

Scrubbers

Introduction

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IMO Guidelines

Limits of SO_x in exhaust from fuels - MARPOL, Annex VI Regulation 14

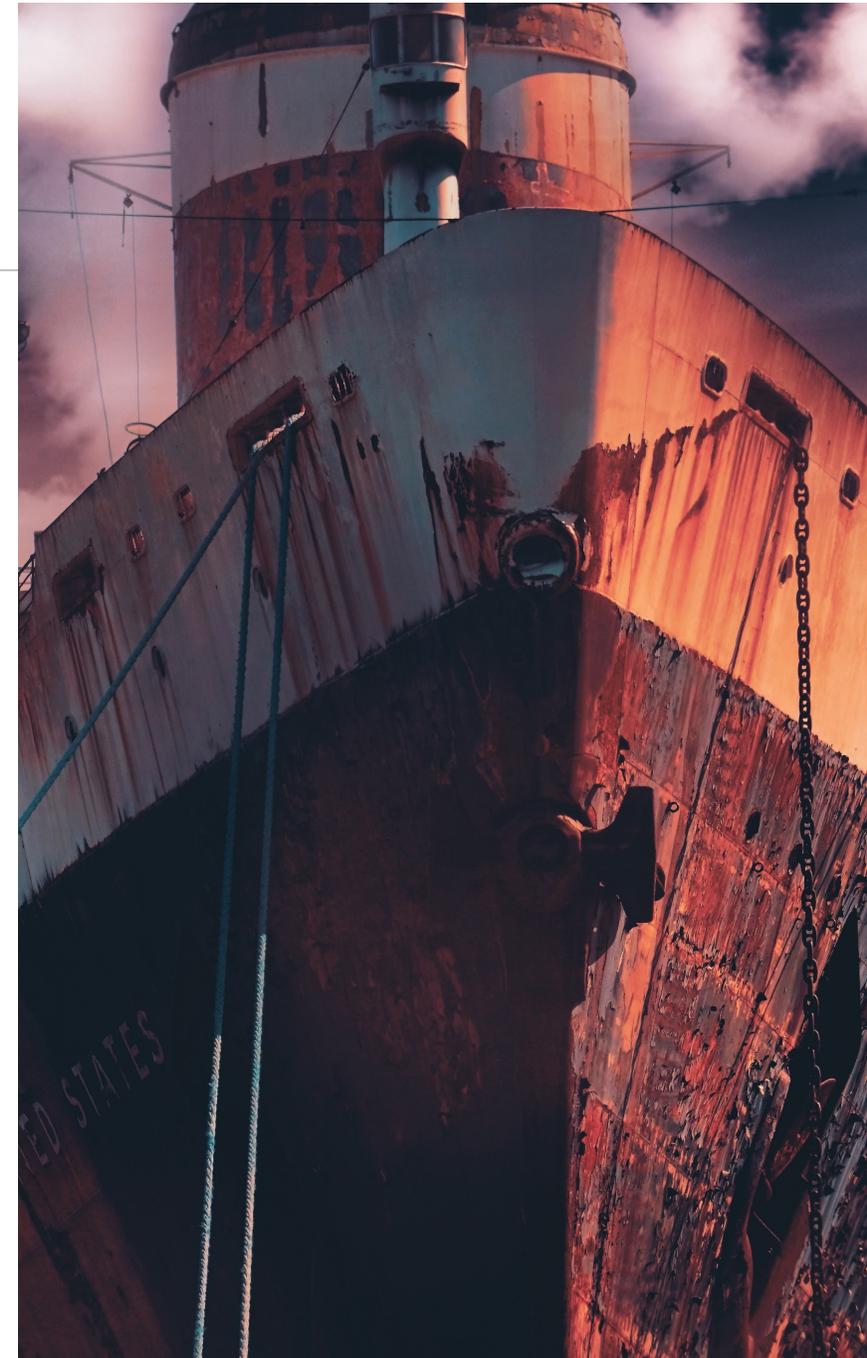
1997: Sulfur Emission Control Areas (SECAs)

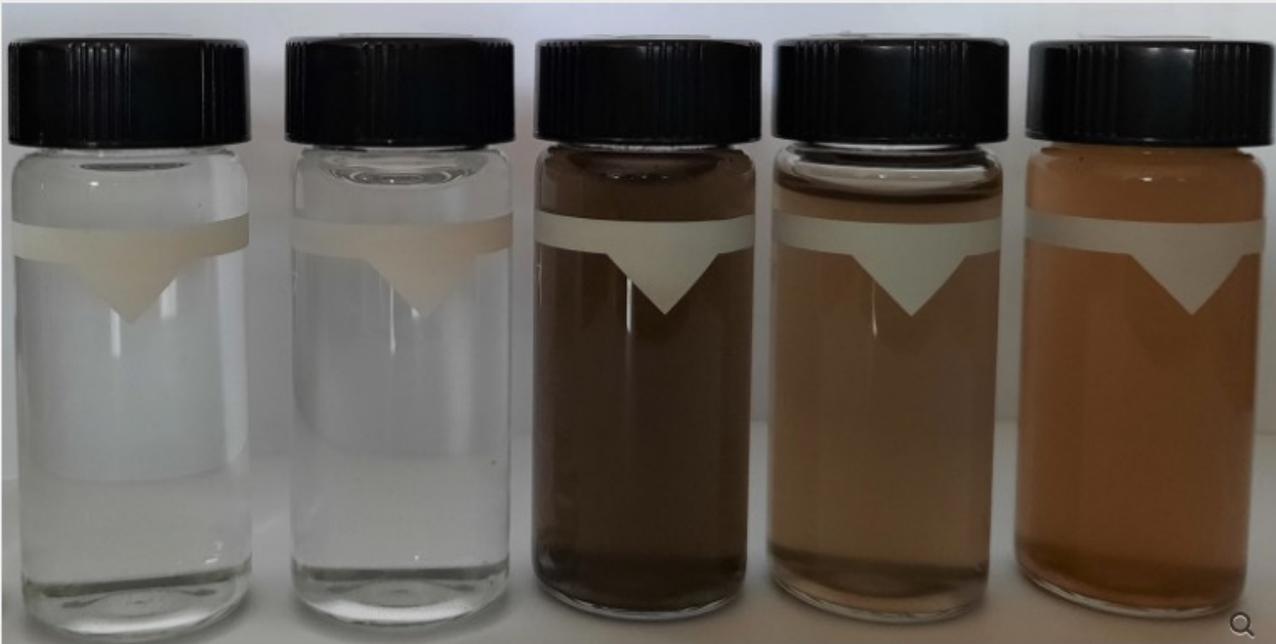
2008: Emission Control Areas (ECAs) and globally

Compliance

- low-sulfur fuels
- equivalent methods → Scrubbers (Regulation 4)

First – and only – scrubbers discharge criteria was established (2008)





Samples of scrubber discharge water. Picture source: [Bundesamt für Seeschifffahrt und Hydrographie \(BSH\)](#)

Despite the revisions of Annex VI that followed, the criteria on scrubber discharge water was never revised to be more stringent

A threat to air and water pollution



Worth the money investment



Air

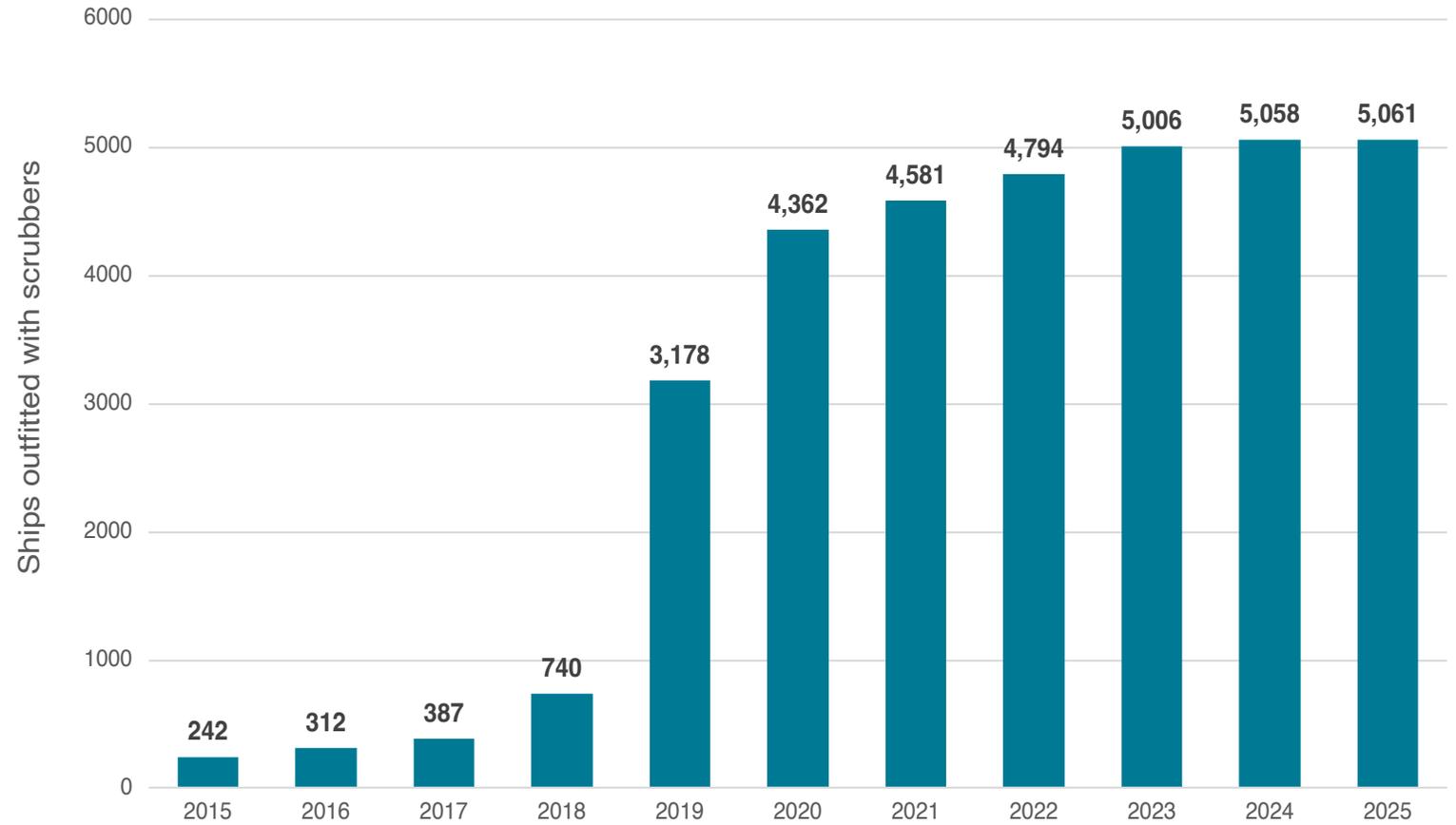
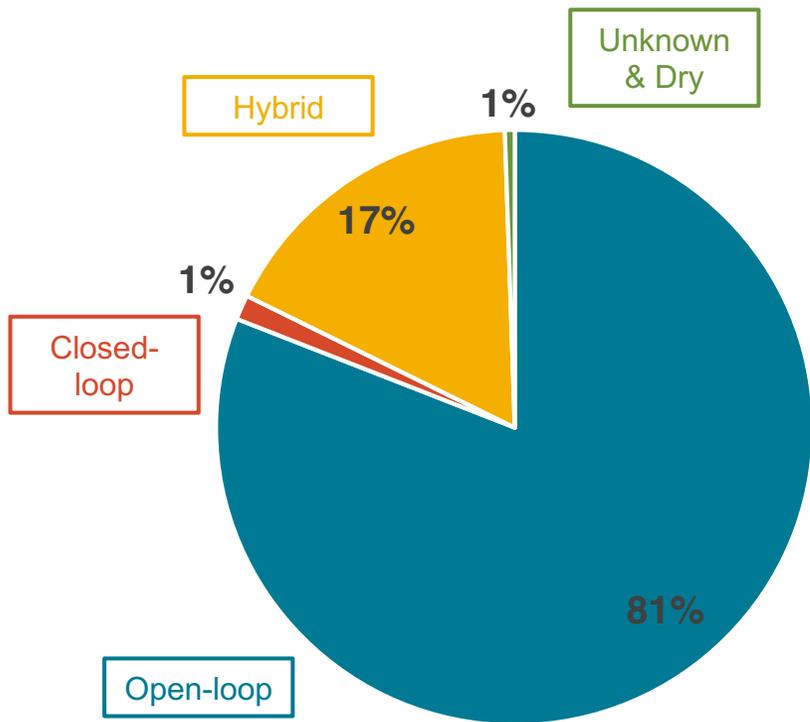
Higher than Marine Gas Oil:
CO₂
Particulate matter
Black carbon

Seawater

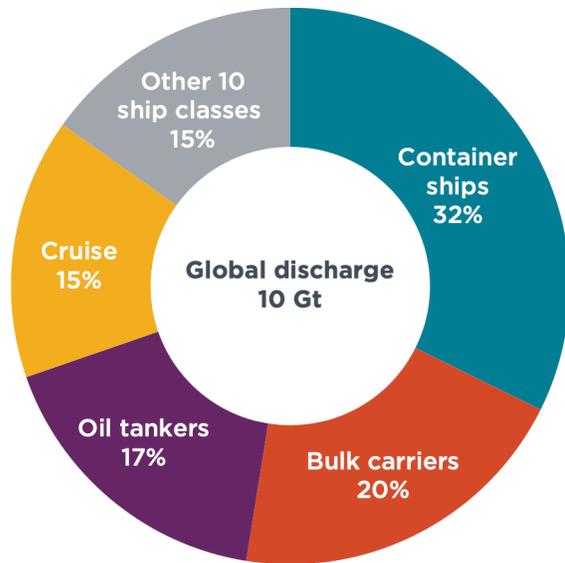
Polycyclic hydrocarbons
Particulate matter
Nitrates
Nitrites
Heavy metals



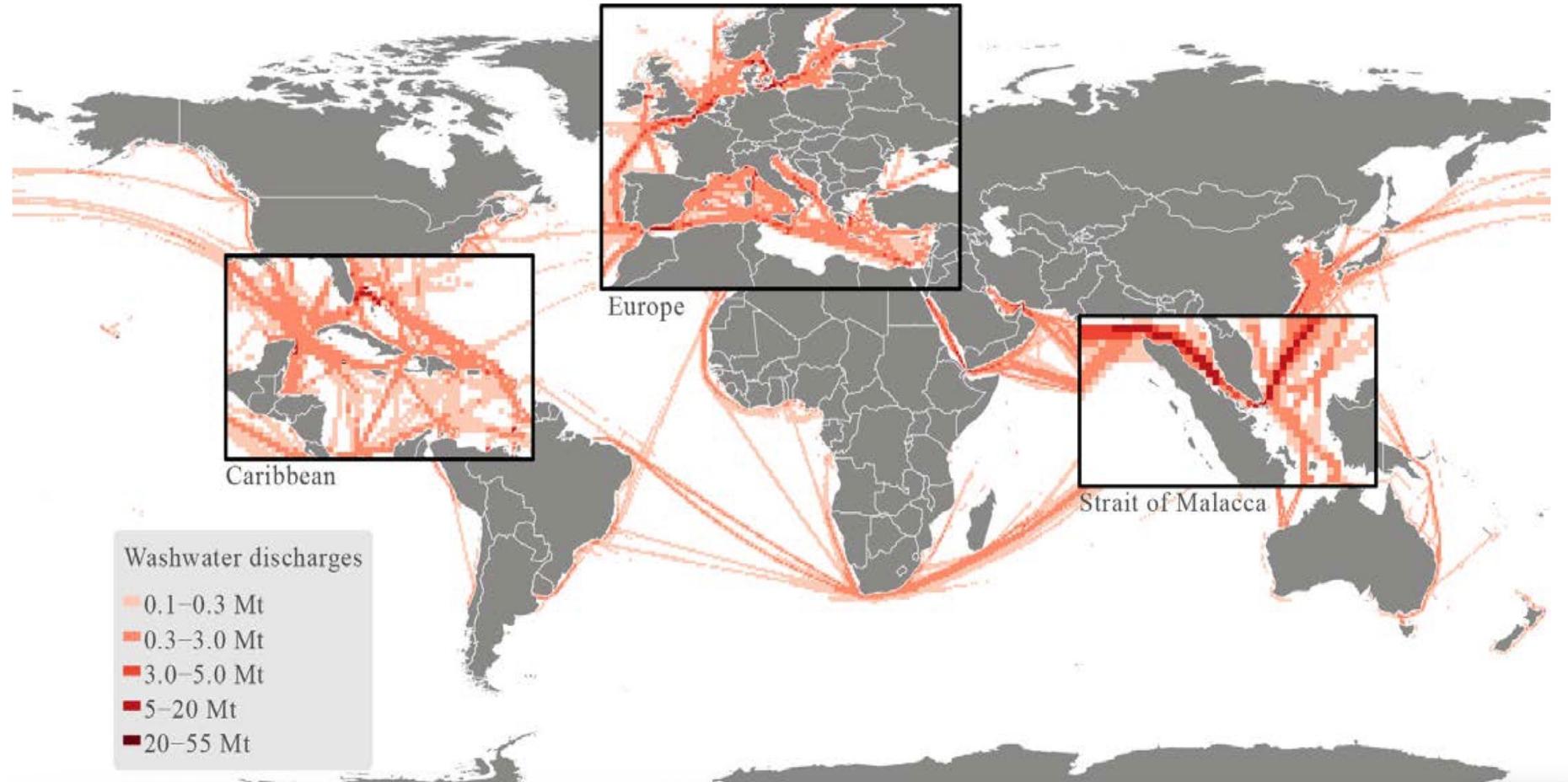
Scrubber fleet



Scrubber discharge water distribution

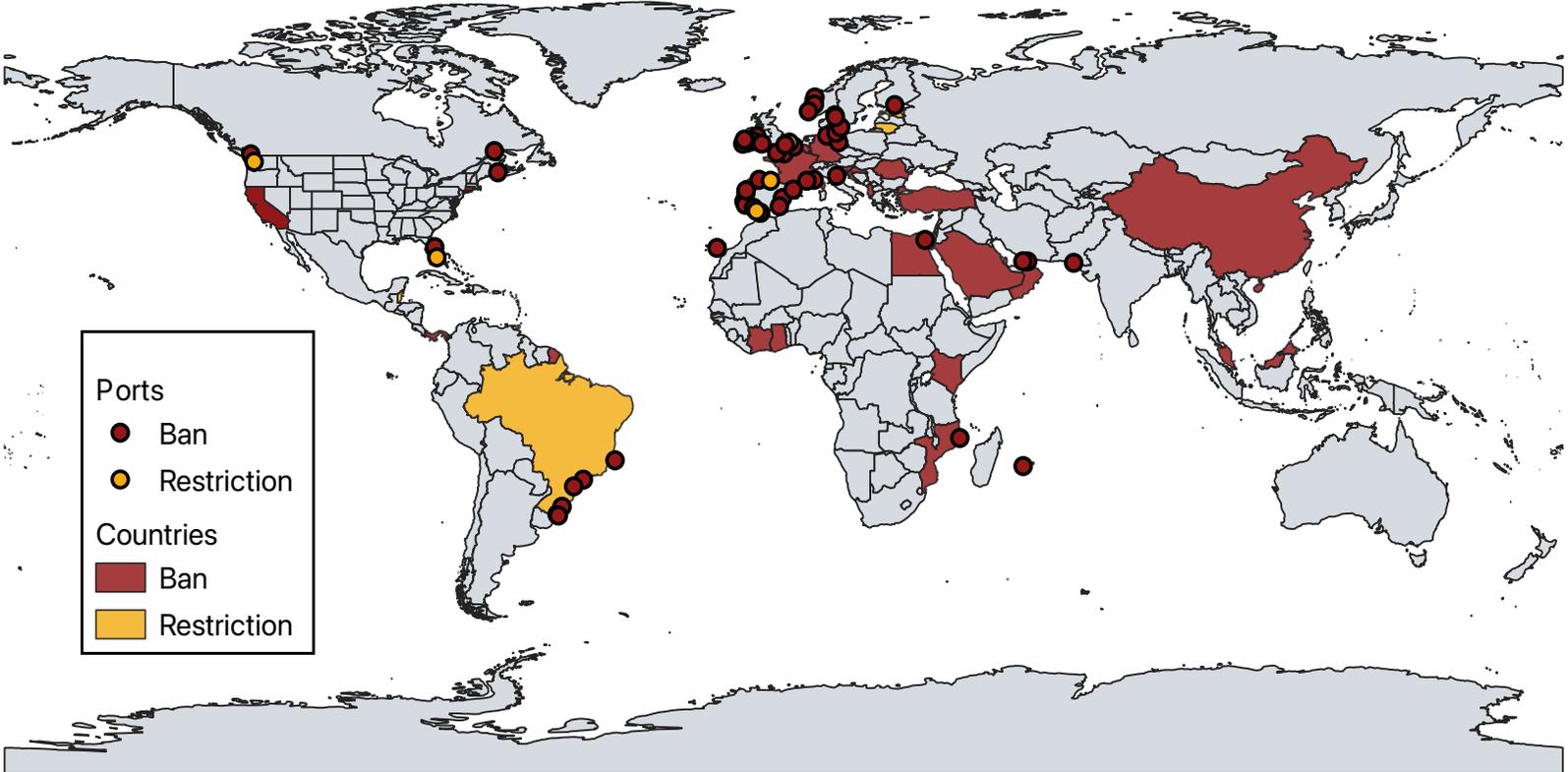


Scrubber discharge water by ship type



Global scrubber discharge water distribution and the sites with the largest washwater hot spots

Regulating scrubbers: Current bans & restrictions



Ports
● Ban
● Restriction

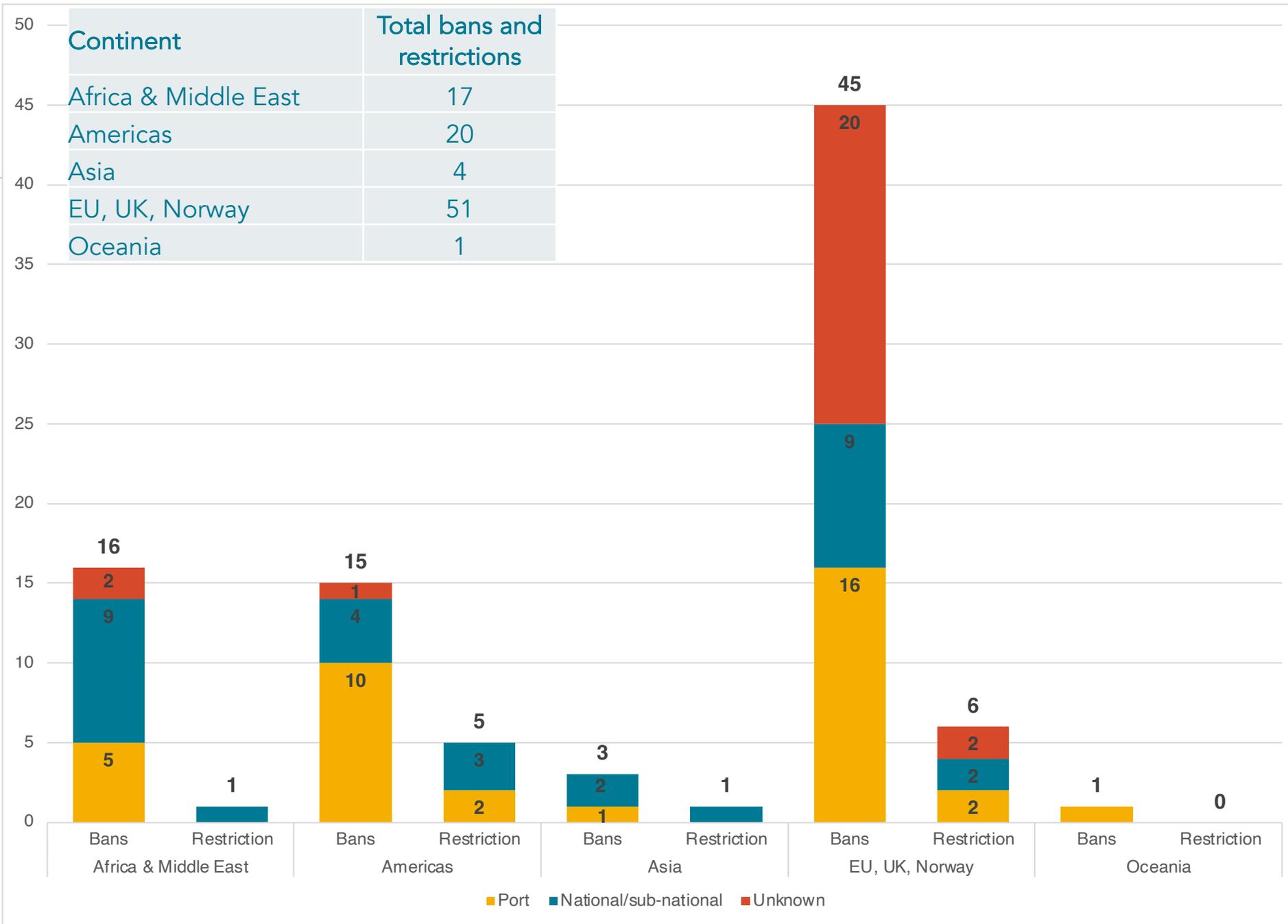
Countries
■ Ban
■ Restriction

45 countries

80 bans

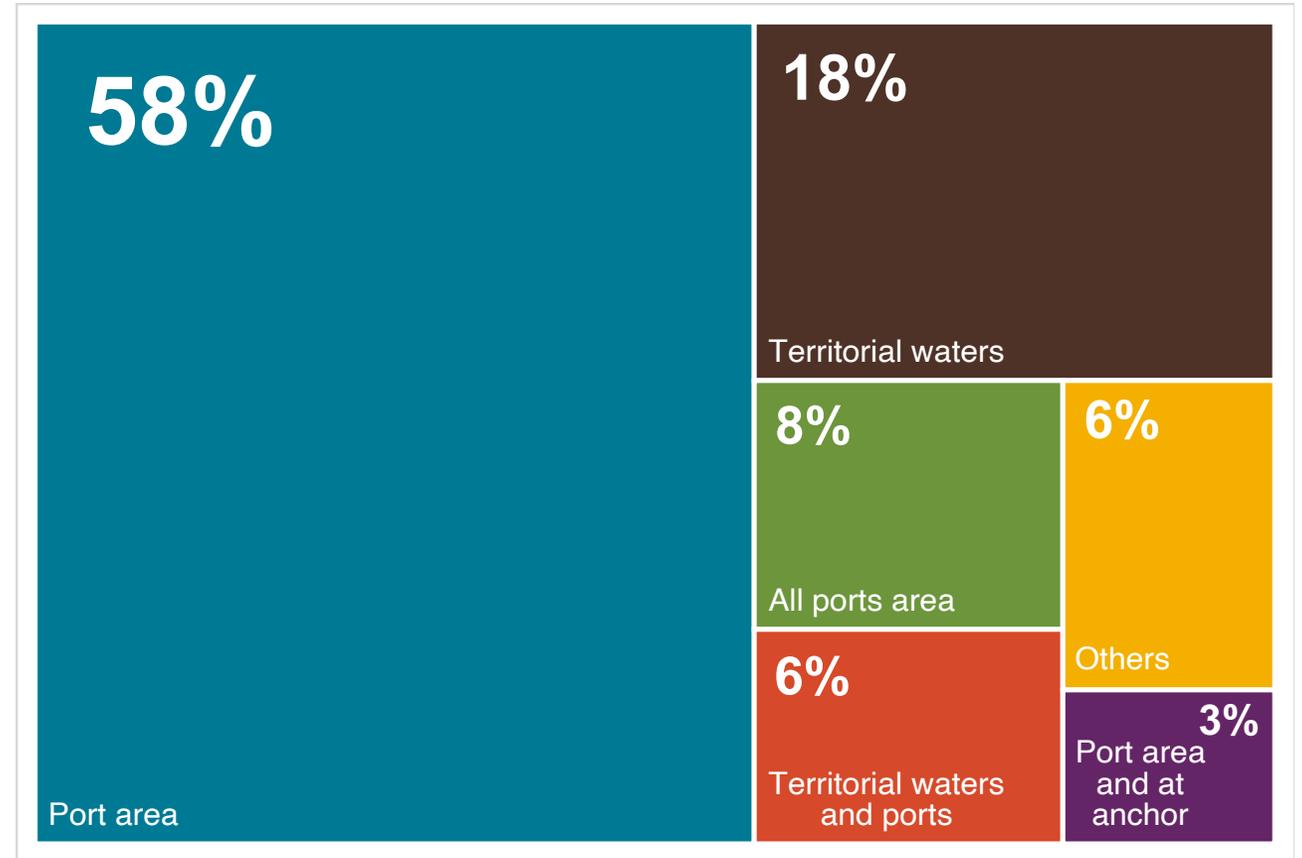
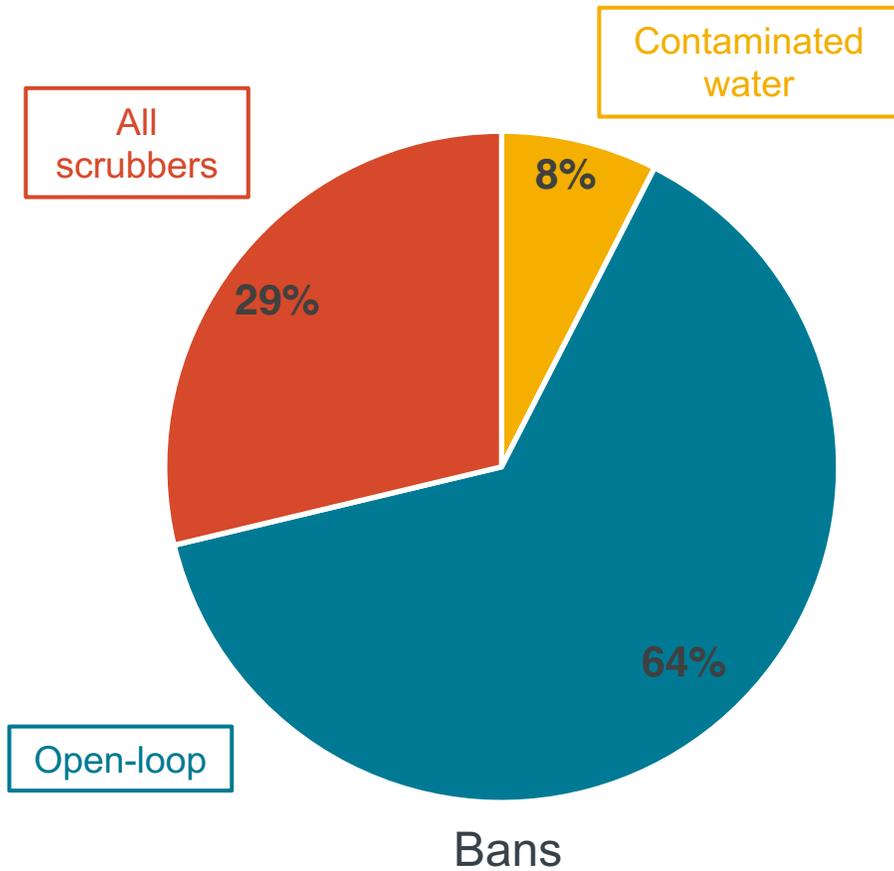
13 restrictions

(port, national, and sub-national level)



Number of bans and restrictions per continent

What is regulated in the current measures?



Bans and restrictions

How are ports implementing the bans?

Examples

- Publication of Notices (e.g., Port of Tilbury)
- Publication of Circulars (e.g., Suez Canal Authority)
- Use of existing national laws (e.g., Port of Hamburg)
- Port Regulation or guidelines (e.g., Vancouver Fraser Port Authority)

Conclusions

- Scrubber fleet is increasing
- Measures against scrubber exist but are limited
- Ports can have a leading role in banning scrubber discharge water



More needs to be done at IMO/national/port level

What actions can IMO/countries/ports take?



- Stop dumping scrubber discharge water in protected areas
- Prohibition of scrubbers as an equivalent sulfur compliance option



- Scrubber discharge water ban in national waters
- On-land facilities to properly dispose of the sludge and promote onshore power
- Joint efforts nearby countries



- Scrubber discharge water ban in individual ports
- Enforcement of using onshore power in ports and facilities to dispose of sludge
- Water and sediment pollutants monitoring in ports

Thanks

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