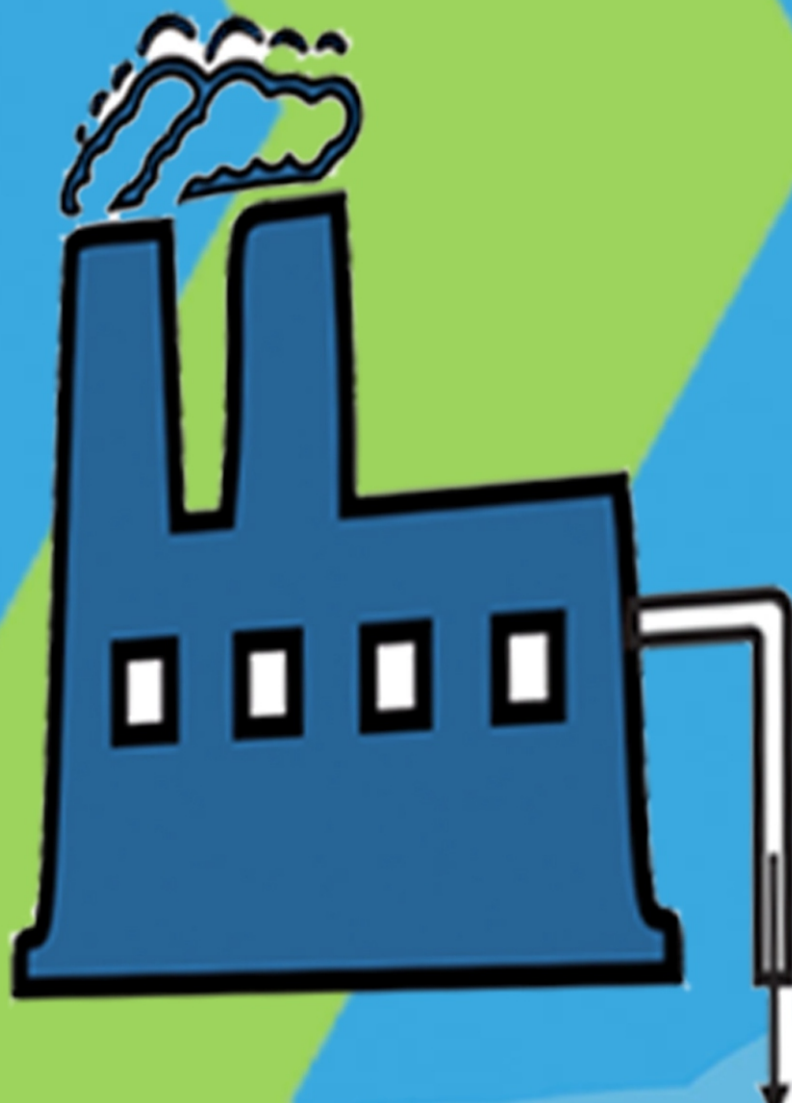


UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE

# Carbon Capture and Storage A Key to Climate Change Mitigation



**UNECE**

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**CARBON CAPTURE AND  
STORAGE –  
A KEY TO CLIMATE CHANGE  
MITIGATION**



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If the world is to succeed in constraining CO<sub>2</sub> emissions to levels consistent with a less than 2°C rise in global temperatures, then carbon capture and storage (CCS) will need to contribute about one-sixth of needed CO<sub>2</sub> emission reductions in 2050, and 14 per cent of the cumulative emissions reductions between 2015 and 2050 (compared to a business-as-usual approach). It is the only technology option other than energy efficiency and shifting the primary energy mix to lower carbon fuels that can deliver net emissions reductions at the required scale.

Given the rapid growth in energy demand in developing countries over this period, the largest deployment of CCS will need to occur in non-OECD countries. By 2050, non-OECD countries are expected to account for 70 per cent of the total cumulative mass of captured CO<sub>2</sub>. On the other hand, the OECD countries will need to show leadership in validating the technologies with both research and development and commercial-scale demonstration and assisting in deploying them at scale. Given the magnitude of CO<sub>2</sub> emissions from coal and natural gas-fired electricity generation, the greatest potential for CCS is in the power sector. However, CCS is not only about electricity generation. Around 45 per cent of the CO<sub>2</sub> captured between 2015 and 2050 in the 2°C scenario is from industrial applications that cannot be replaced by renewable technology. In this scenario, between 25 per cent and 40 per cent of the global production of steel, cement and chemicals would have to be equipped with CCS by 2050.

Making CCS technology available as a viable de-carbonisation policy option will require further fully-integrated, large demonstration projects representing the range of technologies. Global CO<sub>2</sub> storage levels of at least one billion tonnes per year by 2030 need to be in place, and more thereafter. Delivering such an outcome will require collective commitment by governments and industry alike to fund CCS demonstration

projects and development efforts in power and industrial applications at levels commensurate with the required abatement outcomes. This commitment will require that a significant share of global funds allocated to clean energy be targeted towards CCS. Such outcomes also depend on careful alignment of public funding commitments and enduring economic incentives that can stimulate commercially attractive industry investment. Ensuring the availability of CCS will require regulatory and legislative support at all levels of government and international cooperation at project level. Particular attention should be given to permitting environmentally-sound technical solutions and safe geological storage siting that creates conditions for public acceptance.

Drawing on the analyses and assessment of its Group of Experts on Cleaner Electricity Production from Fossil Fuels, UNECE has made a number of recommendations to the UNFCCC regarding carbon capture and storage: 1) it is critical that policies on CCS/CCUS have parity with other no carbon/low carbon technologies regarding their climate mitigation potential, commensurate with the state of technological and infrastructure development; 2) governments should consider a broad array of fiscal instruments to encourage CCS/CCUS until carbon is properly and adequately priced; 3) capturing and storing CO<sub>2</sub> from all industrial sectors will be essential to reach climate goals; 4) CCS/CCUS deployment will accelerate if governments work together to financially sponsor demonstration projects; 5) developed countries should be encouraged to invest in CCS/CCUS in developing countries; and 6) CCS developments need to be monitored and tracked globally – best practice guidance on CCS should be developed and disseminated.

The full [set of recommendations](#) is available on the UNECE website.

# United Nations Economic Commission for Europe

## Sustainable Energy Division

UNECE's work on sustainable energy is designed to improve access to affordable and clean energy for all and help reduce greenhouse gas emissions and the carbon footprint of the energy sector in the region. It promotes international policy dialogue and cooperation among governments, energy industries and other stakeholders.

The Committee on Sustainable Energy and its six subsidiary bodies carry out concrete and results-oriented activities with the aim to achieve the specific objectives identified for each priority area:

### Areas of work

- Cleaner Electricity Production
- Coal Mine Methane
- Energy Efficiency
- Natural Gas
- Renewable Energy
- Resource Classification
- Energy Security

### For more information



<http://www.unece.org/energy.html>



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