

# Why Carbon?



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Carbon Capture, Utilization, and Storage: Handbook for Policymakers

# About the Handbook

A ‘how-to’ action guide to empower legislators, ministries, regulators, and NOC officials for understanding the policies, rules, and best practices that countries can adopt and implement for CCUS.

Available here:

[cldp.doc.gov/carbon-capture-utilization-and-storage-ccus-resources](https://cldp.doc.gov/carbon-capture-utilization-and-storage-ccus-resources)

**Carbon Capture,  
Utilization, and Storage**  
Handbook for Policymakers



# Carbon Capture, Utilization, and Storage: Handbook for Policymakers

## About the Handbook (Cont.)

- Sponsored by **U.S. Department of State, Bureau of Energy Resources.**
- Drafted over one week in an intense session with eight expert co-authors.
- Co-written by authors representing:
  - Government
  - NGOs
  - Multilaterals
  - Industry
  - Academia



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# Key Takeaways

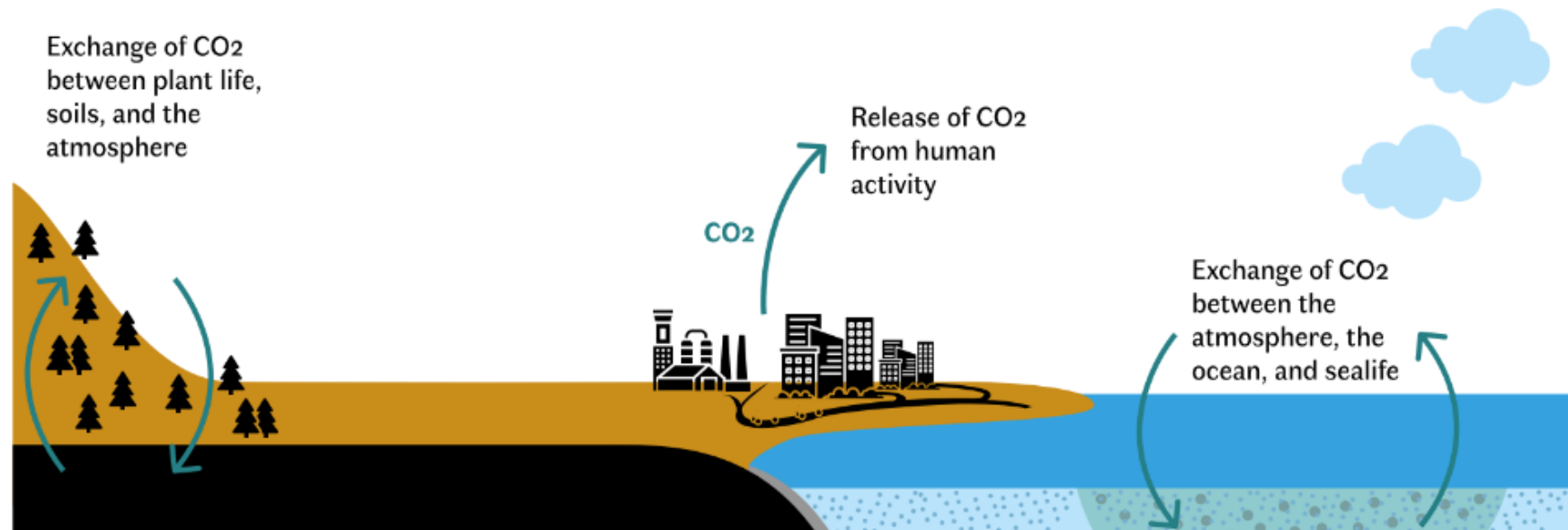
- Carbon capture, utilization, and storage (CCUS) is expected to play a critical role in managing climate change.
- Scaling up CCUS also has important economic growth benefits: CCUS has the potential to create jobs, catalyze innovation, drive trade, monetize low-carbon product manufacturing, and sustain existing industries with decarbonization.
- Companies are ready to invest, as CCUS has, for decades, demonstrated commercial success. The earliest commercial CCUS project that did not include enhanced oil recovery was in 1996, and since then CCUS projects have expanded significantly. For example, in China alone, three projects became operational just in 2023.
- For many countries, therefore, the challenge is putting in place the policy, law, and regulations that will invite responsible investment into CCUS.



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# CO<sub>2</sub> and its Contribution to Climate Change

- Carbon dioxide (CO<sub>2</sub>) is a greenhouse gas (GHG) and a major contributor to accelerated climate change
- Though CO<sub>2</sub> is part of the natural carbon cycle, human activities are contributing to an unprecedented volume of CO<sub>2</sub> in the atmosphere, which the natural carbon cycle cannot absorb
- Because CO<sub>2</sub> acts as a heat-trapping mechanism that causes global warming, the additional CO<sub>2</sub> acts to increase global temperature



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# Global Energy Demands and Drivers for Climate Mitigation

- In the coming decades, developments in emerging economies will dramatically grow per capita energy consumption
- Addressing climate change requires major transitions in the energy use sectors, including climate mitigation, which involves reducing the flow of heat-trapping greenhouse gases
- An overarching goal is the need to reduce or eliminate regional climate impacts, in addition to:
  - ✓ International and domestic policies to achieve net zero emissions per the Paris Agreement climate goals
  - ✓ The European Unions' Carbon Border Adjustment Mechanism imposes a CO<sub>2</sub> tariff on imports of certain goods from countries outside of a carbon pricing scheme
  - ✓ Available incentive schemes, such as carbon markets and leveraged tax credits
  - ✓ The general public's insistence on transparency and accountability for emissions reduction and reporting



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# Climate Change Mitigation Approaches

- No single mitigation approach will address climate change
- Portfolio of different mitigation options offers the least expensive, most economically sustainable path to achieving climate mitigation goals
- In addition to other widely used mitigation strategies, such as energy efficient improvements, expanding the use of renewable sources of energy, and the development and use of alternative fuels, there is **carbon capture, utilization, and storage (CCUS)**

## *Case Study: India's Panchamrit Agenda Around Climate Change Mitigation*

Five Point Agenda to address climate change, including the reduction of CO<sub>2</sub> emissions:

1. Reach 500 Gigawatts of non-fossil energy capacity by 2030
2. Fulfill 50% of its energy requirements through renewable energy by 2030
3. Reduce total projected carbon emissions by 1B tons by 2030
4. Reduce carbon intensity of economy by 45% by 2030 vs. 2005 levels
5. Achieve net-zero emissions by 2070

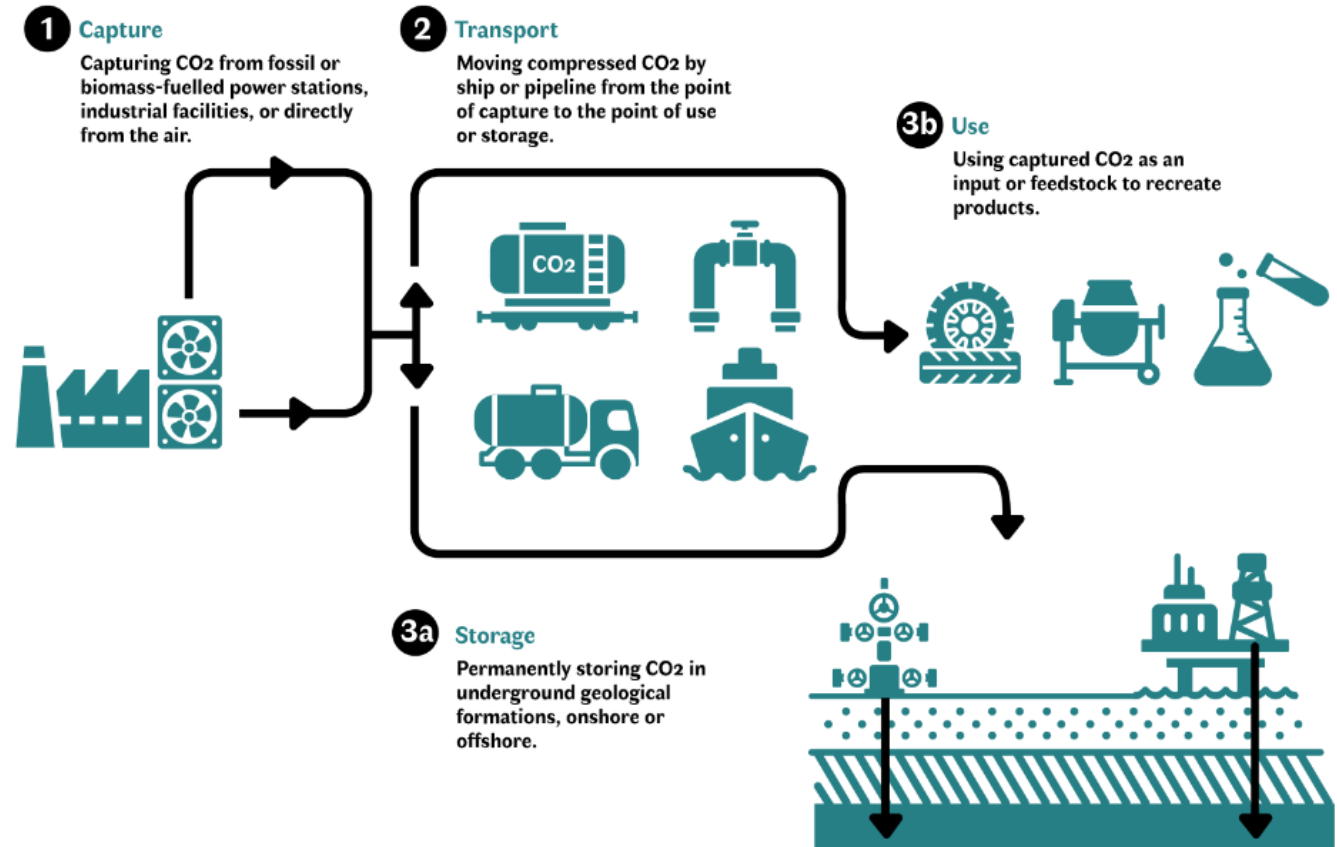




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# What is CCUS?

1. Capturing **CO<sub>2</sub>** from point sources or directly from the atmosphere,
2. Transporting the **capture** CO<sub>2</sub> for either:
3. **Utilization**, or
4. Geological **Storage**



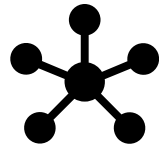
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# Foundation of Regional Collaboration on CCUS

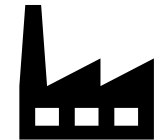
Various coalitions and consortia are emerging globally to bring together stakeholders to advance CCUS frameworks



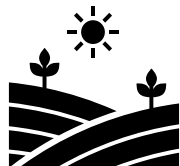
As of January 2024, there are over 500 CCUS projects globally at various stages of development and operation



A pan-Asia CCUS network could include a cluster of more than 20 carbon capture and underground storage hubs



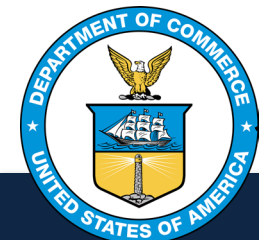
In China, three projects became operational in 2023, including Asia's largest coal-power plant CCUS facility

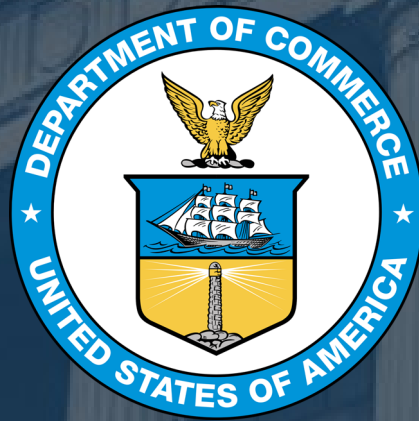


Japan has announced seven CCUS networks that will capture CO2 in Japan for storage



International organization for Standardization's (ISO) committee on CCUS includes almost 50 countries convening together to develop standards and technical reports across the full CCUS value chain





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