



Carbon Capture and Storage: An NGO perspective

International conference on CCS regulation
for the EU and China
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GREENPEACE

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The Problem: Climate Change

- **Dangerous impacts as evidenced by IPCC, AR4**
- **New scientific evidence: worse than AR4**
- **Close to first tipping point: melting Arctic summer sea ice**

What we need

- **Peak temperature rise as low as possible**
- **Peak greenhouse gas emission by 2015 at latest**
- **Industrialised countries to reduce their emissions by 40% by 2020 (as compared to 1990)**
- **Developing countries to deviate at least 15% from BAU baseline by 2020**

The solutions

- **A revolution in the way we produce, consume, store and transport energy**
- **Zero deforestation**
- **Strongly reduce and phase-out non-CO2 emissions**

Can CCS contribute?

Definitely not in the short-term

Why not?

- **CCS is unproven and cannot deliver in time to peak emissions**
- **Storing carbon underground is risky**
- **CCS wastes energy**
- **CCS is expensive**

CCS cannot deliver in time

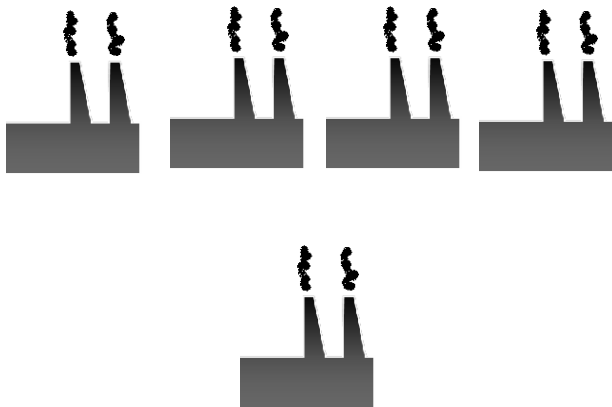
- X** Not demonstrated at commercial scale (no large-scale plants)
- X** Not technically feasible and commercially viable before 2030/2050
- X** Storage estimates are inadequate
- X** Potential bottlenecks in the process chain
- X** Future commercialization requires massive financial support

Storing carbon is risky

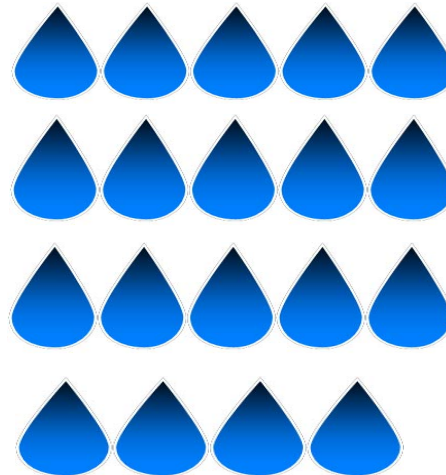
- X** No reliable basis for estimating probability or severity of leakage
- X** Implications for the environment
- X** Monitoring may not detect low level leakage
- X** Discussions on “acceptable leakage”: permanence equals no leakage and must be a prerequisite for CO₂ storage

CCS wastes energy and resources

Energy- 10-40% more



Water- 90% increase



Wide scale adoption of CCS is expected to erase the efficiency gains of the last 50 years and increase resource consumption by one-third.

CCS is expensive

- **Cost of capture €24-75 per tonne CO₂ avoided**
- **Estimated to double power plant cost**
- **Definitely more costly than other solutions (cfr. McKinsey's cost abatement curve)**

Governments and CCS

Greenpeace is opposed to current massive public funding for CCS as:

- **There are other and better alternatives**
- **CCS is unproven, not ready, too costly, not safe**

Governments should ensure strong regulations for research and development of CCS

CCS regulation, some remarks

- **Storage**
- **Pure CO₂-streams**
- **Monitoring**
- **Capture ready**
- **Site identification**

storage

- **Objective must be zero leakage**
- **0,5% leakage is 50% loss in 140 years**

CO2 streams

99,9 purity standard (cfr. Japan)

- **Hazardous waste**
- **Reduce storage capacity**
- **Increase transport**

monitoring

Need for continuous monitoring even after site is closed

Capture ready

Unacceptable

- Retrofit is even more expensive
- What guarantee?

Site identification

Criteria for site selection need to be very detailed and strict