

Climate Change Resilience – Implementing Practical Approaches for Ports and Harbours

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Summary

There is an increasing societal emphasis being placed on the concept of resilience – and, in particular, to address the dual challenges of climate risk in terms of the transition to a low carbon economy and adapting to acute and chronic physical risks such as sea level rise. For the ports and harbour sector in Australia, the requirement for climate resilience still remains discretionary and is largely being driven by investor and corporate ESG aspirations. However, the latest IPCC AR6 report and the outcomes of the negotiations at the recent COP26 indicate there is likely now a shortening window of opportunity for ports and harbour organisations to address climate resilience issues before climate impacts become more serious and/or there is increased reporting and regulatory requirements (as seen with the TCFD reforms being seen in some jurisdictions in APAC). This abstract and presentation will outline some practical elements and methods for approaching climate resilience within the port and harbour sector, drawing on lessons learned as part of a case study undertaken by Ports North in Far North Queensland in 2022.

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Introduction

Climate risk and resilience are critical issues for the ports and harbour sector. Despite this, the requirement for climate resilience remains largely discretionary for port and harbour organisations in APAC, with internal drivers for action from investors, boards and stakeholders prevailing over risk management or external regulatory requirements. However, the latest IPCC AR6 report and the outcomes of the negotiations at the recent COP26 indicate there is likely a shortening window of opportunity for ports and harbour organisations to take action on climate risk and resilience before more significant impacts are experienced and regulatory reporting requirements are enacted.

What are the specific issues driving action?

Some of the specific issues driving interest and activity related to climate resilience for ports and harbours across the region include –

- identifying the scopes and quantities of current greenhouse gas (GHG) emissions being produced by ports and harbours and the associated pathways for reducing these through decarbonisation initiatives;
- preparing for external changes and/or opportunities associated with the move to a low carbon future such as support and delivery of materials for renewables projects and/or planning for provision of alternative vessel fuels;
- identifying and understanding the acute and chronic physical climate risks that could affect assets, operations or workforces of the port and associated supply chains;
- developing a road map or other long term strategy to integrate these considerations into the planning, design, investment, and

operational policies and procedures of the organisation; and

- Emerging reporting and regulatory requirements such as TCFD disclosure.

Taking Action on Climate Resilience

In responding to these drivers, while there is sector-specific guidance on how ports should approach decarbonisation and climate adaptation published by PIANC[1] as well as other sources such as the NCCARF Coast Adapt web portal [2], there is a need to ensure the approach to climate resilience is 'fit for purpose' and practical for the size and complexity of the port or harbour being assessed. This extended abstract and presentation outlines some practical methods for approaching climate resilience within the port and harbour sector, drawing on lessons learned as part of a case study undertaken by Ports North in Far North Queensland in 2022.

Using an Agreed Framework for Climate Risk and Opportunity Assessment

The guidance published in 2017 by the Taskforce on Climate-Related Financial Disclosure (TCFD)[3] provides the most suitable framework for considering both transition and physical risks from climate change as well as opportunities. Endorsed internationally, TCFD can accommodate the full scope of climate issues outlined earlier, as well as provide the groundwork for addressing future regulation that will likely be instigated through reporting requirements and disclosure.

Developing a port-specific GHG baseline

Ports and harbours are quite unique forms of transport infrastructure on the coastal margin and as a result have a different mix of scope 1, 2 and 3

emissions compared to other organisations. Scope 1 emissions can include fuel used by marine vessels, terrestrial vehicles and a broad range of cargo handling equipment while Scope 2 is relevant to both electricity used by the port or harbour authority as well as the provision or wholesale of such electricity to tenants. Scope 3 emissions are potentially extremely broad in scope relating to the tenancies on site, but also the myriad of visiting cargo, cruise and recreational vessels and the provision of fuel, electric and waste services to service these customers.

Decarbonisation pathways

Decarbonisation pathways for ports and harbours are similarly unique and challenging. While scope 1 emissions for vessels will be difficult to address in the short term based on long vessel asset lifespan and current technology, there are opportunities for investment in renewable energy production on ports or buying green power certificates from power utilities. Offsetting will likely play a major part of achieving carbon neutrality in the short to medium term but there are opportunities for ports with large land holdings to develop blue carbon and other nature-based carbon removal strategies that are local and provide a range of potential co-benefits.

Leveraging existing data and hazard mapping

There is now a plethora of existing information and data sets that have been collected and made available from other sources that ports and harbours can use to inform assessments of physical climate risk. From regional climate projections published by Government science agencies, through more bespoke flood and coastal hazard mapping studies developed by local authorities, these data sets are useful for 1st and 2nd pass assessment of climate risk so as to prioritise investment and further studies for higher risk areas.

Consequence assessments

While essential to understanding climate risk, hazard maps and data layers only provide half of the risk equation and it is critical to work directly with port and harbour infrastructure and asset owners and operators to truly understand the consequence of climate impacts. In some cases, existing policies, and practices such as emergency management procedures only need to be modified slightly to address new risks from climate, whilst other areas of port planning may need to be re-considered entirely in terms of future development precincts in areas subject to more regular inundation, or increased storm tide risk.

Mainstreaming and monitoring

High-level assessments of GHG emissions, decarbonisation options, physical risks and their consequences and understanding future opportunities with the transition to a low carbon economy can be sufficient to define the materiality

of climate risks and to inform corporate planning such as risk registers and master planning. While this does not replace the need for more detailed analysis down the track including options and cost benefit reviews, this initial investment can be a valuable first step for understanding risk exposure and building greater awareness across an organisation.

Discussion and Conclusion

As the ports and harbour sector moves into this important phase of responding to climate risk and implementation of resilience actions, information that helps to mainstream understanding of climate risk and opportunities into the business of the organisation and its leadership will be as critical as continuing to invest in technical studies.

The approaches outlined here provide some proven and tested methods for taking steps toward practical climate change resilience.

References

- [1] PIANC Working Group Guidelines have been produced for Carbon Management as well as Climate Change Adaptation Planning for Ports and Inland Waterways – see <https://www.pianc.org/publications/envicom/>
- [2] GW Fisk/NCCARF (2017) *Climate Risk and Adaptation Pathways for Coastal Transport Infrastructure* accessible from the Coast Adapt web portal found here: https://coastadapt.com.au/sites/default/files/factsheets/R7_Guidelines_Climate_Risks_Coastal_Transport.pdf
- [3] TCFD Recommendations and Guidance (2017) access here: <https://www.fsb-tcf.org/publications/>