THE MARITIME RESILIENCE BREAKTHROUGHS

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RESILIENCE RISING

ARUP

LR Foundation

RACE TO RESILIENCE

1. THE MARITIME RESILIENCE BREAKTHROUGHS

1.1. THE CHALLENGE

Maritime shipping, responsible for transporting 90 percent of global trade, **provides a crucial link between communities and the global supply networks needed to support health, well-being and livelihoods.** It is also a major contributor to greenhouse gases, with maritime vessels responsible for 3 percent of the world's annual emissions. The industry has made important strides toward decarbonization, including a series of ambitious commitments at COP26 to reduce emissions in alignment with IPCC guidance to maintain global temperature rise below 1.5 degrees Celsius. This race to zero must remain a priority.

Yet maritime infrastructure is increasingly exposed to shocks and stresses, and the risk of highly consequential disruptions in service, including from climate change, geopolitical uncertainty, and the urgent need for social and environmental equity. These cumulative disruptions to global supply chains undermine economies and societies, raising the cost of living, creating political instability, and making it harder to respond to climate pressures both in and out of the sector. **Urgent adaptation is needed. COP27 marks a turning point in maritime shipping's race to resilience.**

Many actors are working to improve aspects of the sector's resilience. High-impact solutions are emerging, but they are not linked by a common framework and set of targets to coordinate action at scale, or by metrics to evaluate progress**. Accelerating the pace and scale of the resilience transition will require a consolidated action agenda. This is the objective of the Maritime Resilience Breakthroughs.** These are the first resilience breakthroughs to emerge from the maritime sector, making it the first sector to elaborate a complementary mitigation and resilience framework.

1.2. DEFINING THE RESILIENCE BREAKTHROUGHS

A resilient maritime sector is one that is equipped to withstand and adapt to changing conditions and recover positively from shocks and stresses, whether they be related to climate hazards, geopolitical uncertainty, technological change, decarbonisation efforts, or other unforeseen disruptors. A resilient maritime sector requires coordinated actions and transformation across all system elements, from vessel and cargo owners to downstream logistics providers. Because ports connect shipping and supply corridors and are facing some of the most urgent and costly climate-related impacts, **port systems are the initial focus of the Maritime Resilience Breakthroughs**.

Ports are resilience gateways. They are intermodal hubs for freight and passenger transport, representing a nexus of critical infrastructure systems and activities. As such, their reliability and performance are essential to the flourishing of the economy, and society at large. Moreover, ports will play a key role in ensuring the success of green corridors, serving as hubs for clean shore power systems and energy sources (particularly low carbon fuels) for shipping's energy transition.

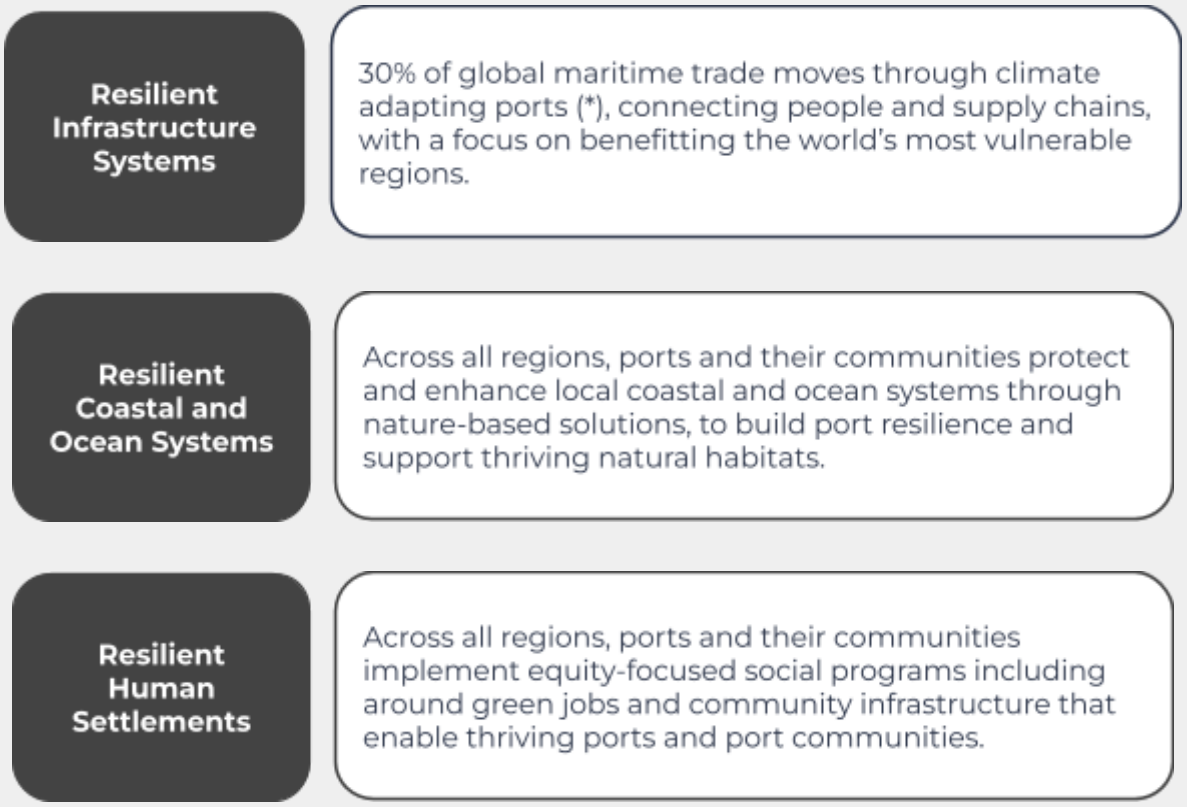
Additionally, ports interface with coastal communities and natural habitats, which are also facing severe climate and environmental impacts. Building the resilience of ports and port infrastructure also provides opportunities to build the resilience of coastal communities and habitats. In fact, ensuring the resilience of these related systems is essential to ensuring the resilience of port and related maritime infrastructure.

The Maritime Resilience Breakthroughs are, therefore, targeted not only at building resilience in port systems themselves, but also ensuring that actions taken to enhance the resilience of the maritime sector positively support coastal communities and habitats, particularly the most vulnerable ones.

The Resilience Breakthrough targets are in alignment with the key impact systems set forth in the Marrakesh Partnership to track initiatives globally as part of the Climate Action Pathways. The targets are meant to set out simple, measurable, and attainable milestones to guide progress toward resilience. They will serve to connect existing efforts and catalyse new ambition.

1.3. THE RESILIENCE BREAKTHROUGHS

Through a coordinated global effort, across a wide-range of stakeholders who are involved in ideating, testing, and rapidly scaling of solutions, the following port-related resilience breakthroughs targets can be achieved by 2030, enabling a complete resilience transformation of global ports by 2050:



(*) Climate adapting ports are those that are taking high-impact, specific and systematic actions to factor climate risks in decision-making. They are embedding climate adaptation and resilience considerations into masterplanning, port governance, asset strategy and planning, and asset management through the asset lifecycle.

Note: this is an initial list of port-focused Maritime Resilience Breakthroughs that will continue to be refined through consultation following COP27. The expectation is that these will be expanded to also include other facets of the maritime sector beyond ports.

2. ENABLING TRANSFORMATION

Achieving the breakthroughs and unlocking resilience will require a whole value chain and whole system approach, going beyond the adaptation of physical infrastructure to shape people, processes and nature. Ports are nested within a broader system of maritime and transport-orientated actors, including vessel operators, cargo owners and logistics industries. These actors must engage with not only infrastructure owners and operators but also others in the value chain, including policy makers, financiers, engineers and designers, and local communities.

Deep collaboration between these stakeholders must be fostered across three dimensions: economy and society; leadership and strategy; and infrastructure and ecosystems. Specifically, the following enablers of port resilience - as described in more detail in *Port Resilience Framework for Action* https://resiliencerisingglobal.org/resilience4ports/ - are essential components of this holistic approach. They are mutually supportive, and taken together, they can not only drive breakthroughs for port infrastructure but also achieve resilience benefits for coastal habitats and communities.

- **Connected port communities**: Ports are linked to and rely upon people in diverse ways. Ports must engage and support port communities to build social capital, support sustainable economies, and operate in harmony with society.

- **Proactive port users:** The actions of port users/customers affect ports' ability to function amidst disruption. For ports and supply chains to become resilient, ports must work together with customer/users to reduce disruption and collectively manage shocks and stresses.

- **A facilitating political economy:** A political-economy and finance sector that fosters long-term thinking, collaboration and innovation is critical to port resilience. Governments, investors, and civil society can create a platform that drives and supports port climate adaptation.

- **Effective disaster response:** Even stable and resilient ports may fail due to exceptional unavoidable climate shocks and stresses. There is

a need for predefined, tested plans for monitoring, response, and recovery, aiming to rebound to a more resilient state.

- **Aligned regulations and policy:** There is a need for Government policy, industrial strategy and maritime sector plans to embed resilience at and through ports, acknowledging opportunities for wider port transformation (such as decarbonisation and digitalisation) to unlock resilience.

- **Holistic port master planning:** Embedding resilience within port masterplanning will help maintain a port's capacity to provide the right services efficiently and sustainably, whilst ensuring continuity of service, providing a north-star for port operations, as well as port customers/users.

- **Integrated port governance:** Ports are often governed by an array of parties, aiding port effectiveness and efficiency. There is a need to integrate governance across the port system – between port authorities and operators – to break down barriers to collaboration.

- **Adaptive asset planning and management:** Climate adaptation and resilience can be embedded across the asset management anatomy, covering the full lifecycle of port assets. This requires an adaptive and integrated approach to climate hazards that recognises vulnerability and criticality.

- **Nature-based solutions:** Nature delivers ecosystem services to ports and their users alongside benefits to people and the planet. By protecting and enhancing natural assets, ports can reduce their exposure to shocks and stresses, align with regulation and build social capital with communities.

3. Implementation

3.1 NEXT STEPS

One of the first initiatives to support the Maritime Resilience Breakthroughs, launched at COP27, is the **Maritime Resilience Breakthroughs Lab: Resilience4Ports**, led by Resilience Rising and supported by Arup, Lloyd's Register Foundation, Lloyd's Register Group, and the UN Climate Change High-Level Champions. This will bring a globally representative cohort of port owners, authorities and operators together with policy makers, engineers, business executives and community representatives to build the resilience of ports to climate change and to other sources of disruption and uncertainty. Building on the enablers of port resilience, partners will identify, pilot and scale solutions to build port, and ultimately, sector-wide maritime resilience.

The Climate Champions will support Resilience Rising and other partners to grow the network of stakeholders participating in the Resilience4Ports program, as well as develop other aspects of the Maritime Resilience Breakthroughs, which in time will include other parts of the maritime system.

COP28 will provide an opportunity to assess progress..

3.2 CALL TO ACTION

COP27 is an opportunity to align the maritime industry behind these resilience breakthroughs. The Climate Champions invite feedback on these breakthroughs from members of the maritime sector and other key stakeholders.

For those interested in learning more about Resilience Rising's Maritime Resilience Breakthrough's Lab: Resilience4Ports, please visit the Resilience4Ports program page where you can also register to join the effort.