

Carbon Dioxide Capture and Storage (CCS) and Coal-Fired Power

Background

- CCS is a means of separating out carbon dioxide (CO₂) when burning fossil fuels, collecting it and subsequently “dumping” it underground or in the sea. CCS is an integrated concept consisting of three distinct components: CO₂ capture (pre- or post-combustion), transport and storage (including measurement, monitoring and verification).
- CCS is proposed as a means of reducing the contribution of, primarily, coal-fired electricity generation to climate change. Currently, there is little experience with fully integrated CCS systems and its effective utilisation in large-scale power stations is open to question. CCS technology is not expected to be commercially available for use in coal-fired power generation before 2020.
- Life cycle assessments of coal-fired power stations equipped with CCS predict a maximum overall reduction in CO₂ emissions of 72-79 per cent due to technological constraints and additional energy requirements for carbon capture, transport and storage. On the surface, this appears attractive. However, CCS does nothing to improve a power plant’s overall efficiency. Typically, conventional coal-fired plants convert only around one-third of the fuel’s energy into electricity; the remaining two-thirds is wasted. Moreover, coal-fired power stations which employ CCS are expected to consume between 10 and 40 per cent more energy than equivalent power stations without CCS.

*For additional details on CCS technologies and risks, refer to the Energy [R]evolution, page 70.
www.greenpeace.org/raw/content/international/press/reports/energyrevolutionreport.pdf*

Greenpeace Position

The international scientific consensus is that a conclusive link exists between anthropogenic emissions of CO₂ and climate change. Limiting the increase in global mean temperatures, compared to pre-industrial levels, to as far below 2 degrees Celsius as possible – the threshold for avoiding the most severe impacts of climate change – means global CO₂ emissions must peak by 2015 and be reduced by at least 50 per cent by 2050. The solution lies in the smart use of energy and substantial reliance on existing renewable energy technologies. This calls for an energy revolution that promotes sustainable energy solutions while eliminating nuclear power and phasing out the use of coal.

CCS, particularly in relation to coal combustion, is an unproven technological response to the creation of the waste product, CO₂. Furthermore, it serves as a justification for increasing dependence on fossil fuels at a time when all efforts should be focused on moving towards the proven solutions of energy efficiency and renewable energy. In developing countries, the ‘promise’ of CCS threatens to derail efforts to develop low-carbon energy systems. As long as CCS remains speculative, while alternatives are already available to meet our energy needs in a safe and sustainable manner, this

technology should not be viewed as a legitimate tool in the fight to combat climate change.

The pursuit of CCS as a 'solution' is unwise given its lack of technological maturity and the absence of commercial viability. The construction of 'capture ready' power plants places hope in an end-of-pipe solution that may or may not be realised in time to effectively reduce CO₂ emissions from the power sector. Reliance on CCS is veiled in uncertainty as to whether CO₂ can be permanently stored in an environmentally-sound manner. What's more, CCS addresses only one of the myriad environmental externalities associated with coal. Even if CCS could significantly reduce CO₂ emissions, it would not solve other problems which are inherent to the combustion of dirty fuels. Given all of the above, the focus for all climate and energy policies must lie in achieving the levels of emission cuts necessary to avoid catastrophic warming without reliance on CCS.

Policy Statement

1. Given the current uncertainties surrounding the effectiveness, regulatory, liability and environmental impacts of CCS, Greenpeace is opposed to the application of CCS to coal-fired power stations as a means to combat climate change;
2. Greenpeace is opposed to any public funding of CCS as it occurs at the expense of investment in renewable energy and energy efficiency;
3. Greenpeace is opposed to the licensing and construction of so-called 'capture ready' power stations that rely on the potential future availability of CCS to reduce power sector CO₂ emissions;
4. Greenpeace is opposed to all forms of direct disposal of CO₂ into the ocean whether in the water column or at the seabed in deep waters. This is because the retention of CO₂ would not be permanent, could not be easily monitored and controlled, and would result in severe impacts on marine ecosystems. Greenpeace believes that disposal in sub-seabed geological formations will be associated with the same problems and uncertainties as disposal into deep geological formations on land;
5. Greenpeace is opposed to the inclusion of CCS in the Clean Development Mechanism (CDM) as it would divert funds away from the stated intention of the mechanism. CCS does not provide long-term benefits to local communities, whereas a shift from traditional energy sources to renewable energy and energy efficiency would promote local sustainable development by creating employment and new economic opportunities.