

# How smart monitoring can help reduce ship emissions in-terminal

PortZone Episode 13

RightShip – Yucel Yildiz



# About RightShip

**RightShip** is the world's leading ESG focused digital maritime platform, providing expertise in global safety, sustainability, and social responsibility best practice.

Our safety and environmental scoring systems and consultancy services are built on decades of maritime experience, comprehensive datasets, and sophisticated technology.

RIGHTSHIP



**A truly global perspective**

More than **220 colleagues** in Australia, China, Vietnam, Japan, Malta, Singapore, UAE, Greece, UK and the US.

# Serving the maritime eco-system

RIGHTSHIP



A maritime industry that causes zero harm

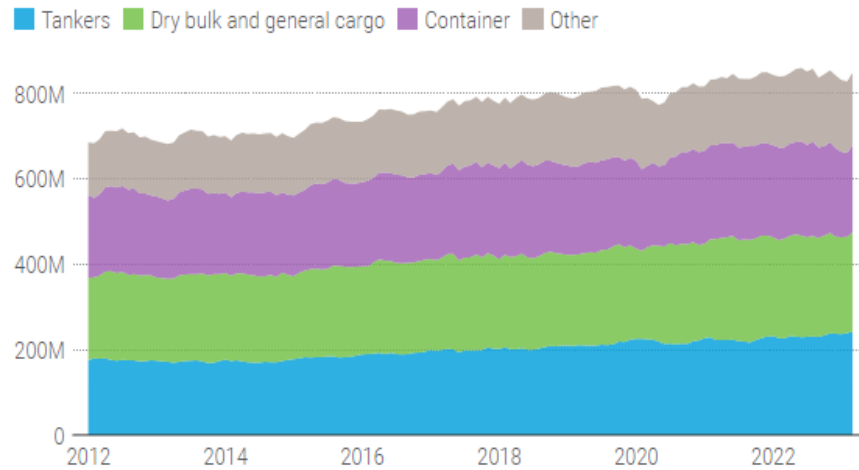
# The climate change challenge

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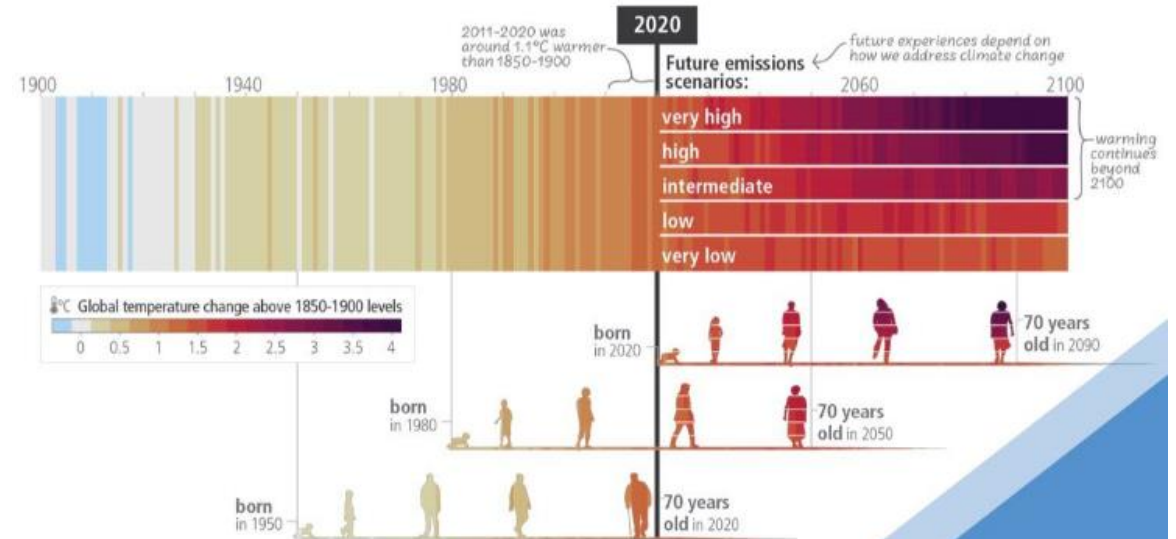
## Shipping emissions are headed in the wrong direction

Carbon dioxide emissions by main vessel types, tons, 2012–2023



Note: The group "other" includes vehicles and roll-on/roll-off ships, passenger ships, offshore ships and service and miscellaneous ships.

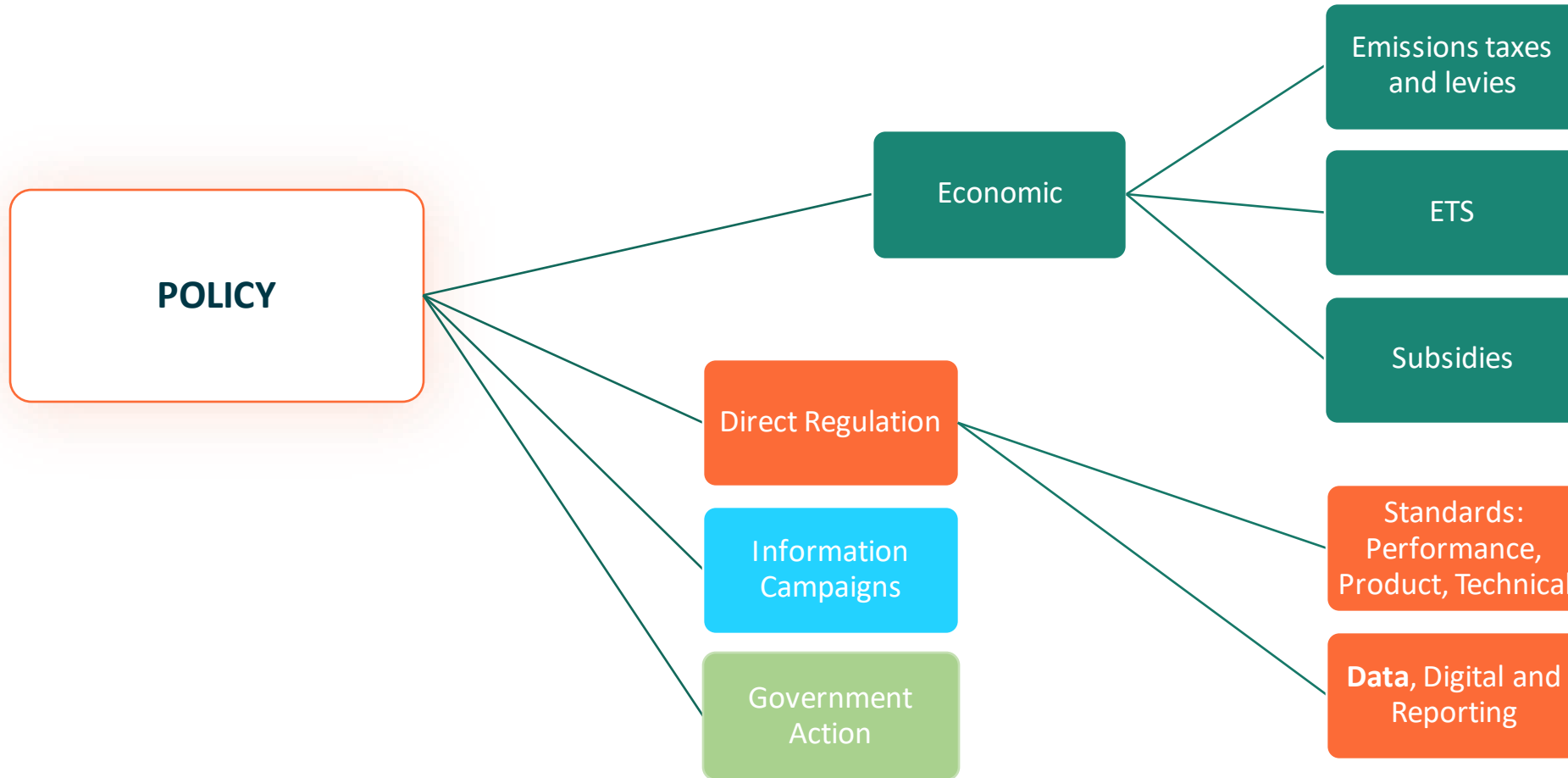
Source: UNCTAD based on data provided by Marine Benchmark, June 2023. • [Get the data](#) • [Download image](#)



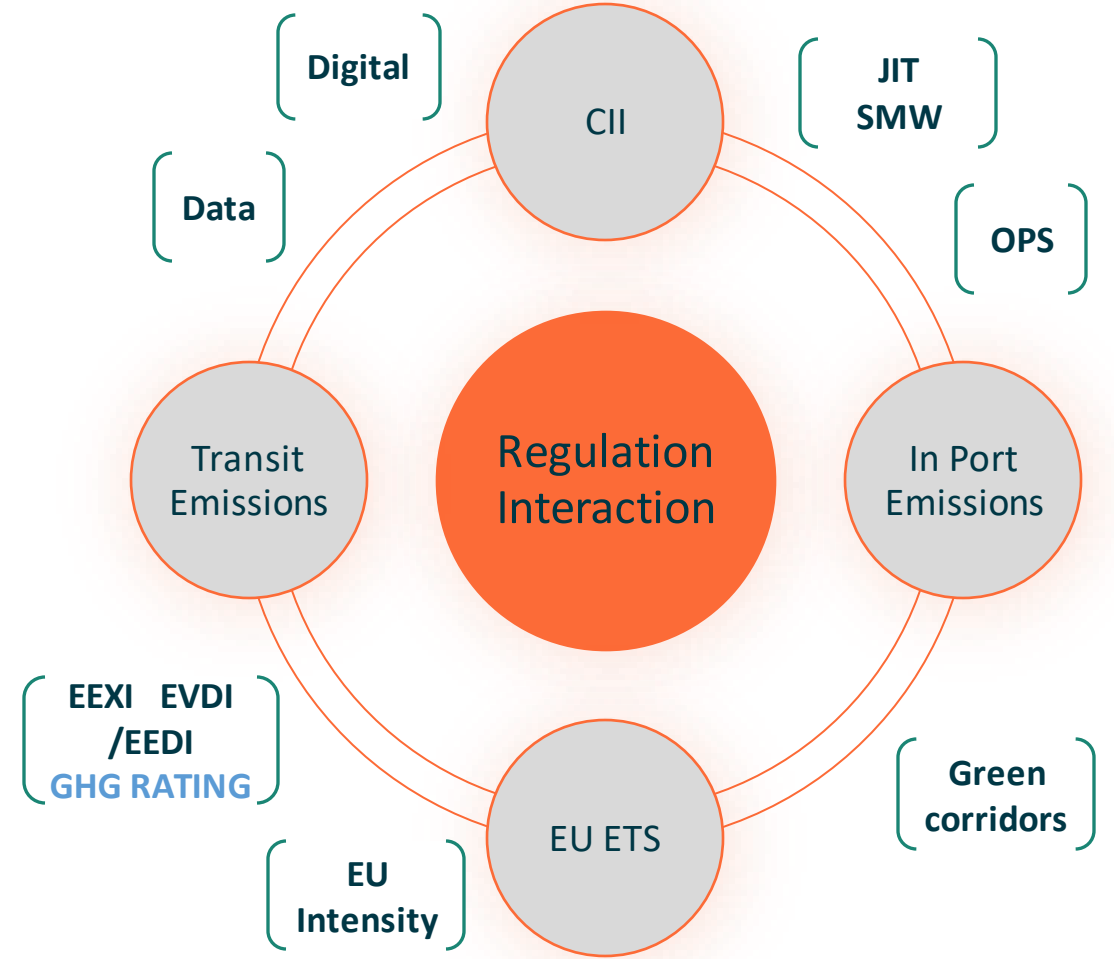
Sixth Assessment Report | Synthesis Report

ipcc  
INTERNATIONAL PANEL ON CLIMATE CHANGE

# Climate action – basket of measures



# Complexity and collaboration



# The shipping eco-system

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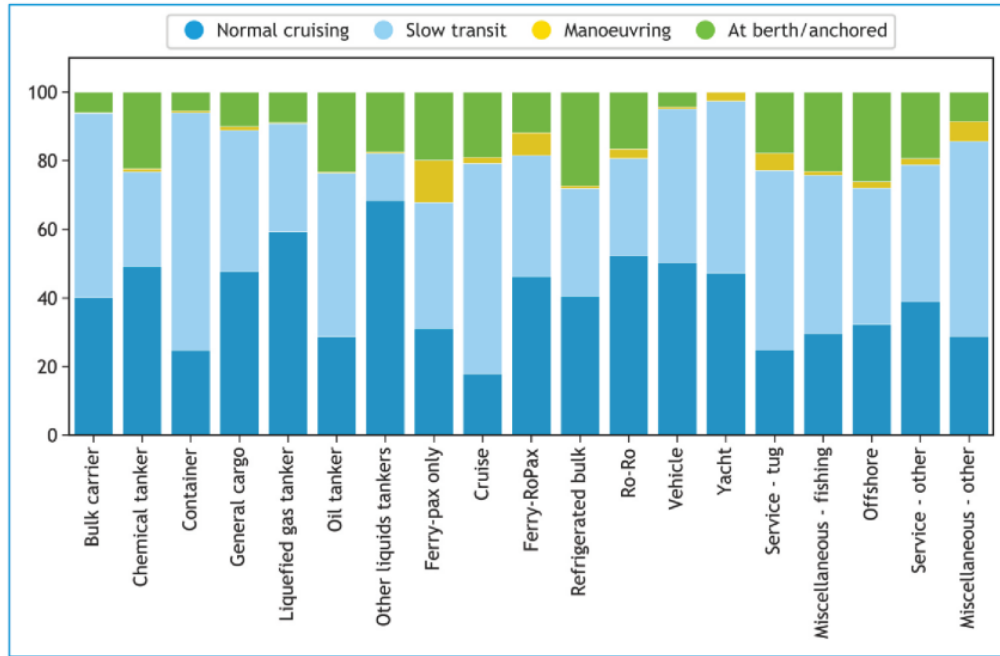


Figure 6 – Proportion of international GHG emissions (in CO<sub>2</sub>e) by operational phase in 2018, according to the voyage-based allocation of emissions. Operational phases are assigned based on the vessel's speed over ground, distance from coast/port and main engine load (see Table 16)



Regulatory environment



Stakeholder pressure



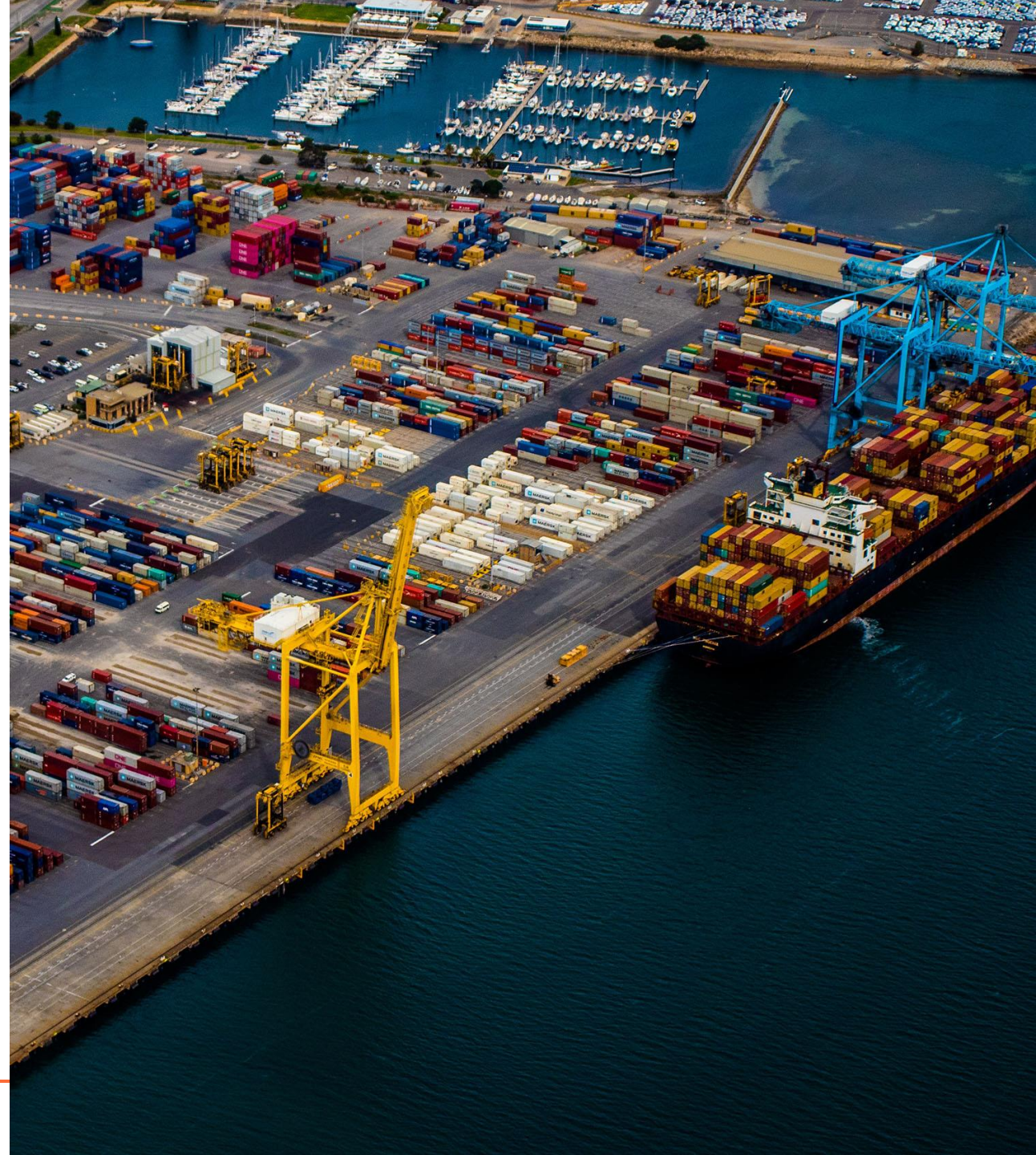
Green corridor & Net-zero



Trusted data and transparency

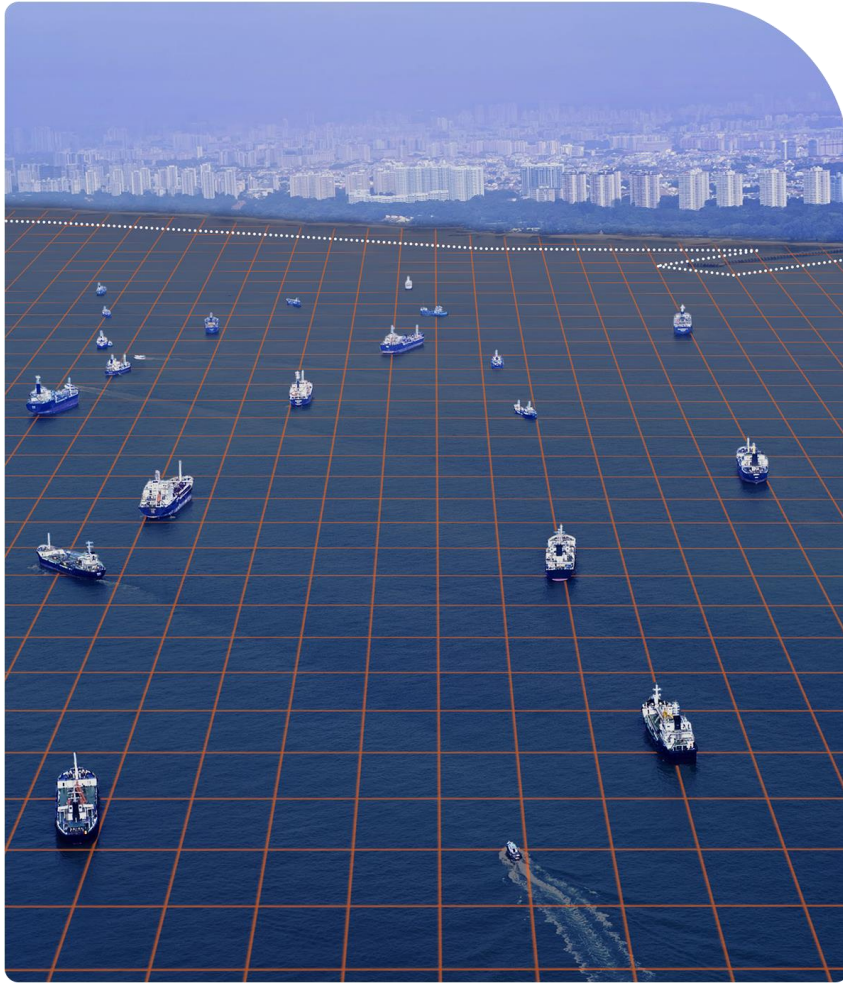
# Challenges for Ports

- Increased regulatory and stakeholder pressure on environmental considerations, marine ecosystems and coastal communities' health and wellbeing, achieve zero emission port operations by 2050 or sooner.
- Lack of accurate ship-specific data in measuring ship-sourced GHG emissions & pollutants within port areas.
- Lack of official guidance for ports globally on how to effectively measure and manage Scope 3 emissions using recognised methodologies.
- Desire for more transparency in measuring and managing the emissions and air quality in and around your port.



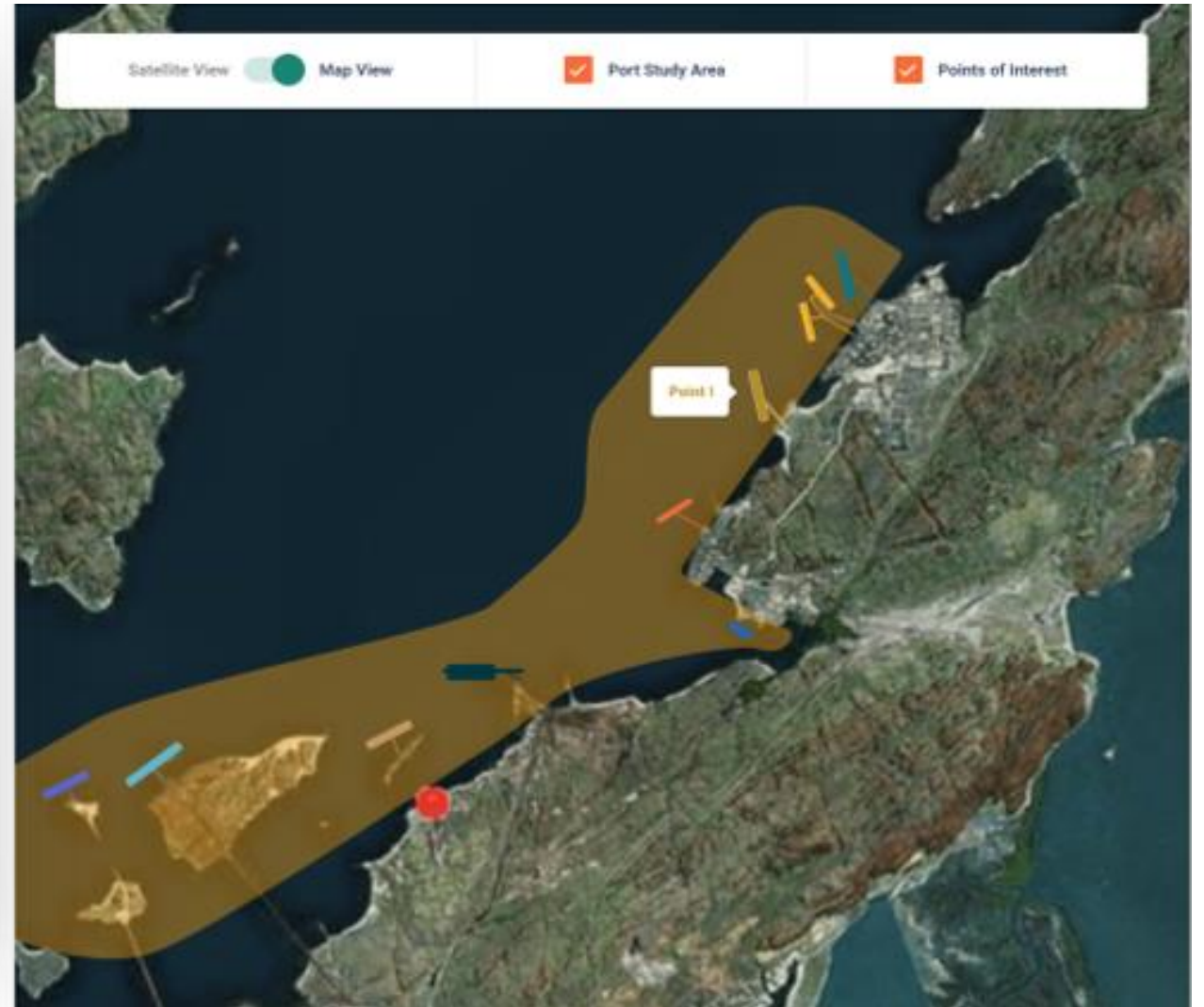
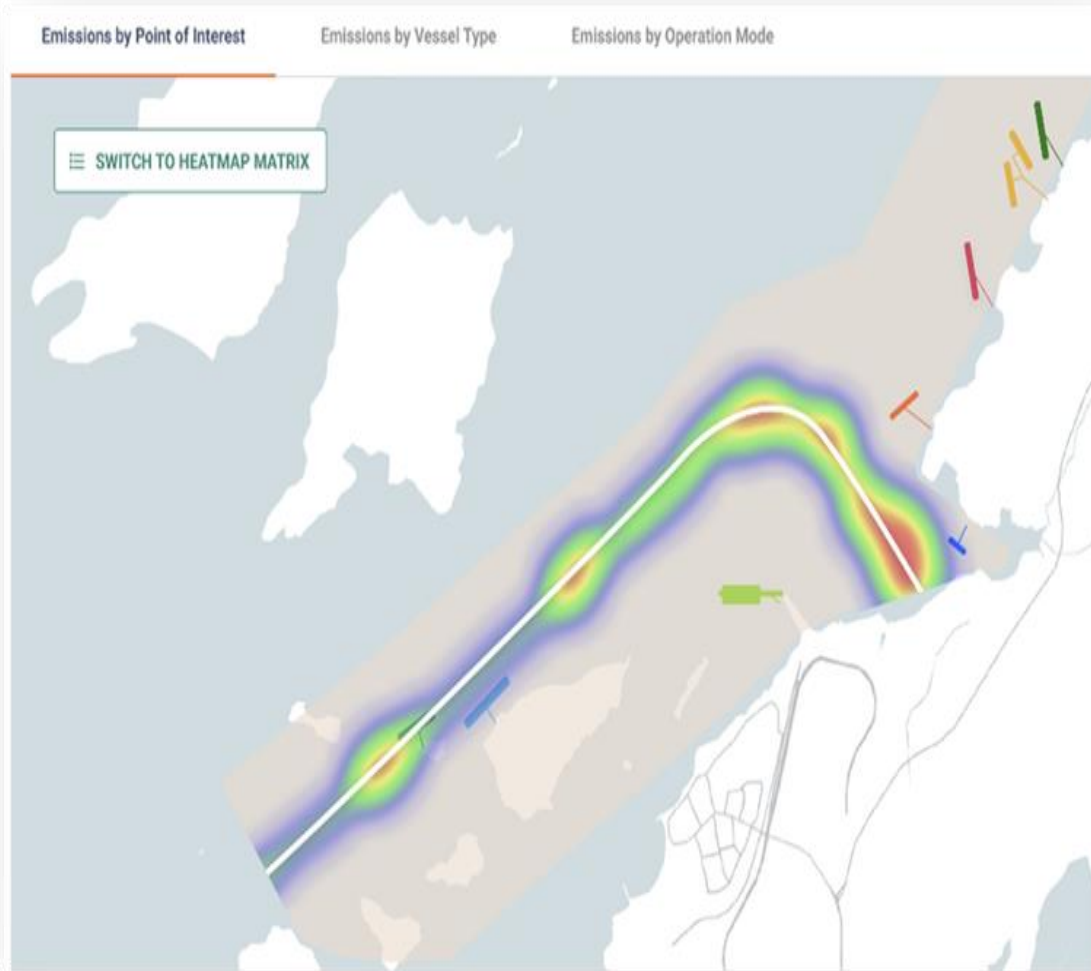


# What is the MEP?



- Turnkey emissions monitoring and management tool for ports and terminals.
- AIS vessel movement data combined with our unique environmental database of more than 200,000 vessels.
- Emissions in four separate operational modes, across defined points of interest within the port.
- Ship emissions inventory/modelling services as defined by Climate Change Information Kit (UNEP and UNFCCC).
- Methodology reviewed and validated by independent third-party industry experts from the California Air Resources Board (USA); Ricardo Energy & Environment (UK) and the University of Delaware (USA).

# Port mapping and emissions hot spots



# Total Emissions at port level

### Total GHG Emissions

67,685 tCO<sub>2</sub>e<sub>100yr</sub>

Scope 3 67,685 tCO<sub>2</sub>e<sub>100yr</sub>

CO<sub>2</sub> Carbon Dioxide → 66,007 tonnes

N<sub>2</sub>O Nitrous Oxide → 3.4 tonnes

CH<sub>4</sub> Methane → 28 tonnes

Source: RightShip

### Total Criteria Pollutants

1,072 tonnes

Scope 3 1,072 tonnes

SO<sub>x</sub> Sulfur Oxides → 124 tonnes

PM<sub>2.5</sub> Particulate Matter < 2.5 μm → 28 tonnes

VOCs Volatile Organic Compounds → 56 tonnes

NO<sub>x</sub> Nitrogen Oxides → 835 tonnes

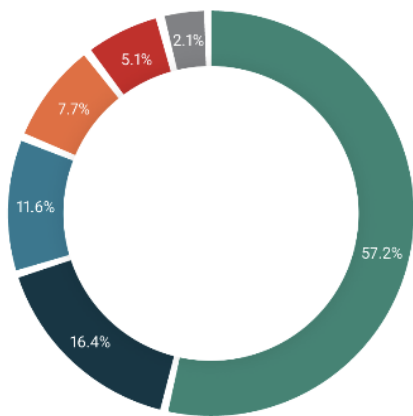
PM<sub>10</sub> Particulate Matter < 10.0 μm → 30 tonnes

Source: RightShip



# Emissions by Vessel Type / Operation Mode

Emissions by Vessel Type



Product Tankers

54,786 tonnes



● Extremely high levels of emission

Bulk Carriers

15,774 tonnes



● Average emission

General Cargo

11,115 tonnes



● Average emission

Offshore Support Vessels

7,366 tonnes



● Low emission

Tugboats

4,851 tonnes



● Average emission

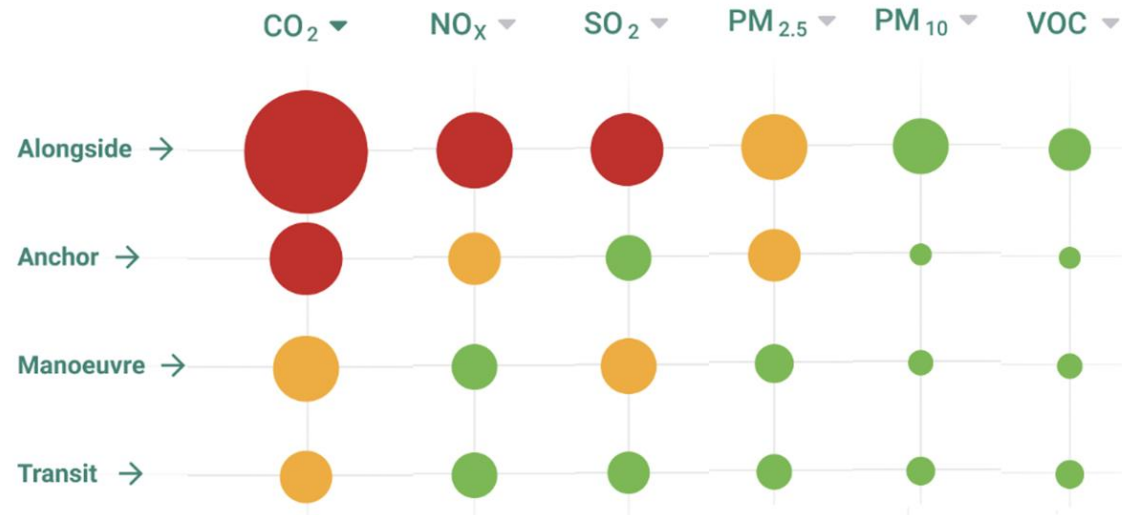
Others

2,030 tonnes



● Low emission

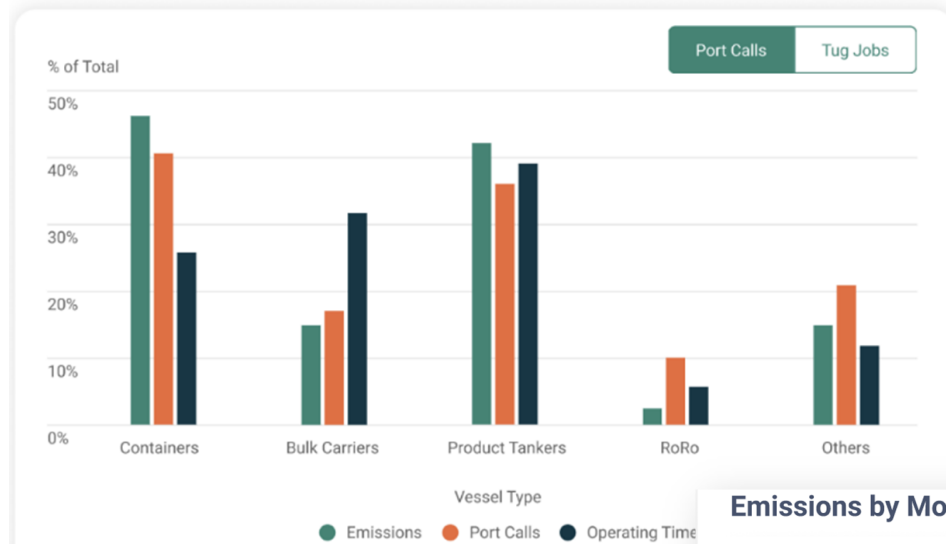
Emissions by Operation Mode



### Top Contributors to Emissions

	Vessel Name	GHG Rating	CO <sub>2</sub>	Port Activity	Operating Time
1	<b>BLUE PRIDE</b> IMO 9281011 Product Tanker	<b>E</b> Verified	2,969 tonnes	3 port calls	22d:12hr:13m
2	<b>ANAFI WARRIOR</b> IMO 9370848 Product Tanker	<b>D</b> Verified	2,018 tonnes	6 port calls	17d:22hr:20m
3	<b>NS SILVER</b> IMO 9309576 Product Tanker	<b>D</b> Unverified	1,983 tonnes	3 port calls	49d:17hr:58m
4	<b>ASHLEY LADY</b> IMO 9429039 Product Tanker	<b>F</b> Unverified	1,714 tonnes	4 port calls	13d:8hr:28m
5	<b>KRASNODAR</b> IMO 9270517 Product Tanker	<b>F</b> Unverified	1,691 tonnes	2 port calls	12d:14hr:47m

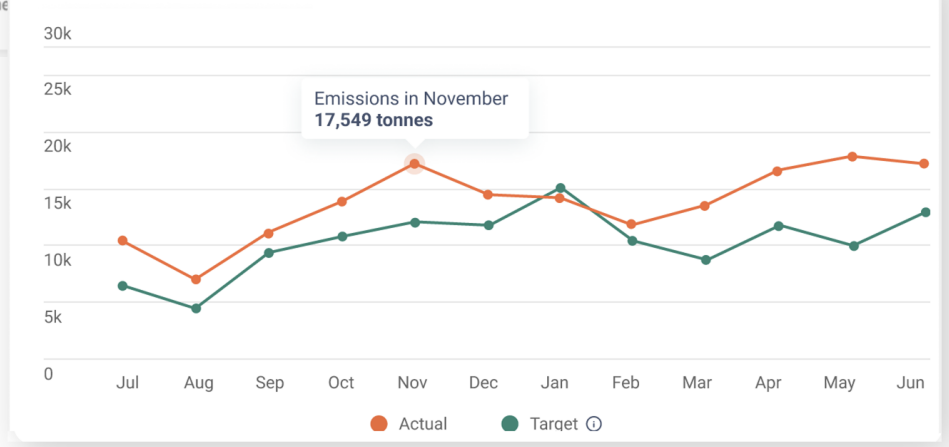
### Correlation of Emission Volume with Port Activity and Operating Time



### Smallest Contributors to Emissions

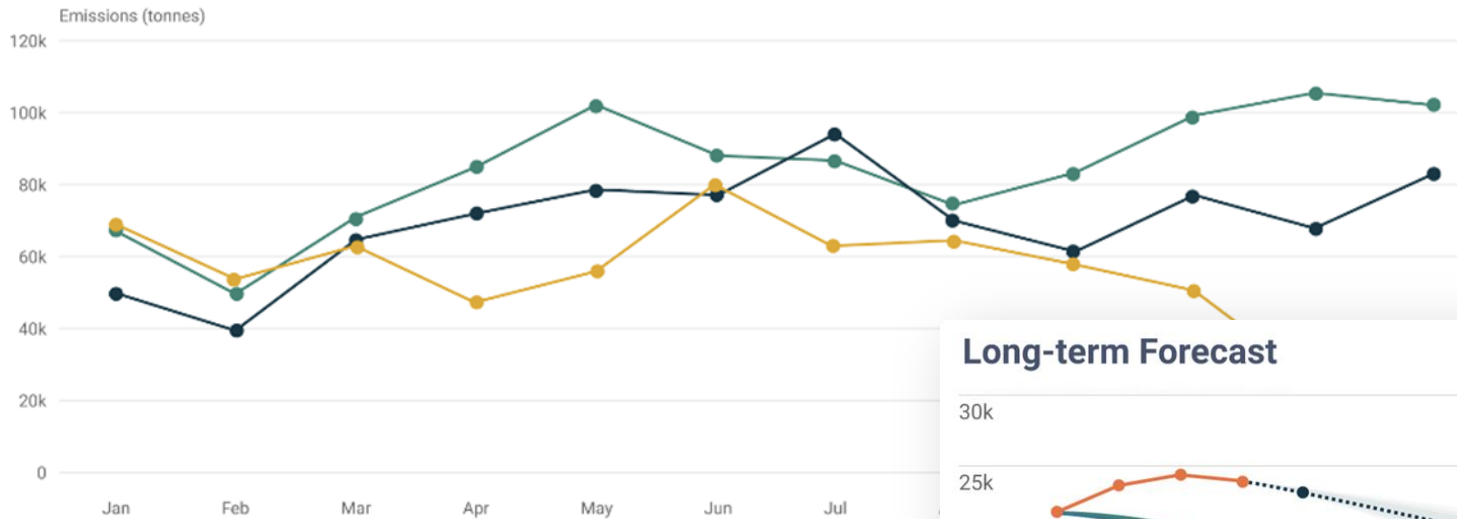
	Vessel Name	GHG Rating	CO <sub>2</sub>	Port Activity	Operating Time
1	<b>BBC RUSHMORE</b> IMO 9508469 General Cargo	<b>F</b> Verified	9.5 tonnes	1 port calls	0d:12hr:20m
2	<b>STOLT SATSUKI</b> IMO 9781114 Product Tanker	<b>B</b> Unverified	11 tonnes	1 port calls	0d:7hr:30m
3	<b>STOLT RENGE</b> IMO 9781126 Product Tanker	<b>B</b> Unverified	12 tonnes	1 port calls	0d:8hr:28m
4	<b>AAL KOBE</b> IMO 9498444 General Cargo	<b>F</b> Verified	14 tonnes	1 port calls	0d:15hr:21m
5	<b>SIDER JASMINE</b> IMO 9463542 General Cargo	<b>F+</b> Verified	15 tonnes	1 port calls	0d:22hr:7m

### Emissions by Month

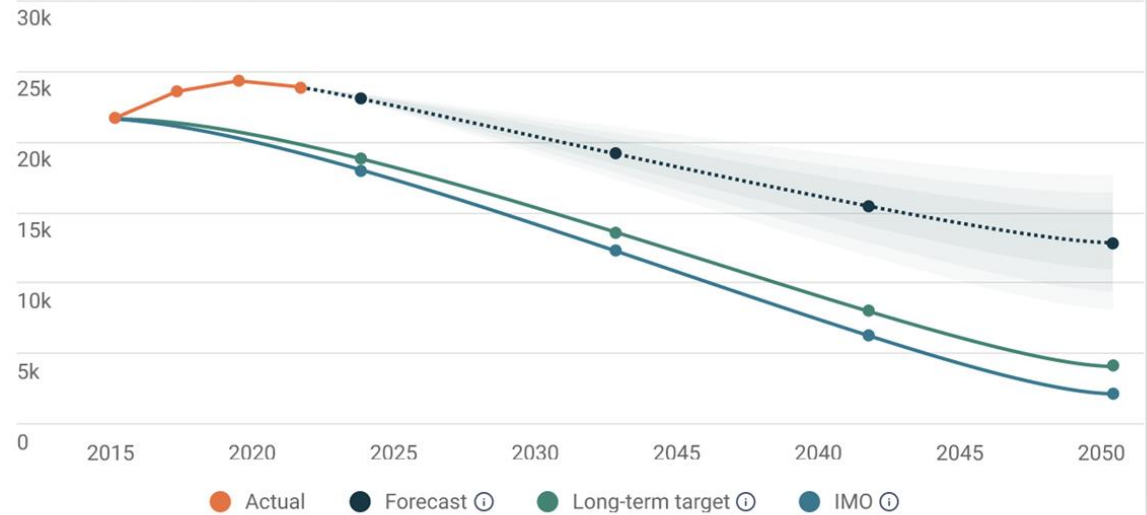


## Emissions - Year over Year Comparison

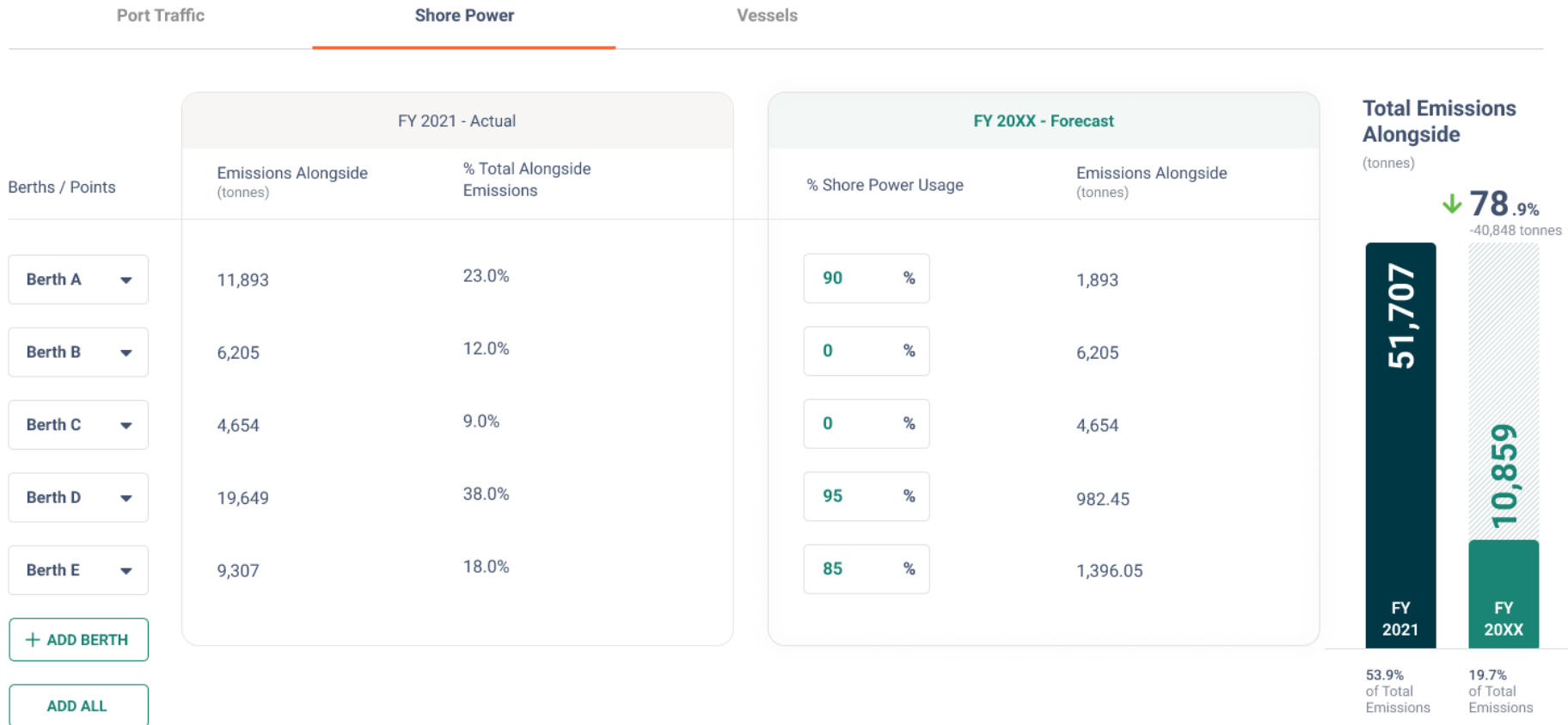
- Emissions in 2019  
**107,145 tonnes**
- Emissions in 2020  
**95,922 tonnes**  
↓ 10.47%
- Emissions in 2021  
**88,159 tonnes**  
↓ 8.09%



## Long-term Forecast



# What Next? Scenario Planning to evaluate change



Thank you

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