

Green Port Evaluation Standard and Choice of Policy Tools for Reducing Ship Emission in China



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1 Green Port Conception

2 Green Port Evaluation Standard

3 Reduce Ship Emission Policy Tools

4 Choice of Policy Tools in China

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Green Port: Contents

GREEN, as an develop model, is equal to SUSTAINABLE or RESOURCE-EFFICIENCY and ENVIRONMENT-FRIENDLY. At present, it' s contents should include

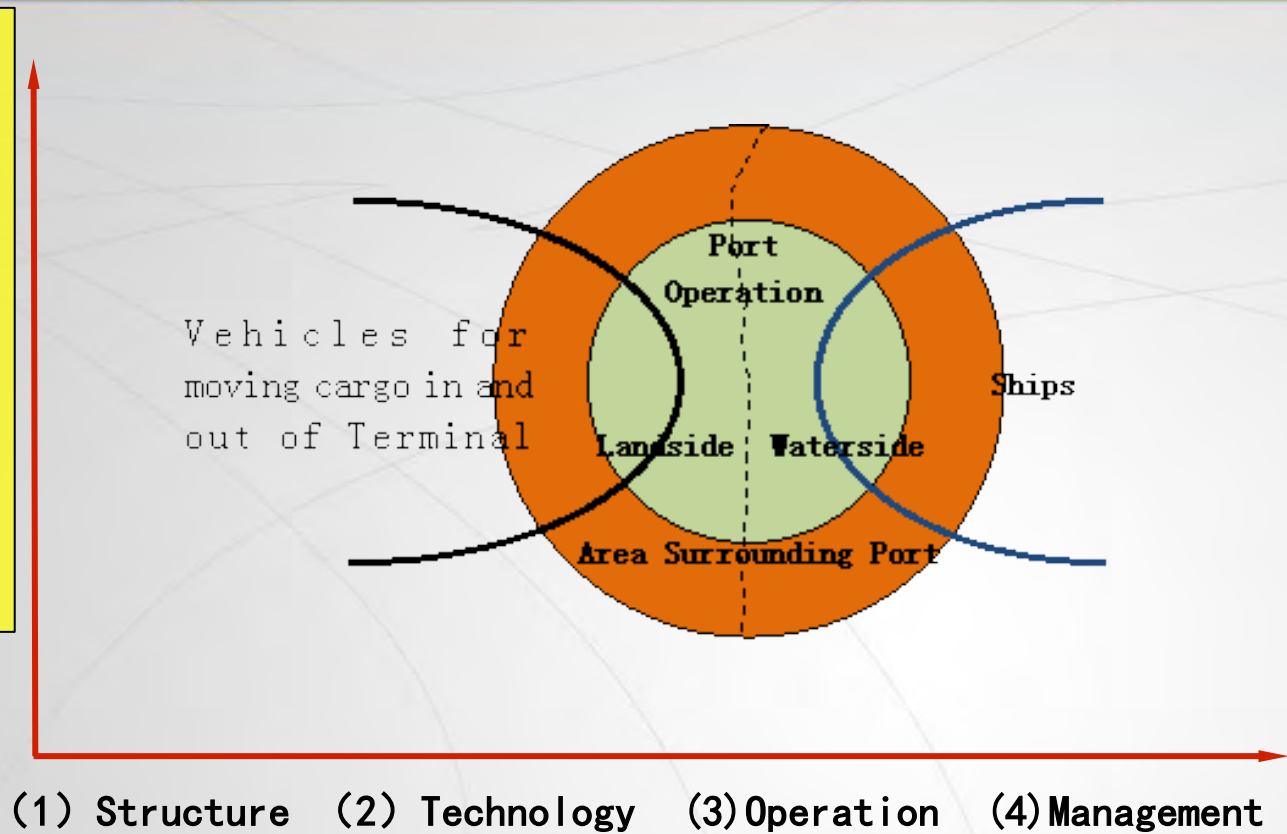
- ① Saving resources
- ② Reducing emissions
- ③ Protecting environment
- ④ Controlling GHG

Green Port: Scope

**Policy+Procedures
+Standard+Specification**

- ① Planning
- ② Design
- ③ Construction
- ④ Modification

⑤ Operation



Green Port: Conception

Port or terminal which operator, In the process of production operation, adhere to the concept of resource saving, environment friendly development, actively fulfill the social responsibility, comprehensive taken to save resources and energy, protect environment and ecology, technology and management measures to address climate change, meet the corresponding green port grades standard

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Evaluation Standard: Standard for Green Port Grade Evaluation

Goal: Unify understanding of green port
Standardize green port evaluation
Promote transformation of port development

Principle: Philosophy is the foundation
Action is the key
Management is the guarantee
Aim is effect

Evaluation Standard: Standard for Green Port Grade Evaluation

Item	Score Weight	Sub item	Indicator
Philosophy	0.10	Strategy	Strategy Planning
			Funding
			Work Plan
		Culture	Enterprise Culture
			Education Training
			Promotional Activities
Action	0.40	Environment Protection	Pollution Control
			Comprehensive Utilization
			Ecological Protection
		Energy Saving	Main Equipment
			Operation Technology
			Auxiliary Facilities
		Low Carbon	Fuel Replacement
			Renewable Energy Sources

Evaluation Standard: Standard for Green Port Grade Evaluation

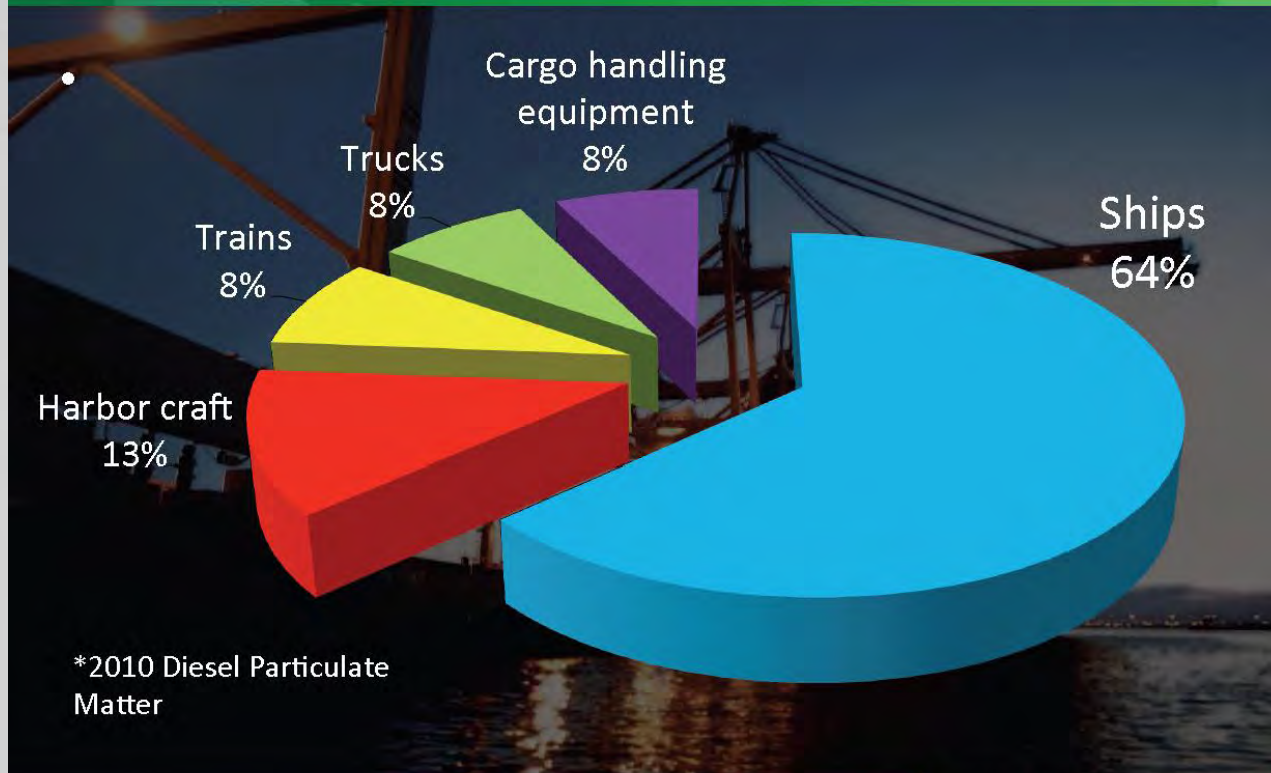
Item	Score Weight	Sub item	Indicator
Management	0.15	System	Management Organization
			Audit and Verification
		mechanism	Objective Assessment
			Statistical Monitoring
			Incentive and Constraint
Effect	0.35	Effect	Environment Protection and Zoology
			Resource Saving and Low Carbon
		Level	Environment Protection and Zoology
			Resource Saving and Low Carbon

Evaluation Standard: Standard for Green Port Grade Evaluation

Green Port Grade	★★★	★★★★	★★★★★
Score E	$75 \leq E$	$85 \leq E < 95$	$E \geq 95$
Action score P	$P \geq 70$	$P \geq 80$	$P \geq 90$
Green port planning	–	–	✓
Green development special found	✓	✓	✓
Annual report on green development	✓	✓	✓
Objective assessment system	✓	✓	✓
Environmental qualification ISO14001	–	✓	✓
Use onshore power for ship	–	–	✓

Evaluation Standard: Standard for Green Port Grade Evaluation

Sources of Diesel Emissions*

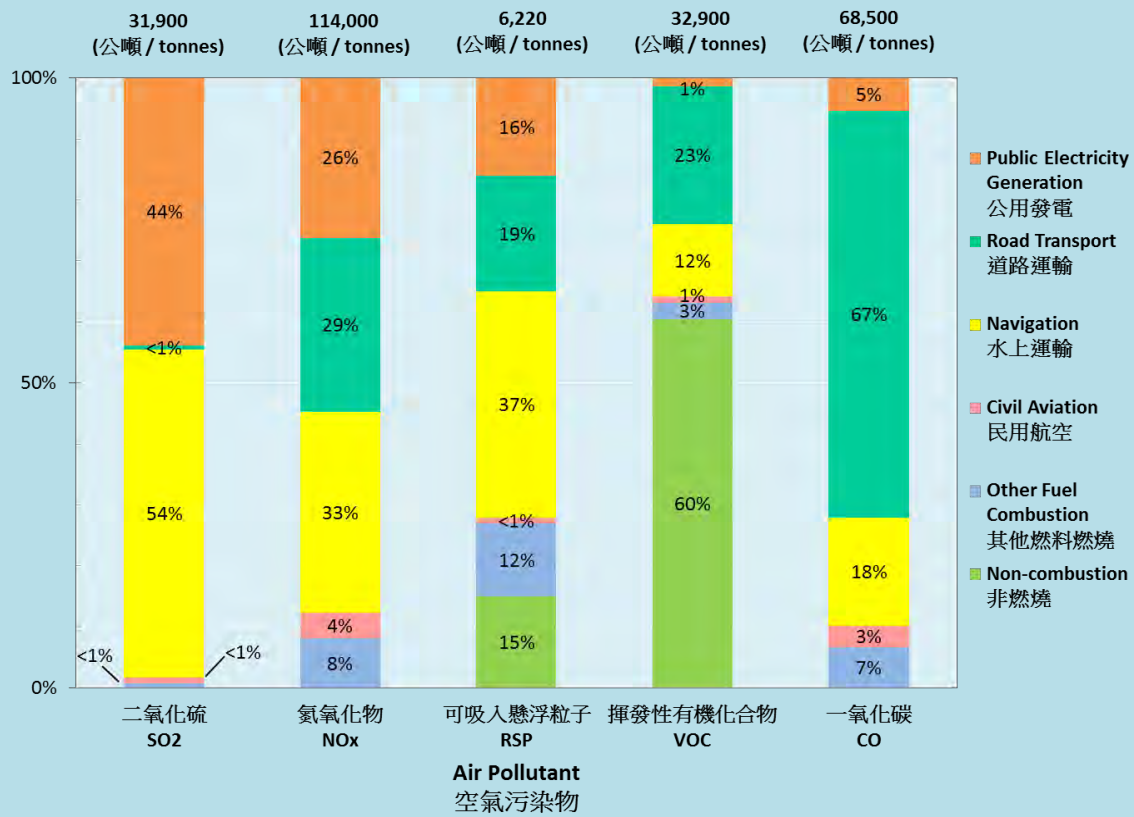


*2010 Diesel Particulate Matter

Evaluation Standard: Standard for Green Port Grade Evaluation

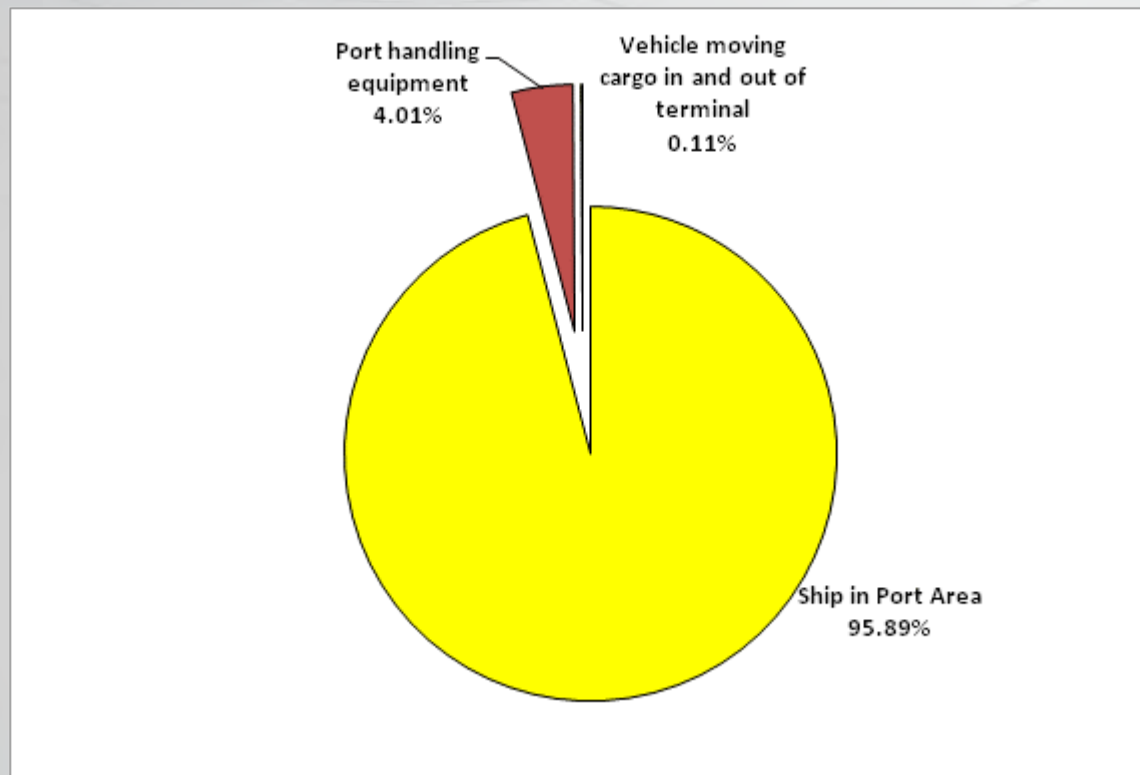
2011 年排放清單

2011 Emission Inventory



Evaluation Standard: Standard for Green Port Grade Evaluation

PM2.5 Emission from Ship in Port of Shanghai in 2010



Standard for Green Port Grade Evaluation

has been promulgated in 2013, in order to promote ports development transform from extensive model to intensive model, with minimal resource consumption and environmental costs, maximize provide high quality service.

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Policy Tool: Incentive Mechanism

●Green Flag Program of Port of Long Beach

Under the Green Flag program, the port offers discounted dockage fees and environmental awards to vessel operators who achieve compliance rates of 90% or better and Green Flags to individual ships that have 100% compliance with the program for a year.

●Green Harbor Program of Singapore

●Fair Winds Charter of Hong Kong

Policy Tool: Mandatory Mechanism

●Directive 2005/33/EC

From 1 January 2010 on, ships at berth in Europe Union ports for more than 2 hours shall not use marine fuels with a sulphur content exceeding 0.1% by mass except that ships switch off all engines and use shore side electricity while at berth in ports.

●California Code of Regulations

Beginning January 1, 2014, fleets calling at California ports must shut down their auxiliary engines and plug into the electrical grid while at berth.

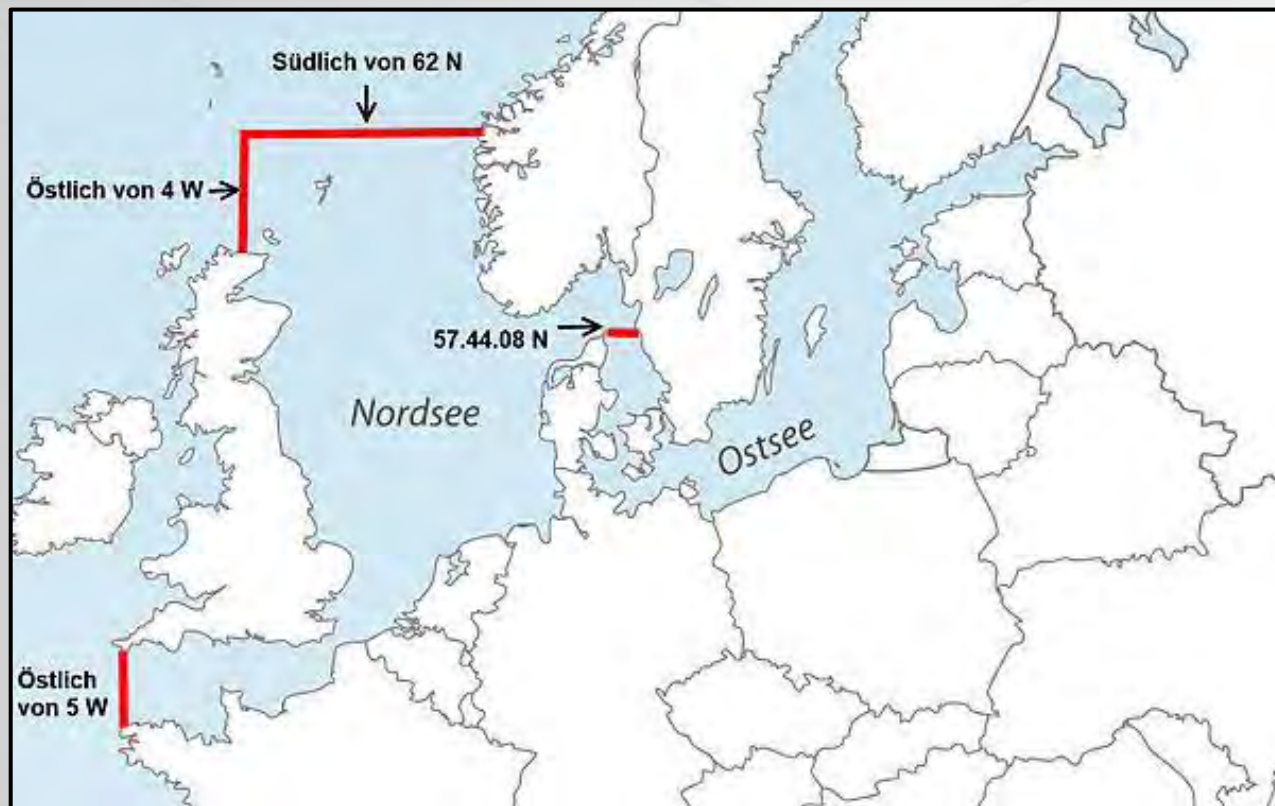
Policy Tool: Emission Control Area

Baltic Sea SOx Emission Control Area (19 May, 2006)



Policy Tool: Emission Control Area

North Sea SOx Emission Control Area (11 November, 2007)



Policy Tool: Emission Control Area

North America Emission Control Area (1 August, 2012)



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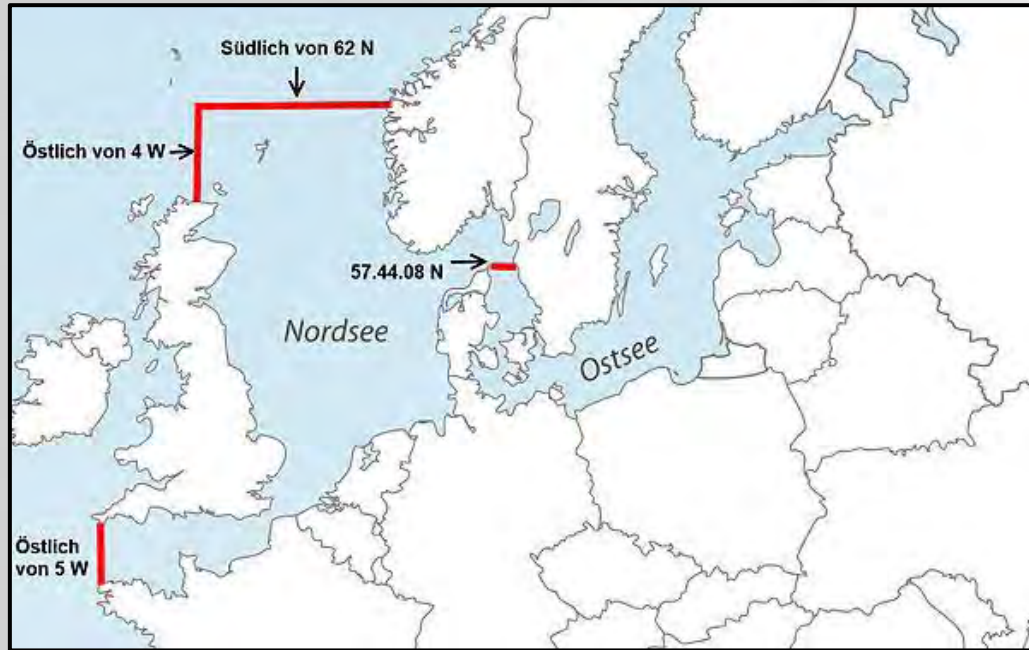
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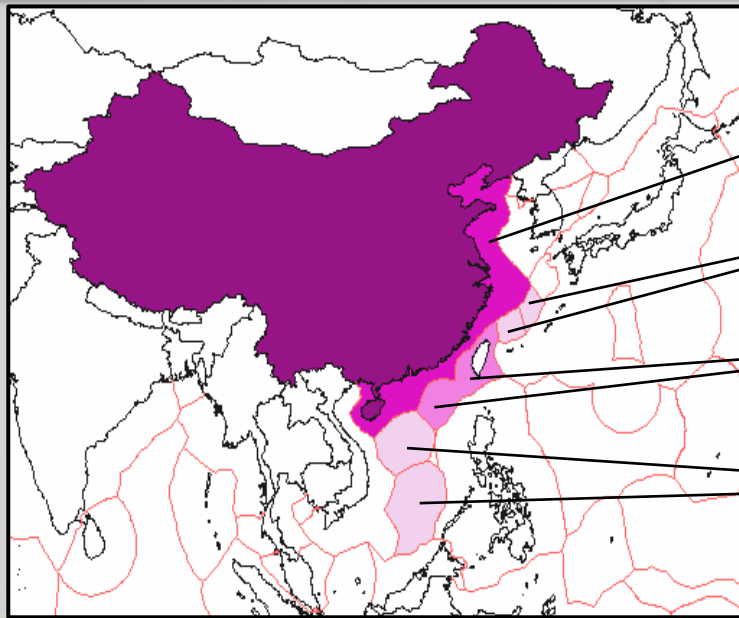
Choice of Policy Tool: Construct National Emission

Technical possible: Netherland, Belgium, Germany, Denmark, Poland, US and so on



Choice of Policy Tool: Construct National Emission Control Area

- ① Lack of information for Proposal
- ② Land environment protection: 10ppm gas and diesel all over the country in the end of 2017
- ③ Dispute exclusive economic zone
- ④ Supervise capacity and ability building and fuel supply system



Mainland

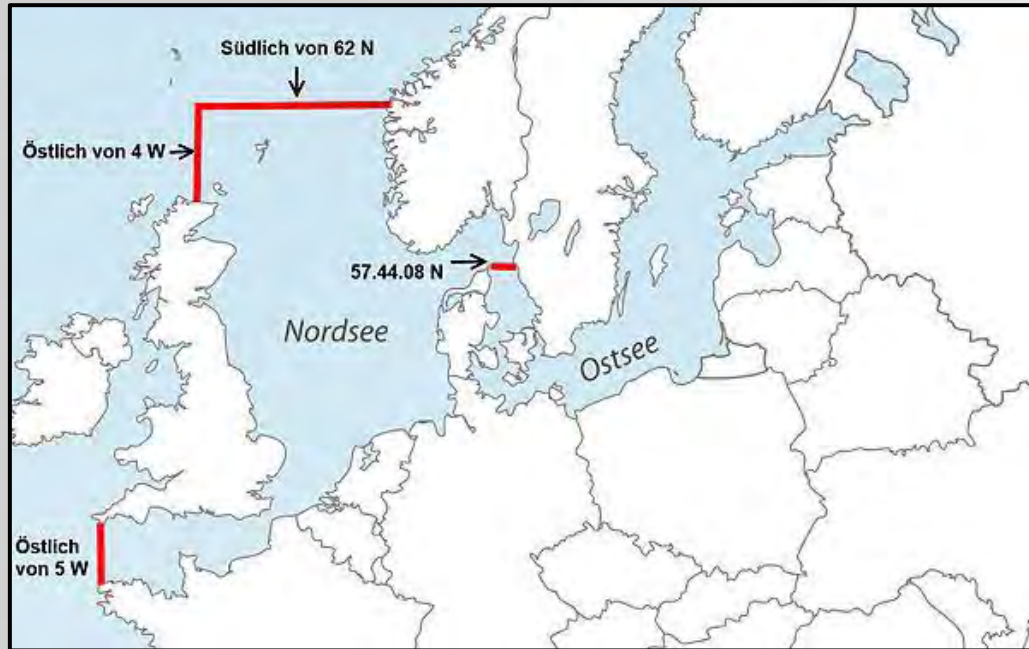
Disputing

Taiwan

Disputing

Choice of Policy Tool: Construct Local Emission Control Area

Technical possible: Finland, Sweden, France, Britian, Canada



Choice of Policy Tool: Construct Local Emission Control Area

① Port competitiveness change inside and outside Area

三条铁路集装箱班列示意图

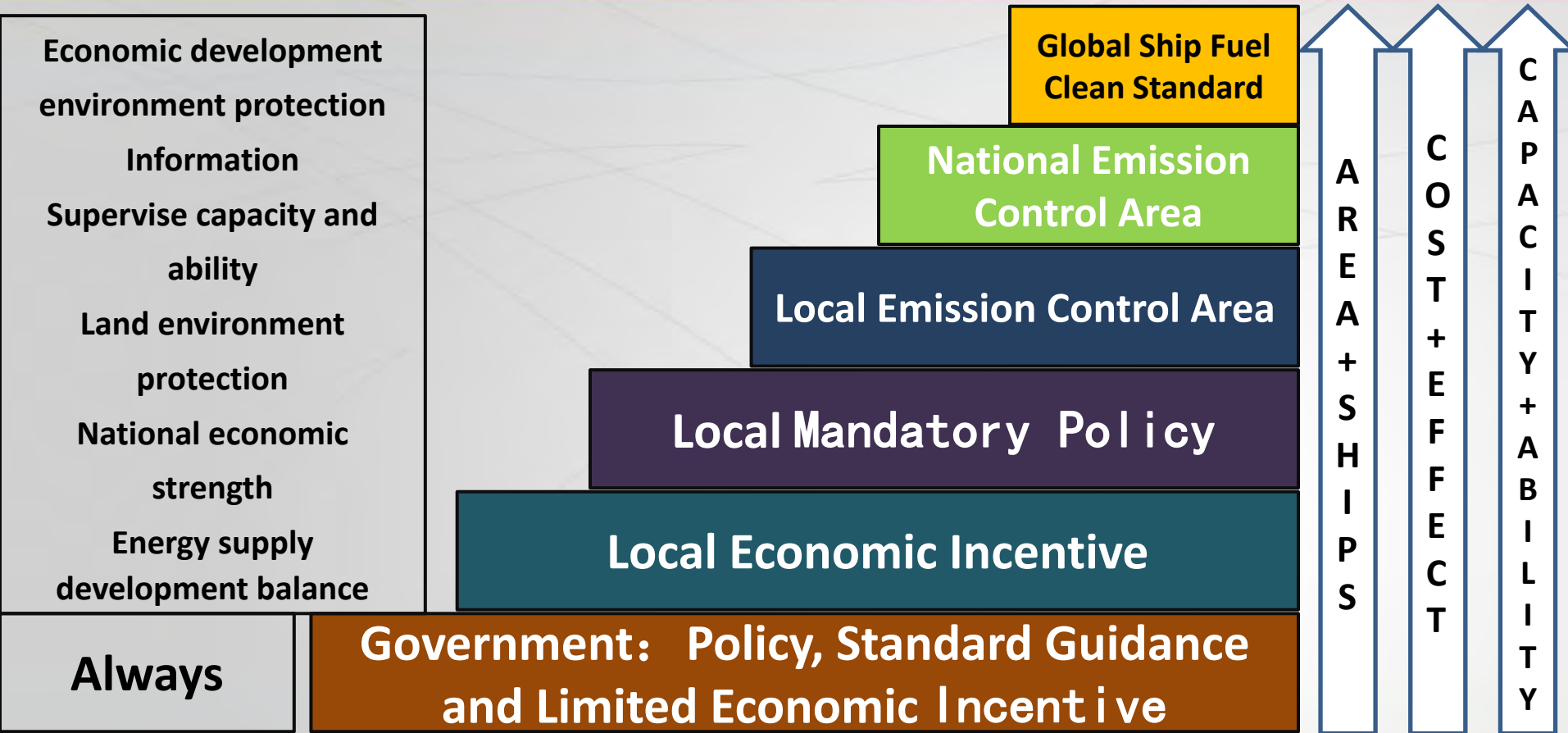
渝新欧国际联运班列：通过阿拉山口，
到达哈萨克斯坦，俄罗斯，德国等欧洲国家



为内陆客户提供一站式服务



Choice of Policy Tool: Conditions and Requirements



To avoid affect regional economic development the competitiveness excessively, local governments buy environmental protection effects. 2 examples:

- Shenzhen government will compensate port half cost for constructing onshore power supply equipment and charge 0.75RMB per kWh electricity used by ship at berth.
- Guangdong province green port action plan will use port construction fee as green port project subsidy.

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THANKS