Linking domestic emissions trading schemes and the evolution of the international climate regime bottom-up support of top-down processes? Introduction to the special issue of MITI

Ralf Schüle · Wolfgang Sterk

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1 Introduction

More and more countries are incorporating emissions trading into their national climate policies. While the European Union (EU), Norway and Switzerland have already launched their emissions trading schemes (ETS), the Japanese Ministry of the Environment has started a small pilot scheme and the Japanese government is now considering the introduction of a full-scale ETS. Also in Canada, Australia and the U.S. domestic emissions trading schemes are being discussed. Simultaneously, in the U.S. individual states are pushing ahead the establishment of sub-national trading schemes.

Several authors have pointed out that a *linking* of emerging domestic cap-and-trade schemes at the entity or installation level would yield benefits for international climate policy at different levels: From an economic point of view, the linking of domestic schemes is supposed to increase the economic efficiency of carbon markets. The inclusion of more participants in an extended emissions trading market entails a greater diversity of sources and more abatement options. This should in turn lead to a more economically efficient allocation of resources towards least-cost abatement measures and thus reduced overall compliance costs (Haites and Mullins 2001; Anger et al. 2006, Anger and Böhringer 2006, Edenhofer et al. 2007; IETA 2007).

From a climate policy perspective, there have been three main arguments supporting the linkage of domestic schemes: *First*, linkings may increase environmental effectiveness of climate policy because enhanced cost-effectiveness of reduction measures might make stricter targets politically acceptable. Linkings may also help to reduce the problem of “leakage”: a uniform price signal will remove the incentive to shift production within the countries participating in the combined trading scheme. Actually, if the same price applies everywhere, the most CO₂-efficient companies will gain a competitive advantage

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R. Schüle (✉) · W. Sterk

Wuppertal Institute for Climate, Environment and Energy, Döppersberg 19, 42103 Wuppertal, Germany
e-mail: ralf.schuele@wupperinst.org

(Edenhofer et al. 2007). *Second*, linking the emerging domestic ETS would underpin the top-down approach of the Kyoto Protocol by an instrument-based bottom-up process (Ott 2007). Bi- and plurilateral agreements could serve as a fallback structure for the Kyoto regime if negotiations for a post-2012 agreement fail (Michaelowa et al. 2005; Tangen and Hasselknippe 2005). *Third*, linking the EU ETS to an U.S. trading scheme might represent a vital first step to re-engage the U.S. in the international processes to mitigate climate change. Bringing back the U.S. might not take place through an immediate ratification of the Kyoto Protocol or a successor agreement. Instead, the U.S. will probably first establish a national climate policy, which is likely to have emissions trading at its centre, and then connect its domestic policy to the international regime. In this scenario, full reintegration of the U.S. would take place only at a later stage (Ott et al. 2008).

To increase economic efficiency and environmental effectiveness of international climate policy, however, harmonised emissions markets are required to reduce transaction costs and to assure the environmental integrity of the entire linked scheme. So far, however, the current state of implemented markets is far from being globally harmonised or systematically linked as, for example, suggested by Wicke (2005) or Vattenfall (2006). Instead, a fragmented mosaic of markets has been under development differing in timing, location, relationship to the Kyoto Protocol and their level of legal commitment. While the traded commodities may seem identical (i.e. metric tonne of CO₂ equivalent), covered actors and sectors can be quite different (Bell and Drexhage 2005: 6).¹ As early as 2003, for example, Hasselknippe (2003) already identified 43 different carbon markets in the world, threatening to result in a rather heavy fragmentation.

Different types of emerging trading schemes can be distinguished: At the level of Kyoto's governmental trade, two current types can be differentiated, cap-and-trade schemes with absolute limitations of emissions (Art 17 emissions trading) and the bottom-up project-based baseline-and-credit schemes JI and CDM. For post 2012, a second alternative of a credit-and-baseline scheme has been under discussion: a top down baseline-and-credit CDM. Also at the level of entity-based trading, three types can be differentiated, entity-based cap-and-trade schemes (as the EU ETS), bottom-up baseline-and-credit schemes (JI/CDM) and top-down baseline-and-credit schemes as suggested for Canada.

Types of ET-Schemes Level of Trading	Cap and Trade Schemes	Baseline and Credit (top down)	Baseline and Credit (bottom up)
Governmental Trade	IET (Annex B countries)	CDM (2012 ff., under discussion)	JI/CDM
Entity-Based Trade	EU ETS, RGGI (US) Warner/Liebermann (US) JVETs (Japan)	Canada (LFE)	JI/CDM

The prospect of linking domestic emissions trading schemes targets a de facto harmonisation of entity-based schemes in Annex B countries (IETA 2007).

This special issue focuses on the economic, institutional and ecological dimensions of linked domestic emissions trading schemes at the entity level. It comprises contributions from authors who aim at sounding out the conditions for economically efficient and ecologically effective linking processes. What are the expected economic impacts of

¹ In addition to Kyoto trading and domestic systems, there have been a number of voluntary business initiatives to establish emissions trading among companies (e.g. the Chicago Climate Exchange, CCX).

linking, how can the environmental integrity of the linked schemes be assured? Is the linking of domestic schemes compatible with the principle of supplementarity of climate policy and can linked schemes substantially contribute to an improvement of international climate policy in a Post-2012 regime? These are research question which the seven articles comprised in this special issue are dealing with:²

- (1) From an economic point of view, **Anger, Brouns and Onigkeit** show by using a quantitative simulation model of the global carbon market that economic benefits from connecting the European ETS to emerging non-EU schemes strongly depend on the regional allowance allocation of the linking participants: In a world of moderate reduction targets, for example, an economically efficient regional allowance allocation in line with relative sectoral abatement costs induces a much stronger fall in total compliance costs than a sub-optimal (i.e. too high) domestic allocation of emissions permits to the ETS sectors. This is due to the fact that average abatement costs in the energy sector and energy-intensive industries are generally lower than average costs in the non-ETS sectors.
- (2) Also using an economic simulation model of linked emissions markets, **Persson** demonstrates that the impact of linkage between a regional U.S. scheme (RGGI) to the EU-ETS on permit prices strongly depends on the reduction target in the European scheme: A low EU target results in a net flow of permits to the Northeast scheme, while a more stringent target results in a net flow of permits from the Northeast. A flow of permits from the Northeast state must be compensated for by the EU because the United States is not a party of the Kyoto Protocol. The EU must therefore buy permits in allowances recognized in the Kyoto regime in an amount equal to the net flow of permits from the Northeast states.
- (3) From an institutional perspective, **Sterk and Schüle** aim to examine to what extent the current status of emissions trading in industrialised countries provides a basis for reinforcing and moving forward the international climate regime through linking domestic ETS. The authors show that differences in crucial design issues will increase the transaction costs and will threaten the environmental integrity of the entire linked scheme. A key role is seen by the EU in the process of linking: the EU should pro-actively engage with the non-EU countries to try to harmonise their developing national emissions trading schemes with the EU ETS, widely disseminate the lessons it has learned from the EU ETS, strongly make the case for environmental integrity and at the same time make clear that systems that want to link to the EU ETS will need to meet certain quality criteria
- (4) **Golub, Cozijnsen and Petsonk** examine possibilities for linkage between the EU ETS and Russia. The authors distinguish three paths for possible EU-Russia linkages by which the Russian Assigned Amount under the Kyoto Protocol can be greened in order to stimulate emissions trading: Joint implementation, green investment schemes and linked cap-and-trade systems. The authors conclude that emissions trading through linked domestic emissions trading systems offers the best opportunities at the lowest transaction costs.
- (5) **Streck, Tuerk and Schlamadinger** focus on another institutional aspect of linked domestic emissions trading schemes, the role of domestic offset projects in linked

² Some of the articles (1, 3, 7) build on recent work on linking of ETS carried out as part of the project “Joint Emissions Trading as a Socio-Ecological Transformation”. For more information: <http://www.wupperinst.org/Sites/Projects/rg2/3214.html>. The authors are grateful for a funding provided by the German Ministry of Research and Technology within the research initiative “Socio-Ecological Research”

emissions trading schemes. They argue that the linking of the EU ETS to other domestic schemes with different designs of, and opportunities for, domestic offset projects threatens the environmental integrity of the EU ETS.

- (6) **Haites and Wang** discuss different dimensions of the environmental integrity of linked emissions trading schemes at a more general level: In their article they show that some design features can even lead to higher aggregate emissions if schemes are linked. From their point of view, administrators of the linked schemes must ensure the stringency of the emissions cap relative to the “business as usual” emissions of affected sources, the accuracy of the emissions reported by affected sources, the integrity of the allowance registry, effective compliance enforcement, and the environmental integrity of the credits issued for emission reduction projects over time.
- (7) Finally, **Onigkeit, Anger, Brouns** focus in their article on international fairness aspects of linked domestic emissions trading schemes. Based on a three step analysis, the authors conclude that European per capita emissions will be reduced to a considerably smaller extent if a linking of the EU ETS is accompanied by an optimal design of the National Allocation Plans and if low-cost CO₂ permits became available via the CDM to a large extent.

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