

**Global Supply Chain Forum
(Bridgetown, Barbados, 21–24 May 2024)**

Parallel Session A8

**Climate change adaptation, resilience-
building and disaster risk reduction for
ports**

23 May 2024

**The Resilience Imperative for Ports & Coastal
Infrastructure**

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The Resilience Imperative for Ports & Coastal Infrastructure

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Climate Change Adaptation, Resilience Building
& Disaster Risk Resilience (DRR) for Ports

UNCTAD Global Supply Chain Forum

21-26 May, 2024





Coastal infrastructure: Critical, complex, constrained

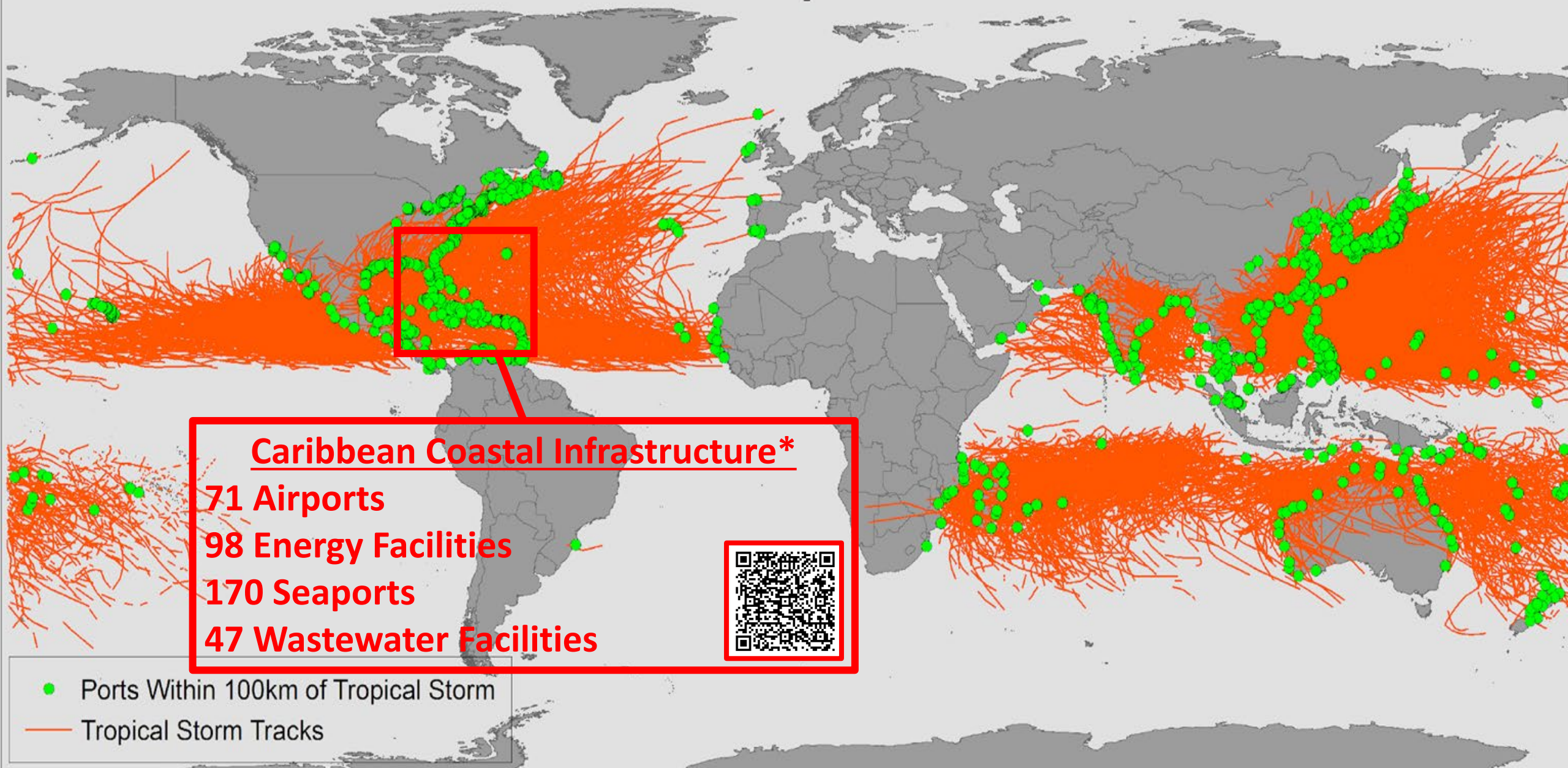


Critical - Economic engines

Complex – Multiple stakeholders & decision makers

Constrained - Specific & ecologically-sensitive locations

Ports Within 100km of Tropical Storm Tracks 1960-2010



Caribbean Coastal Infrastructure*

- 71 Airports
- 98 Energy Facilities
- 170 Seaports
- 47 Wastewater Facilities

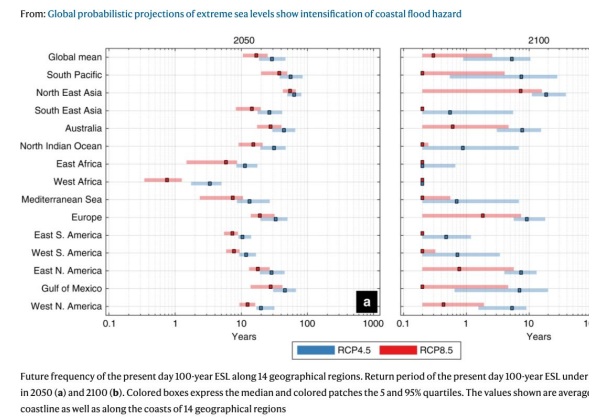


● Ports Within 100km of Tropical Storm
— Tropical Storm Tracks

*<https://caribbean-coastal-critical-infrastructure-inventory-uri.hub.arcgis.com/>



Climate change challenges for coastal decision makers



Graph from Vousdoukas et al, 2018, Hurricane Sandy photos courtesy Mary Lee Clanton, Port of NYNJ

Doubling of Cat 4 and 5 tropical storms

Sea levels to rise 0.75 – 1.9 meters by 2100

Increased precipitation



(Bender et al. 2010; Grinsted et al. 2013; Rahmstorf 2010; Emanuel 2013; IPCC 2012; Tebaldi et al. 2012, Vousdoukas et al 2019)

Disaster impacts on ports are broad ranging. . .



Photograph GP_11

1) Direct damages

(e.g., structures, equipment, freight, land, etc.)



2) Indirect costs

(e.g., lost wages, business interruptions, cleanup costs, knock-on effects throughout supply chain)

Rotten Meat From Katrina Still in Gulfport Neighborhood

still remains untouched in various pools on abandoned sites throughout a West Gulfport neighborhood surrounding Regnault Avenue.

"It's nine months now. They say, 'Well, you ought to be used to it by now.' You ain't gonna get used to that smell. My gosh," said resident Gary Tatum.

The meat had been stored at the Port of Gulfport. Katrina washed it in to yards covering an eight block span. The meat in the yards has been picked up, but the meat in hard-to-see areas has not.

3) Intangible consequences

(e.g., quality of life, environmental damages, loss of essential services)

Bottom-up barriers to resilience investing

“...you can't control mother nature.” (*Port director*)

Problem is overwhelming
2/30

Lack of understanding risk
28/30

“We need more information to run risk models...”
(*Environmental Specialist*)

“Money! It's the magical answer to everything – if we had the money, or if we had the money allocated appropriately.”
(*Safety Planner*)

Lack of communication
2/30

- 17 Directors & Managers
- 8 Environmental Specialists
- 5 Safety Officers

not exceed action threshold
21/30

“We [use] the design standard for a category three storm . . . for something such as sea level rise, that really hasn't been done.”
(*Safety Planner*)

Interviews with 30 port staff from 15 North Atlantic seaports

20/30

Top-down leadership voids...



Overlapping
jurisdictions



Limited
mandates



Resource
constraints



Limits of
political will

Resilience assessments increase adaptive capacity



- Gain understanding of vulnerabilities
- Enhance relationships with external/internal stakeholders
- Educate port leadership on climate issues
- Identify funding opportunities
- Formalize a planning approach
- Facilitate dialogue, resource sharing, and collaborations

Guidance has been developed...

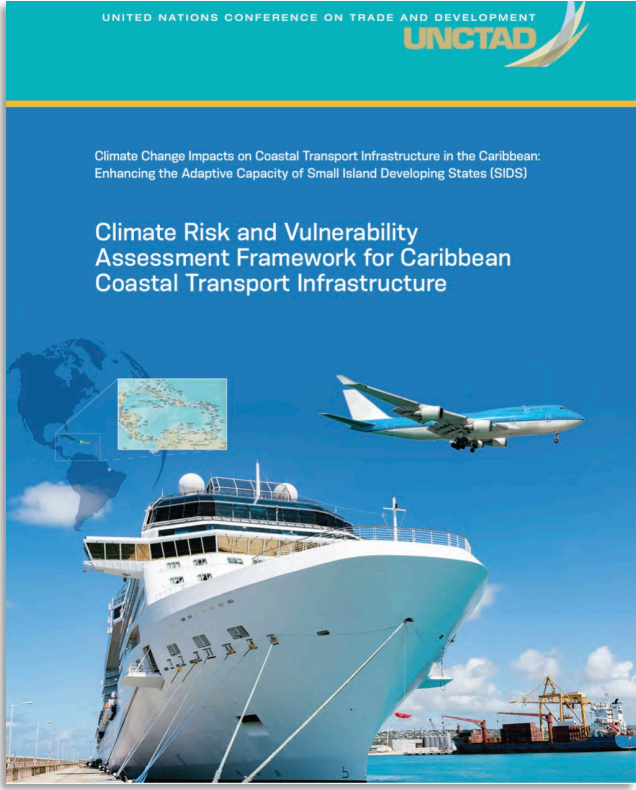


MARINE TRANSPORTATION SYSTEM RESILIENCE ASSESSMENT
Guide
February 2023

The contents of this document do not have the force and effect of law and are not meant to bind the public in any way. This document is intended only to provide clarity to the public regarding existing requirements under the law of agency policies.



Infrastructure Resilience Planning Framework (IRPF)
MAY 2023 | VERSION 1.1

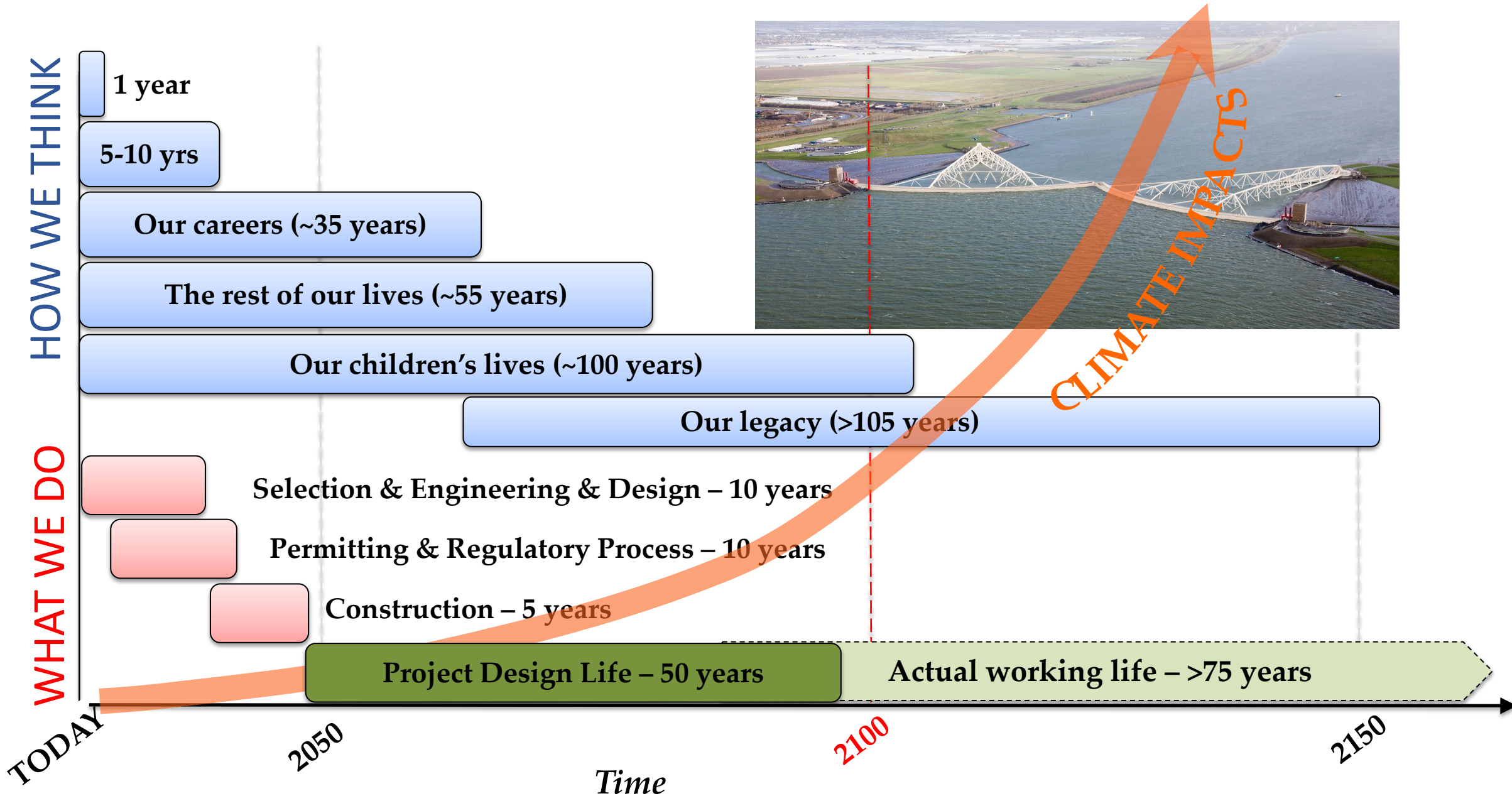


Climate Risk and Vulnerability Assessment Framework for Caribbean Coastal Transport Infrastructure





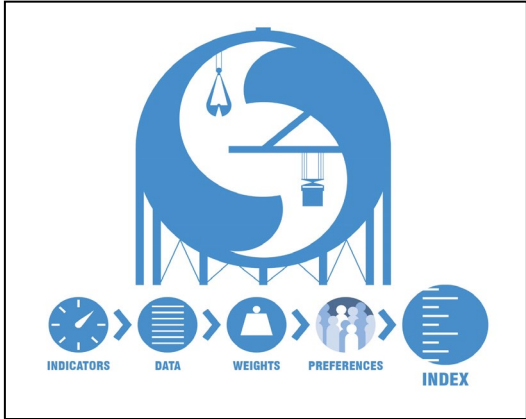
Resilience requires a fundamental shift



Key messages for ports and decision makers

- Climate change - growing crisis for port-dependent economies, especially SIDS
- Resilience planning - reduces economic impacts & human suffering
- Deep engagement & collaboration - addresses institutional constraints

Thank you!



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