



A first sketch of a maritime carbon fuel standard

Jasper Faber, 27 November 2018



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Outline of the presentation

- Policy context
- The need for regulation of a fuel switch in maritime transport
- Identification and high-level assessment of policy options
- A sketch of a fuel standard
- Conclusion



Policy context

- The Initial IMO Strategy on Reduction of GHG Emissions from Ships
 - Sets out a vision to ‘reduce GHG emissions from shipping and (...) phase them out as soon as possible in this century’
 - Defines Levels of Ambition, including:
 - Improve CO₂ efficiency of maritime transport by 40% in 2030; and
 - Reduce GHG emissions by at least 50% in 2050, relative to 2008.
 - Specifies that the 2050 level of ambition requires ‘the global introduction of alternative fuels and/or energy sources’; and
 - Identifies a list of candidate measures, including:
 - implementation programme for the effective uptake of alternative low-carbon and zero-carbon fuels; and
 - new/innovative emission reduction mechanism(s) to incentivize GHG emission reduction



Low-carbon fuels: need for regulation

- Low- and zero-carbon fuels are currently much more expensive than fossil fuels and likely to remain so in the foreseeable future
 - Hence, in competitive markets, shipping companies will not use them on a large scale
- Low- and zero-carbon fuels are currently produced in very small quantities
- Several low- and zero-carbon fuels require dedicated infrastructure
 - There is no business case to invest in production facilities or infrastructure without a prospect of demand
- Regulation is required to ensure (a prospect of) demand, either by
 - ensuring that low- and zero-carbon fuels are commercially attractive; or
 - mandating ships to use low- and zero-carbon fuels.



Policy options: identification and assessment

- Carbon levy
 - A gradually increasing levy on the fossil carbon content of marine fuels would make fossil fuels more expensive to use and could result in cost-parity with low- or zero-carbon fuels. The revenues could be used to subsidise low- and zero-carbon fuels in order to gradually increase demand
- Emissions trading scheme
 - A gradually diminishing cap on the amount of fossil CO₂ emitted by ships would ensure that shipping companies implement all measures to reduce emissions, including low- and zero-carbon fuels when they are cost-effective
- A carbon fuel standard
 - A gradually decreasing standard for the average carbon content of fuels used by shipping would mandate an increasing use of low- and zero-carbon fuels



Policy options: identification and assessment

- Carbon levy
 - Cost-effective mitigation, as all measures to reduce emissions can be taken to comply;
 - Politically difficult as the levy would need to be coordinated internationally and it affects sovereign decisions of states on the tax base and rates ([CE Delft 2012](#));
 - New instrument to IMO; no precedent at global level.
- Emissions trading
 - Cost-effective mitigation;
 - Need not raise revenues: no resemblance with tax ([CE Delft 2012](#));
 - Perceived to be complex;
 - Probably not a strong incentive for innovation
 - New instrument to IMO; no precedent at global level.



Policy options: identification and assessment

- Carbon fuel standard
 - Precedents at IMO for setting fuel standards, e.g. relating to
 - Flash point (SOLAS Chapter 2, IGF Code)
 - Sulphur content (MARPOL Annex VI)
 - A fuel standard does not raise revenues: clearly not a tax
 - May be less cost-effective than a levy or an ETS because non-fuel emission reduction options cannot be (directly) used to comply.



A sketch of a fuel standard

- Headline policy
- Supporting policy instrument



A sketch of a fuel standard

- Headline policy
 - A regulation, e.g. in Marpol Annex VI, mandating that the maximum carbon content of fuel used by ships be reduced from 85% m/m (the current level) to 0% ‘as soon as possible in this century’, e.g. by 2.5 percentage points per year (transition would take 34 years).
 - Because the carbon content of fuels has discrete values, it makes sense to mandate the average carbon content of all fuel used in international shipping.
 - E.g. a 50% of the fleet sailing on H₂ from renewable sources and 50% of the fleet sailing on HFO would have an average carbon content of $(0 + 85)/2 = 42.5\%$ m/m
- This policy would create a clear market outlook for low- and zero-carbon fuels, and thus create an incentive for innovation and investments in production and bunkering infrastructure.



A sketch of a fuel standard

- Supporting policy instrument
 - In this situation of 50% of the fleet sailing on H₂ from renewable sources and 50% of the fleet sailing on HFO, how could a level playing field be ensured when H₂ is likely to be more expensive?
 - Introduce a baseline- and credit trading scheme:
 - Ships that use fuels with a lower carbon content than required would create credits
 - Ships that use fuels with a higher carbon content than required can buy the credits from the other ships and use them to comply
 - E.g. the carbon standard is 42.5% m/m
 - A hydrogen-fuelled ship would create 42.5 credits per GJ of fuel;
 - A HFO-fuelled ship would need to have 42.5 credits per GJ of fuel.
 - This would spread out the costs of new fuels across the fleet



A sketch of a fuel standard

- Many questions remain:
 - Compliance and enforcement
 - When the *global average* carbon content is regulated, how will flag states enforce, when they only observe a share of the fuel used?
 - Monitoring and reporting requirements
 - For ships
 - For fuel production and supply
 - Impacts on innovation
 - Will the regulation induce innovation sufficiently?
 - Impacts on shipping
 - Impacts on States
 - Et cetera



Conclusions

- A carbon fuel standard merits serious consideration as a mid- or long-term measure under the Comprehensive IMO GHG Strategy because
 - It appears to be an effective instrument to mandate the shift to low- and zero-carbon fuels;
 - It appears to fit in the regulatory experience of the IMO;
 - It circumvents some of the disadvantages of MBMs.
- A carbon fuel standard could be supported by a baseline- and credit trading system to spread the costs of the fuel switch over the shipping sector and ensure a level playing field.
- Many details remain to be developed further.



Thank you for your attention

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