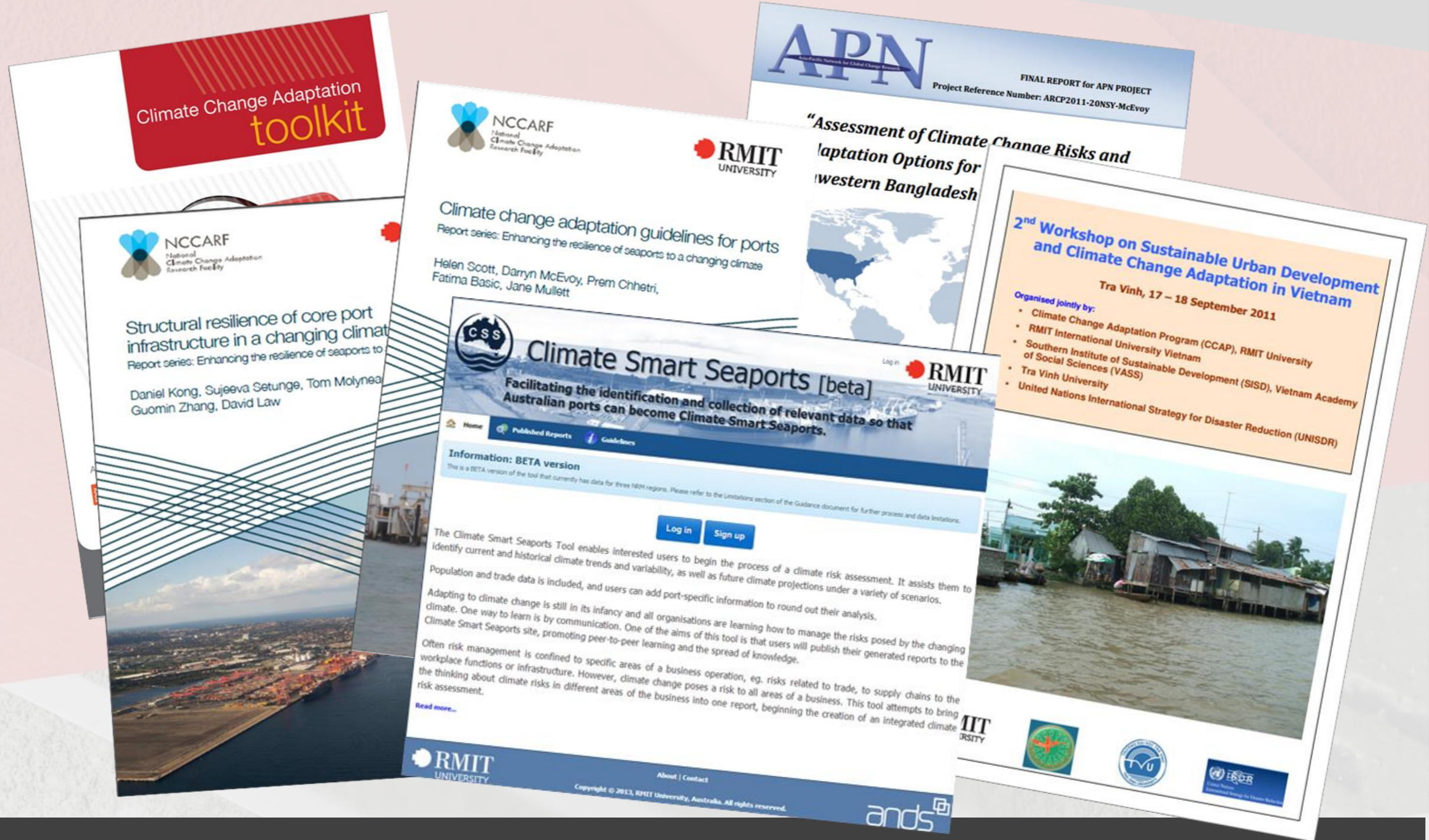


# Climate Smart Seaports - Pacific

Climate Change Adaptation Decision-Support Tool  
Case studies: Papua New Guinea and Fiji

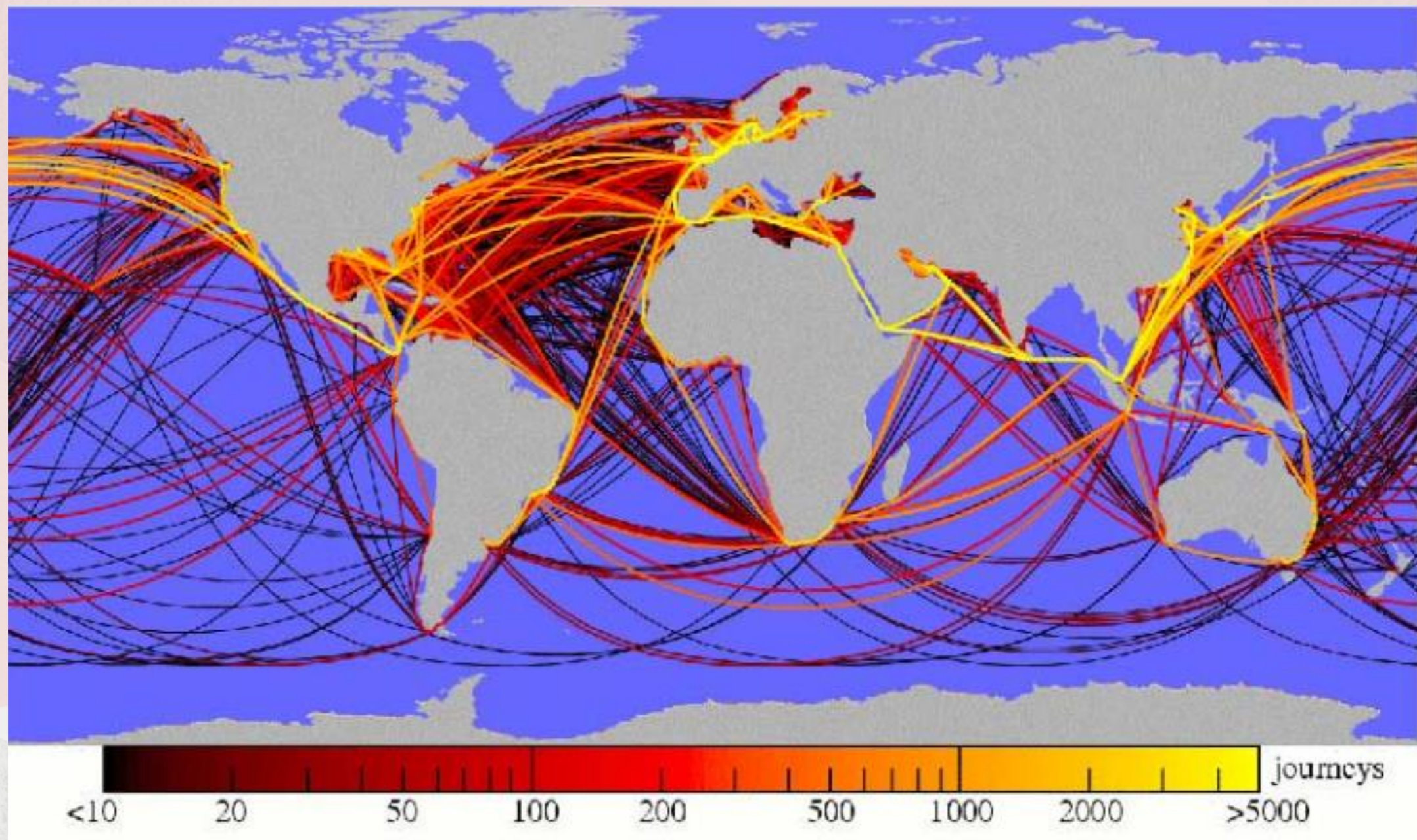
Jane Mullett, Darryn McEvoy, Alexei Trundle - RMIT  
Chris White – University of Tasmania

# Climate Change Adaptation Program



Work in Australia, the Pacific, and Asia

# World sea lanes

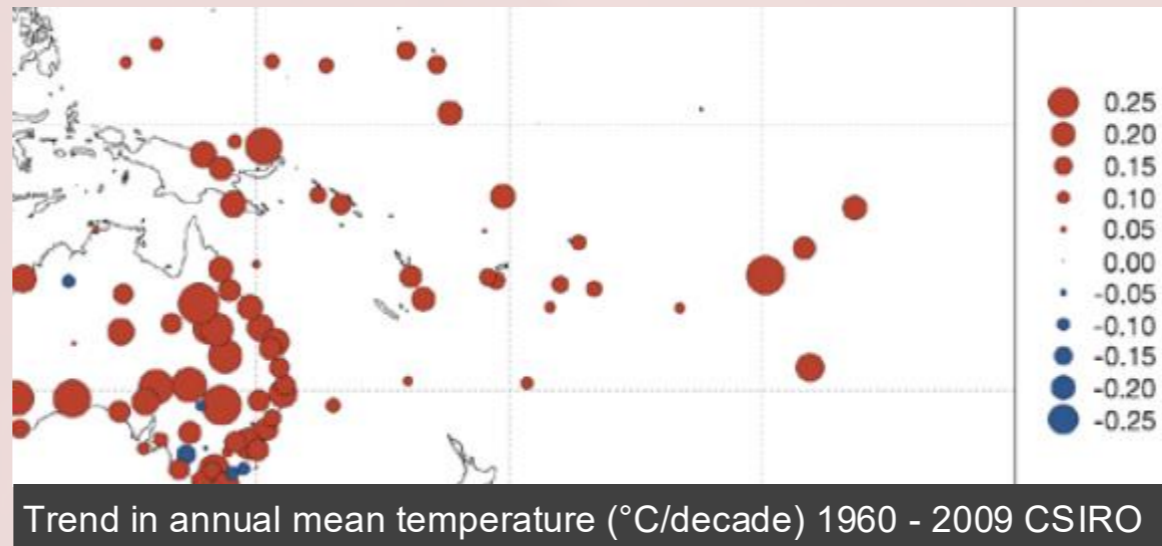


Annual commercial sea journeys, 2012

# The Changing Climate

Increasing global temperatures leading to:

- More hot days
- Less cold nights



More extreme weather:

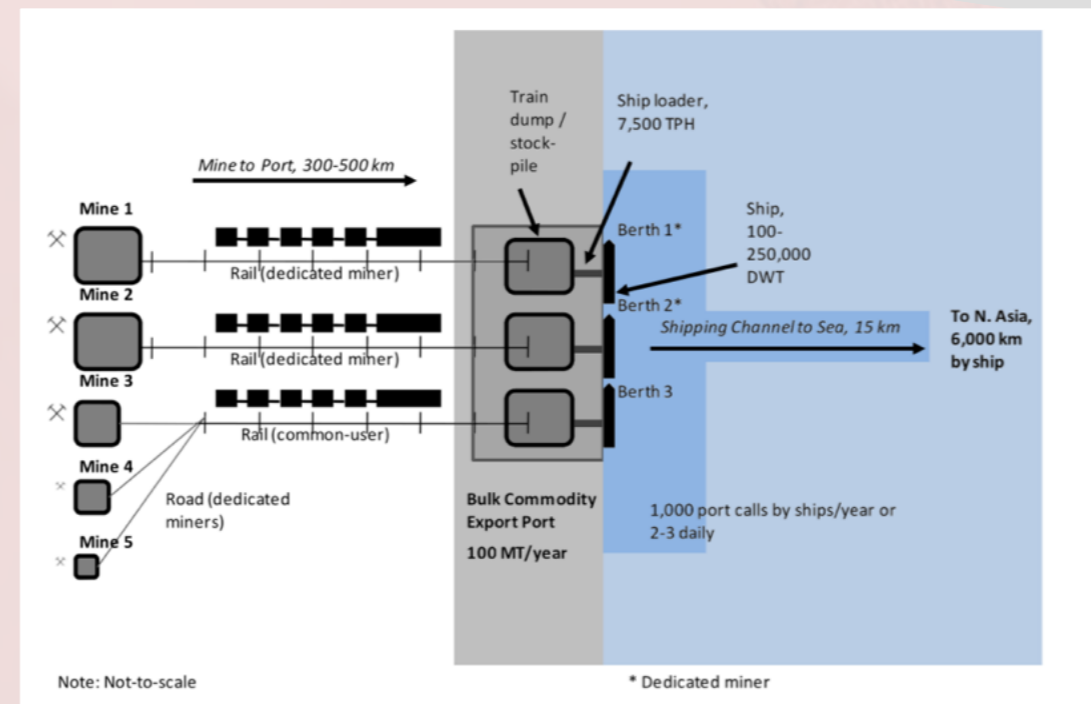
- intense cyclones, storms,
- bushfires, heatwaves, drought
- intense rainfall, floods

Rising global sea level:

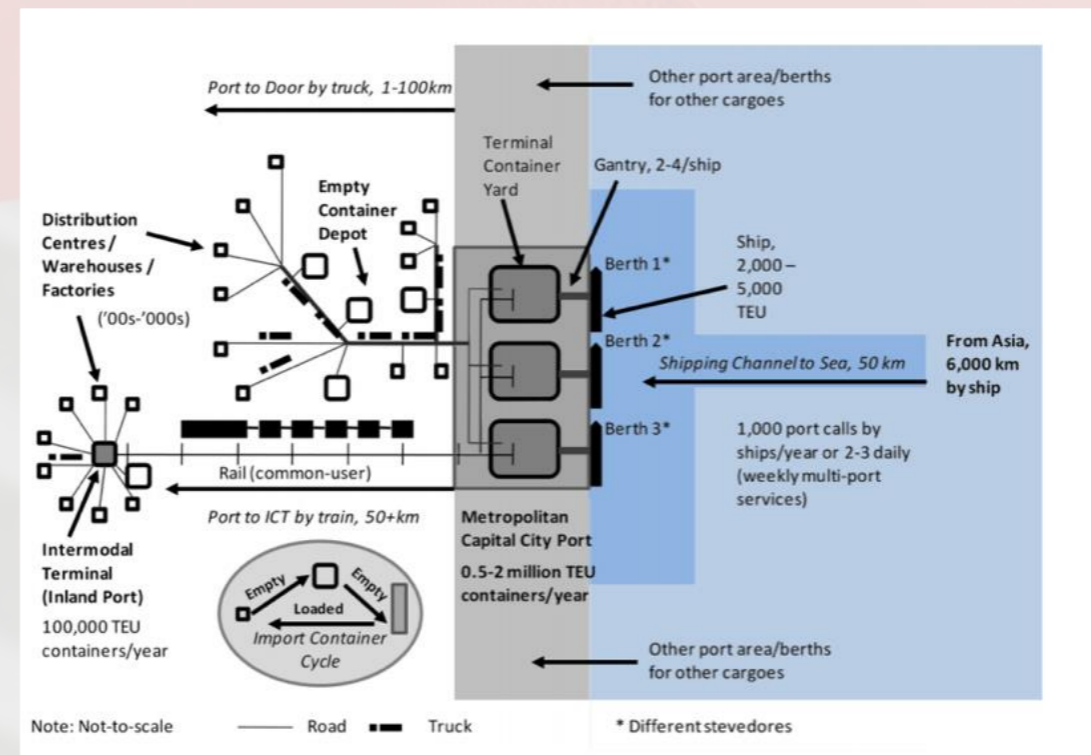
- increased storm surge
- floods

# Implications for Port Authorities

- Sea ports are vulnerable to current climate variability and to future climate change and sea level rise.
- Climate impacts on ports differ in type, extent and vary spatially and temporally.
- Each port needs its own climate change adaptation plan



Navigation & Berthing	Materials & Handling	Vehicles & Movement	Goods Storage	Transport & Supply Chains
<b>Climate Impacts: Physical Infrastructure</b>				
Sea Level Rise Sea Spray Storm Surge Sea Salinity Sea Acidity Sea-Surface Temp.	Sea Level Rise Storm Surge Sea Spray Humidity Heat Rainfall	Storm Heat Rainfall	Storm Heat Rainfall	Storm Heat Rainfall
<b>Climate Impacts: Management Systems &amp; Workforce</b>				
Sea Level Rise Storm Surge Storm Wind Fog	Sea Level Rise Storm Surge Lightning Fog Wind	Storm Lightning Heat Rainfall	Storm Heat Rainfall	Storm Heat Rainfall



McEvoy et al 2013

GHD 2010

# Climate Impacts on Seaports



## Recent Examples:

- Severe East Coast Low, Pasha Bulker, Newcastle, Australia, 2007
- Hurricane Sandy, Container Yard, New York New Jersey Port, 2011
- Severe East Coast Low Road collapse, Newcastle, 2007



# Climate Smart Seaports

The screenshot shows a web browser window with the URL 118.138.241.5:8080. The page features a header with the CSS logo, the title "Climate Smart Seaports - Pacific", and the RMIT University logo. Below the header is a navigation bar with links for Home, Published Reports, and Help. A prominent blue box contains the text "Information: BETA version" and a disclaimer. Two buttons, "Log in" and "Sign up", are centered on the page. The main content area contains several paragraphs of text describing the tool's purpose and usage. The footer includes the RMIT University logo, the text "About | Contact", the copyright notice "Copyright © 2013, RMIT University, Australia. All rights reserved.", and the USAID logo with the tagline "FROM THE AMERICAN PEOPLE".

118.138.241.5:8080

Log in

## Climate Smart Seaports - Pacific

Facilitating the identification and collection of relevant data so that Australian ports can become Climate Smart Seaports.

Home Published Reports Help

**Information: BETA version**  
This is a BETA version of the tool that currently has data for two South Pacific regions. Please refer to the Limitations section of the Guidance document for further process and data limitations.

[Log in](#) [Sign up](#)

The Climate Smart Seaports Tool enables interested users to begin the process of a climate risk assessment. It assists them to identify current and historical climate trends and variability, as well as future climate projections under a variety of scenarios.

Population and trade data is included, and users can add port-specific information to round out their analysis.

Adapting to climate change is still in its infancy and all organisations are learning how to manage the risks posed by the changing climate. One way to learn is by communication. One of the aims of this tool is that users will publish their generated reports to the Climate Smart Seaports site, promoting peer-to-peer learning and the spread of knowledge.

Often risk management is confined to specific areas of a business operation, eg. risks related to trade, to supply chains to the workplace functions or infrastructure. However, climate change poses a risk to all areas of a business. This tool attempts to bring the thinking about climate risks in different areas of the business into one report, beginning the creation of an integrated climate risk assessment.

[Read more...](#)

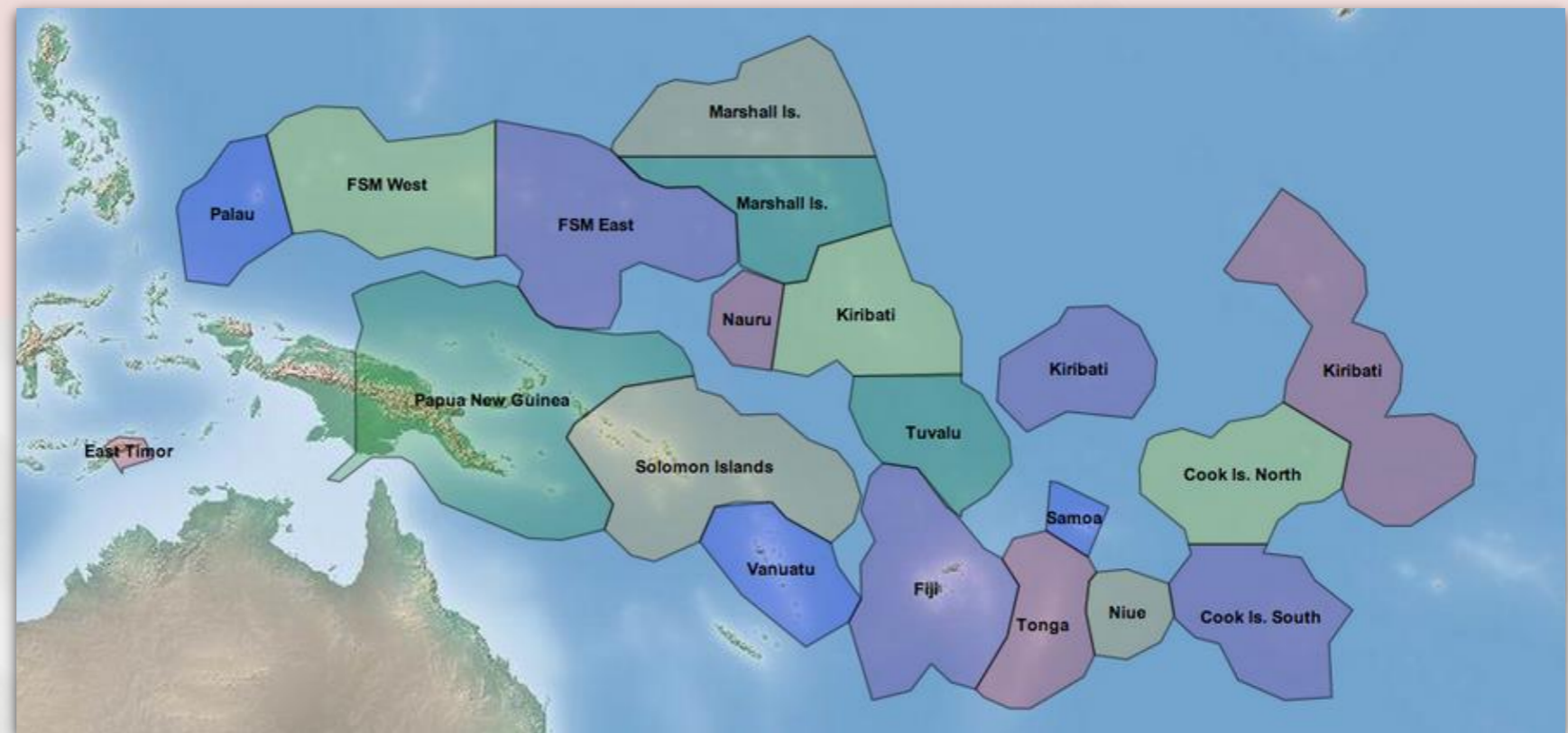
[About | Contact](#)

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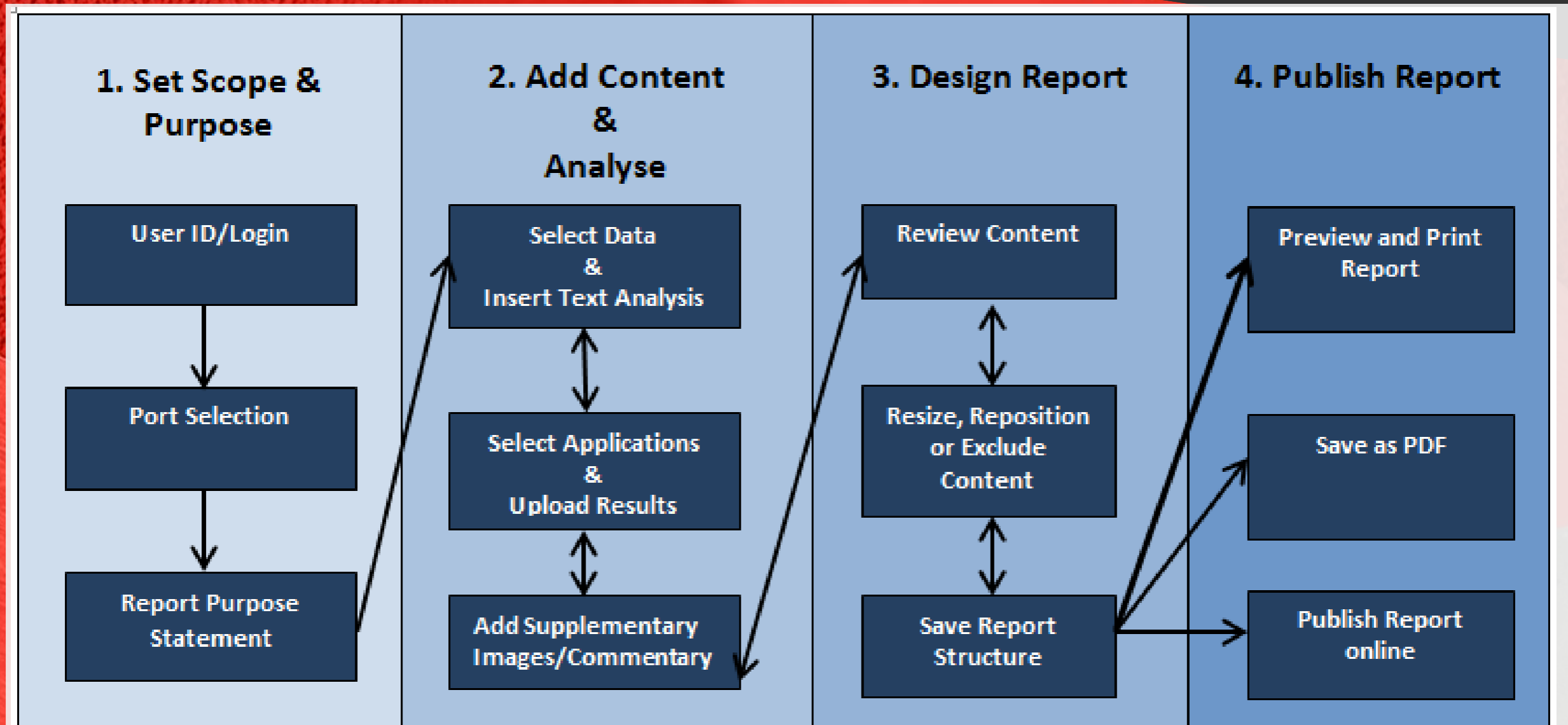
This tool was funded by USAID  
Based on a tool developed in 2013 for Australian Seaports (funded by ANDS)

# Climate Smart Seaports - Pacific

- Data by Pacific Country/Region - Seaport Focus
- Easy account creation: username, email & login
- PDF and video help guide available
- Currently includes data for PNG and Fiji



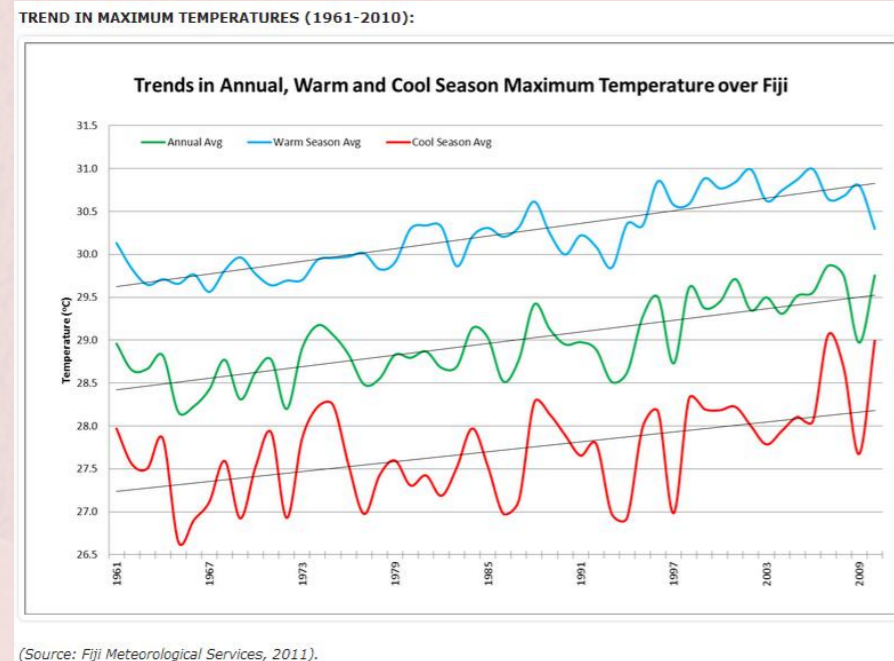
# Climate Smart Seaports - Basic Process



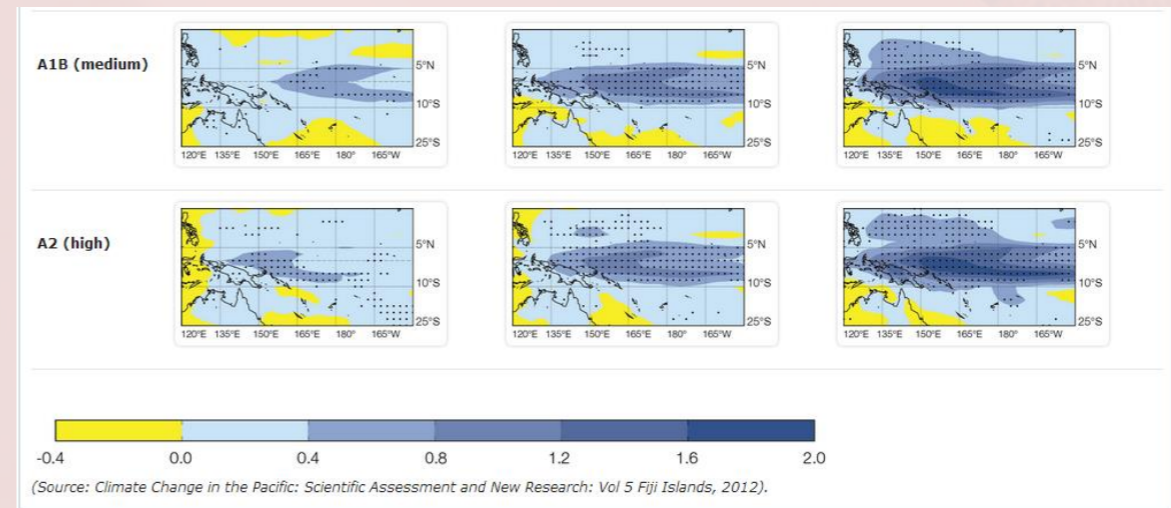
End aim is the creation of a report that can be used within the business as a starting point for adaptation actions.

# Climate Smart Seaports - What Data?

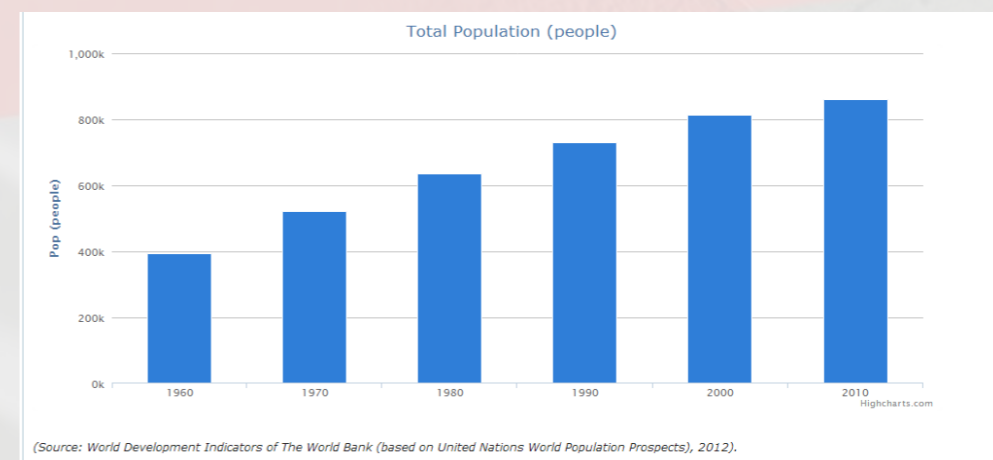
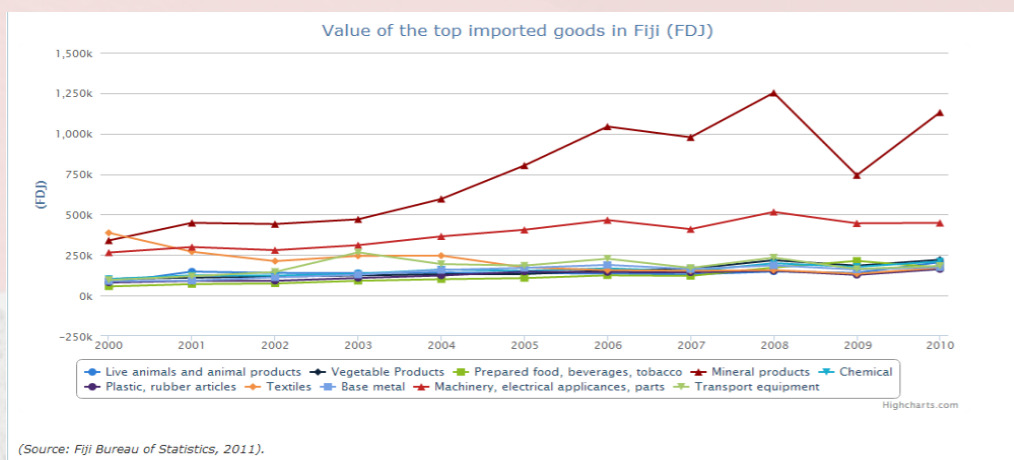
## Observed Climate & Marine



## Future Climate & Marine



## Non-Climate Context & Port-Specific Data



Fiji examples

# Climate Smart Seaports – Analysis (add text)

Success !  
The element was deleted successfully from the report.

Observed climate & marine | Future climate | Non-climate context | **Applications** | Summary (All)

+ Add Data | + Add Text | + Add File

What should I add in this category ?

**Vulnerability Assessment Data Element** | Display: Graph | + Include | X Delete

In 1998, the port experienced a disruptive storm (wind and rain combined) event. This event impacted the port directly.  
The identified business consequences of these impacts, and their severity can be represented by the following graph:

Consequences Rating of Storm (wind and rain combined) in 1998

The response to this disruptive climate related event is described as adequate.

New Text

Severe Tropical Cyclone Yasi was first identified on 26 January 2011 as a tropical disturbance, given the identifier "09F" by the [Regional Specialized Meteorological Center](#) in Nadi, Fiji ([Fiji Meteorological Service](#); FMS), located about 330 km (205 mi) south-southwest of [Tuvalu](#). Situated over a region of high [sea surface temperatures](#) and low to moderate [wind shear](#), gradual intensification was expected as the system moved southwestwards.<sup>[18]</sup> Little development took place over the following two days,<sup>[19]</sup> though the disturbance was classified as a tropical depression on 27 January.<sup>[10]</sup> By 28 January, the depression was characterised as a poorly developed low with a broad area of rotating, flaring [convection](#).<sup>[11]</sup> Considerable development took place the following day, prompting the [Joint Typhoon Warning Center](#) (JTWC) to issue a [Tropical Cyclone Formation Alert](#). The storm's [low-level circulation centre](#) became increasingly defined and [convective banding features](#) were apparent along the northern periphery of the depression.<sup>[12]</sup>

Path: p » sup

+ Add Text to report

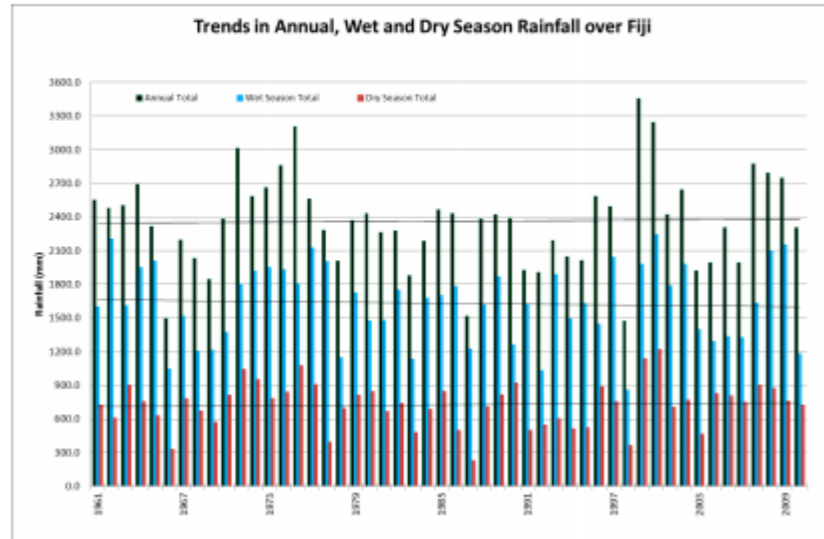
Insert text after: Vulnerability Assessment Data Element [1]

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Pop-up analysis available in each section, editable throughout

# Climate Smart Seaports – Report Extraction

6/24/14 Report - Climate Smart Seaports  
Trend in Rainfall (1961-2010):



(Source: Fiji Meteorological Services, 2011).

Current climate vulnerability perception assessment for storm surge in Suva - 11 Jun 2014

	Not Vulnerable	Could be Vulnerable	Somewhat vulnerable	Moderately Vulnerable	Significantly Vulnerable
Marine Infrastructure		X			
Port Infrastructure			X		
Port Superstructure			X		
Supply Chain	X				
Operations	X				
Workforce	X				
Financial				X	
Legal / Regulatory	X				
Environment	X				
Trade					X
Community					X

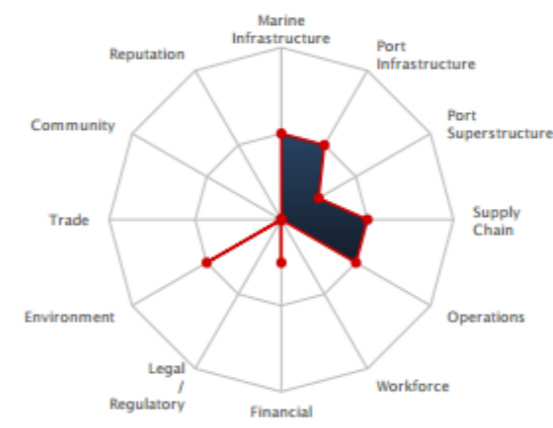
115.146.93.230:8080/auth/report/view?id=2

3/12

6/24/14 Report - Climate Smart Seaports  
Consequences Rating of Cyclone in 1993

In 1993, the port experienced a disruptive cyclone event. This event impacted the port directly. The impact was described as: "containers were blown over and the port was closed for 5 days"

The identified business consequences of these impacts, and their severity can be represented by the following graph:



Highcharts.com

Other business consequences of these impacts are identified as: ""

The response to this disruptive climate related event is described as adequate. The following changes have been nominated as a result of the event: "no we are used to cyclones but we could think about improving container yard security"

Current Return periods of exceeding daily extreme rainfall (200mm)

Locations	2010 - Observed return periods (year)
Nadi Airport	5.4
Laucala Bay	2.9
Nabouwalu	7.2
Vunisea	9.6
Lakeba	6.1
Rotuma	4.4

(Source: Fiji Meteorological Services, 2011).

115.146.93.230:8080/auth/report/view?id=2

4/12

Report Preview: Order data/text, Exclude elements, Publish Report or Print

# Thank you

For more information contact

[jane.mullett@rmit.edu.au](mailto:jane.mullett@rmit.edu.au)