

Practices of Promoting Green Waterborne Transport Development in China



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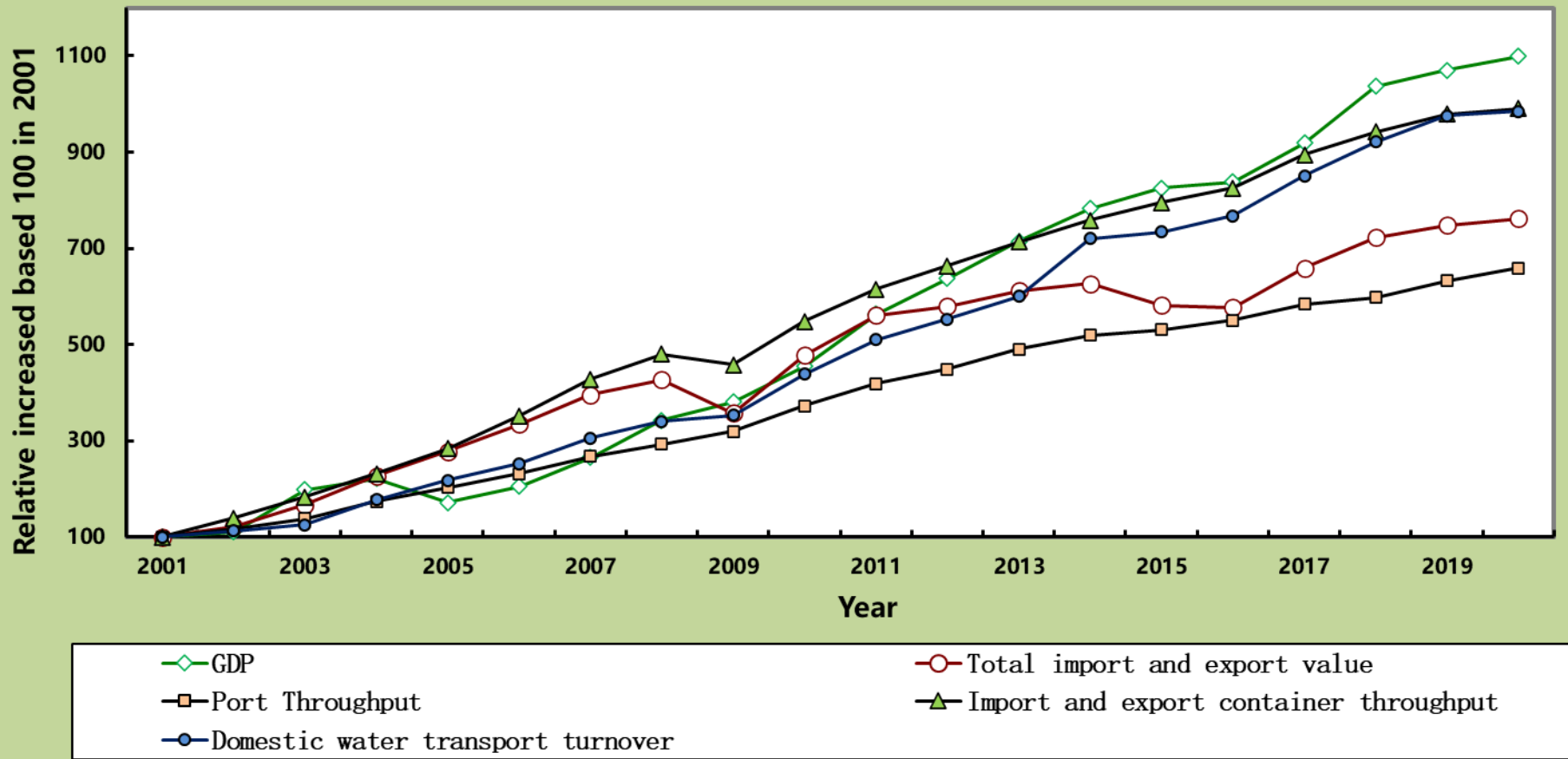
He is a Professor of China Waterborne Transport Research Institute, and Chief Technology Official in Environmental Protection and Energy Saving area. Since 1991, he has been engaged in waterborne transport technology research, standards and policy formulation, and has participated in various international exchanges and cooperation on water transport technology and policy organized by the government. His scientific research achievements have won a second prize of national Science and Technology Progress award and a number of navigation or port science and technology progress awards. He was responsible for normative documents such as the Overall Implementation Plan for Energy Conservation and Emission Reduction of Waterborne Transport during the National 12th Five-Year Plan Period and the industry standards such as Guide for Green Port Grade Evaluation. He promoted the use of shore power for ships at-berth and the establishment of ship emission control areas in China.

1 Policy Driving

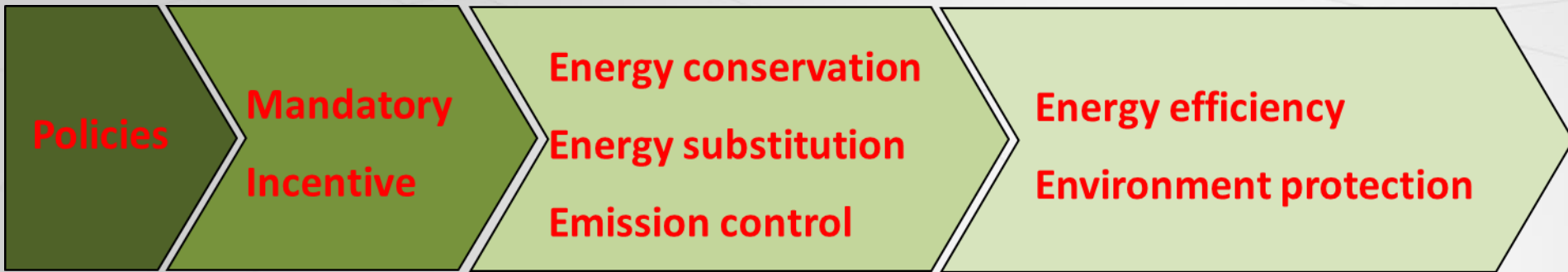
2 Industrial Action

3 Future Trend

Water transport plays important role in economic and social development in China



Policies → Implementation → Action → Objective



National or Industry Policy System in China

Standard		
Normative document	Work program	Administrative Enforcement
	Action plan	
	Pilot project	
	Guiding opinion	Economic incentive
	Development plan	
Regulation		
Law		

All red font mark methods can often be used by MOT to guide industry development.

Industry Policy System: Examples

Policy	Examples
Standard	Standard for Green Port Grade Evaluation Technical Code of Shore-to-Ship Power Supply System
Normative document	Action Plan of Ship and Port Pollution Prevention and Control (2015-2020)
	Implementation Plan of Controlling Green House Gas in Transport Sector during National 13th 5-year Plan Period
	Implementation Plan of Ship Emission Control Area
	Instruction on Promoting the Application of Liquefied Natural Gas in Waterborne Transport Sector
	Layout Scheme for Shore Power Supply System in Port
	Development Plan of Green Transport during National 14th 5-year Plan Period
Regulation	Regulations on the Prevention and Control of Marine Pollution and Marine Environment

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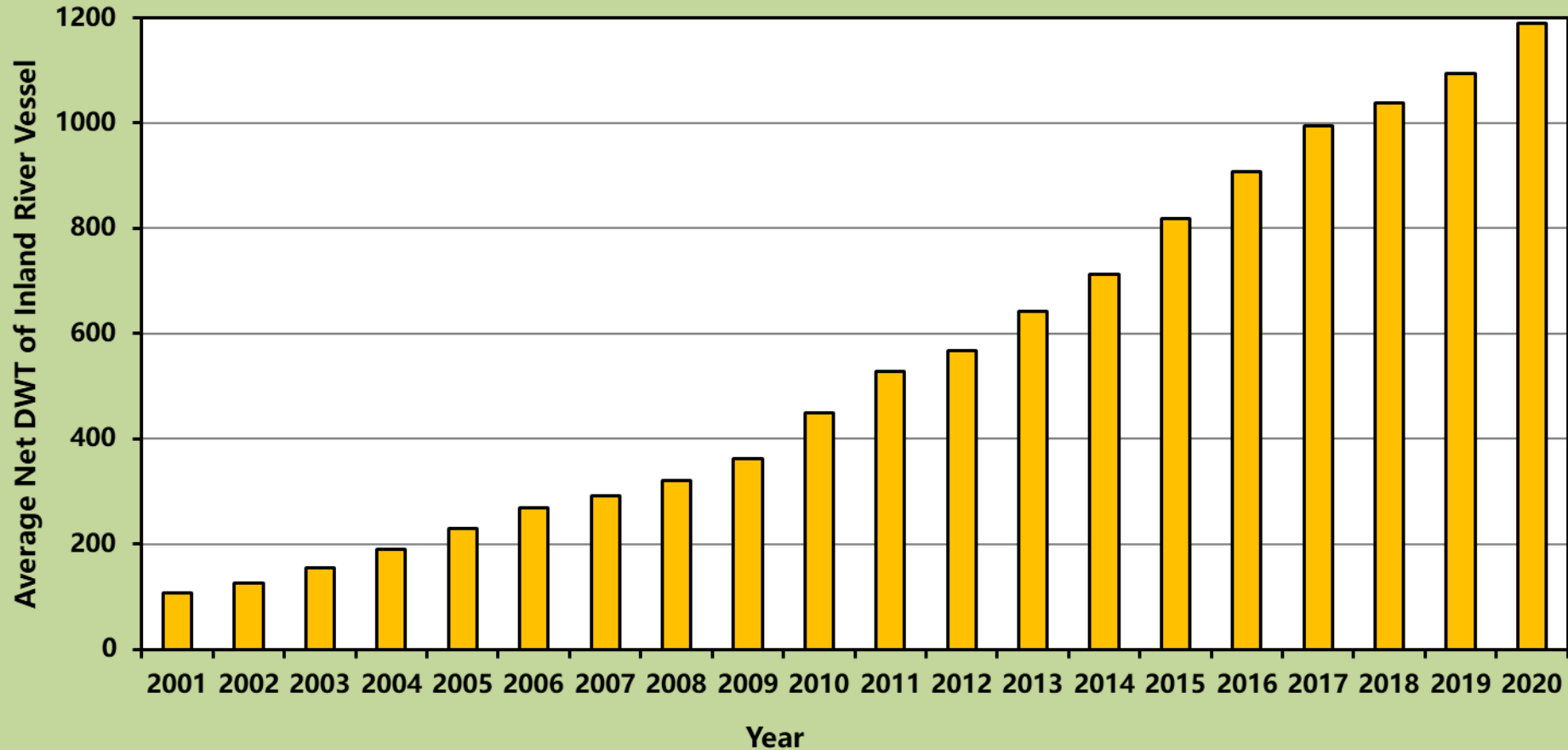
Selected measures

Actions	Selected Measures
Energy conservation	(1) Obsolescence of old ships
	(2) Wind-assisted ship
	(3) Wind & photovoltaic power generation in port
Energy substitution	(4) Convert RTGs' power from diesel to electric
	(5) Fully electric automated container terminal
	(6) Clean energy fueled ship & port machinery
	(7) Shore-power system for ships at-berth
Emission control	(8) Emission control area
	(9) Dust suppression
	(10) Control water pollutants from ship

(1) Obsolescence of old ships

2020 vs 2002:

Inland river ship: 9.5 times
Coastal ship: 6.3 times
Ocean-going ship: 3.7 times



(2) Wind-assisted ship



(3) Wind & photovoltaic power generation in port



(4) RTGs' power converted from diesel to electric

2300+RTG



(5) Fully electronic automatic container terminal

2016: Port of Xiamen



(5) Fully electronic automatic container terminal

2017: Port Of Qingdao
2018: Port of Shanghai



(6) Clean energy fueled vessel and port equipment

Electric fueled



(6) Clean energy fueled vessel and port equipment

Electronic fueled
Hydrogen fueled



(6) Clean energy fueled vessel and port machinery

Electronic fueled
Hydrogen fueled



(7) Shore power system for ship at berth

Coastal Port



(7) Shore power system for ship at berth

Inland River Port



(8) Ship emission control areas

2015 Version → 2018 version



(9) Dust suppression

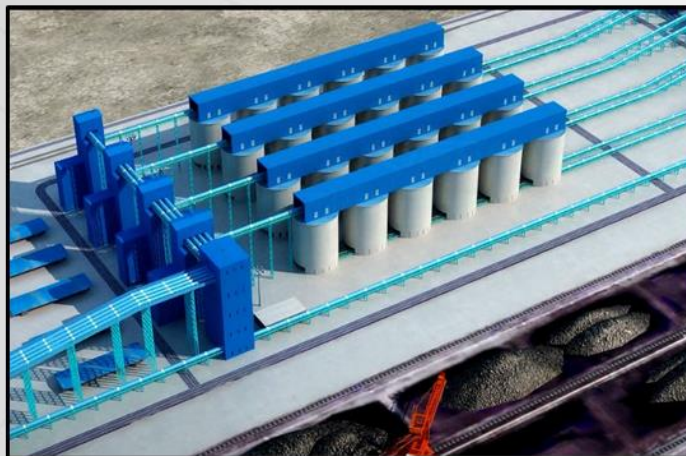


(9) Dust suppression



(9) Dust suppression

Port of Huanghua



(9) Dust suppression

Port of Huizhou



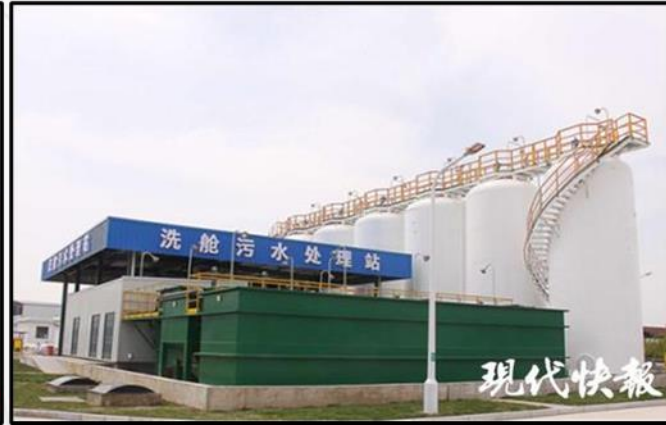
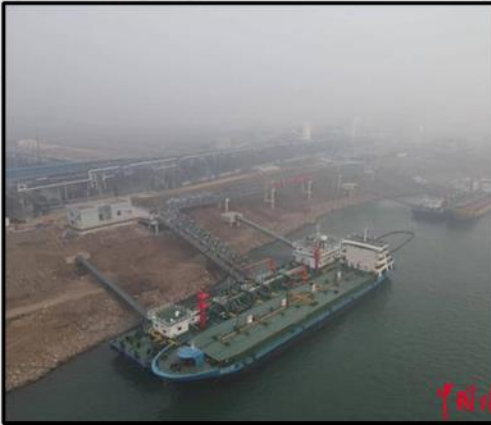
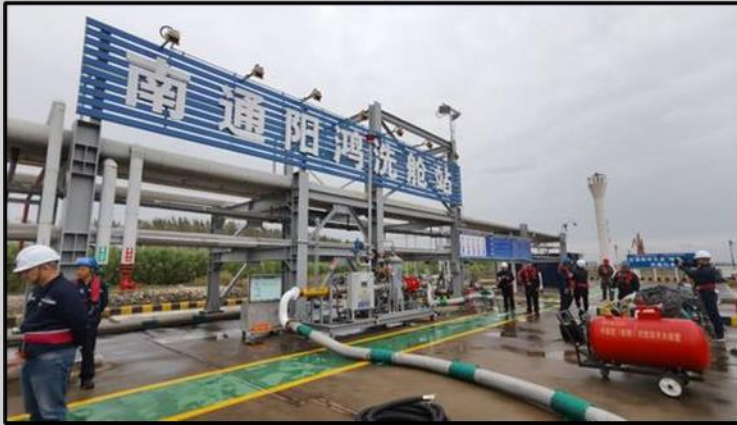
(10) Control water pollutants from ship

Port reception facility



(10) Control water pollutants from ship

Hazardous chemical ship washing station

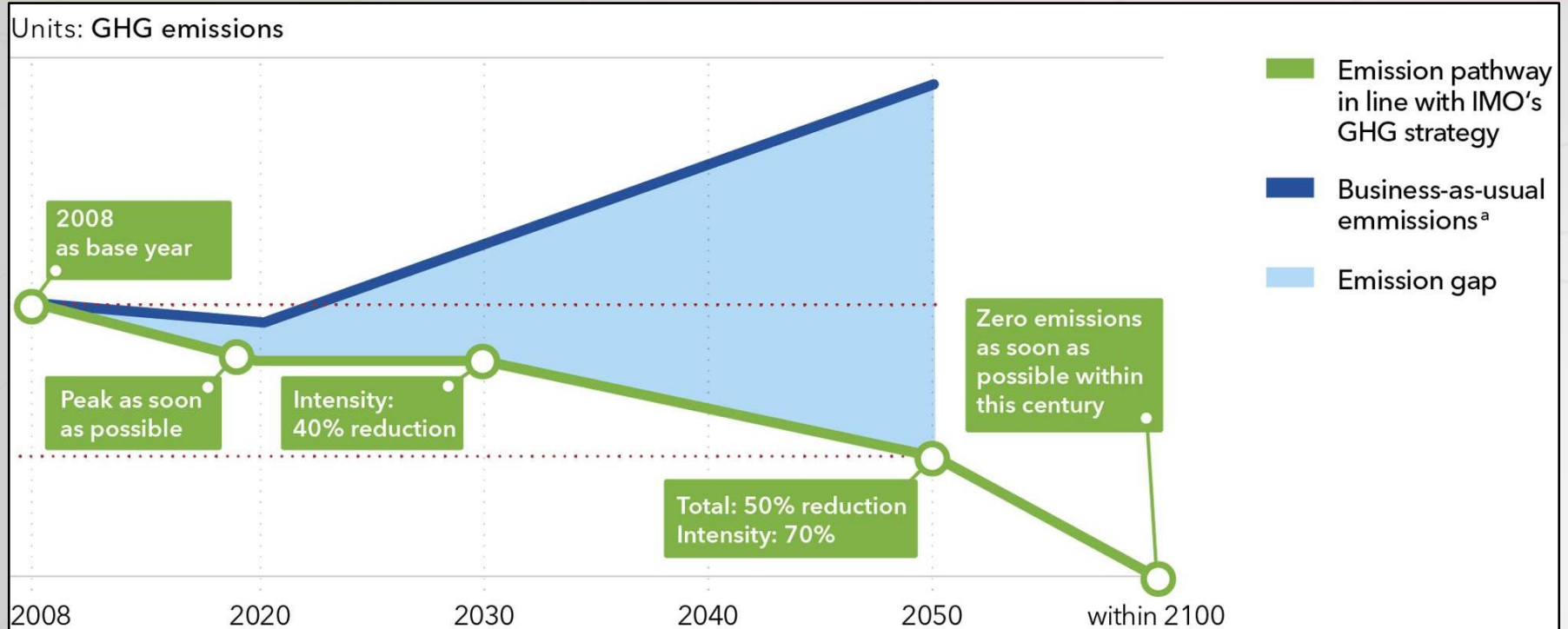


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Initial IMO strategy on reduction of GHG emission from ships

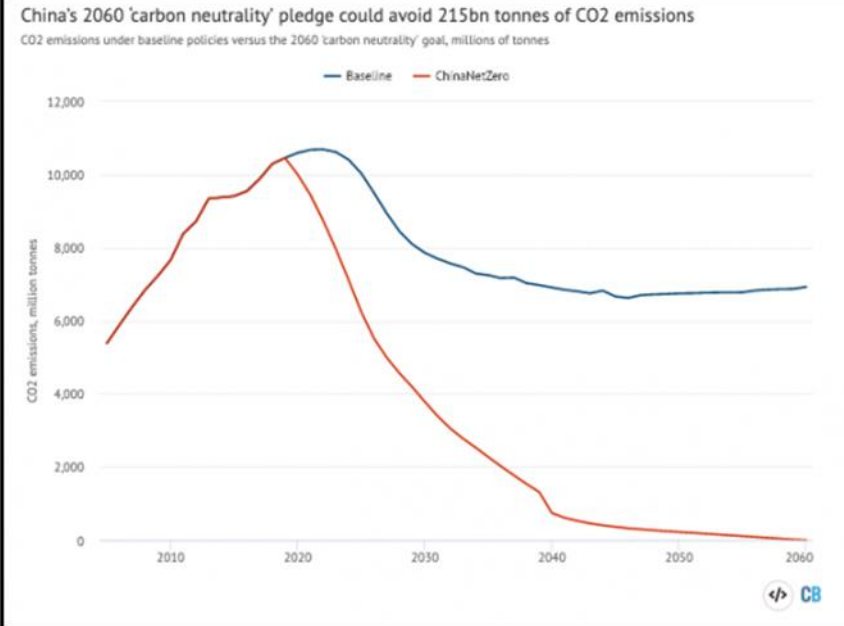
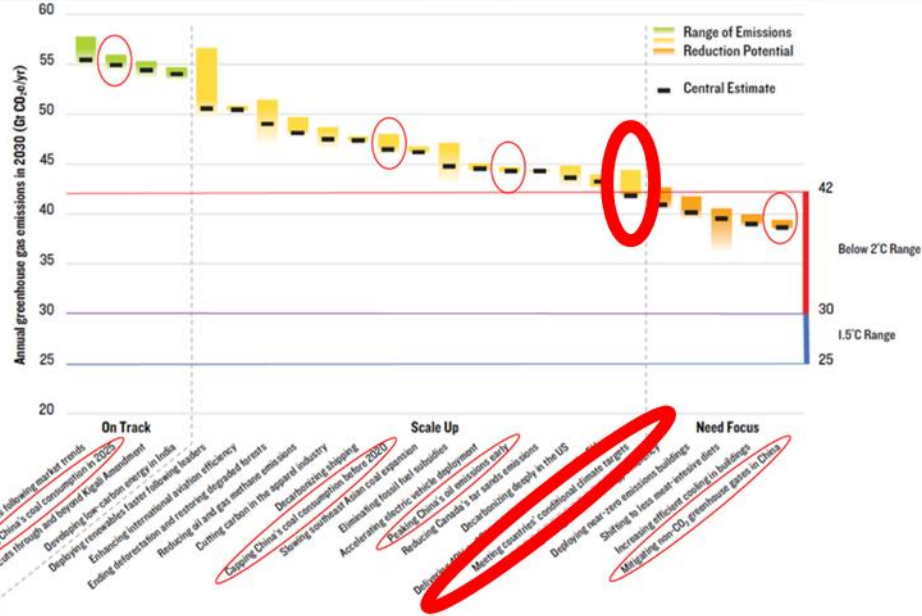


Total: Refers to the absolute amount of GHG emissions from international shipping.

Intensity: Carbon dioxide (CO₂) emitted per tonne-mile.

^{a)} Note that the business-as-usual emissions are illustrative, and not consistent with the emissions baseline used in our modelling (Chapter 6).

China's "dual carbon" target: Water transport is no exception



Current measures is not enough for existed decarbonization requirements

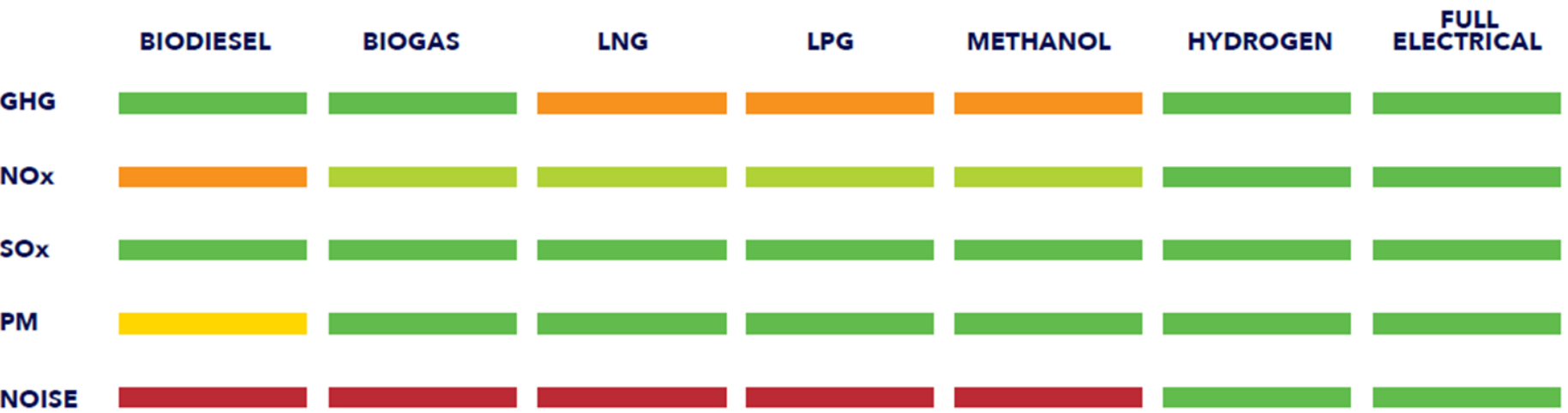
Further electrification of port machinery and development of more wind or photovoltaic systems in port



Current measures is not enough for existed decarbonization requirements

New clean fuel is necessary for shipping decarbonization

Diverse fuels and technologies differ in their potential to reduce various components of tank-to-propeller emissions from ships. The reductions illustrated are relative to using traditional fuels (HFO/MGO). Green indicates high potential. Red indicates low potential.



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THANKS