



Technical good practice guidance on climate change adaptation for port and inland navigation infrastructure

PIANC Working Group 178

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Navigating a Changing Climate GCA initiative

Partners

- The World Association for Waterborne Transport Infrastructure (**PIANC**)
- International Association of Ports and Harbors (IAPH)
- International Bulk Terminals Association (IBTA)
- International Harbour Masters' Association (IHMA)
- International Maritime Pilots' Association (IMPA)
- Smart Freight Centre (SFC)
- Institute of Marine Engineering, Science and Technology (IMarEST)
- European Dredging Association (EuDA)
- European Sea Ports Organisation (ESPO)
- Inland Waterways International (IWI)

Objectives

1. **Improve** sector-wide **awareness** of climate change; the challenges facing waterborne transport infrastructure and potential solutions or opportunities
2. Create and facilitate knowledge networks, promoting the **sharing of experience** and good practice between state and non-state actors at international, regional and national levels
3. Develop or facilitate the preparation of **technical good practice guidance**, training opportunities and web-based resources
4. Provide a coordinated, global focal point: a 'centre of excellence' to **support** the owners, operators and users of waterborne transport infrastructure **in building mitigation and adaptation capacity**



Navigating a Changing Climate Action Plan

Potential climate change impacts

- Increases in **flooding** frequency or severity due to sea level rise or precipitation changes
- Increased frequency of extreme **wind, waves or storms**
- Changes in **sediment transport**, erosion
- Potential for changes in **fog** characteristics or other visibility issues
- Changes in **ice** cover, snowmelt
- Changes in **river flow**, water availability, drought
- Air and water **temperature** increases; water chemistry changes

Why act?

- Maintain **infrastructure integrity**
- Ensure **navigational safety**
- Reduce **downtime**
- Protect **business continuity**

WG 178 technical guidance*

1. Understand the **context**; set objectives
2. Understand the climate related **impacts**
3. Understand the vulnerabilities and **risks**
4. Identify and implement adaptation and resilience **measures**

* Not a 'standard' as such



Working Group 178 technical guidance

Amongst the challenges ...

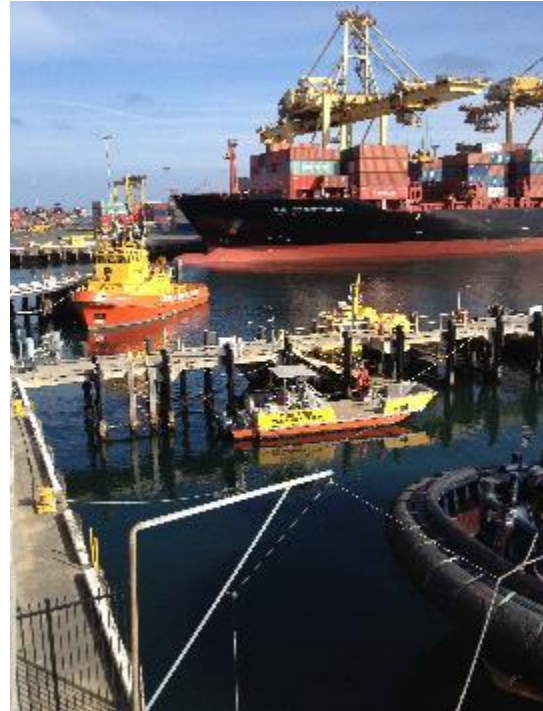
- **Conventional statistical methods** that rely on past history may not predict certain extreme events if there is non-stationarity in the system. Design (i) to facilitate modification and (ii) to 'fail gracefully'
- **Conventional option evaluation techniques** using discount rates may not cope well if there is uncertainty about the timing of benefits. Multi-criteria analysis or the Ecosystem Based Approach may be more useful

And the lessons learned ...

- Promote **adaptive management** and **flexibility in infrastructure design** through revised standards, methodologies, planning processes and evaluation techniques
- Review and refocus business case development **and investment financing criteria**
- Develop real-time **monitoring** and **early warning** systems; prepare contingency plans
- **Monitor** asset condition and prioritise **maintenance** to maximise adaptive capacity
- Facilitate information exchange, share **good practice**, feed back into guidelines / standards
- Engage all stakeholders to exploit opportunities for **integration, interconnectivity** and improved **efficiency**; use **nature-based solutions**



Thanks for listening!



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