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Course set for a cap? A case study among ship operators on a maritime ETS

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ABSTRACT

International shipping is an important emitter of greenhouse gases. The International Maritime Organization (IMO) is discussing different approaches to reduce maritime CO_2 emissions, in particular market-based mechanisms. In this paper, we assess potential implications of a maritime emission trading scheme (ETS) on the organisation and operations of shipping companies, primarily on the basis of a case study involving ship operators. Our results suggest that there is no major reason why a cap-and-trade approach should not work in the shipping sector in practice. A maritime ETS has the potential to engage this sector into cost-efficient emission reduction if designed to account for the special characteristics of the international shipping industry.

1. Introduction

In the year 2007, international shipping emitted 870 million tons of CO_2, which represents about 2.7% of worldwide CO_2 emissions (IMO, 2009a). The overall development of CO_2 emissions of different transport modes are illustrated in Fig. 1 and Fig. 2. Moreover, it is expected that the emissions from ships will continue to increase significantly in the near future (IMO, 2009a). In contrast to emissions of most other sectors, the reduction of maritime emissions is mainly discussed at the International Maritime Organization and not at UNFCCC. Accordingly, the Kyoto Protocol does not include international shipping in the national inventories but points to IMO to find solutions to reduce CO_2 in this sector (UNFCCC, 1998).

In its second greenhouse gas study the IMO acknowledges the role the maritime industry plays in combating climate change (IMO, 2009a) and the current debate on how global shipping emissions can be reduced mainly takes place at the Marine Environment Protection Committee (MEPC), which within IMO is entrusted with issues related to the environment.[1] As a first result of the discussion, MEPC adopted the Energy Efficiency Design Index (EEDI) in 2011 which requires new build ships to comply with a given energy efficiency level per capacity mile (IMO, 2011). However, given the need for significant emission reductions in the sector, the search for a suitable instrument at IMO continues and, among other proposals such as energy efficiency index for the operation of ships (EEOI), MEPC has considered the implementation of market based mechanisms (MBM) such as a levy on bunker fuel or a worldwide maritime emission trading scheme (maritime ETS).[2] Although pricing carbon by means of a levy, tax or cap-and-trade scheme has become a standard tool of modern climate policy, implementing an MBM would be a novelty for IMO. In the past IMO has resorted mainly to technical and operational standards or regulations to tackle environmental issues. But in the context of global cumulative pollutants such as CO_2 emissions and in the face of a broad set of emission abatement options involving different costs, as they are present in the international shipping industry in form of different technical and operational measures, MBMs seem particularly suitable.

An important question in this context is the effect on the maritime industry. The introduction of an MBM represents an

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[1] For details on the structure of IMO: http://www.imo.org/About/Pages/Structure.aspx.

[2] For details on the numerous proposals, in particular those not involving a market based mechanism, the interested reader is kindly referred to the IMO document centre: https://webaccounts.imo.org/

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0967-070X/

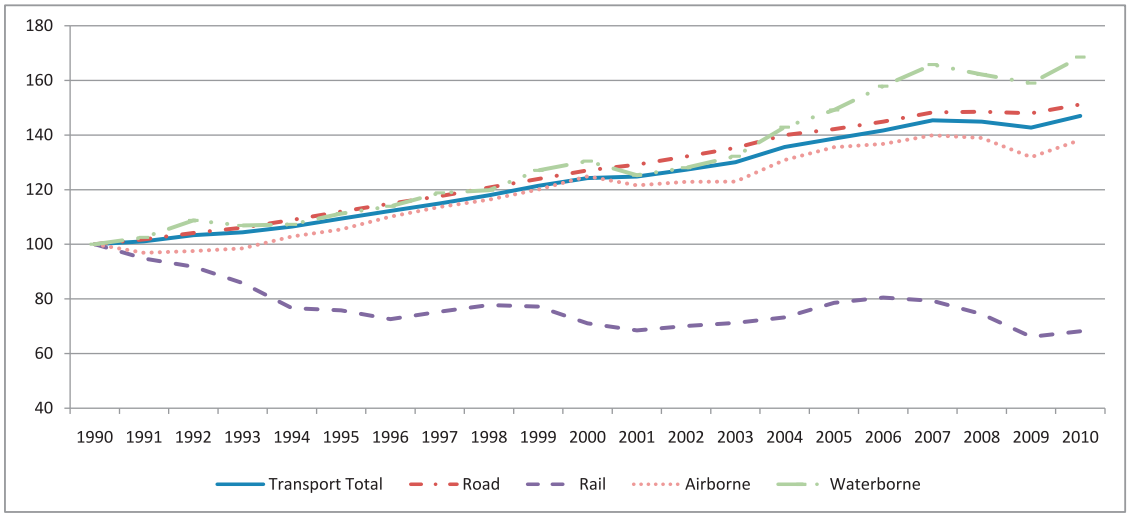

Fig. 1. Change of global transport CO_2 emissions from 1990 to 2010 (Index: 1990; Source: IEA, 2012).

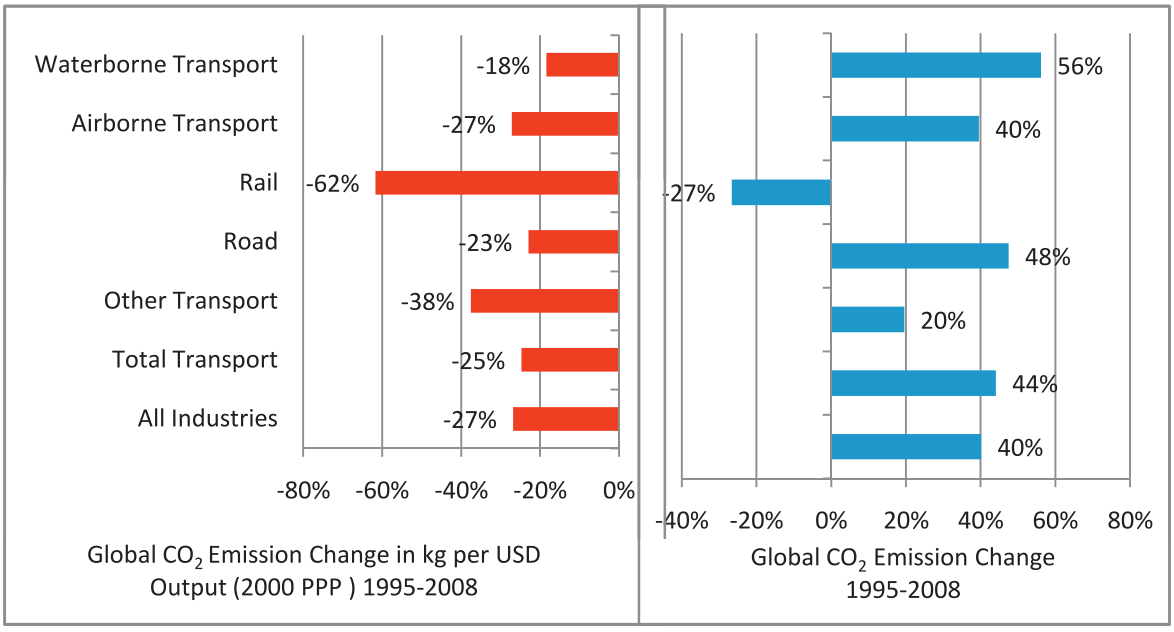

Fig. 2. Global change in CO_2 emissions from 1995 to 2008 (Source: ITF/OECD, 2010).

additional cost of operations for ship operators and the possible effects have been debated at length in the IMO at MEPC. While there are many studies investigating the potential impact of emissions mitigation policy on the transport industry including the maritime sector,[3] there is less detailed discussion about impacts on ship operations and the different categories of costs faced in the maritime sector as opposed to other transport sectors.

Against this background, we investigate the potential effects of a possible future maritime CO_2 emission regulation in the form of an MBM on ship operators. We do this directly using a case study interview approach, rather than a modelling approach as is typical in the climate policy literature. An interview approach has the advantage of obtaining data directly from the actors who will be affected by such legislation. The limitation of this approach is that it is not feasible to cover all the industry and interview partners have to be found. Therefore, we interview a small number of ship operators who represent different maritime markets. The interview structure was designed to elicit the views of ship operators on the potential impacts of a maritime ETS on their operations and their views as to the desirability of different mechanism design options (see Section 2 below for a description).

We focus on a maritime ETS, because the current policy debate considers a maritime ETS as one of the main options for an MBM (although most insights apply also to other MBMs establishing a financial incentive for CO_2 abatement). Up to now, no MBM targeting maritime CO_2 emissions has been implemented. We therefore build on a proposal for a maritime ETS presented by Norway (IMO, 2010a). The Norwegian submission is to date one of the most detailed proposals for a worldwide maritime ETS in discussion at MEPC and can be seen as a good starting point for our analysis. It envisages an ETS that is applied on a global scale to every individual ship undertaking an

[3] See for example Bäuerle et al. (2010), Faber et al. (2010), Miola et al. (2011), Schinas and Stefanokos (2012), Shi et al. (2013), Kapetanis et al. (2014) or Hermeling et al. (2014).