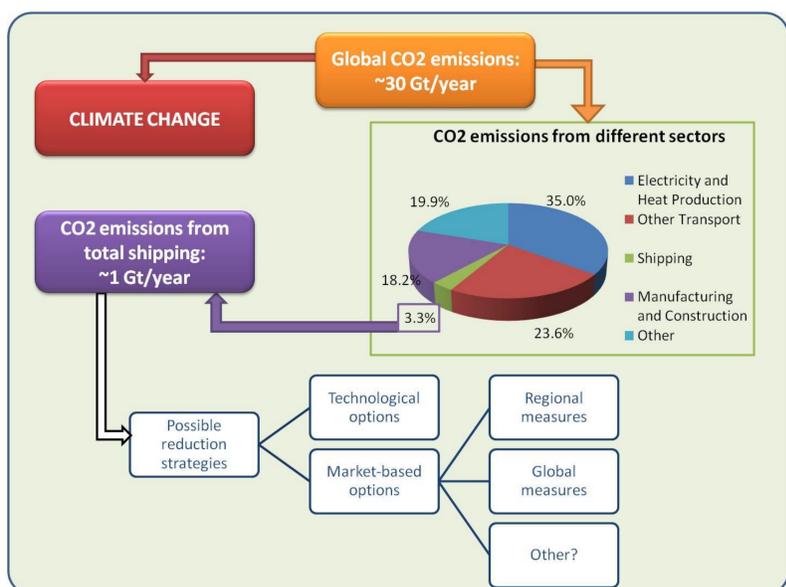




Designing a climate change policy for the international maritime transport sector: technological options and market-based instruments.

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The international maritime transport sector has a significant abatement potential and some technical improvements that reduce GHG emissions would already be profitable without any policy in place, but on average the sector faces high marginal abatement cost. In order for the maritime transport sector to become more environmentally friendly, the flexible nature of the EU Emission Trading Scheme and of other international market-based measures provide a definite window of opportunity without placing unnecessary high burden on the sector. However, the development of a regional policy, such as at European level, for the international maritime transport sector faces several obstacles: allocation of emissions, carbon leakage, permit allocation, treatment of the great variety in ship type, size and usage, and transaction cost. Global market-based policies could overcome most of these challenges.



Technological options

The most effective technological measures regard: (i) the introduction of transverse thruster openings (Ships design); (ii) the use of alternative (e.g. silicon based) hull coatings (Operation); (iii) the use of towing kites; (iv) the monitoring of the propeller's performance (Propulsion), and (v) the reduction of the vessels' average speed (in order to reduce fuel consumption).

These measures could immediately lead to a 13% of fuel saving and the abatement of the related emissions, with an overall cost-effectiveness of 500\$ saved per ton of CO2 abated. This means that the sector has certainly the capability to start realizing GHG abatement itself (according to DNV, 2009, the adoption of all the cost-effective measures may lead to a 20% of emissions and fuel savings) by cost-efficient manner.

However, to achieve a higher reduction, the technological options by themselves are not sufficient. Investigating the opportunity to introduce market-based policies is therefore relevant. Due to the high costs of some technological options, indeed, the maritime transport sector as a whole is expected to become a net-buyer of allowances in any emission trading scheme (Kågeson, 2007).

A global policy

As part of the Kyoto Protocol, the UNFCCC Conference of Parties (COP) agreed to pursue reduction of GHG emissions through IMO. In the 1990s the discussion focused primarily on how to allocate emissions to Parties, a topic that proved to be a major bottleneck for progress on the issue (Haïtes, 2009). With a sectoral approach shipping sector (practically: the IMO) will be included as a separate Party in the post-Kyoto protocol and has to live up to its sector-wide abatement targets. With global coverage, the total of CO2 emissions per ship can be calculated as a factor of the total fuel bought, without risking carbon leakage by ships bunkering in places that fall outside the regulation

Common but differentiated responsibilities and equal treatment of ships

A central principle in international climate change negotiations is that of 'common but differentiated responsibilities'. The initial text comes from the Rio Summit in 1992: "In view of the different contributions to global environmental degradation, States have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command" (DESA, 1992). For maritime transport the basic principle is, on the contrary, equal treatment of ships.

Design choices for market-based policy: critical elements for an EU ET market for international maritime transport.

Allocation of permits

- The great variety in ship size, type, and usage creates the necessity to choose carefully which way to allocate the permits to the operators.

Transaction costs.

- The cap-and-trade policy can confront participating operators as well as regulators with high transaction cost related to trading, monitoring, enforcement, and verification. The volume of allowances traded will decrease as a result of the cost associated with trading, resulting in sub-optimal trading. However, even with high transaction cost it is likely that a trading policy is more cost-effective than technical standards (Stavins, 1995).

Allocation of emissions to Member States.

- In order to include maritime transport as a trading sector in the EU ETS, the participating countries need to decide on an allocation method of ship emissions to countries as the member states are responsible for the emissions of their national installations and ships change flag constantly

Geographical scope.

- Ships are per definition easily movable, and can therefore reduce production cost simply by avoiding the European ports, seas or gasoline sellers as much as possible, which leads to an ineffective environmental policy, as well as a loss of competitiveness of the European economy in general and European maritime transport companies in specific.

Conclusion

Climate change policy needs to be able to promote collective action while safeguarding flexibility and diversity. Due to uncertain future benefits and high present costs the issue faces the risk of time-inconsistency behavior, triggering policymakers to opt for ambitious environmental policies. Combining these considerations with the internal features of the international maritime transport sector – being the most international sector with ships changing flag continuously and being highly diverse in type, size, and usage – explains partly the inability of the UNFCCC and the IMO to implement a clear-cut GHG reduction policy. Moreover, if the sector is included as a separate Party in the post-Kyoto Protocol, a fund needs to be created to assist developing countries in addressing climate change. In this way, a global cap on bunker fuels regardless of flag or country would be in line with the "equal treatment" principle of the IMO while the financial support corresponds to the 'common but differentiated responsibilities' concept of the international climate change negotiations.

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