



In-session workshop on Carbon dioxide Capture and Storage

Environmental NGO perspectives: Perspective of Greenpeace

- **Climate Change** – Emission reduction – **CCS** - Risk of leakage – **Sustainable Development** – Summary -

Climate Change

- Our target: Keep global warming well below 2°C to prevent dangerous climate change

This requires global greenhouse gas reductions in the order of 50% (= 80% in industrialised countries) by 2050

- Our vision: a low carbon world where all people have access to clean water, food and energy supplies





How to achieve emissions reductions?

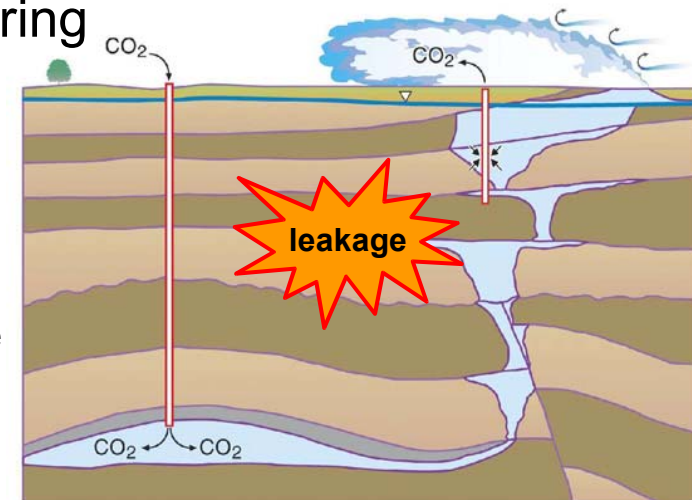
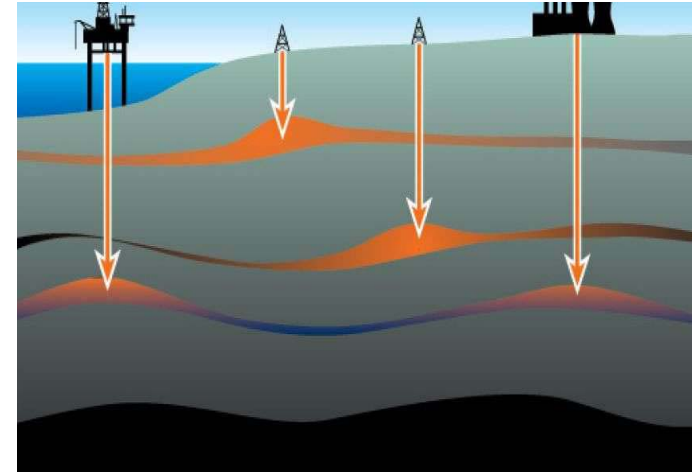
- Reduce GHG emissions at their source -
- The goal: new renewable energies provide clean energy, energy efficiency reduces demand
- Today: New, more efficient coal power plants need less coal and emit less CO₂ than old power plants - but there is still too much land degradation and water pollution due to mining and too much CO₂ emitted.



... how about CCS?

*Carbon dioxide Capture and Storage**

- CCS is meant to continue burning coal. Its intent is not to avoid the production of harmful emissions but instead to bury them.
- Storing of CO₂ raises environmental concerns:
 - Liability, regulatory, accounting issues, monitoring
 - Risk of leakage**
 - Contribution to sustainable development



* Geological storage – NO ocean storage (The oceans are rich in biological life and any disposal of CO₂ eventually lowers the pH to dangerous levels; storage not permanent).

** Storage performance of CO₂ in geological reservoirs has not yet been proven to be safe over a long period of time – much more R&D is needed.



Risk of leakage

- Local risk: If CO₂ leaks out of a storage formation, local impacts may exist for humans, ecosystems and groundwater. The risk increases if the injected CO₂ stream contains toxic impurities.



- Global risk: Release of CO₂ may contribute significantly to climate change if some fraction leaks from the storage formation to the atmosphere. Continuous leakage could, at least in part, offset the climate benefits of CCS.

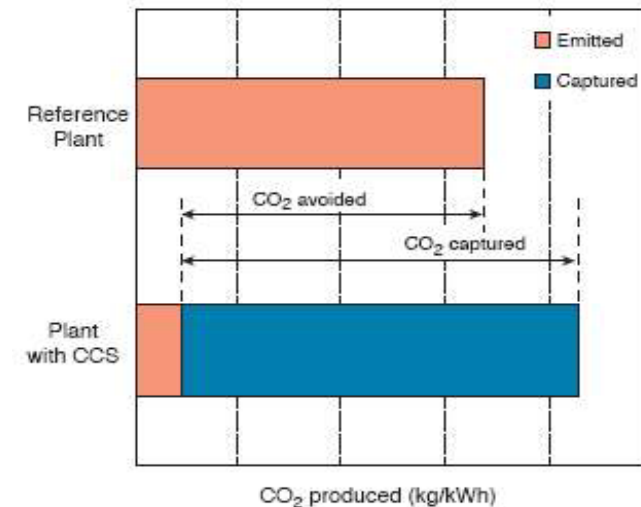
The IPCC report classifies two types of leakage scenarios: (1) abrupt leakage, through injection well failure or leakage up abandoned wells, (2) gradual leakage, through undetected faults, fractures or wells.

Contribution to sustainable development

'meets the needs of the present without compromising the ability of future generations to meet their own needs' [Brundtland Commission, 1987]

- Coal power plants equipped with a CO₂ capture facility for CCS need more coal and produce more CO₂ than conventional power plants.
- Much less CO₂ is emitted to the atmosphere. But a lot of CO₂ is stored underground that must be monitored over a long period of time.
- Because of high costs large point sources are the prime candidates for CCS.

Figure: IPCC SRCCS



Future generations pay the price: locked in a fossil-fuel path with no other chance than to store millions of tons of carbon underground.



Summary

- If we take climate change seriously profound, long-term structural changes are needed, especially related to the use of fossil fuels. We must begin and continue to move to efficient use of renewable energy.
- The Special Report states that CCS won't play a major role until the second half of this century.



CCS doesn't help us with the urgent need to cut emissions now!



CCS is not the silver bullet

- CCS requires a high carbon price in a global regime.
- CCS may be necessary in some places but it should not be the primary element of an energy policy, and must be relied on as little as possible.
- Much more research is needed to answer all unresolved issues satisfactorily before important decisions should be taken as CCS will have a great impact on our future energy system.



Thanks