

CCS in a climate policy perspective: The case of Norway

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Text

Fossil fuels will remain the backbone of human energy systems over the coming decades, the International Energy Agency (IEA) estimates. In a climate change mitigation context this is bad news. Carbon Capture and Storage (CCS) offers the possibility of limiting CO₂ emissions to the atmosphere from fossil fuel combustion.

Engaging in CCS as a climate policy strategy requires a holistic approach from a host of relevant stakeholders and decision makers at different levels. Norway is a country where CCS has gained a remarkably strong foothold. In the particular Norwegian approach to reducing greenhouse gas (GHG) emissions, CCS is second only to the key policy-strategy of establishing transnational tradable emission quota markets. Indeed, the impression is made that CCS may prove fundamental to in the effort to harmonize Norway's fossil fuel dominated exports economy with Norway's international GHG reduction commitments.

Against this backdrop the present study investigates the conditions for CCS to become an effective GHG mitigation measure in Norway, and thus contributing to fulfill Norway's climate political targets being part of the national sustainable development strategy. The text pursues three main objectives: (1) The term "climate policy instrument" is defined and operationalized along a typology spanning from *end of pipe solutions*, to *transitional measures* and *sustainable development*. (2) Relevant political, economic and technical framework conditions for deploying CCS as a "climate policy instrument" in Norway are identified. Confronted with these criteria, the eventual analysis (3) assesses current and potential Norwegian CCS efforts in three scenarios: (i) the Mongstad full-scale CCS plant, (ii) Technology Centre Mongstad and finally (iii) a commercialized European CCS network with storage under the North Sea.

Main findings suggest that deployment of CCS as a climate policy instrument in a Norwegian context will require significant political and economic support to become reality. Nevertheless, if built may CCS perform as an end of pipe solution in a single emission site perspective or as a transitional measure if phasing out other, more polluting energy production in a wider perspective. The solution is hardly sustainable, however, and may therefore contribute to sub-optimal means-goal efficiency in achieving the national sustainable development strategy, which Norwegian climate policy is set to serve. The decisive question remains to whether fossil fuels are inevitable as *the* vital energy source in the coming decades also, or whether CCS contributes to unnecessary carbon lock-in. Before investing massive resources on rolling out its full

potential, one should in a climate policy perspective consider what questions and uncertainties one gives answers to by forcefully commercializing CCS.

The presentation will give input to the wider discussion on how to research and invent “smart” policy instruments capable of serving several seemingly conflicting policy goals at the same time. This might contribute to increase means-goals efficiency in climate policy development and also improve the chances of building winning political coalitions on what policy measures to apply.

Although the unit of analysis refers to Norway as a country in particular, one should note how different scenarios and perspectives prescribe different system boundaries. Taking into account cross-border infrastructure for energy and CO₂ transportation and wider “climate political entities”, like the EU ETS, the paper also addresses the implications of wider system perspectives. Such considerations put the Norwegian CCS commitment in an international context that may widen the relevancy of the study at hand.

Data gathering is primarily based on document review. Four semi-structured interviews with experts in the field were also conducted. Though partially formed as an empirically oriented study, relevant theories of industrial ecology and environmental management together with elements of institutional political economy provide the theoretical basis for the research approach.

This study is conducted as a master thesis at the Programme for Industrial Ecology at the Norwegian University of Technology and Science (NTNU) during the spring semester 2011. The lead author has had the policy dimensions of CCS as a field of interest throughout his graduate studies. This has resulted in two course research papers on the international politics of CCS à 8500 words each, which both received top marks. He has also pursued further knowledge on the topic during exchange studies at the Monterey Institute of International Studies, California (2010). The author has attended two CCS conferences organized by Tekna in Trondheim (2010 and 2011). He was a student at IEAGHG’s Interdisciplinary CCS Summer School, Longyearbyen (2010).

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