example, peaker plants and load following power plants, which can be ramped up and down, are necessary to handle peaks in demand. Likewise, hydrocarbon fuelled power plants will likely have a role to play in scenarios where intermittent renewables are unavailable. CCS is capable of decarbonising all of the electricity from such power plants, making it possible for their continued use over the course of the energy transition.

In the power sector, carbon capture and storage can bring considerable value to the operability of the electricity system and maintain generation capacity in line with electricity demand. The value of CCS to the energy system should be considered beyond LCOE given its operability to provide a stable and firm source of energy. CCS power plants have the potential to displace thermal power generation plants on a one-to-one basis.<sup>12</sup>

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<sup>10</sup> <http://www.actacorn.eu/>

<sup>11</sup> <https://www.iea.org/weo2018/>

<sup>12</sup> <https://pubs.rsc.org/-/content/articlehtml/2016/ee/c6ee01120a>

**Alongside its submission, the Institute would like to provide additional information and reports in support to the answers to this public consultation.**

- [Global CCS Institute, Global Costs of Carbon Capture and Storage, 2017](#)
- [Global CCS Institute, Global Status of CCS Report, 2018](#)
- [Global CCS Institute, Policy priorities to incentivise the large-scale deployment of CCS, 2019](#)