Summary of NRDC Roundtable Meetings on Shipping and Port Emissions Control (October 19, 2015)

China has seen rapid growth in seaborne trade in the past three decades. The country is now home to the world's eight busiest ports in terms of cargo volume. Studies have found that shipping is a significant contributor to air pollution in Shenzhen, Shanghai, and Hong Kong. There is growing recognition in China that controlling air pollution from ships and port-related activities is essential for the country to reach its clean air goals, especially for cities that are home to large ports or are located along major waterways.

The Chinese government is acting swiftly and forcefully to combat air pollution from shipping pollution. It recently announced a number of major initiatives and is currently deliberating details of these initiatives, which include:

- Requiring inland waterway vessels to use general diesel fuel (diesel permitted for use in off-road machinery), beginning on January 1, 2016[1]
- Developing the first set of emission standards for new marine engines that will be used in China-registered vessels
- Developing a detailed plan to establish Emission Control Areas (ECAs) around three major port regions (Pearl River Delta, Yangtze River Delta and Bohai Bay), in which ships will be required to switch to lower sulfur fuel or to apply equivalent emissions-reducing measures
- Proposing to install on-shore power infrastructure at three major port regions and liquefied natural gas (LNG) bunkering facilities along main inland waterways
- Launching incentive programs to reduce air pollution from ships and ports in Shenzhen and Shanghai

[More information about these announcements can be found at: http://switchboard.nrdc.org/blogs/bfinamore/how_china_is_taking_major_step.html]

To support policy makers, port officials, and key researchers in formulating a pragmatic and effective work plan for implementing these important initiatives, the Natural Resources Defense Council (NRDC) organized a series of roundtable meetings between port experts and key stakeholders in Beijing, Tianjin, Shanghai, and Guangzhou on September 21-25, 2015 (see meeting agenda in Appendix I). The meetings were planned to share how air pollution from shipping and ports are controlled and mitigated in the U.S. and EU, and to discuss the range of measures that can be taken to enable the Chinese port and shipping sectors to maintain growth while simultaneously reducing air emissions from these activities. Nearly 70 participants attended, including senior officials and researchers from the transport, maritime, and environmental protection agencies in the national government and key port provinces and cities, as well as port officials and academics. This document summarizes the insights shared during these meetings.

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[1] The national sulfur limit for general diesel fuel will be gradually tightened from the current level of 350 ppm, to 50 ppm by July 1, 2017 and 10 ppm by January 1, 2018. For more information, see http://www.sdpc.gov.cn/gzdt/201505/t20150507_691028.html.

Clean port initiatives and the enforcement programs for low sulfur fuel regulations:

The former head of the Port of Los Angeles (POLA), Dr. Geraldine Knatz, and the Senior Manager and Executive Advisor of the Port of Rotterdam, Peter Mollema, joined the NRDC team for all the meetings. They discussed their first-hand experiences in the U.S. and EU in mitigating air emissions from ports and shipping. In addition, the Director of the Air Enforcement Division of the U.S. Environmental Protection Agency (EPA), Phillip Brooks attended the meeting in Beijing, and the Engineer of the Shanghai Environmental Monitoring Center (SEMC), Dr. Deng Guo Liu, joined the meeting in Tianjin.

Dr. Knatz shared her experiences in developing and implementing the San Pedro Bay Clean Port Action Plan (CAAP) jointly with the Port of Long Beach (POLB) over the past decade. The plan was developed based on a detailed emissions inventory, which allowed the port to more readily identify the major sources of air pollution and greenhouse gases. By setting challenging goals, working closely with its neighbor (POLB) and stakeholders, and periodically updating the action plan, the POLA has successfully reduced particulate matter emissions by over 80 percent, sulfur oxide by 97 percent, and nitrogen oxide by over 50 percent in less than a decade.

Mr. Mollema discussed the objectives of the Port of Rotterdam's clean air initiatives, including the need to protect natural habitats, improve air quality, maintain the port's position as the world's leading fuel hub, reduce noise impacts, improve comfort onboard for inland ship skippers, and meet the EU "Clean Power for Transport" Directive.[2] With the ambition to become a world-class LNG bunkering hub, the Port of Rotterdam is building a new set of LNG import, bunkering, and breakbulk facilities. It is also, in conjunction with other ports, developing guidelines and standards to ensure safe use of LNG on vessels and in trucks. On inland shipping, the port mandates the use of shore power for inland barges when docked to reduce air pollution and noise impacts. The port has passed by-laws and offers incentives to promote the use of shore power and LNG. With its LNG and shore power infrastructure, the port is well-positioned to serve customers that choose to use these clean shipping fuels.

In addition to their clean port initiatives, Dr. Knatz and Mr. Mollerma explained that international, national, and regional regulations are critical as they serve as a backstop to limit emissions from ships and other port-related mobile pollution sources. Mr. Brooks, the US EPA representative, and NRDC experts discussed programs that help ensure ships are in compliance with the low sulfur marine fuel requirements in the U.S., EU and Hong Kong. Participants were particularly interested in the process for inspecting ships, taking fuel samples, and imposing penalties if violations are found, as well as the equipment for monitoring and testing fuel quality at the port or when ships pass by. In addition, Dr. Liu presented the methodology for developing a marine inventory in Shanghai with participants in Tianjin who are starting to develop an air pollution inventory for the Tianjin port.

Experts at the meeting agreed on a set of major lessons learned from American and European clean port programs and regulations:

- From the port authority perspective, a comprehensive emission inventory is critical to enable ports to set reduction goals and identify mitigation strategies and technologies that best serve their needs. It is also important to collaborate with other ports in the same region to ensure that

[2] The Clean Power for Transport Directive aims to create a single market for alternative fuels in Europe and includes components related to implementing shore power and LNG in key ports. For more information, see http://ec.europa.eu/transport/themes/urban/cpt/index_en.htm

similar programs and regulations are adopted across nearby ports in order to ensure a level playing field for customers.

- Effective enforcement of regulations is essential for maintaining a level playing field among carriers and ensuring that promised benefits will be realized.
- Clean port initiatives tailored to the ports' specific needs, supported by effectively enforced regulations, enable ports to reduce air pollution and other environmental impacts while maintaining port growth. This can help ports gain critical buy-in from relevant stakeholders for further expansion of port activities.