



# Policies for sustainable shipping in the Baltic Sea - a ranking

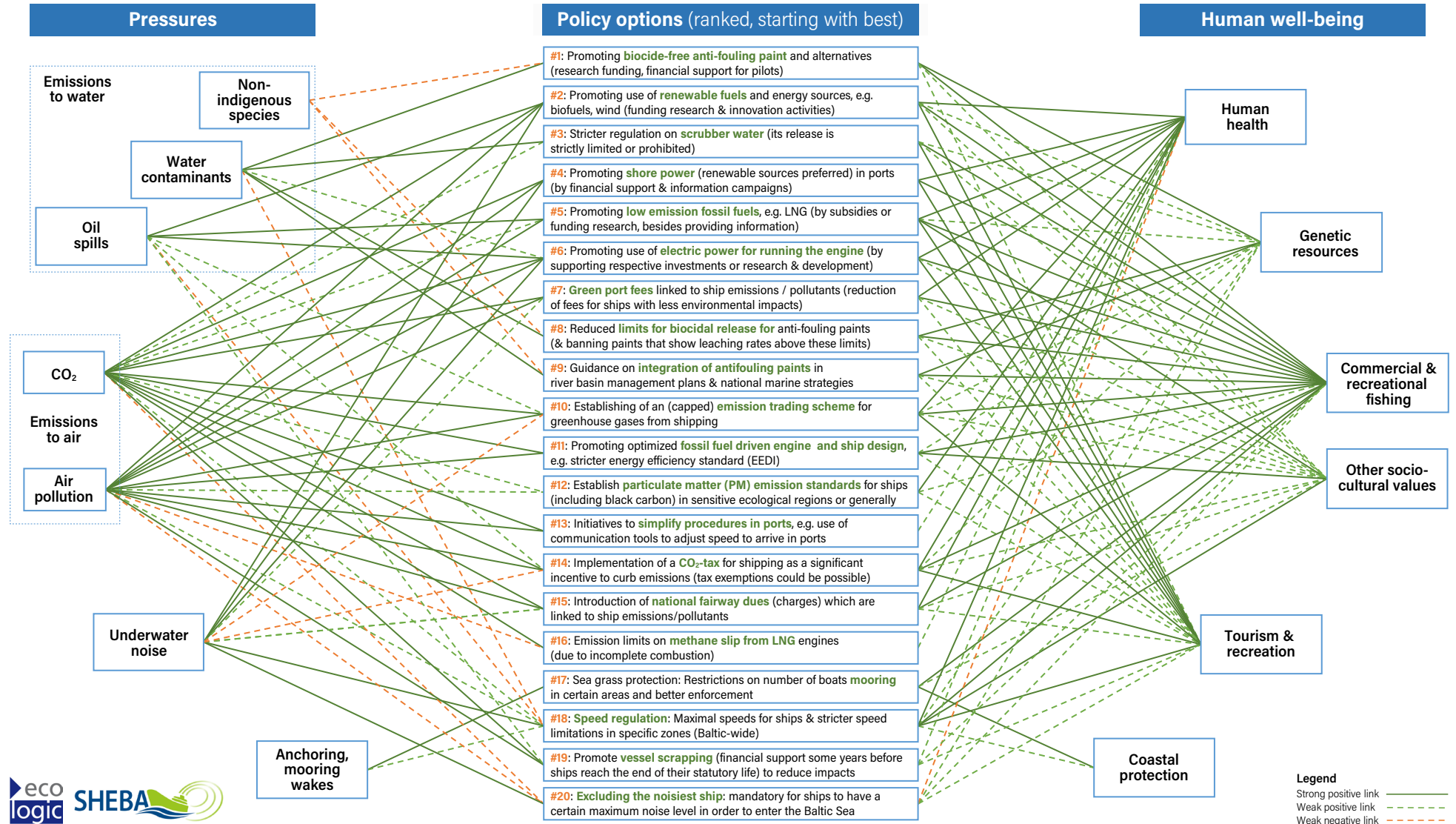
## Policy Brief

Shipping is vital to the global economy and in particular for countries strong in trade like those surrounding the Baltic Sea. Compared to other activities, shipping is as an important driver for the increase of non-indigenous species and physical impacts. Nitrogen oxides (NO<sub>x</sub>), particulate matter (PM) emissions and underwater noise are also important pressures from shipping compared to other land and sea-based drivers. At the same time, shipping is a source of greenhouse gases. This policy brief presents an assessment of 20 policies with potential to tackle the pressures from shipping.

## Key conclusions

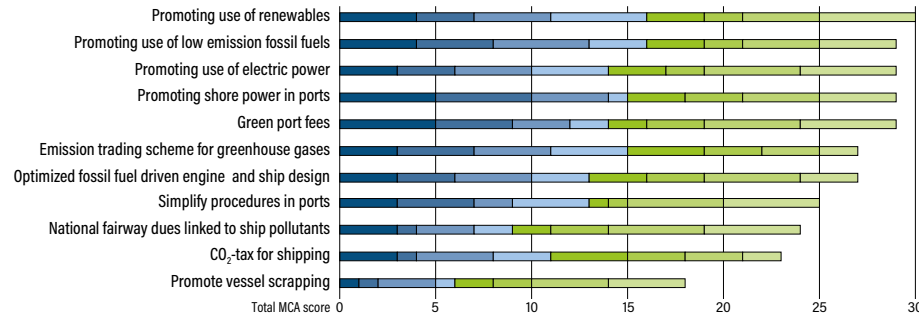
1. There are **"low hanging fruits"**, which would have considerable impacts at low costs – for example 'the promoting low emission fossil fuels'; for which infrastructure is often available.
2. Other policies are effective, but require **considerable efforts** of policy making – for example 'promoting shore power'.
3. Some policies do not only require changes of policy schemes or new institutions, but a **paradigm shift** – for example introducing a carbon tax or emission trading scheme.
4. Some assessed policy options have an **integrative potential**, covering several policy targets, environmental pressures and components of human wellbeing, e.g. 'the promotion of renewables', 'decreasing shipping speed' or 'promoting battery driven ships'.
5. Options might not be too powerful as stand-alone instruments but could play a role in **combination with other policy options** – for example promotion programmes and financial support combined with standards or taxes.
6. Options can have **systemic effects** – for example with ships going on a lower speed more ships would be necessary to transport the same amount of goods in a given time, which would compensate the benefits partially or totally.
7. Policies can have **positive and negative impacts at the same time** (conflicting policy goals) – for example when antifouling paint is limited and non-indigenous species are spread.
8. Depending on the situation, **not only high prioritized policy options should be considered**, also instruments in mid-range of the ranking can be suitable, especially if implemented in combination with other instruments to compensate weaknesses.

# Links between the ranked policy options, pressures & human wellbeing



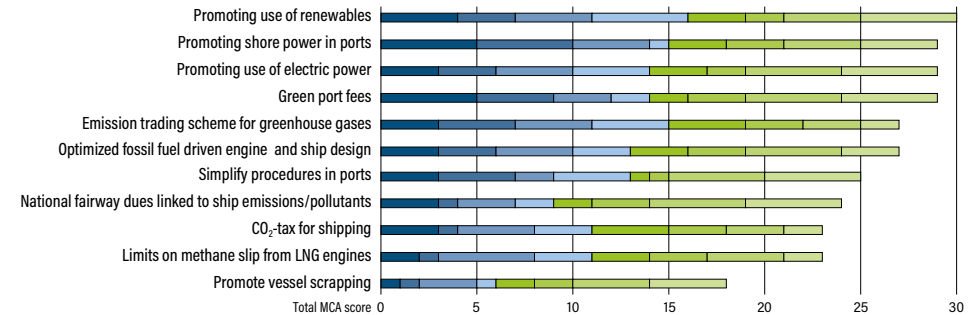
# A ranking of policy options per pressure

## Policy options for reduction of GHG emissions



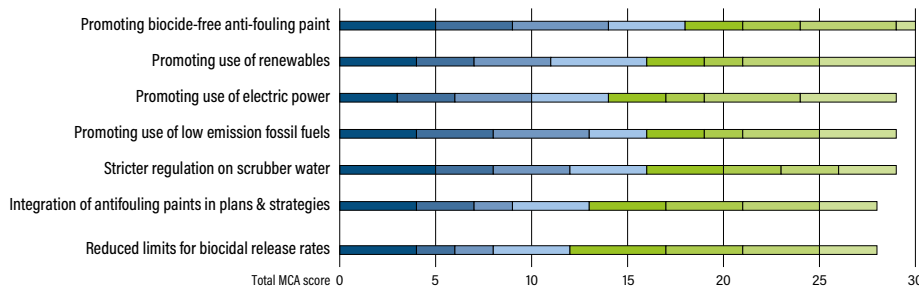
Shipping contributes about 2.4% of global CO<sub>2</sub> emissions today. Promoting of renewables, low emission fossil fuels, electric driven ships & improvements on energy efficiency in the short term and a systemic change in the long-term - initiated by a carbon tax or emission trading scheme - seem to be promising. A further increase of LNG fueled ships should be combined with a 'stricter regulation of the methane slip', otherwise the mitigation effect is compensated.

## Policy options for reduction of air pollution



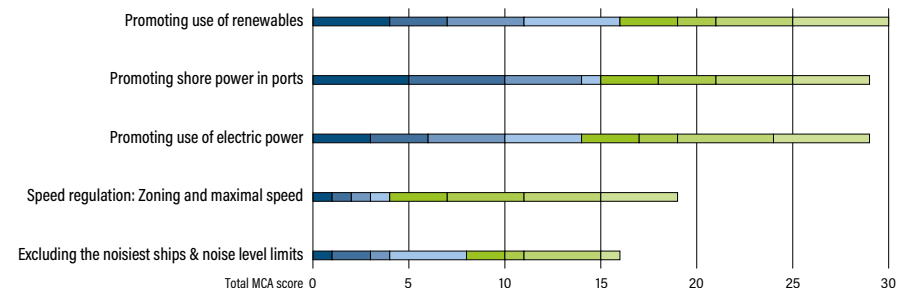
Policy instruments targeting NO<sub>x</sub> and SO<sub>x</sub> emissions are already adopted for the Baltic Sea. Air pollution from ships is highly interlinked with negative health impacts (especially in ports). Additional options are necessary. Respective measures are often linked to cleaning technologies (scrubber), type of fuels (LNG or renewables are beneficial) or efficiency standards.

## Policy options for reduction of water contaminants



Focus on antifouling paint; promoting alternatives and funding respective research activities could decrease the biocidal release rate. More effective than strengthening release standards is banning the most toxic substances. Historic evidence (e.g. banning TBT) shows that major negative impacts are unlikely.

## Policy options for reduction of noise emissions



Because the extent and parameters of the negative impacts of underwater noise are uncertain, it is challenging to identify respective policies. However, retrofitting ships, regulating shipping speed and promoting renewables (especially battery driven ships) are promising options to curb underwater noise.



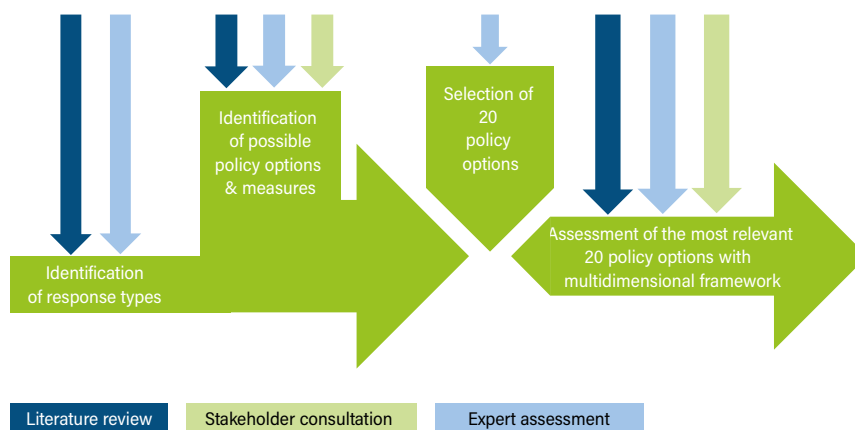
## Summary of the assessment

The highest ranked policy option is an option targeted very specifically on the reduction of two related pressures (copper release in the water and non-indigenous species). Four of five options ranked two to six are related to a fuel switch to electricity, LNG or renewables (in ports or at sea). On the lower end of the ranking, the noise related and the 'promoting of vessel scrapping' are evaluated. All examined policies show a very low or low score for the two criteria political implementability and acceptance & feasibility which were assessed by the stakeholders. The options targeting noise emissions additionally show a significant knowledge gap.

## Assessment method

In the SHEBA project, 20 out of 85 policy options that focus on different environmental pressures from shipping were selected. They have been evaluated based on a developed multidimensional assessment framework which includes eight assessment criteria: political implementability, acceptance & feasibility, scientific knowledge & uncertainty, technological & innovation potential, environmental and health outcomes, efficiency, distributional effects, synergies & trade-offs. The result is a semi-quantitative and participatory multi-criteria assessment. The assessment includes different steps of stakeholder engagement, such as stakeholder workshops and a web-survey, in which two of the eight assessment criteria were evaluated directly by stakeholders.

### SHEBA's approach: A Multidimensional assessment of policy options



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**Based on Deliverable:** Tröltzsch, J., Hasenheit, M., Krüger, I., Boteler, B. (Ecologic Institute), Roth, E. (SDU), Matthias, V., Quante, M. (HZG), Fridell, E., Moldanova, J. (IVL), Jalkanen, J.-P. (FMI), Hassellöv, I.-M., Ytreberg, E., Granhag, L., Eriksson, M. (Chalmers) (2018): Report on policy evaluation and tradeoffs to reduce environmental pressures of shipping in the Baltic Sea, Deliverable D5.3, BONUS Research Project SHEBA, Call2014-41

**More information about SHEBA can be found at:** <http://www.sheba-project.eu>