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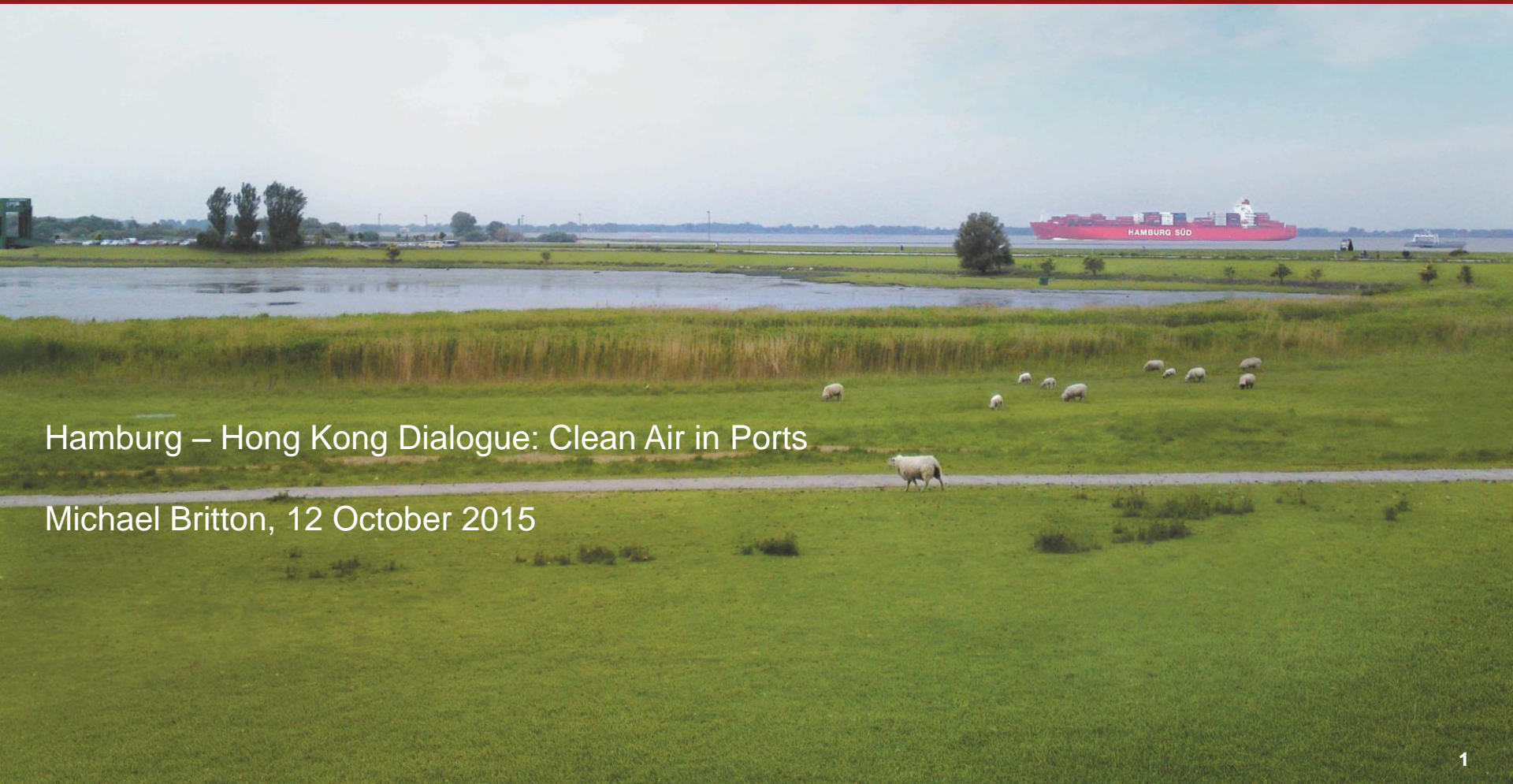
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Cleaning the Air with the Port & Shipping Sector

Making It Our Business



Hamburg – Hong Kong Dialogue: Clean Air in Ports

Michael Britton, 12 October 2015

Options to Improve Environmental Performance of Ships & Lower Emissions

- Corporate Policies that educate and encourage
- Energy & CO2 efficiency of vessels: e.g. bigger vessels, optimal hull, propeller cleaning
- Operation of Vessels: Slow Steaming, Weather Routing
- Information Flow: Environmental Control & GL Emission Manager
- Alternative fuels and technological innovations
 - Involvement of Stakeholders
 - Shippers, Vendors, Communities, Government

Corporate Policies and Framework for Environmental Performance

- Environmental policy and ISO 14.001
 - Continuous reduction of environmental impact
 - Satisfaction of customer requirements
 - Adherence to all applicable laws
- Accountability by Stakeholders
 - Customers & Vendors

Safety, Environmental and Quality Policy

The primary goal of the Hamburg Süd Group is to safeguard and constantly improve the quality and environmental compatibility of our services as well as to avoid errors and risks.

■ The company respects prevailing law and expects the same of its employees and business partners. All applicable work, safety, environmental and other legislation is followed, regardless of whether it involves domestic, foreign or supranational laws, ordinances or other regulations.

■ By practicing sustainable management, we grant every employee the best possible level of health and safety and thus the protection of his or her integrity. We achieve a high measure of safety at sea and ashore by providing high-quality and best-suited equipment, regular training of our personnel and information about all known and potential hazards.

■ The aim of our environment is a fleet featuring modern technology, efficient use of resources, supporting employee and regional environments.

■ The satisfaction of our customers regarding safety, achieved by measurement and at regularly visited partners.

■ We guarantee the provision of services by strict implementation of this policy.

Implementation of this policy

The Executive Board

November 2013

MANAGEMENT SYSTEM CERTIFICATE

Certificate No.: 151077-2004-01-01-0001 Date Issued: 24.05.2004 Valid: 24.05.2014-24.05.2017

This is to certify that the management system of

Hamburg Südamerikanische Dampfschiffahrts-Gesellschaft KG

Willy-Brandt-Straße 55-61, 20457 Hamburg - Germany and the sites and ships as mentioned in the Appendix accompanying this Certificate

has been found to conform to management system standards:
ISO 9001:2008, ISO 14001:2004

This certificate is valid for the following Scope:

Worldwide liner and tramp shipping activities, ship management, warehousing and multimodal transportation, development of complete concepts in the fields of logistics and container technology as well as customer-specific EDP and communication applications.

For travel agency: Organization and procurement of journeys within the segment of Business Travel and Columbus Tours Event Business. Additionally Columbus Tours carries out its own events.

Place and Date:
Hamburg, 19.07.2014

DAKKS
Deutsche
Akreditierungsstelle
D-20354 Hamburg

For the issuing office:
Willy-Brandt-Straße 55-61, 20457 Hamburg
Germany
Technical Manager

This certificate remains the property of DAKKS and shall not be used for other purposes without the written consent of DAKKS. The certificate holder shall be liable for the correct use of the certificate.

Efficiency of Ships

Design and Optimization



Stern measures. While propellers generate powerful thrust, they can also create undesirable swirl which reduces efficiency. Hamburg Süd vessels have been the first to deploy the 'Becker Twisted Fin', an integrated fin system fitted in front of the propeller which produces a counter-swirl in the upstream water flow. This partially cancels out the negative effect of the slipstream swirl, producing energy savings as high as 4%.

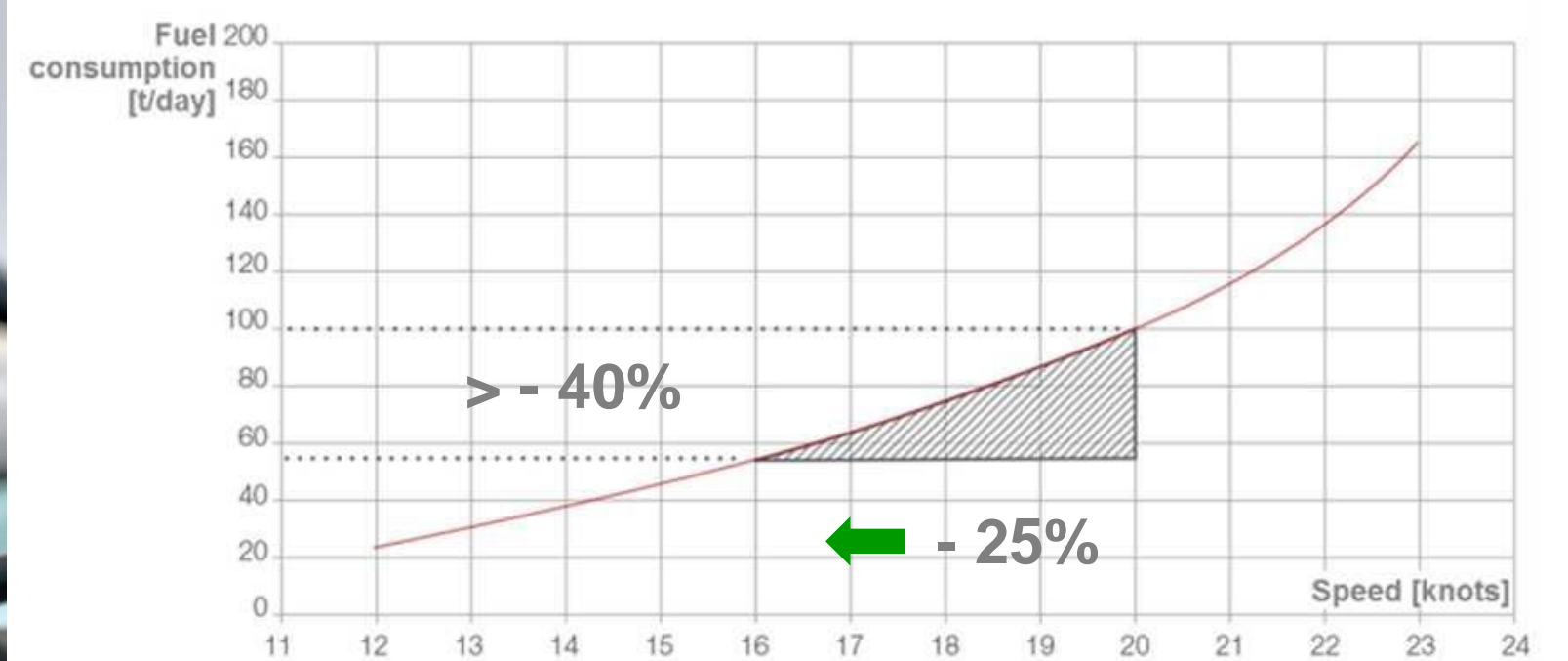
Ingenious engines



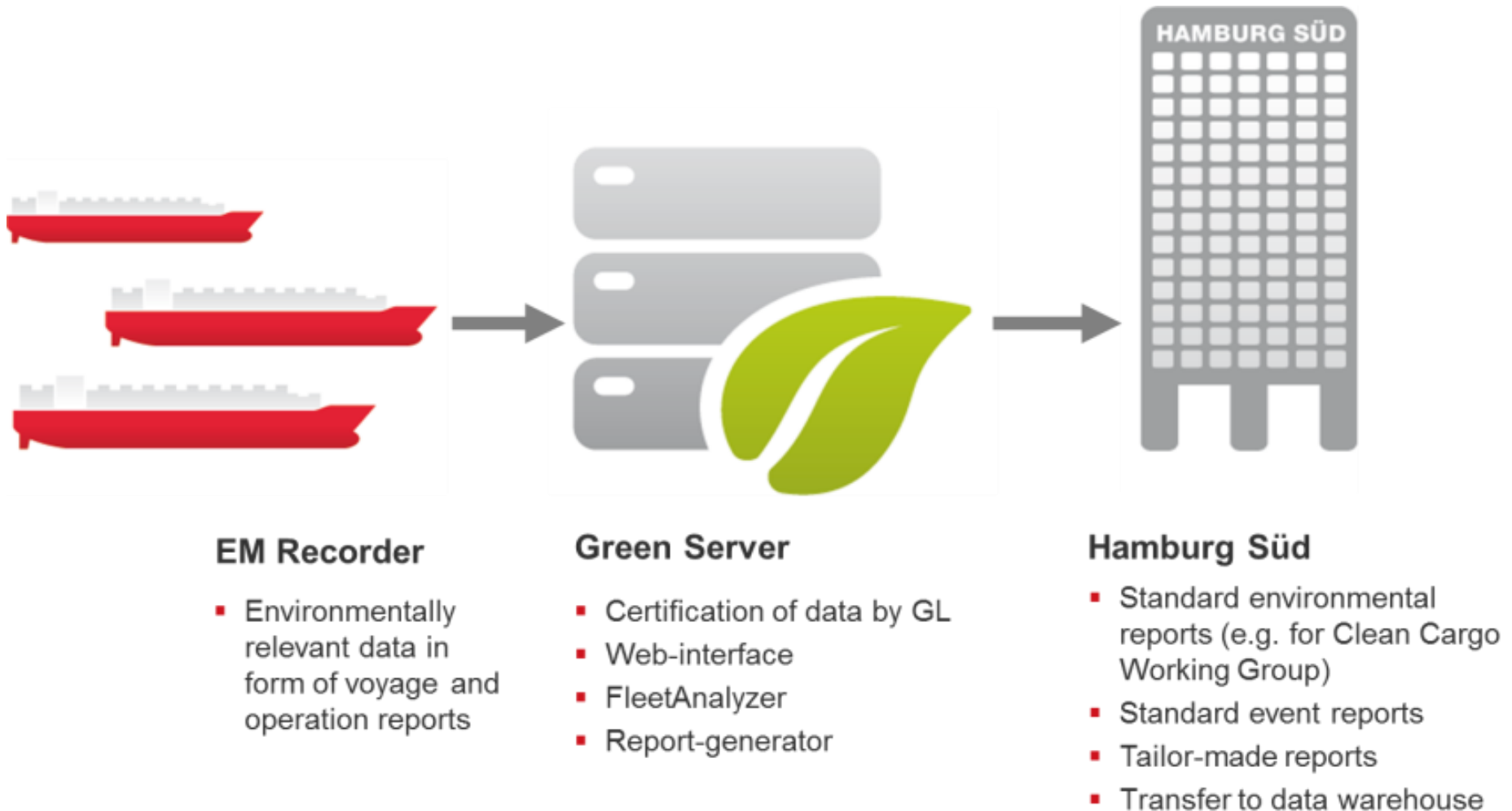
Fuel combustion efficiency and economy can also be achieved by the utilisation of electronically controlled common rail injection. With this system, the optimal amount of fuel needed by each individual cylinder can be precisely calculated and the timing for its injection can be electronically controlled by fast-switching solenoid valves from a common pressure accumulator. Since 2010 all new Hamburg Süd vessels have been equipped with common rail main engines, thereby achieving exceptionally efficient combustion in all load ranges and especially at low engine speeds.

Operation of Ships

- Fleet Operations Center
 - Slow steaming
 - Weather Routing



Information Flow: GL Emission Manager (DNV GL)



Information Flow: Raising Awareness

- Mandated processes include:
 - Lower CO₂e emissions (2020 target: 45% reduction)
 - Stringent vessel propulsion and on-board energy management systems
 - Eco-friendly reefer construction standards, including abandoning of tropical wood for floors (2012–2015 target: 80% of all newly built dry containers to have floors made of bamboo or suitable alternative)
 - Lower reefer energy consumption (2015 target: 20% reduction for all newly built reefers)
 - Prudent off- and on-shore waste management practices

Sustainability > Environment > Environmental control > CO2 calculator

Carbon footprint calculator

Carbon footprint calculator

Load location: Hong Kong, HK

Discharge location: Santos, BR

Container type: Dry

Cargo volume*: 2 TEU

Fields marked with a * are mandatory and must be filled.

Find

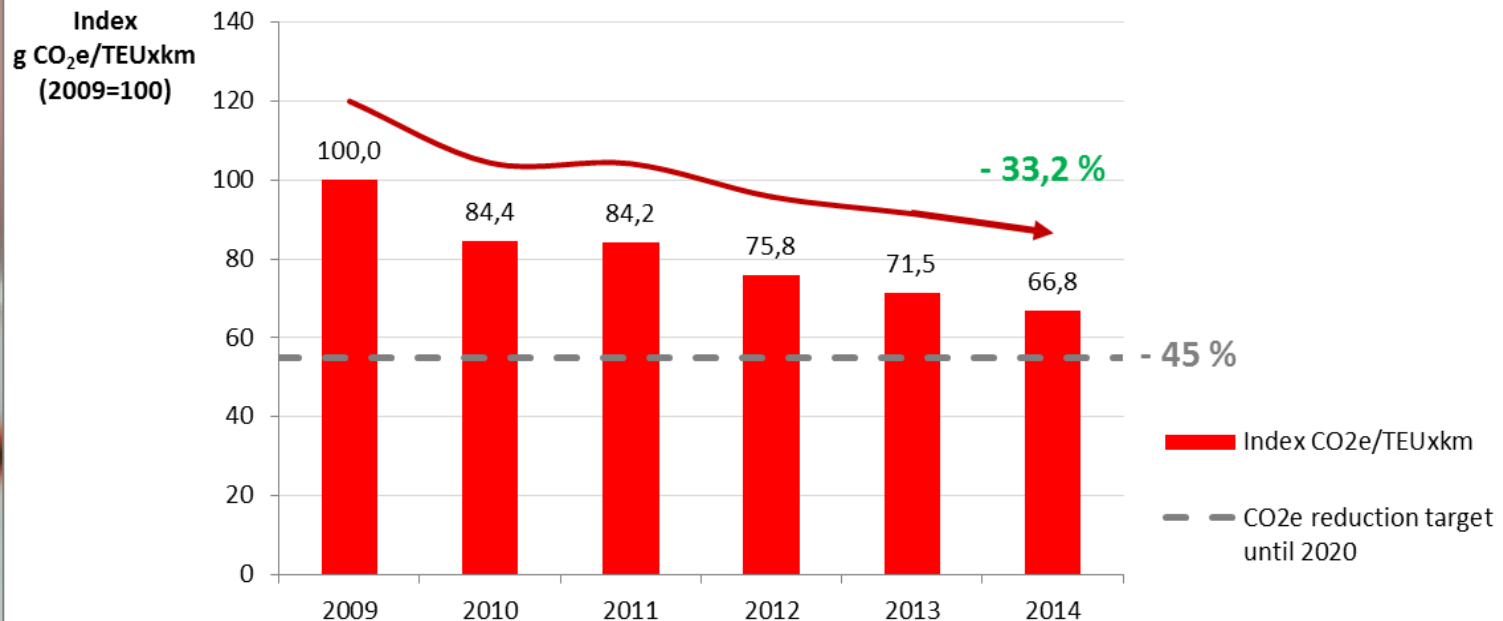
	Route	Distance (km)	CO2 Emission (kg)
+	Hong Kong - Santos	19,114	1,474



CO₂e* reduction target

- Shown activities together have led to a very positive effect on CO₂e emissions per unit of transport work (TEUxkm)
- Emissions of other gases have been reduced similarly

CO₂e reduction target & relative CO₂e emissions of the container fleet

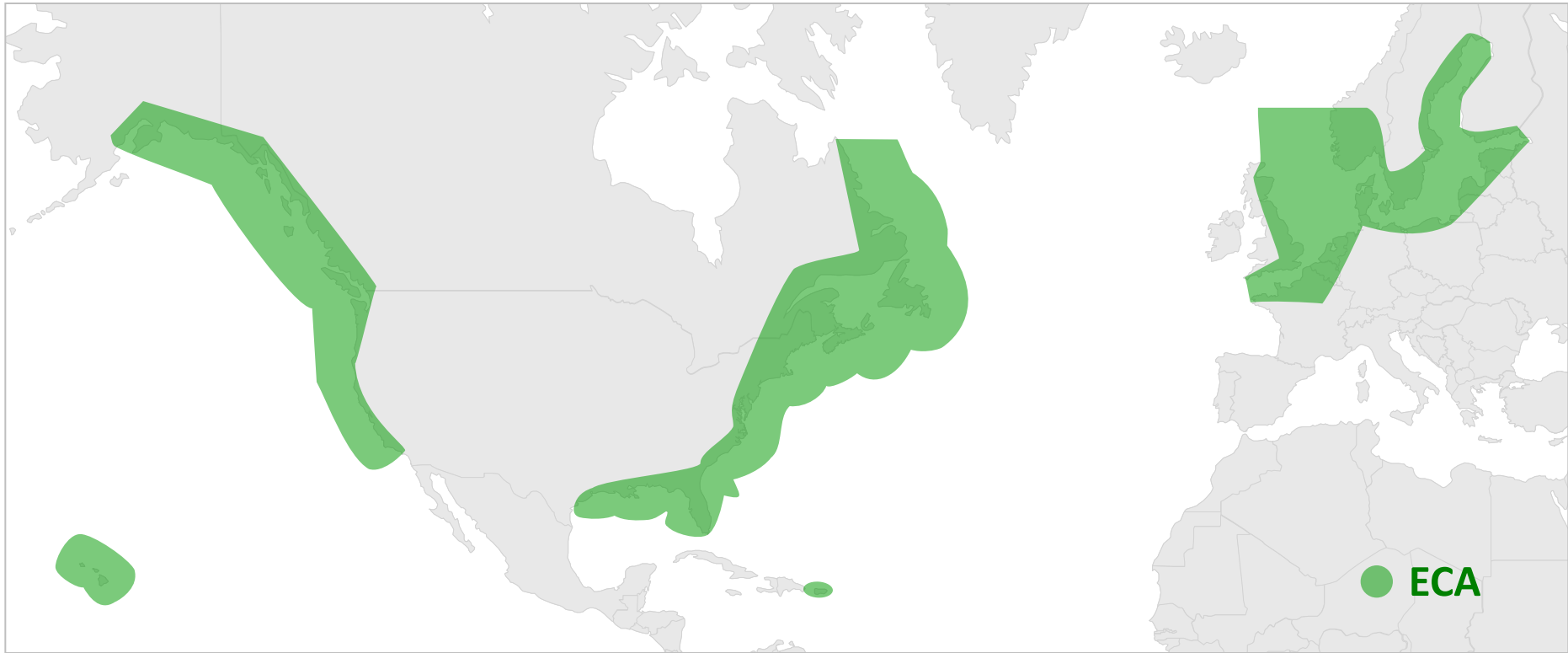


*: CO₂e, carbon dioxide equivalents, not only considers carbon dioxide but also other emissions produced during the combustion process (e.g. methane gas).

■ Initiatives with focus on CO₂, SO₂ und NO_x

- Clean Cargo Working Group (CCWG)
 - Global B2B initiative of carriers and shippers
 - Objective is the improvement of environmental performance in container liner shipping
 - Measurement, assessment and reporting of environmental performance are essential ingredients
- Environmental Ship Index (ESI)
 - Developed by the World Ports Climate Initiative
 - Assesses vessels depending on their emissions
 - Participating ports offer discounts on port dues depending on vessel score
- Carbon Disclosure Project
 - The largest collection globally of self reported climate change data
- Trident Alliance

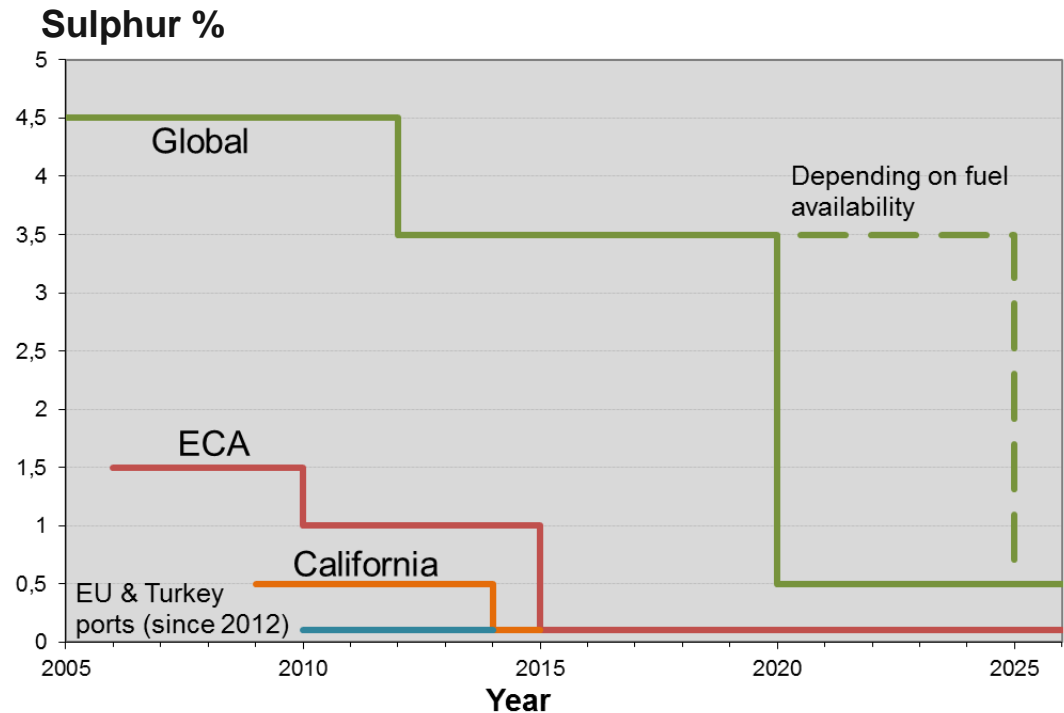
■ Regulatory Initiatives with Focus on CO₂, SO₂ und NO_x



- Impact: Irritation of eyes and respiratory tracts, acid rain, soil acidification
- Regulatory Initiatives
 - Marpol Annex VI (S and NOX)
 - Country and Port Specific Regulations
 - ECA & Shore Side Power

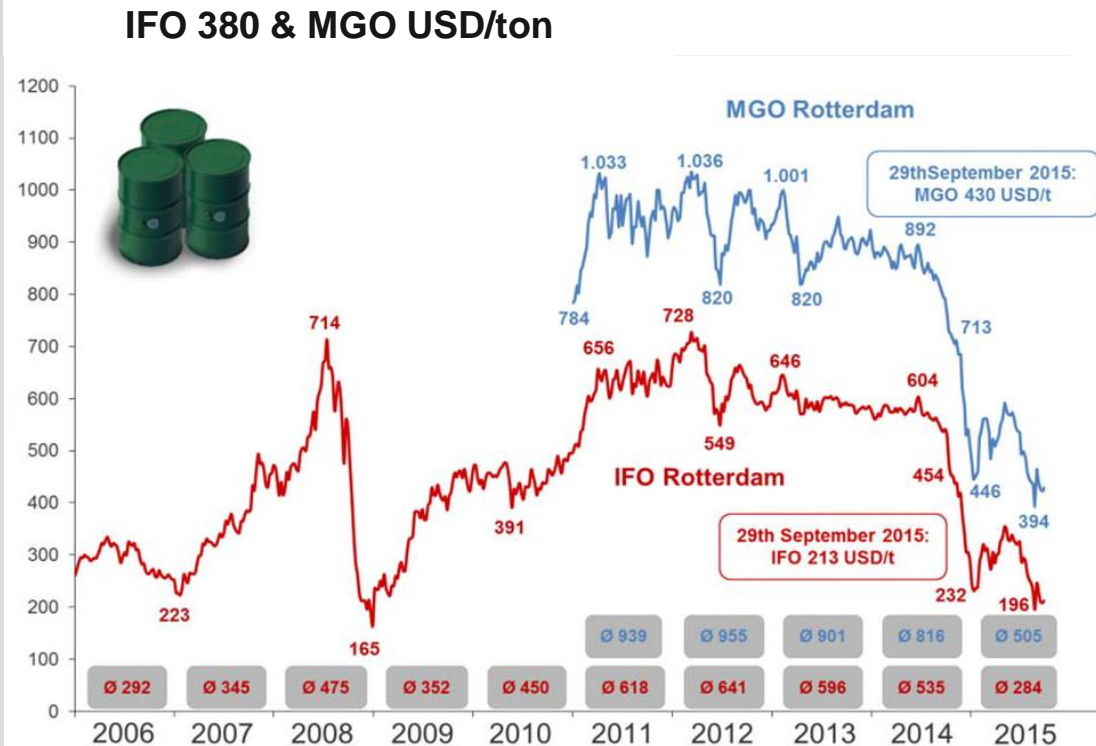
Regulatory Initiatives with Focus on CO₂, SO₂ und NO_x *Carrier Alternatives*

- Low Sulphur Fuel, Marine Gas Oil
- Scrubbers
- Catalyzers & Emission Gas Recirculation
- Diesel Particulate Filters
- LNG



Regulatory Initiatives with Focus on CO₂, SO₂ und NO_x *Carrier Alternatives*

- Low Sulphur Fuel, Marine Gas Oil
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- Liquefied Natural Gas (LNG)



A lighter footprint

- Success in the next decade is achieved based on decisions made today
- Support from Communities as well as other Stakeholders is important
- Adoption of Best Practices promise best results
 - Standardization of metrics and regulations

Thank you for your attention!

