

Papua New Guinea Bridge Replacement Program: Climate Change Vulnerability Assessment

Asia Pacific Adaptation Forum, Bangkok 2012

The PNG Bridge Replacement Program

- Improve rural access
- Large geographical distribution of bridges across PNG- existing exposure
- 50 year design life, 100 year effective life
- Vulnerability of infrastructure to changes in climate:
 - Precipitation
 - Temperature
 - Sea level rise and storm surge

Impacts

- Structural integrity:
 - Log/debris impact
 - Scour, geomorphological changes
 - Bed accretion
- Access and function:
 - Overtopping
 - Blow outs (approaches)
- Influences of non-climate factors



Climate change in PNG

- Climate change and vulnerability: uncertainty, planning and impacts

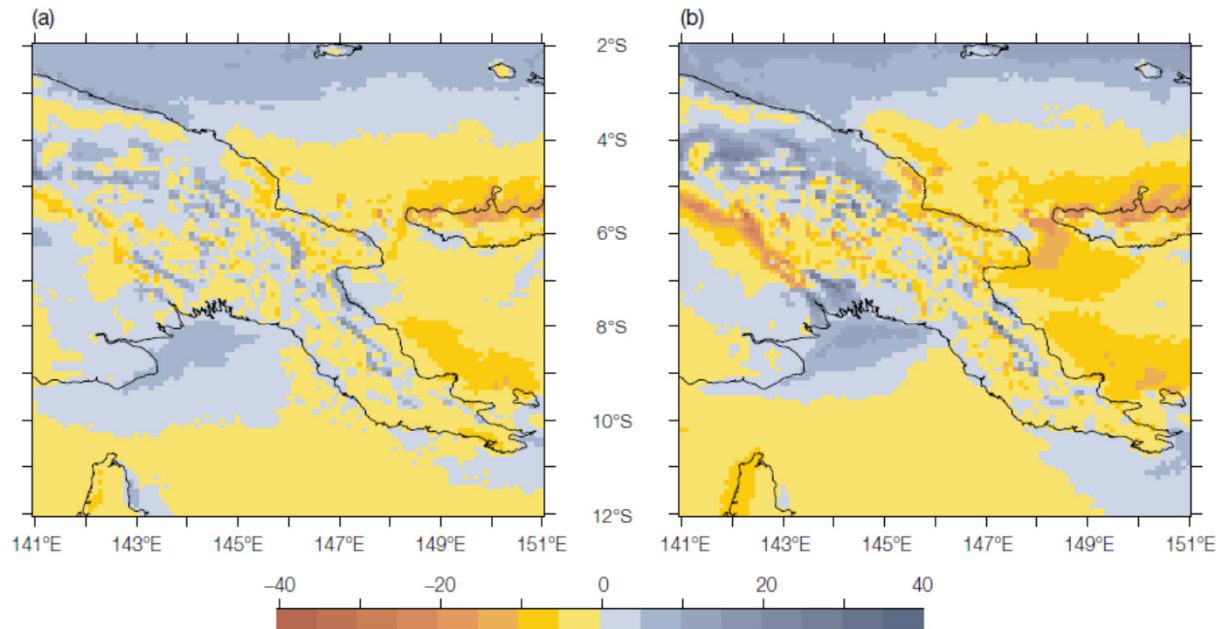


Figure 1 Pacific Climate Futures Technical Report- Change in projected number of days with heavy daily rainfall for a)2055 and b) 2090 for A2 emissions scenario (CCAM 8km downscaled multi-model mean) (Figure 7.16)^[1].

<http://www.pacificclimatefutures.net/>

^[1] Pacific Climate Futures Program (2011): Climate Change in the Pacific: Scientific Assessment and New Research, Volume 2: Country Reports, CSIRO

Design as a tool

- Existing processes for design (and inputs)
- Understanding key factors (using vulnerability)
- Providing guidance
- Using local and best available information to inform design
- Adopting the precautionary principle

Adaptation measures

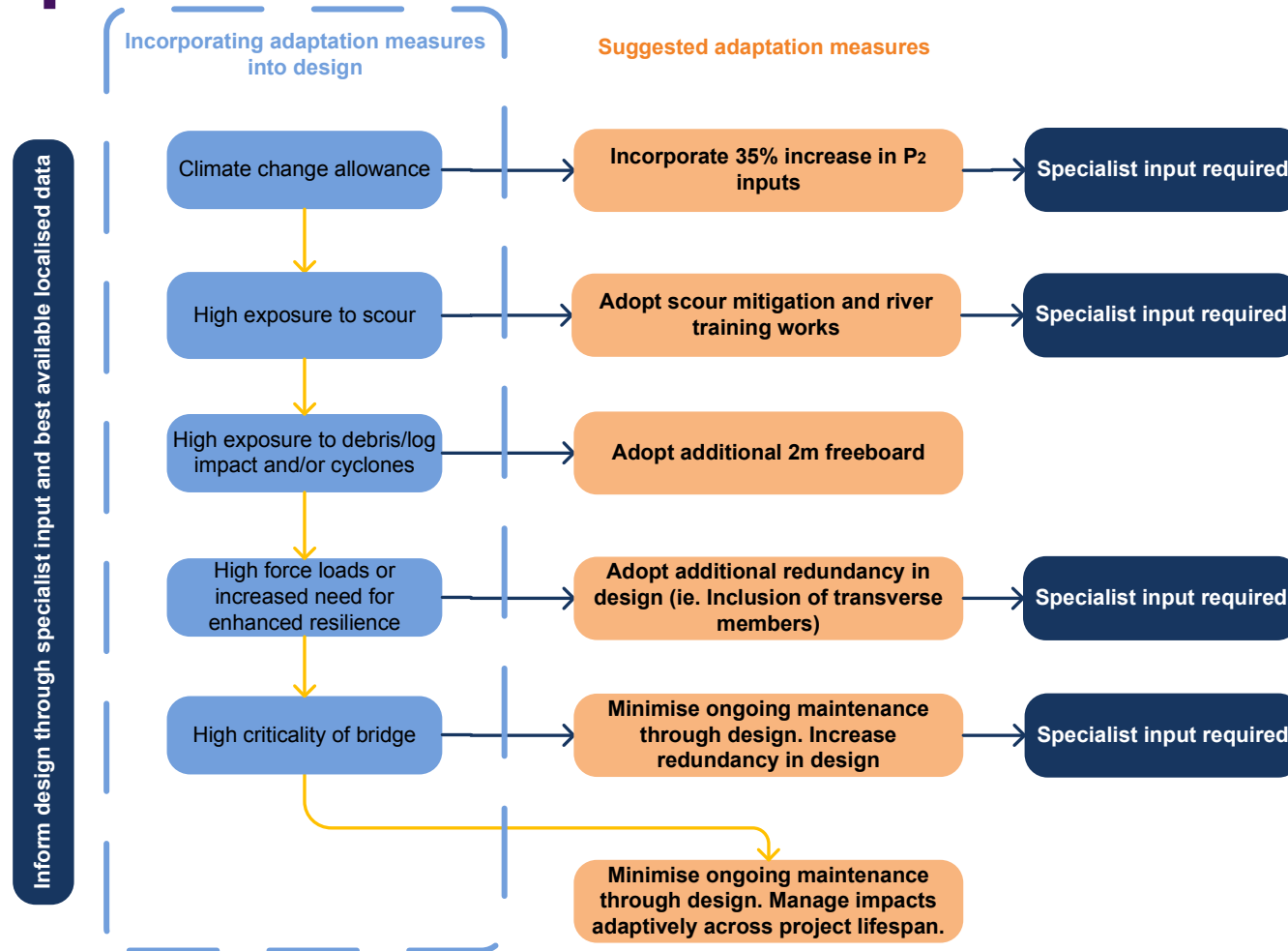


Figure 3 Adaptation guidance tool for bridge design. This tool is designed as a decision tree for considering additional adaptation measures in design. The design criteria boxes on the left describe the key elements which should be considered in bridge design. The middle boxes identify key recommended adaptation measures.

Opportunities and improvements

- Provides replicable process for incorporating changes in climatic variables
- Using best available science to inform adaptation
- Data availability limitations
- Using local and site specific information
- Monitoring change and new climate science as it emerges