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IMPACTS OF CLIMATE CHANGE ON SEAPORTS: A SURVEY OF KNOWLEDGE, PERCEPTIONS, AND PLANNING EFFORTS AMONG PORT ADMINISTRATORS

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To ascertain how port authorities plan to adapt to climate change impacts on operations, we conducted a survey of port planners, administrators, and policy makers. Like other sectors of the economy, ports must adapt to meet new environmental challenges in the coming century. Given shipping's efficiencies and its relative carbon footprint size compared to other modes of transport, as well as forecasted increases in world freight volumes, demands on ports are likely to grow in the coming century. At the same time, impacts of climate change on seaports, such as sea level rise and damage from extreme events, are also likely to increase. These two trends must be considered together to understand the strategies ports will need to implement to reduce their risk and vulnerability to climate change. Climate change impacts will disproportionately affect ports across the globe, depending on their geographic location and the nested institutional capacities of the ports themselves and the communities in which they are located. For example, ports in low-lying areas in a hurricane belt will face different physical challenges than those that are on land with a greater slope and out of the way of most ocean storm systems and ports in developing nations will have a different suite of options available to them than those in developed nations.

In our survey, we targeted a wide variety of port authorities in an attempt to sample both large and small ports, ports in developing and developed nations, and ports in geographic areas with varying amounts of risk to coastal and ocean storms. Results describe how port authorities are considering adaptation strategies, what science they base their long-range plans upon, and the information they consider necessary to plan for facility maintenance and growth, while addressing likely climate change impacts in the coming century. The results from this survey will be used in ongoing research to better quantify the challenges seaports face due to climate change impacts, the adaptation strategy options they may employ, and the potential policy responses that may be designed to promote resilient port-based economies.

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