Climate Change and the Maritime Industry:

Moving Forward

White Paper, April 2020

www.bassnet.no

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Abstract

This paper presents a detailed overview of the relationship between climate change and the maritime industry. Consideration is given to the impact climate change has on shipping, as well as the maritime sector's contribution to global warming.

In addition, arguments for shipping to take a proactive approach to combat the climate crisis are examined, with a discussion of potential solutions moving forward. Solutions described in this paper are specific to the maritime industry.*

**Solutions considered include but are not limited to the digital space, which is the domain of BASS Software's offerings detailed in the Appendix to this paper.*

Climate Change: Global Threat & Impact

Climate change is a global threat for many reasons. Sea level rises. Melting ice-caps. We can expect more intense heatwaves and hurricanes, alongside other extreme weather events.

With the increasing shifts in climate patterns worldwide, there will likely be greater frequency of wildfires, droughts, as well as increased precipitation.

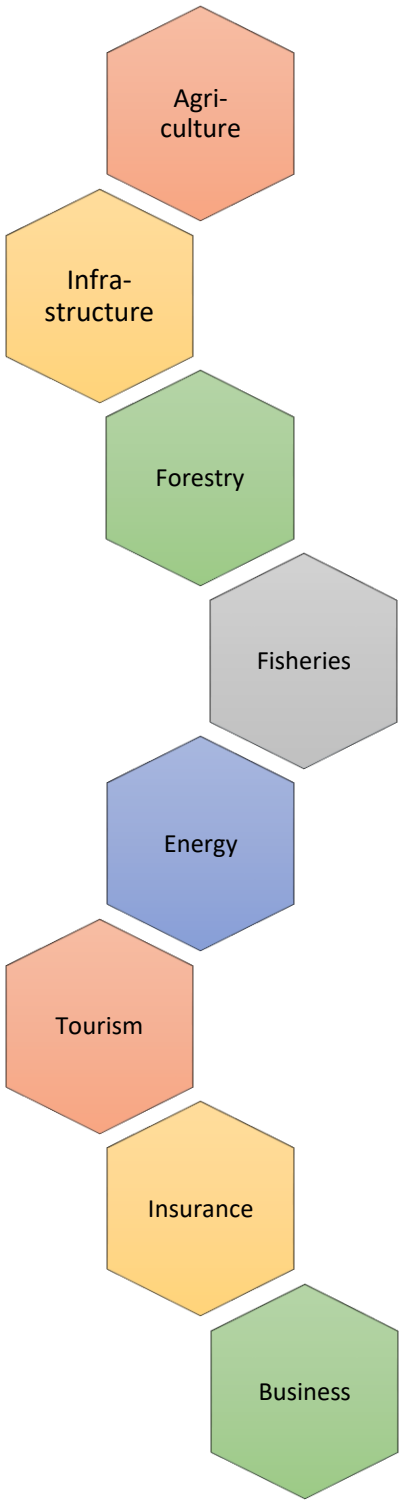
These changes are likely to cause significant impact to a number of industries that contribute to the global economy.[1]

The agriculture industry in multiple countries will be particularly hard-hit, posing a threat to major global food supply chains; food security is among the areas anticipated to be at risk at the global, regional and local levels. [2]

It should therefore come as no surprise that the Intergovernmental Panel on Climate Change (IPCC) estimates the net damage costs from climate change will only increase over time.[3]

> "Taken as a whole, the range of published evidence indicates that the net damage costs of climate change are likely to be significant and to increase over time."
>
> *- Intergovernmental Panel on Climate Change*

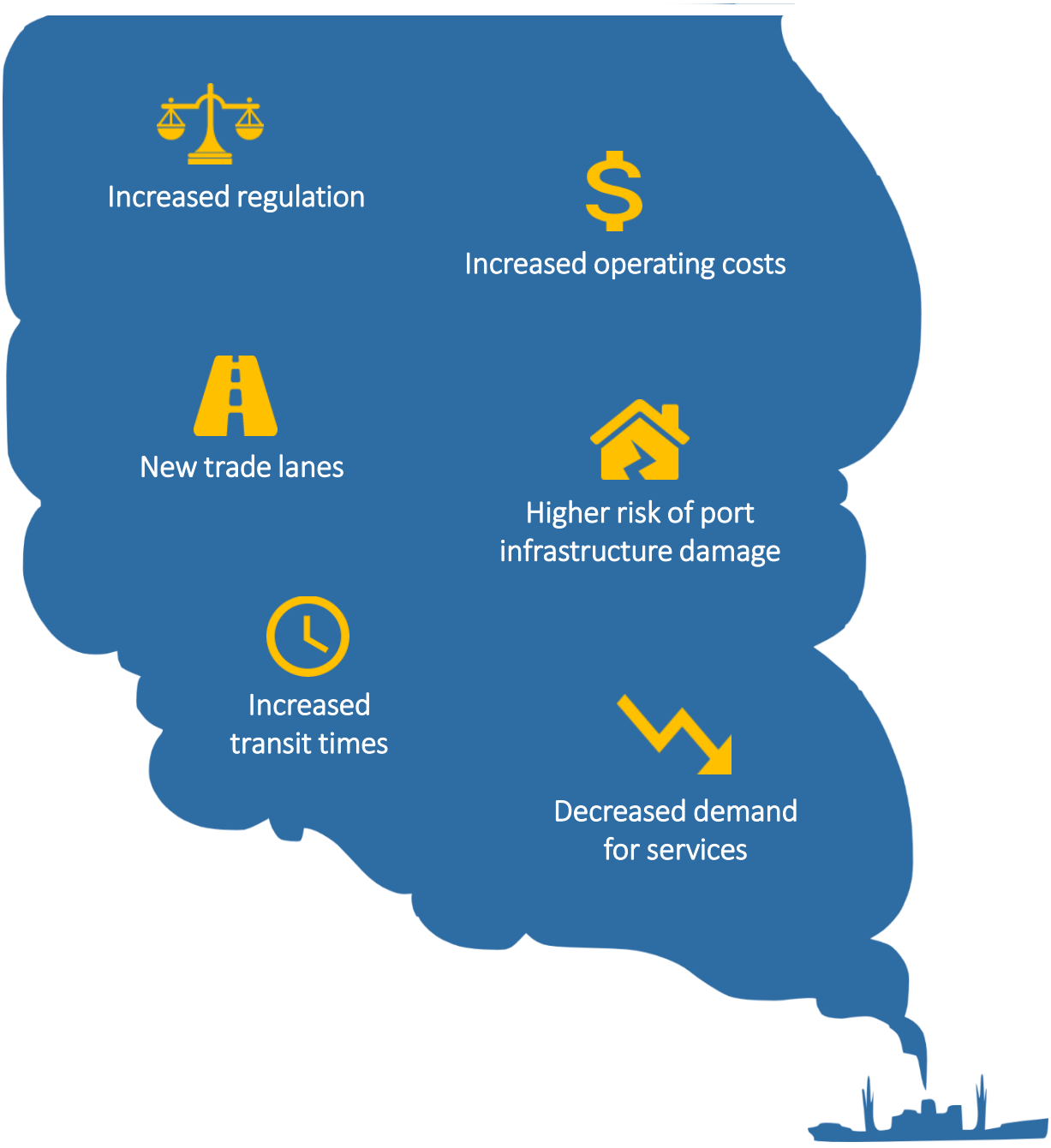
Sectors impacted



How Does Climate Change Affect the Maritime Industry?

What does the advance of climate change mean for the maritime industry? With shipping forming 80% of the volume of world trade[4], this vital transportation channel is unlikely to emerge unscathed from the effects of climate change.

Indeed, research is overwhelmingly pointing to the need for shipping to adapt quickly to minimize the potential negative effects of climate change to productivity and costs. Here are just some of the major changes expected to impact business as usual[5]:



How Does Shipping Contribute to Climate Change?

The writer C.S.Lewis once noted, "A sum can be put right: but only by going back till you find the error and working it afresh from that point, never by simply going on." In this spirit, it is important to recount just how the maritime industry contributes to climate change before we delve into the many solutions available.

Air Pollution

Currently, shipping accounts for 2.5% of global greenhouse gas (GHG) emissions.[6] This is expected to increase to a whopping 10% by 2050.[7]

The European Federation for Transport and Environment (also known as 'Transport & Environment (T&E)') has also highlighted the release of black carbon particles through the burning of heavy fuel oil, alongside the release of other noxious fumes ranging from nitrogen oxide (NOx) to sulphur oxide (SOx).[8]

Such gas emissions contribute significantly to climate change and acidification, and it's no coincidence that global shipping has been compared to the major national emitters.

As the nonprofit conservation organisation Oceana points out, '… if global shipping were a country, it would be the sixth largest producer of greenhouse gas emissions'.[9]

> "… if global shipping were a country, it would be the sixth largest producer of greenhouse gas emissions."
>
> - *Oceana, inc*

Water Pollution

The industry's impact on air quality is unfortunately not the end of the matter.

Ballast water disposal, greywater and blackwater/sewage pollution, chemical pollution, solid waste pollution and oil pollution (for example, by the mixing of bilge oil with oceanic water), mean that the maritime industry also heavily affects ocean water quality.[10]

Why Should the Maritime Industry Combat Climate Change?

The negative impacts of climate change for shipping are set out in this paper's topic 'How does Climate Change affect the Maritime Industry?' and they make a strong case for a proactive approach. Here are more good reasons why it's time for shipping to step up:

All Hands On Deck

- A globalised economy means an increased need for maritime transport, with its corresponding increased emissions.[11]
- As the maritime industry is on its own a major contributor to global warming, it should take responsibility to reduce emissions.
- There is increasing pressure for shipping to take action. For example, the EU Parliament voted to include shipping in the EU Emission Trading Scheme from 2023 unless the International Maritime Organization (IMO) proposed equivalent regulations on its own.[12]

Regulatory Compliance

- An international agreement was brokered by IMO for shipping companies to halve their greenhouse gas emissions by 2050.[13] The IMO is now adopting mandatory measures to reduce emissions.[14]
- Shipping must now meet many regulatory requirements designed to combat global warming. Examples include the EU MRV regulations, IMO DCS data collection system, MARPOL regulations on air pollution, and IMO sulphur limits.[15]

Support of Global Initiatives

- There are now many global initiatives that support the maritime industry in battling climate change.
- Examples: *Sustainable Mobility for All* and *Carbon Pricing Leadership Coalition* are both supported by the World Bank.

The Power of Digitalisation

- Digitalised fleet management systems provide an opportunity to better track emissions and fuel consumption data with ease.
- Digitalisation opens the door to powerful analytics features, including environmental efficiency trends and the great potential of predictive analytics.

Challenges Faced Historically

Transportation has always been a large contributor to global pollution, and the maritime industry is no exception. But the ability to persevere in the face of complex tasks has always been the hallmark of shipping. So why has it been such a challenge for the industry to organize in the face of the global warming threat? The answer is complicated.

Excluded from international agreements

Given the global and complex nature of maritime activities, shipping has traditionally not been included in obligations under international agreements to reduce emissions (for example, the Kyoto Protocol and Paris Agreement).[16]

Lack of partners

Planning a cohesive strategy across the entire industry on a global scale is an upward climb without international initiatives backed by strong partners, organizations and networks.

Few national targets

There have rarely been national emissions targets set by sector.[17] This means the maritime industry could not rely on regulatory frameworks within nations on a large enough scale to make a difference.

Few digital tools

It is only relatively recently that digitalisation has taken off, bringing a range of tools to bear on the collection of valuable information for data sharing and analytics. These tools could well make the difference in combating climate change.

What are the Solutions for Shipping?

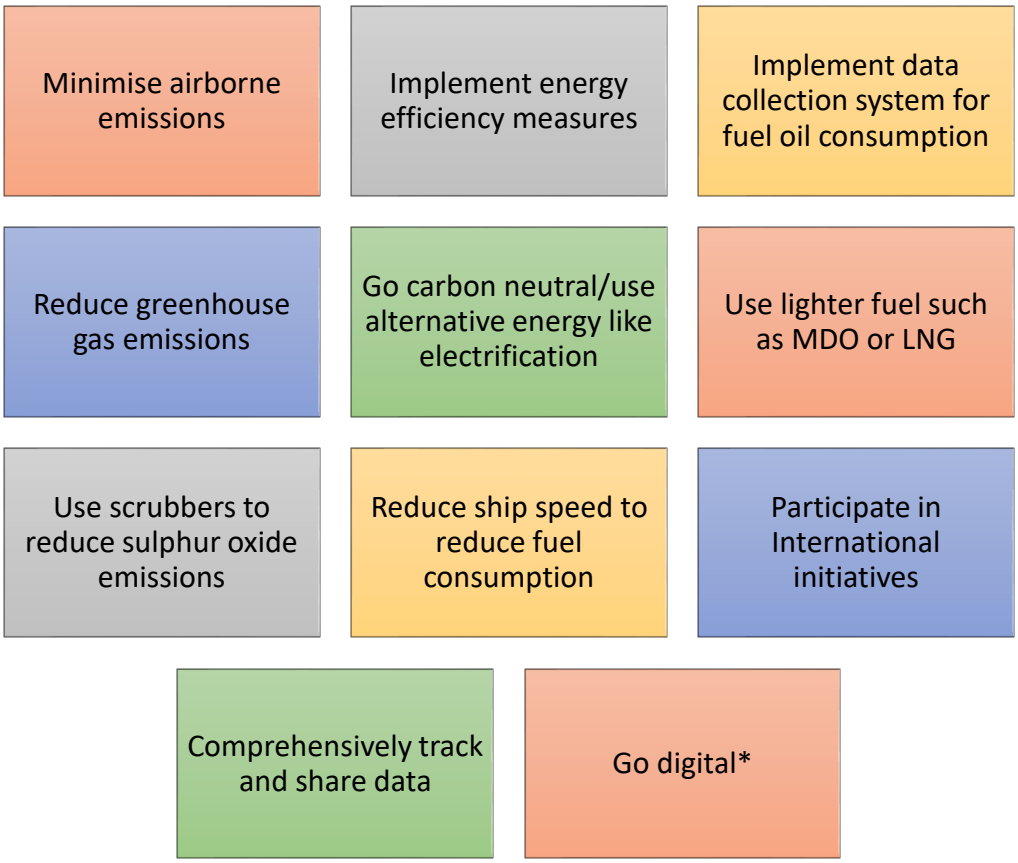
Climate change cannot be solved overnight, nor by a single industry. But there are effective solutions available to the maritime industry ranging from emissions-tracking and energy efficiency measures to going carbon neutral.

A substantial number of vessels have also chosen to add scrubbers to reduce sulphur oxide emissions; as at March 2020, it is estimated that 4000 ships will be using scrubbers (operational and on order).[18]

The use of lighter fuels such as MDO or LNG is also a winning solution. And with many countries prohibiting the entry of ships with scrubbers, it is no wonder that some expect LNG-propelled ships to make up 60.3% of new shipbuilding orders in 2025.[19]

Digitalisation is another strong solution[20] with its capacity for efficient information gathering, data sharing, trend analysis and predictive analytics. Notably, digitalisation can also contribute to economic benefits by optimising shipping activities and reducing operating costs.

Here are a range of effective actions that ship owners and managers can take to combat climate change:



*BASS provides digital solutions that can help reduce air and water pollution, as set out in the Appendix below.

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Appendix: How Can BASSnet™ Help?

How can BASSnet™ help the maritime industry to combat the climate crisis? To start with, BASS's focus has been on capturing all data on emissions in the system for monitoring and reporting purposes.

In addition, our digital solutions include powerful analytics to capture environmental efficiency trends, user-friendly electronic logs for crew to record information, and a variety of environmental management tools.

Powerful Analytics

As an ERP suite of solutions, BASSnet™ is a complete digital fleet management system that is primed to gather data across various modules. This makes it easy to monitor ship emissions and gauge the impact to the environment through data-driven analytics.

The main module for capturing vessel operational information and environmental management data is BASSnet™ Operations. Our useful **My Dashboard** feature then provides a bird's eye view of analytics, with beautifully rendered charts and graphs for vessel KPIs, including environmental efficiency trends.

BASS is also providing a new Business Intelligence solution that enables customers to build their own web-based analysis and KPIs. Please reach out to us at contact@bassnet.no for more information.

Comprehensive E-logs

BASSnet™ Operations provides user-friendly electronic logs to instantly record fuel consumption, ballast water activities, disposal of solid residues, operations related to oil, (garbage) discharge into the sea, operations for ozone depleting substances, and operations for sewage discharge.

Not only can customers easily track emissions and fuel consumption, data recorded can then be extracted with our useful reporting tools to ensure regulatory compliance.

Appendix (Cont'd)

Other powerful benefits of the BASSnet™ system include:

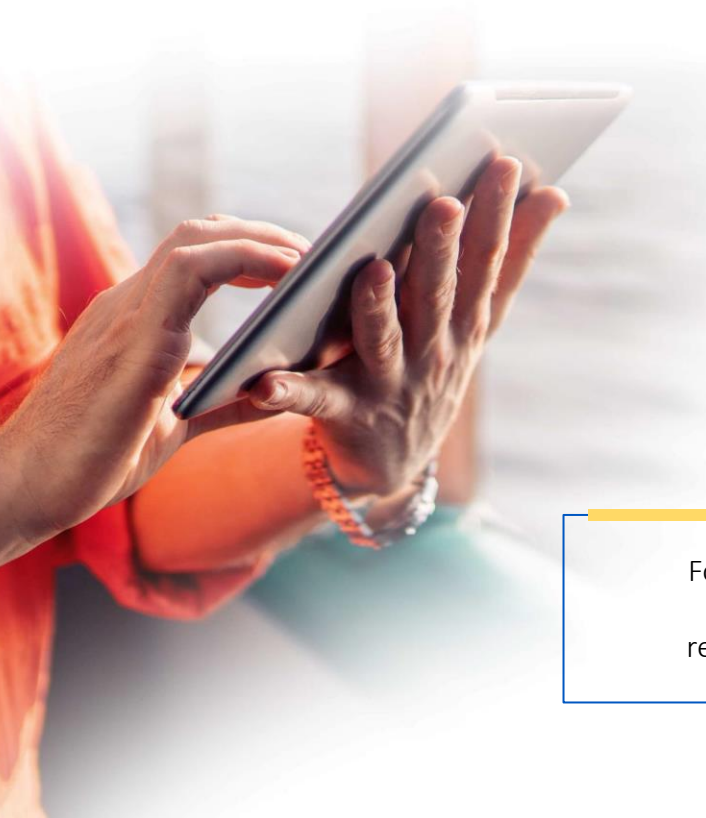
Vessel Environmental Impact Monitoring

Our dedicated **Environmental Management** module enables tracking of all information on calculations for environmental emissions based on date ranges and voyage legs. This data can then be used for comparison and to generate environmental impact trends.

Here's a brief overview of the module's top features:

- **Surveys, Audits & Documentation** feature to centrally link surveys, certificates and documents from other modules.
- **Environmental Emissions Calculation** feature for calculating vessel emissions to gauge the environmental impact.
- **EEOI Calculator** enables easy calculation and analysis of a vessel's Energy Efficiency Operational Indicator to check CO2 emissions.
- Useful **Reports & Statistics** feature to generate reports on emissions to sea and air, among others.

Comprehensive Reporting



The system contains flexible report designing and viewing features for customers to customize reports to best serve their needs.

In addition, our comprehensive range of readily available reports aid in ensuring compliance with international regulations such as MARPOL and EU MRV, while IMO DCS data collection requirements can now be efficiently implemented.

For more information on our offerings, please visit www.bassnet.no or reach out to us at contact@bassnet.no

Contact Us
contact@bassnet.no

Find Us

About Us

BASS, founded in 1997 with Norwegian heritage, is a leading global provider of fleet management software for ship owners and ship managers, as well as operators of rigs, FPSOs, and other offshore units. Today, our customers, including leading multinational shipping corporations and offshore service providers, run the proprietary and fully integrated BASSnet™ Fleet Management Systems on more than 2,000 vessels around the world.

For more info on our offerings, please visit www.bassnet.no