

Investing in Net-Zero Emission Ambitions: Global ESG Frameworks and CCUS Projects

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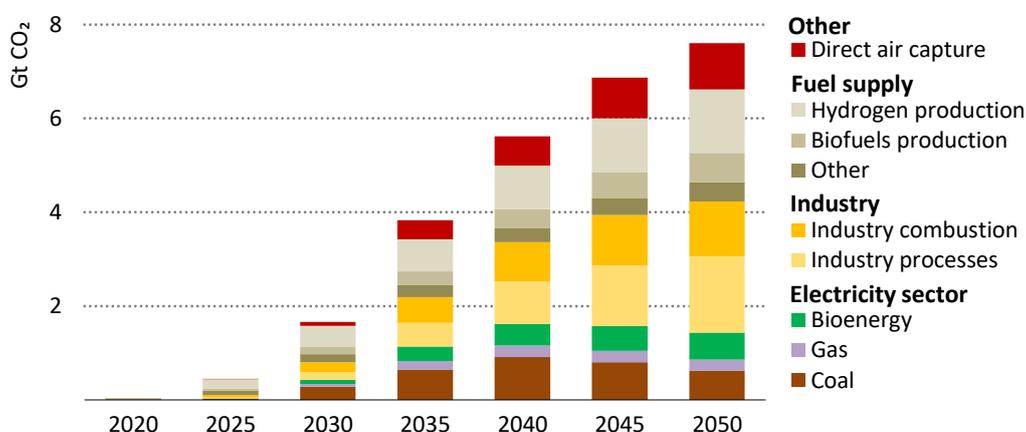
Summary

Achieving global net zero emission (NZE) goals necessitates trillions of US\$ of annual investment in various mitigation technologies. While a significant portion of this investment is expected to take place in mainstream mitigation technologies (e.g., renewable energy), low carbon technologies (e.g., CCUS) are also considered among the key enablers, especially in hard-to-abate sectors. However, the lack of a globally recognized environmental, social, and corporate governance (ESG) taxonomy and disclosure standards hinders efforts to scale up the necessary finance, especially in the case of CCUS investments. Establishing more holistic global ESG guidelines, including more explicit guidance on the reporting of CCUS-related activities, can accelerate the global sustainable energy transition.

Role of Carbon Capture, Utilization and Storage (CCUS) in Net Zero Emission Ambitions

Achieving global net zero emission (NZE) goals necessitates trillions of US\$ of annual investment in various mitigation technologies (e.g., IEA [2021]; IRENA [2021]; BNEF [2021]). While a significant portion of this investment is expected to take place in mainstream mitigation technologies (e.g., renewable energy), low carbon technologies, such as carbon capture, utilization, and storage (CCUS), are also considered among the key enablers, especially in the case of hard-to-abate sectors. According to a recent report by the International Energy Agency (IEA 2021), CCUS is listed among the seven pillars of a successful sustainable energy transition, which requires significant investment over the next decade to achieve NZE by 2050. While its role is particularly crucial for the carbon-intensive sectors, such as steel and cement, as well as oil and gas, CCUS is also an enabling technology to produce clean fuels. Among these fuels, hydrogen, and bioenergy, labeled as ‘blue’ based on their production offset by CCUS, are also mentioned in the IEA’s report as the two other pillars for achieving NZE. Figure 1 summarizes the key areas that CCUS technologies can be used in, along with the expected carbon offsets by 2050.

Figure 1. Global carbon dioxide (CO₂) captured by source.



Source: IEA (2021).

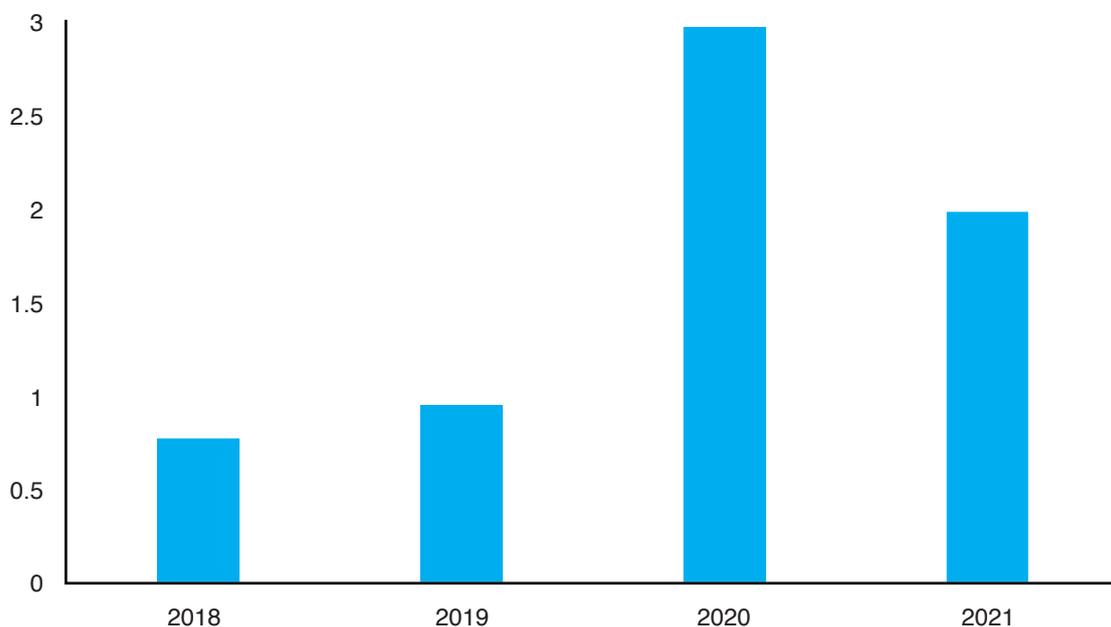
Note: Gt CO₂ = gigatonnes of carbon dioxide.

CCUS also offers cost-effective and practical solutions to the risk of asset stranding by decarbonizing current infrastructure (e.g., power generation) and the heavy industries (IEA 2021). According to the IEA’s projections, without CCUS technologies, an additional US\$15 trillion investment would be needed in renewable energy to achieve the same level of emission reductions. Considering the risks associated with stranded assets and their potential adverse effects on global financial stability, practical solutions, such as CCUS, are particularly crucial in providing flexibility to the NZE pathways.

Growing Financing Needs and the Role of ESG

Despite the need for more investment in the technology, this has not been forthcoming, and thus a significant scaling up of CCUS has not yet been achieved. According to the recent investment figures from Bloomberg (Figure 2), global investment in CCUS is between US\$2 to US\$3 billion annually, which is multiple times lower than the needed levels. For instance, according to the IEA’s projections based on NZE scenarios, annual investment in CCUS is expected to grow to US\$160 billion by 2050. Such a significant scaling up is certainly beyond the internal financing capacities of firms or public funds alone, and requires greater engagement from private investors.

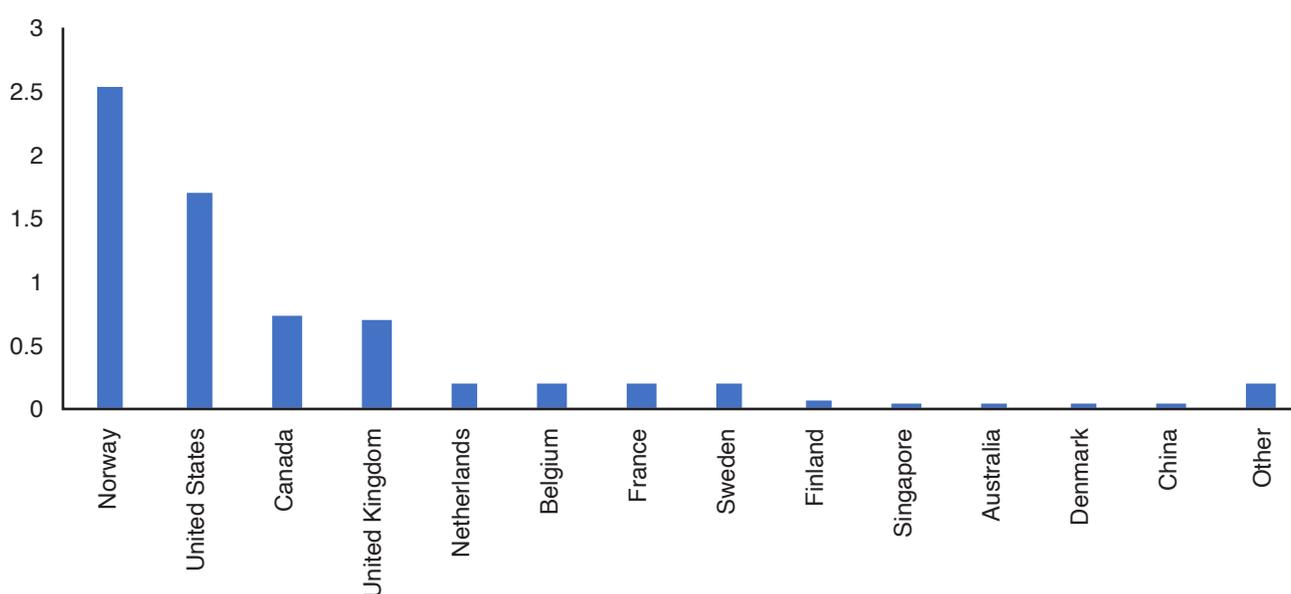
Figure 2. Global CCUS investments in US\$ (billions).



Source: Authors’ calculation from Bloomberg Transition Investment.
Note: The CCUS investments include blue hydrogen projects with CCUS.

Moreover, the technology is currently utilized in only a handful of developed countries, despite the fact many heavy carbon sectors are generally located in the developing world (Figure 3). Many studies have shown that there has been a significant migration of carbon-intensive sectors toward developing economies to exploit less stringent environmental regulations since the early 1990s.¹ Today, developing nations generally have a higher reliance on hydrocarbons or carbon-intensive sectors,² as depicted in the well-known concept of environmental Kuznet-Curve.³ As the current geographic distribution of the CCUS investments does not seem to reflect this important data fact, substantial opportunities seem to be unexploited in many developing nations.

Figure 3. Total CCUS investment in US\$ (billions) by country.



Source: Authors' calculation from Bloomberg Transition Investment.

Note: The figure uses data from 2018 to 2021, which also includes blue hydrogen projects with CCUS. All the reported countries are developed economies except China, according to the classification by the United Nations (2020).

Low storage capacity, uncertainties around global carbon practices, and weak regulatory support⁴ might have contributed to the slow progress of the technology's utilization. However, attracting the necessary finance has perhaps been the most crucial factor. This is mainly because CCUS projects are capital-intensive, requiring a significant upfront cost. It is challenging for firms to raise this capital without external support, and thus external private finance becomes an important source.

¹ For a wider discussion, see Shahbaz, Balsalobre-Lorente, and Sinha (2019) and Shao (2018).

² For instance, China and India alone account for more than half of the global steel and cement production.

³ See Roberts and Grimes (1997) for a broader discussion on the issue.

⁴ See Giovanni and Richards (2010) and Global CCS Institute (2020) for a more detailed discussion.

Many traditional financial instruments (e.g., bonds and loans) can provide large enough pools of capital to meet the needs of the sector. Yet, as traditional financial instruments do not incorporate the risks and opportunities associated with climate change, they cannot provide favorable enough financing conditions for climate change resilient projects. In contrast to traditional financial instruments, sustainable finance instruments focus more on long-term returns, while taking into account the ESG risks in financing decisions. Hence, they tend to offer lower financing costs with greater asset allocation toward transition-related projects. Among the ESG pillars, the ‘E’ pillar has captured the most attention in recent years from institutional investors (e.g., pension funds) globally. The pillar has emerged as the common financing trend driving the required funds for the investment needs of the sustainable energy transition (OECD 2021).

Current ESG Frameworks and the CCUS: Toward a More Inclusive Approach

CCUS projects are capital intensive and scaling up the technology requires significant external private finance, which continues to be a global challenge, especially for many developing economies. The widely accepted ESG frameworks among investors seem to favor mainstream mitigation technologies, such as renewable energy and electrification, neglecting the practical solutions that CCUS technologies can offer. The ongoing confusion around global ESG guidelines and the lack of a globally agreed ESG framework might have been an important driver of the current practice (GCCS 2020). As a result, CCUS projects do not seem to attract enough interest from financiers or investors, and thus receive a very small share of the global ESG flows.

Promoting a better understanding of CCUS within the financial community and establishing more explicit and transparent reporting standards for the technology in current ESG frameworks could attract more ESG funds to relevant projects. Aiming to contribute to these growing efforts, the Global CCS Institute recently published a comprehensive report, GCCSI (2022), studying the treatment of low-carbon technologies in global ESG frameworks. After assessing the CCUS coverage in 15 widely used ESG reporting standards and rating methodologies, the study concludes that the current ESG frameworks do not exclude the reporting of CCUS-related activities. However, the study also notes that only a few of the global ESG frameworks provide more explicit guidance on the reporting of CCUS-related activities.

The study also takes an important step toward establishing a methodology for the reporting of CCUS-related activities based on the institute’s research and interviews with the relevant financial community members. Building on the available ESG frameworks, the proposed methodology focuses on providing more targeted and transparent information that can better support the financial community's understanding of CCUS activities, and hence, ensure more informed investment decisions. In particular, the methodology aims to identify the precise contribution of CCUS activities to six important themes. These comprise climate-related management, financial or investment decisions, greenhouse gas emissions, scope 1, 2 and 3 emissions reduction reporting, and outreach and collaboration. Such comprehensive and clear disclosure guidelines can significantly improve the understanding of the opportunities promised by the technology, and thus serve the best interests of all the relevant parties.

Concluding Remarks

ESG finance is becoming a new norm for financing the sustainable energy transition. While it has the potential to unlock significant financial resources that can bridge the unprecedented investment needs of the transition, the lack of a globally recognized ESG taxonomy hinders efforts to scale up the necessary finance. During the 2021 United Nations Climate Change Conference (COP26) in Glasgow, the International Financial Reporting Standards Foundation announced the establishment of the International Sustainability Standards Board (ISSB), whose main mandate is to harmonize the various global ESG frameworks established by different institutions and create a common taxonomy for sustainability disclosures. Such a global ESG framework is expected to boost the amount of available ESG finance for sustainability investments. However, it is equally crucial to ensure the inclusiveness of this framework for lower-carbon technologies, as well as the jurisdiction or region-specific requirements of developing economies that the ISSB has already noted as priorities.⁵ All the efforts contributing to this agenda, such as the recent report by the Global CCS Institute, are extremely valuable in helping to catalyze the role of ESG finance in accelerating the global sustainable energy transition.

⁵ See <https://www.ifrs.org/groups/international-sustainability-standards-board/issb-frequently-asked-questions/>

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