



Marine Fuels – Impacts of the 0,50% sulphur limit as of 2020

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Outline

- 1. Awareness on Air Pollution issues: why/where is a problem?**
- 2. The EU Sulphur in fuel Directive and global SO_x control**
- 3. IMO Implementation of the 0,50% sulphur limit in 2020: impact on oil refinery sector (incl. in the EnC)**
- 4. Future Developments /Conclusions**



Awareness of air quality urgencies: increasing pressure on regulators to act

September 2018

Recent Press reference

- **Le Monde Editorial: 'Pollution de l'air: les négligences coupables de l'Europe'**
- **Nature Editorial: 'Filthy Air is a global disgrace'...**

European Court of Auditors Report is calling for stronger enforcement actions and improved policy coherence through air policy mainstreaming

Why is air pollution a problem?

Europe's air quality is slowly improving, but fine particulate matter and ground-level ozone in particular continue to cause serious impacts on health.

Estimates point to well above 400.000 premature deaths in EU-28 each year due to particulate matter; and more than 15.000 due to ground-level ozone.

1 out of 10 EU citizens are exposed to particulate matter concentrations above the EU limit value; with 9 out of 10 exposed above WHO guidelines.

Assessed against EU Limit Value



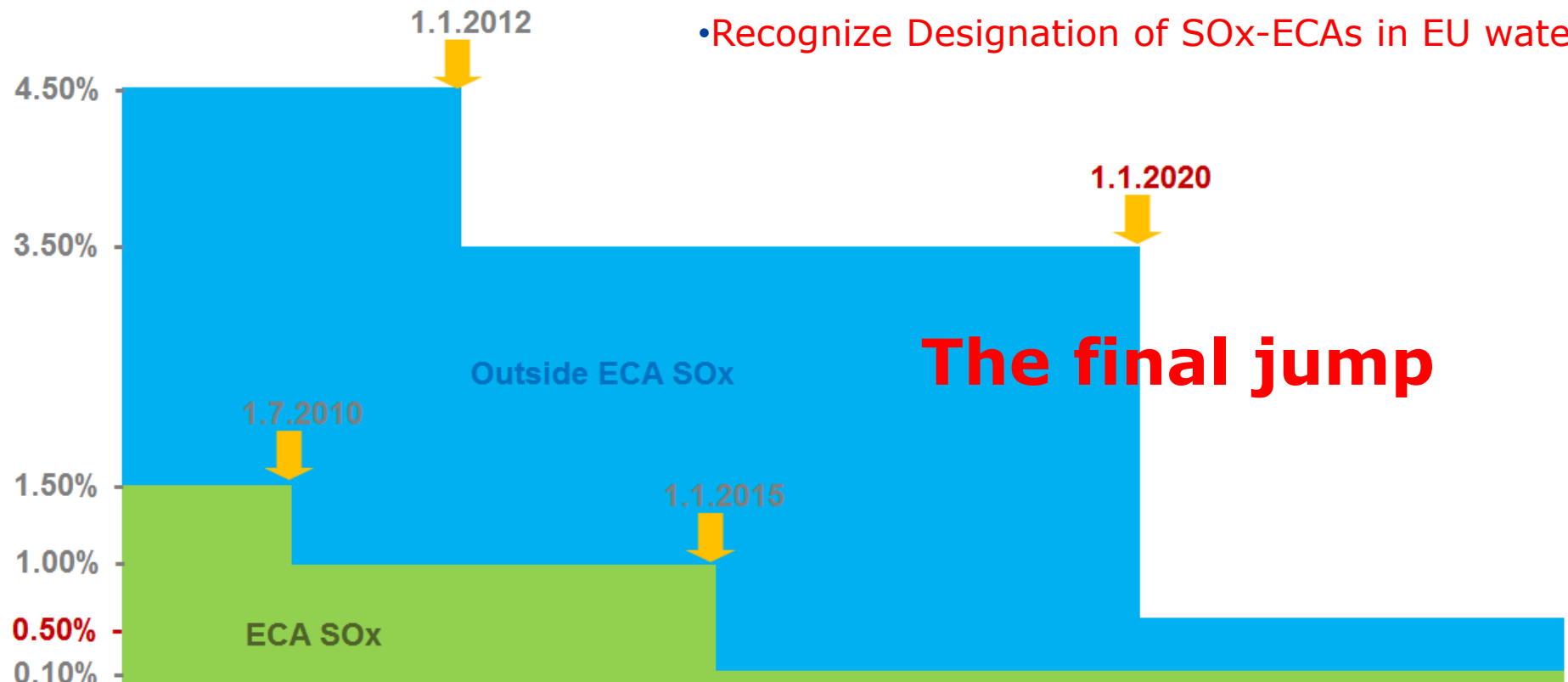
Assessed against WHO Guidelines

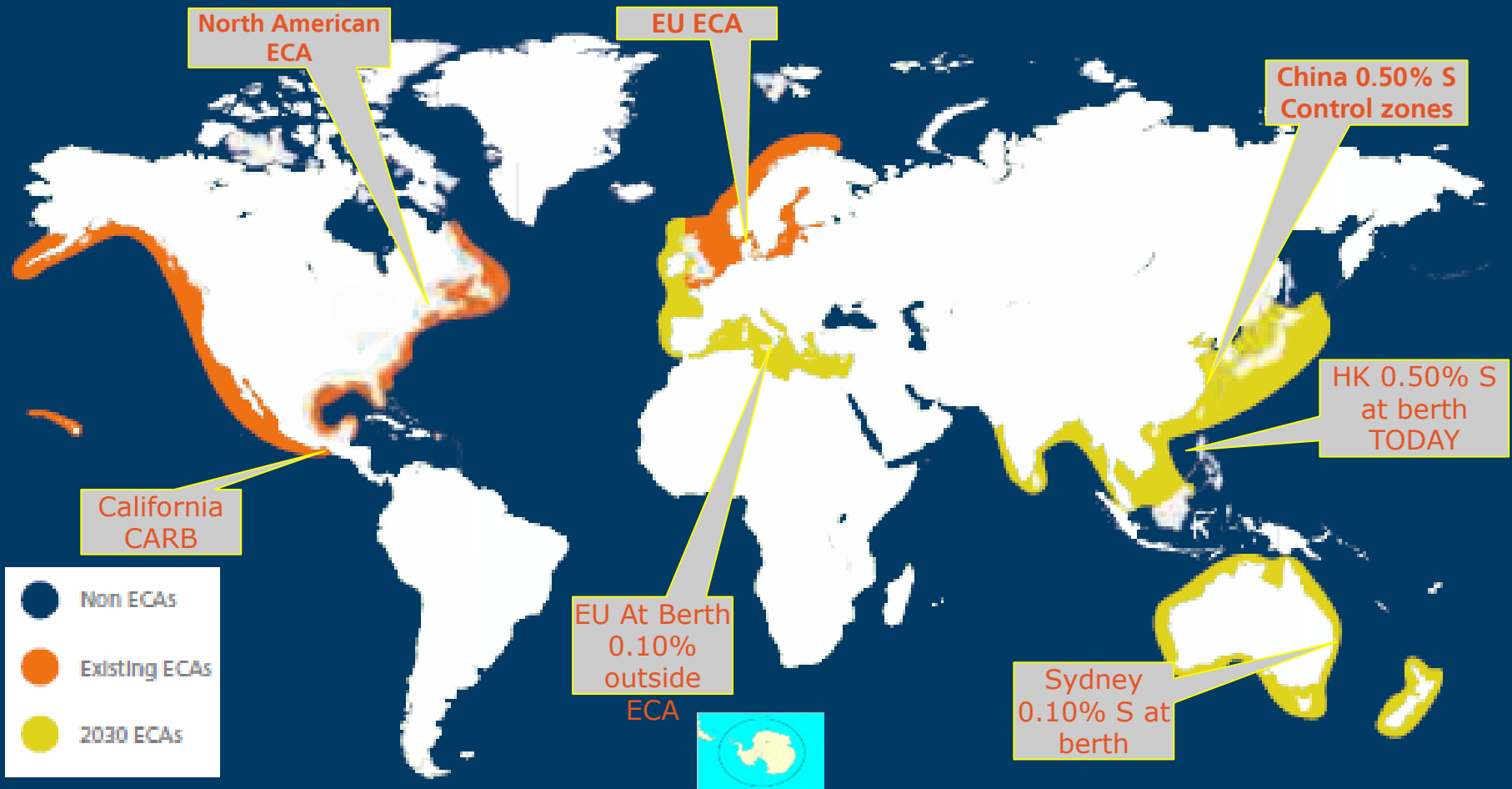


Where? Many EU Member States are facing court cases for failing complying with current EU legislation (AAQD, NECD, pollution sources)

Main elements of the EU Sulphur in Marine Fuel Directive:

- Reduction of ship emissions (SO_x and PM) to protect human health and the environment
- Use of 0,10% (in ports) and 1.5% (passenger ships)
- **0,50% max. sulphur content as of 2020 in all EU waters**
 - Stronger enforcement (on ships and suppliers)
 - **Recognize Designation of SO_x-ECAs in EU waters**





Global SOx control, SOx ECAs worldwide



Commission report adopted in April 2018 on the Implementation of the Sulphur D.

Success of SO_x ECA in EU waters: sulphur dioxide concentrations in ambient air in relevant regions fell by 20%-60%.

High compliance levels by ships achieved across the EU: 93% of inspected ships in the SO_x-ECAs respected the stricter sulphur concentrations

Lesson learnt: To ensure a uniform implementation of any new regulation it necessary

- 1/ for industry to prepare ahead – with IMO steering focus on preparation
- 2/ for administrations to raise awareness on the upcoming regulation (and related enforcement).

Recommendation: Cost-benefit analysis of additional SO_x-ECAs in EU waters, other emissions from ships: NO_x, black carbon, synergies with climate change policies **(April 2018, IMO GHGs initial strategy for the maritime sector)**



Annex VI to MARPOL convention, Regulation 14.1.3

IMO Marine Environment protection Committee (MEPC)

Annex VI adopted in 1997, entered into force in 2005

2008 revised Annex VI entered into force in 2010 (MEPC.176(58)):

- Included the introduction of the 0.50 sulphur limit in marine fuels in 2020 conditional to a review to be completed by MEPC by 2018 (not in the EU legislation)***
- On the basis of 2016 IMO Fuel Availability Review, the IMO decided to maintain 1/1/2020 (MEPC.280(70)) as date of entering into force of the global requirement outside SO_x ECAs***

IMO Consistent Implementation- preparatory process and **some** transitional issues

- **Ships Concerns**
 - Safety and Impacts on machinery systems; availability
 - **Fuel Quality - ISO framework (PAS by 2019) & Oil industry guidance**
- **Enforcement and Verification**
 - Verification issues (inspection procedures) and control mechanisms
 - **Prohibition to carry onboard non compliant fuel
for operation/propulsion purposes**
 - Fuel oil Non availability Reports
 - Guidance to assist Member States and Stakeholders
- **Regulation (consequential amendements, guidelines)**

IMPLEMENTATION STARTS ON 1 January 2020



2020 challenge MARINE FUELS



Fuel type	Demand forecast for 2020 (mill MT)
HFO (scrubbed)	36 (11%)
Max 0.10% sulphur fuels	39 (12%)
Fuels between 0.10% and 0.50% sulphur	233 (73%)
LNG	12 (4%)
Total	320 (100%)

- 0.10% 'ULSFO' DM, RM
- 0.50% 'VLSFO' DM, RM
- HSFO + EGCS
- LNG
- Methanol

Assessment of Fuel Oil Availability

Jasper Faber, Oslo, 27 April 2017

Logos: STRATAS ADVISORS, UMAS, NIMRI, PETROMARKET RESEARCH GROUP, CE Delft

- Options
- Availability
- 0.50% Quality
- Global Consistency
- Enforcement
- Cost
- Operations

The new 0.50% fuels: impacts (1)

- A number of highly aromatic/cracked blends of hydrocarbons will enter the marine market and in significant quantities: varying blend formulations
- High densities, low viscosities, propensity to cause instability in blends (not necessarily so in the separate components)

Major oil suppliers are already working on 0,50% fuels formulations with rigorous testing in progress to meet ISO 8217

Suppliers must meet ISO 8217 (2017) which broadly covers 0,50% fuels, Public Available Specification to address blend variety categorisation in 2019 (mandated by IMO to ISO)

Note: 0,50% fuels already existing, sold and used globally

The introduction of the 0,50% fuels presents challenges and complexity for both maritime and oil industry. These are, however, are NOT unsurmountable and can be managed, but they come at a cost to industry



The new 0.50% fuels: Impacts (2)

Acknowledge

- **Big game changer for the oil sector (higher yield switch towards diesel from gasoline and fuel oil, higher global refinery runs)**
- **Commitment to the IMO decision, added value of Joint Industry initiative**
in the IMO context to address the mentioned aspects (to develop guidance and best practice for fuel oil suppliers)

BUT It is important NOT TO Overemphasise the operational challenges which can and will be addressed as this would send wrong signal to the market

Addressing such challenges requires(ed), however, preparation, ahead planning and investments

Conclusions

- Improving air quality in the EU **and EnC** remains essential in view of health, environment and economic benefits
- All sectors, including maritime transport and fuel suppliers, should contribute to **reducing harmful air emissions** within a low carbon and energy efficient economy.
- EU is actively preparing for the IMO consistent implementation of the 0,50% sulphur cap and **also counts on the EnC** (availability of 0,50% fuels, enforcement, level playing field for industry)
- ***Technical assistance to the EnC by EC/EMSA started in 2018 and will continue***





**Thank you for your attention,
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