

MARINE ENVIRONMENT PROTECTION  
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## AIR POLLUTION PREVENTION

### Information on the development of onshore power supply in China

#### Submitted by China

#### SUMMARY

*Executive summary:* In order to promote ship energy conservation and emission reduction, China formulated and issued the "Port Onshore Power Supply Layout Plan" in 2017, illustrating an action plan for onshore power development. As of 2020, China's port onshore power construction has made great progress, playing an important role in reducing greenhouse gas emissions and air pollution prevention, and has accumulated relevant experience

*Strategic direction, if applicable:* 3

*Output:* 3.7

*Action to be taken:* Paragraph 14

*Related documents:* MEPC 64/4/3; MEPC 69/5/8; MSC 98/20/7; SSE 5/13; and SSE 7/11

#### Introduction

1 In 2012, at MEPC 64, the Secretariat provided relevant information on the development of onshore power in the international shipping industry in document MEPC 64/4/3 (Secretariat). In 2016, at MEPC 69, the European Community of Shipyard Associations (CESA) submitted a document, which noted that the market barriers to onshore power technology were gradually eliminated. There had been many cases of onshore power operations in Europe, California and other regions. It was recommended in document MEPC 69/5/8 (CESA) that IMO should require ports and newly-built vessels to use the international standard for connecting to a shore power system.

2 In 2017, at MSC 98, China submitted a proposal for a new output to develop safety standards for cold ironing of vessels and guidance on safety operation of Onshore Power Supply (OPS) service in port, in document MSC 98/20/7 (China), and the Committee agreed to include the new output in the 2018-2019 biennial agenda of the SSE Sub-Committee. In addition, at SSE 5, SSE 6 and SSE 7, the Correspondence Group on the Development of Guidelines on Safe Operation of Onshore Power Supply (OPS) Service in Port for Ships Engaged on International Voyages actively promoted the formulation of the guidelines (SSE 5/13 (China), SSE 7/11 (China)). The draft interim guidelines have been considered at MSC 103.

3 With the implementation of IMO's *Initial Strategy on reduction of GHG emissions from ships* (MEPC.304(72)) and the 2020 global "sulphur limit" of MARPOL Annex VI, onshore power, as an effective alternative to fuel oil during ship berthing, plays an important role on energy conservation and emission reduction of ships. Its construction and development are attracting extensive attention from the international community.

### **China's "Port Onshore Power Supply Layout Plan"**

4 In order to promote ship energy saving and emission reduction, China formulated the "Port Onshore Power Layout Plan" (OPS Plan) in 2017, illustrating an action plan for the development of onshore power supply in port.

5 According to the OPS Plan, by the end of 2020, more than 50% of the existing specialized berths for containerships, ro-ro passenger ships, cruise passenger ships, passenger ships of 3,000 tons or more and dry bulk carriers of 50,000 tons or more in major ports and ports within ship emission control areas of China will have the ability to supply onshore power to ships. At the same time, ports with greater demand for onshore power supply and better infrastructure are encouraged to strive to achieve a 100% coverage of onshore power supply at berths.

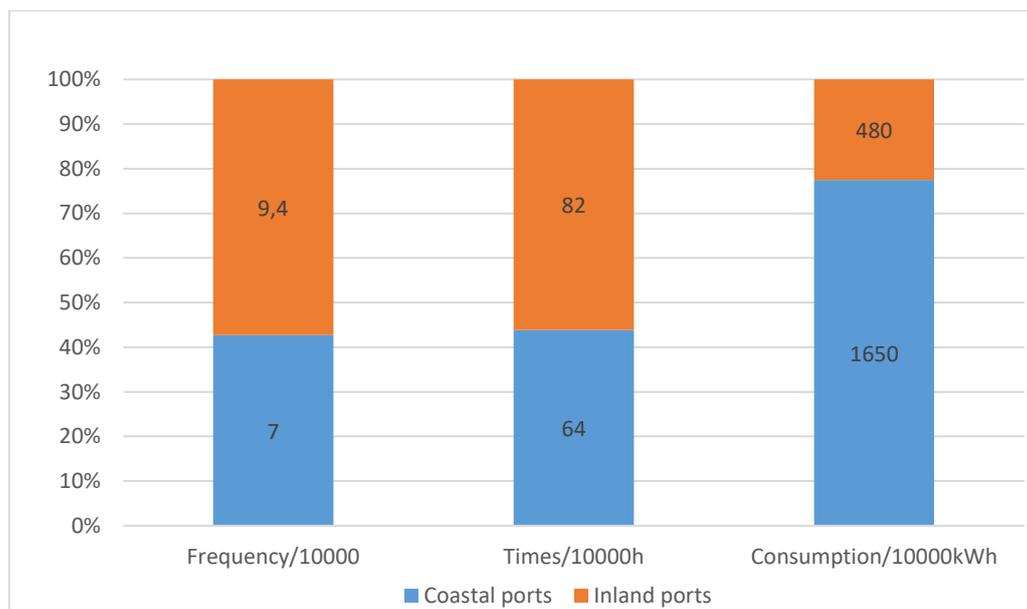
6 According to the OPS Plan, China needs to build, renovate and expand a total of 493 onshore power berths in major ports and ports within the ship emission control areas across the country, which are further subdivided according to berth types. There are 277 berths for containerships, 77 for ro-ro passenger ships, 9 for cruise passenger ships, 29 for passenger ships of 3,000 tons or more, and 101 for dry bulk carriers.

### **Achievements made by China in port onshore power construction**

7 China has vigorously promoted the "Port Onshore Power Supply Layout Plan" based on a comprehensive application of such means as policy, technology, and legislation, completed the construction task beyond expectation, and achieved gratifying results in terms of energy saving and emission reduction of ships.

8 By the end of 2020, onshore power facilities had covered more than 7,500 berths in ports and maritime service stations across the country. The onshore power facilities for the five categories of berths included in the OPS Plan cover a total of 787 berths, far beyond the established goal.

9 According to the data analysis on the effective onshore power use of 3,421 berths in 33 coastal ports and 63 inland ports already built up, despite the influence of the COVID-19 pandemic, the frequency of onshore power supply was about 166,000 times, and the total connection duration was about 1.56 million hours in the first half year of 2020. The total electricity consumption was about 31.9 million kWh. The total emissions of nitrogen oxides, sulphur oxides and particulate matters were reduced by more than 510 tons, and the carbon dioxide emissions were cut down by 22,000 tons. The relevant data is shown in Figure 1:

**Figure 1 Statistics of China's onshore power usage in the first half of 2020**

- .1 from the perspective of shore power consumption in coastal ports, container berths and dry bulk berths consume the most power, accounting for about 50% of the total usage. Passenger berths have longest consumption time, accounting for about 35% in the total; and
- .2 from the perspective of shore power consumption in inland ports, passenger berths consume the most power, accounting for about 57% of inland river onshore power consumption. The general cargo and bulk berths have longest consumption time, accounting for about 48% in the total.

10 In 2018, Chinese government promulgated two important documents, the "Technical Rules for the Statutory Survey of Domestic Sea-going Vessels (Amended in 2018)" and the "Technical Rules for the Statutory Survey of Inland Vessels (Amended in 2018)" to promote the standardization of onshore power connection systems onboard of sea-going and inland vessels. The "Technical Rules for the Statutory Survey of Domestic Sea-going Vessels (Amended in 2018)" stipulated that after 1 January 2019, newly-built containerships, ro-ro passenger ships, passenger ships of 3,000 gross tonnage or more, dry bulk carriers of 5,000 gross tonnage or more, and all newly-built ships engaged on inland water voyages other than tankers should be installed with onshore power connection systems, which should hold a type approval certificate, the installation and arrangement should satisfy the Administration. Moreover, the ships shall implement the ship shore power connection procedure, which could be a part of the ship safety management system. The Chinese government plans to basically complete the alteration of inland containerships, ro-ro ships, dry bulk carriers of 1,200 gross tonnage or more, and multi-purpose ships in the Yangtze River Economic Zone by the end of 2023. Before the end of 2025, the alteration of inland dry bulk carriers and multi-purpose ships of 600 gross tonnage or more will be basically completed.

## China's experience on port onshore power construction

11 **Strategy:** China formulated the "Port Onshore Power Supply Layout Plan" in 2017, clarifying the action plan for onshore power development. The onshore power construction tasks are refined to specific ports. At the same time, the construction of onshore power supply on both coastal and inland river is under coordination, and tasks have been formulated for the construction and alteration of onshore power supply for different types of berth.

### 12 **Legislation:**

- .1 According to the "Implementation Plan for Ship Air Pollutant Emission Control Zones" formulated by China in 2018, from 1 July 2019, ships that meet the requirements for onshore power use on coastal and inland emission control zones should use onshore power. In 2018, the Ministry of Transport revised the "Administrative Rules on Port Project Construction", stipulating the establishment of onshore power supply while building new docks. In 2019, the Ministry of Transport further formulated the "Management Measures for Ports and Ships' Onshore Power" to ensure the safe and standard use of onshore power for ships calling at ports. In 2020, the "Yangtze River Protection Law" was enacted to stipulate from the legal perspective that ships which are ready for onshore power use along the Yangtze River Basin shall use onshore power after arriving at port.
- .2 In 2018, the Chinese government promulgated two important documents, the "Technical Rules for Statutory Survey of Domestic Sea-going Ships (2018 revision)" and the "Technical Rules for Statutory Survey of Inland Vessels (2018 revision)", which stipulated that after 1 January 2019, newly-built containerships, ro-ro passenger ships, passenger ships of 3,000 gross tons or more, dry bulk carriers of 5,000 gross tons or more and all newly-built inland vessels except liquid cargo ships shall be installed with onshore power connection systems to promote the standardization of onshore power connection carried by sea-going and inland vessels.

13 **Standard:** In order to harmonize port onshore power regulations, the Chinese government has formulated a large number of national and industry standards for port onshore power supply construction. Relevant standards are in line with IEEE, ISO and IEC high-voltage onshore power standards, and have refined the specifications of low-voltage onshore power connectors, covering the entire process of onshore power system design, construction, usage, maintenance and testing, and are used to guide and standardize port ships onshore power.

### Action requested of the Committee

14 The Committee is invited to note the information contained in this document.

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