



*Climate Action Network (CAN) and Clean Shipping Coalition (CSC)
Joint input to the Talanoa Dialogue*

CONTRIBUTION OF THE GLOBAL SHIPPING SECTOR TO ACHIEVING PARIS AGREEMENT CLIMATE OBJECTIVES

WHERE ARE WE?

After a long period of operating exclusively under sail, the shipping industry transitioned first to coal-fired steam engines, and then to fossil-fuelled internal combustion engines. Today the fleet almost exclusively uses large four and two-stroke marine diesel engines, fuelled for the most part by “heavy fuel oil”, a cheap and dirty by-product of the crude oil refining process.

According to the [Third IMO GHG Study](#) international shipping emits around 1Gt of CO₂ per year and is responsible for about 2.6% of global man-made CO₂ emissions. If the shipping sector were a country, it would have the 7th largest CO₂ emissions in the world, comparable to Germany's total national emissions.

Official IMO projections suggest that without further action shipping emissions will increase by 50-250% by 2050. On this basis shipping could be responsible for 17% of all emissions by 2050.

However, current estimates and future projections do not take into account the additional climate impact of ship Black Carbon (BC) emissions. According to [ICCT](#), BC accounts for 7-21% of shipping's global climate impact depending on time scale. Since shipping is expected to increase its uptake of LNG, considerable methane slip and leakage associated with this fuel will also likely increase shipping's climate impact beyond current projections.

At present the only shipping climate measure in place is a CO₂ design standard for new ships (the IMO's Energy Efficiency Design Index or EEDI) that [a number of studies](#) have shown to be ineffective at either limiting emissions or driving fleet innovation and decarbonisation. Adopted in 2011, IMO EEDI regulation sets 3 targets, known as phases, which each progressively require ships to be more efficient.

However, the latest [research](#) shows that almost three-quarters (71%) of all new containerships, which emit around a quarter of global ship CO₂ emissions, already comply with post-2025 requirement (30% more efficiency). Similar over-compliance is observed in other ship types, too, signifying that current improvements are driven by natural market forces and not by the EEDI as IMO's only climate measure.

WHERE DO WE WANT TO GO?

Humanity is left with a finite carbon budget of around 770 Gt of CO₂eq from 2010 onwards if it is to limit the global temperature rise to 1.5°C above pre-industrial levels. Under a “fair share” principle, international shipping should be allowed to use no more than 2.3% of this remaining carbon budget, a proportion equal to its past average share of global man-made GHG emissions. In absolute terms,

this means around **18 Gt** of CO₂ starting from the year 2010. According to the Third **IMO GHG study** and its recent update by the **ICCT**, international shipping emitted around 5 Gt of CO₂ between 2010-2015, leaving the sector with around 13 Gt of its 1.5 degree carbon budget remaining.

On this basis and to be in line with the goals of the Paris Agreement absolute emissions from international shipping will have to drop to zero by 2050 at the latest.

The long-term targets for international shipping must be complemented with an objective that absolute annual emissions must be **peaked in the immediate future - well below 2008 levels**, and quickly reduced thereafter. To achieve these immediate and long-term objectives, a basket of abatement measures must be put in place to put the sector on a required decarbonisation pathway.

HOW DO WE GET THERE?

A variety of alternative fuels/propulsion technologies [are available](#) for the sector as it decarbonises. This includes wind and solar, battery-electric propulsion for short-sea shipping, and hydrogen fuel cells, ammonia and hybrid systems for the largest ocean going ships.

Perhaps the most important first step on the road to creating a decarbonised fleet is a clear political commitment to do so in an appropriate time frame. As already noted above, to keep warming below 1.5 degrees and for international shipping to contribute its fair share to tackling the climate crisis the **level of ambition** for the sector must include decarbonisation by mid century. A clear political statement of intent to this effect will make sure that the industry is in no doubt about the direction of travel and the urgency of the task. While this will hopefully help shipping avoid false turns (e.g., use of LNG as an alternative fuel), it will also help ensure that subsequent measures are properly focused on the long-term goal.

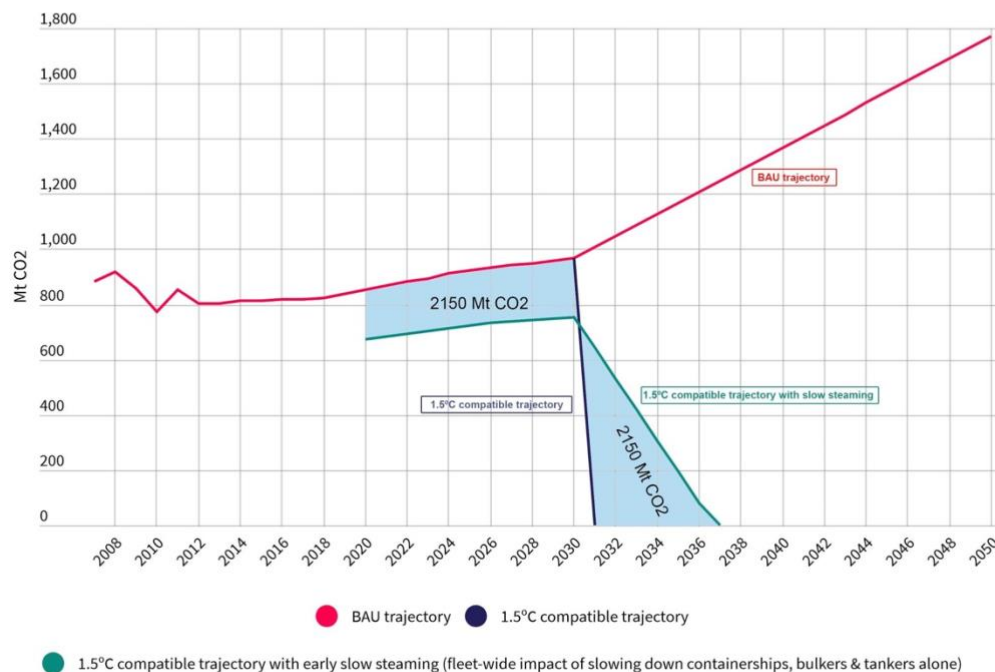
In addition to an agreement on a clear long-term decarbonisation pathway, measures will be needed to peak emissions in the short term and bring about the necessary longer-term reductions that will result in a decarbonised fleet.

With the remaining 1.5 degree carbon budget for shipping dwindling fast **immediate measures** are needed that result in the reduction of all ship GHG emissions (including Black Carbon) in the short-term (i.e., well before 2023). Emissions saved in the short-term could in effect be “spent” later to buy the sector additional time to develop alternative decarbonised fuels and propulsion systems.

Perhaps the most promising immediate measure currently on the table is the regulation of ship speed. [Numerous studies](#) have shown that slow steaming is the most effective emissions reduction measure at the disposal of the sector. One recent estimate (CE Delft, 2017) suggests that over 2 Gt of CO₂ (more than 15% of the remaining budget) could be saved if the the speed of just half the global fleet was reduced by 30% until 2030. Fig X below shows how effective this would be at reducing emissions and buying the industry more time to decarbonise.

International ship CO2 emissions

BAU vs. 1.5°C compatible trajectory vs. 1.5°C compatible trajectory with early slow steaming



Source: Estimations based on 3rd IMO GHG study (2012), CE Delft (2017), ICCT (2017)

Fig X: 1.5°C compatible decarbonization target and early speed reduction

While only delivering emissions reductions in the medium to longer term, immediate action is also needed to ensure that the requirements of the EEDI are in line with the necessary decarbonisation pathways. Ships have quite long life spans with vessels launched in the mid 2020s likely still afloat in 2050. To be a genuine driver for the on-time decarbonisation of the fleet existing and future new EEDI requirements will need to be much stricter.

Following the establishment of immediate measures, **longer term measures** will be needed to, amongst other things, establish an effective carbon price for the sector (e.g. a CO2 charge, fuel levy or equivalent operational efficiency metric) and incentivise the uptake of zero emission technologies. Latest research indicates that a charge of at least \$500/tonne CO2 will be required. In addition, a maritime climate fund should be explored to finance R&D, infrastructure for new zero emission fuels/propulsion technologies and retrofitting existing ships.

The IMO and parties to the Paris Agreement should routinely submit to the global stocktake on agreed targets and reduction measures to abate shipping's climate impact in line with the Paris Agreement. However, economy-wide decarbonisation is ultimately the responsibility of parties to Paris Agreement, and any **ambition gap** left behind after the IMO has acted will need to be filled by those parties, acting either nationally, bilaterally or regionally. This will complement IMO action and must ensure an emissions pathway for international shipping that is consistent with keeping warming below 1.5 degrees. For example, if IMO fails to agree a 70-100% by 2050 emissions reduction target, further national and regional reduction targets for shipping should be adopted as part of parties' NDCs to the Paris Agreement. Similarly, if IMO fails to put in place effective short and mid-term measures to achieve the savings that are needed before 2023 and 2030 respectively, further reduction measures should be implemented by parties to PA at the national/regional level to complement IMO efforts.