



THE ECONOMY WIDE VALUE OF CARBON CAPTURE AND STORAGE

OVERVIEW

- Carbon capture and storage (CCS) technologies are essential to achieving global climate goals and their role has become even more essential with net-zero emissions ambition. According to the International Energy Agency's Sustainable Development Scenario, more than 2000 operating facilities will be needed by 2040, up from 19 today, thus constituting a 100-fold scale-up, which is pressing.
- There are 19 operating large-scale CCS facilities, and a further 32 in various stages of development. CCS has versatile applications that can be used to decarbonize energy-intensive industries such as power, steel, cement, and fertilizer production. It can also reduce CO₂ emissions already in the air by delivering negative emissions through direct air capture and bioenergy with CCS.
- Investment in clean energy innovation, including CCS has multiple benefits for society, including supporting economic growth and addressing the externalities created by emissions and climate change. Investment in CCS can preserve and create high-quality jobs and accelerate innovation that can help us mitigate climate change.
- Climate change remains one of the most complex challenges the world is facing and the sooner emissions can be reduced, the better the chance of fending off its worst impacts. As such, stimulus funds and measures supporting economies with their Covid-19 recovery should be consistent with long-term climate goals.
- Stimulus programs in the past have served to boost the economy while also accelerating clean energy policies. For example, in 2009, the American Recovery and Reinvestment Act was, according to the World Resources Institute, the single largest public investment in clean energy in the US.

UNDERSTANDING THE VALUE OF CCS

- CCS is integral to enabling a least-cost energy transition to net-zero emissions globally. Innovation and advances to scale the technologies will reduce global emissions by helping to access the technology and allowing for an equitable energy transition.
- Emissions intensive industries contribute a relatively large share to economic output and are the backbone of many national economies. As a result of their capital intensity, the proportion of GDP they account for is much higher than their contribution to employment. For example, while the chemicals sector accounts for less than 0.5 per cent of total employment, it contributes 1.4 per cent of global GDP, roughly equivalent to the size of the Indonesian economy in 2017.
- The deployment of CCS will require the construction of infrastructure to transport and permanently store CO₂, boosting growth and job creation. This will require large capital investment, particularly for projects storing CO₂ in offshore storage reservoirs. CO₂ transportation infrastructure is critical to connecting sources of CO₂ with geologic storage sites, achieving economies of scale, and allowing actors to concentrate on their core competencies reducing cost. Construction and operation will also create jobs.
- Investment in CCS deployment creates jobs. The largest employment impacts are associated with the construction of the CCS facility, but these are only temporary. Several hundred people per year are employed in the construction of a typical CCS project. Scaling up the estimates to a global level, in 2050, the deployment of CCS could lead to around 80,000 to 100,000 people being employed in the construction of CCS projects and 30,000 to 40,000 in the operation of CCS facilities forecasted the IEA Sustainable Development Scenario. Several studies have also shown that many jobs are also expected to be created in supply chains.
- By supporting the transformation of industry to a net-zero economy, CCS can support a just transition for the local economies and communities that rely on emissions intensive industries for employment and income. Globally, millions of people are employed within emissions-intensive industries. More importantly, individual plants within these industries are often large local employers, the shutdown of which can have long-lasting effects on employees and their local communities.

RECOMMENDATIONS

- Continue support for the deployment of CCS through a value on carbon and optimizing policies to enable CCS-deployment on a wide range of applications.
- Assess and implement policy mechanisms that reduce risks, enable affordable financing and allow projects to take advantage of low interest rates including capital grants, investments in demonstration projects, concessional loans, loan guarantees, accelerated depreciation and other mechanisms
- Invest or enable investments in CO2 transport and storage infrastructure as investment and innovation multipliers.



CCS REDUCES GHG EMISSIONS COST EFFECTIVELY

Part of the portfolio of technologies needed to meet GHG emission reduction targets at the lowest cost.



CCS TRANSFORMS INDUSTRY AND CREATES JOBS

Supports high paying jobs and employment retention and creates new employment opportunities in the CCS industry.



CCS ENABLES RELIABLE, LOW CARBON ELECTRICITY SUPPLY

Reduces total system costs of near zero electricity supply by providing reliable, dispatchable generation capacity when fitted to flexible fossil fuel power plants..



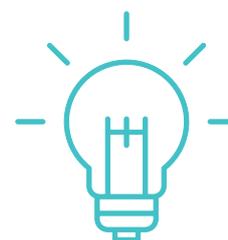
CCS EXTENDS THE LIFETIME OF INFRASTRUCTURE

Utilises existing infrastructure that would otherwise be decommissioned, helping to defer shut-down costs.



CCS IMPROVES AIR QUALITY

Reduces the air pollutants when used for hydrogen production that fuels transport or went fitted to a plant that does not already have pollutant controls.



CCS UNLOCKS CLEAN GROWTH

Provides knowledge spillovers that can support innovation-based economic growth.

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