



Emissions trading beyond Europe: Linking schemes in a post-Kyoto world

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Abstract

This paper assesses the economic impacts of linking the EU emissions trading scheme (ETS) to emerging schemes beyond Europe in the presence of a post-Kyoto agreement in 2020. Numerical simulations with a multi-country equilibrium model of the global carbon market show that linking the European ETS induces only minor economic benefits. As trading is restricted to energy-intensive companies that are assigned high initial emissions, the major compliance burden is carried by the non-trading industries excluded from the linked ETS. In the presence of parallel government trading under a post-Kyoto Protocol, the burden of the excluded sectors can be substantially alleviated by international permit trade at the country level. However, the parallel carbon markets of linked ETS companies and post-Kyoto governments are still separated here. From an efficiency perspective, the most desirable future climate policy regime is thus represented by a joint trading system facilitating international emissions trading between ETS companies and post-Kyoto governments. While the Clean Development Mechanism is not able to attenuate the inefficiencies within linked ETS, in a parallel or joint trading regime the economy-wide access to project-based abatement options in developing countries induces large additional cost-savings.

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1. Introduction

By the initiation of the European greenhouse gas emissions trading scheme in January 2005, for the first time international trading of carbon emissions allowances became feasible for energy-intensive companies at the installation level. Introducing the largest multi-country emissions trading

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scheme (ETS) world-wide, the EU aims at cost-efficient compliance with the reduction commitments of its Member States under the Kyoto Protocol (UNFCCC, 1997). In the future, carbon trading will however not be limited to Europe: The EU ETS directive proposes that “agreements should be concluded with third countries listed in Annex-B to the Kyoto Protocol which have ratified the Protocol to provide for the mutual recognition of allowances between the Community scheme and other greenhouse gas emissions trading schemes” (EU, 2003). At the same time, countries beyond the EU are contemplating the set up of domestic ETS with the intention of linking up to the European scheme — which would enable companies outside the EU to trade emissions with European firms. From 2008 on, company trading among linked schemes would however occur in parallel with trading among countries, as the Kyoto Protocol facilitates international government trading of emissions between Annex-B parties at the country level. To quantify the economic implications of these overlapping future climate policies is the goal of this paper.

Developments of domestic ETS outside the EU have already made substantial progress in Norway and Switzerland who are designing schemes similarly to the European system. Since discussions on linking are already underway, chances are high that these countries will already be linked to the EU ETS until 2010 (Sterk, 2005). In the medium-term perspective up to 2020, further candidates for linking to the EU ETS appear on the stage: Canada has promoted the Large Final Emitter System to cover energy-intensive companies which account for almost 50% of total Canadian greenhouse gas emissions (CEPA Environmental Registry, 2005). The scheme aims to be based on intensity targets and to include a “Price Assurance Mechanism” capping allowance costs at 15 Canadian dollars. Japan has started the Pilot Project of Domestic emissions trading scheme on a voluntary basis, with about 30 private companies participating in the program (Japanese Ministry of the Environment, 2004). Russia – having ratified the Kyoto Protocol – could have incentives to develop a domestic emissions trading system in order to be linked to the European scheme and exploit a larger market for the sale of excess emissions permits – so-called “Hot Air” – due to lower *Business-as-Usual* (BAU) than target emissions committed to.

Although the United States and Australia have not ratified the Kyoto Protocol, individual states in both countries are promoting emissions trading schemes: In the U.S. the Regional Greenhouse Gas Initiative, aiming at a regional ETS, is pushed by several Northeast and Mid-Atlantic states (RGGI, 2006). In Australia the New South Wales Greenhouse Gas Abatement Scheme is already operating at the state level (NSW government, 2006) and more recently, Australian state premiers have released early proposals for a national cap and trade system starting in 2010 (Point Carbon, 2006). Also these schemes could quickly arouse interest in EU-ETS decision makers, as “the Commission should examine whether it could be possible to conclude agreements with countries listed in Annex-B to the Kyoto Protocol which have yet to ratify the Protocol” (EU, 2004). In summary: There are strong signs for future ETS to be established in non-EU countries and potentially linked with the European scheme by 2020.

At the same time, three flexible mechanisms proposed by the Kyoto Protocol will facilitate various emissions market operations by Annex-B parties from 2008 on: International emissions trading makes government trading of *Assigned Amount Units* (AAUs) possible at the country level; the Clean Development Mechanism (CDM) enables project-based emissions reductions in developing countries in order to generate *Certified Emission Reductions* (CERs), and Joint Implementation (JI) facilitates project-based abatement in other Annex-B regions, generating *Emission Reduction Units* (ERUs).

However, the use of the project-based mechanisms will not be restricted to governments: The amending directive linking the European ETS with the Kyoto Protocol’s project-based mechanisms (EU, 2004) allows European companies to generate emissions reductions by means of the CDM or JI.

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