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Australian Government

## TORRES STRAIT REGIONAL AUTHORITY



### Submission to the House of Representatives Standing Committee on Climate Change, Water, Environment & the Arts –

### CLIMATE CHANGE IN THE TORRES STRAIT AND THE IMPACT ON INDIGENOUS PEOPLES

#### PURPOSE

To outline the key concerns, issues and potential impacts of climate change in Torres Strait, and identify information gaps and further support necessary to facilitate sustainable adaptive responses.

#### KEY POINTS

- The impact of sea level rise in combination with extreme weather events leading to tidal inundation and island erosion is of significant concern for residents of the Torres Strait.
- Erosion (and inundation) is already a hazard threatening infrastructure in the region, including housing, harbour works, business enterprises, desalination plants, ecosystems and cultural sites, and there is significant fear in communities concerning sea level rise.
- The recent *Climate Change 2007 IPCC Fourth Assessment Report* addressed a number of matters concerning Indigenous communities and climate change. Specifically for Torres Strait, the report highlighted that as a consequence of king tides in 2005 and 2006, there was a “need to revisit short-term coastal protection and long-term relocation plans for up to 2,000 Australians living on the central coral cays and north-west islands”.
- The report also highlights that “climate-change impacts identified for remote Indigenous communities include increases in the number of days of extreme heat, which may affect disease vectors, reproduction and survival of infectious pathogens, and heat stress; extreme rainfall events and flooding, causing infrastructure damage; salt inundation of freshwater

aquifers and changes in mangrove ecology; changing fire regimes; sea-level rise and coastal erosion”.

- The 2007 PMSEIC Independent Working Group report on *Climate Change in Australia: Regional Impacts and Adaptation* recommended that communities with lower capacity to adapt should be prioritised for the development of adaptation plans. Torres Strait Islanders and other remote Indigenous communities were recognised in the report as having “the highest risks and the lowest adaptive capacity of any in our community because of their relative isolation and limited access to support facilities”.
- However, concerns exist over whether the Torres Strait has been included in the first pass assessment of coastal Australia’s vulnerability to climate change. Current verbal advice from the Department of Climate Change is that the Torres Strait is not included in this first pass assessment, despite that this assessment is to include high, medium or low potential impact regions.
- The digital elevation models project, as part of the national assessment of coastal vulnerability to climate change, would be of vital importance to understanding how inundation from storm surges would occur. However, this study also appears to exclude the Torres Strait, despite that the project data is supposedly to cover the whole coastline and “islands greater than 600 metres square”, which should include many of the inhabited Torres Strait islands.
- The Australian Government and TSRA have recognised the need for better information on the extent and causes of coastal erosion, inundation and climate change impacts in the Torres Strait so that the most appropriate policy and planning responses can be determined. A number of research projects and adaptive planning processes are underway to address these issues.
- A team of experts from James Cook University has recently conducted a study of the causes and impacts of coastal erosion and inundation on the central cay islands in the Torres Strait. Under this project, island vulnerability assessments, identification of options for remediation and community education about coastal processes has been undertaken for the participating island communities. The project has gone some way towards enabling Torres Strait communities to participate in a process of adaptation to environmental and climate change, which includes appropriate adaptive planning and design of infrastructure.
- Another James Cook University study is investigating the impacts of climate change on turtle nesting success on various Torres Strait islands that constitute critical turtle rookeries for endangered species of turtles. Turtle rookeries in Torres Strait supply significant turtle numbers to northern Australia. Turtle is also an important fishery for Torres Strait Islanders.

- The TSRA has assisted in addressing concerns over climate change, inundation and erosion through the formation of a Torres Strait Coastal Management Committee, with technical support from the Environmental Protection Agency (EPA). The committee seeks to promote a coordinated, whole-of-government approach to coastal management and climate change.
- The TSRA also provides support, via its Land and Sea Management Unit, for Torres Strait island communities by seeking funding and technical support to address, mitigate, and plan around the impacts of coastal erosion in a sustainable, long-term way.

## **RECOMMENDATIONS**

### *Recommendation 1:*

That there is further support for all Torres Strait Island communities and regional institutions to access information about projected climate change impacts at a locally and regionally relevant scale, to enable informed decision-making and adaptive planning.

### *Recommendation 2:*

That there are further studies of island processes and projected climate change impacts on island environments, including uninhabited islands with problems such as turtle nesting failures.

### *Recommendation 3:*

That reliable data is obtained on island interior heights and elevations to support more accurate predictions of inundation levels.

### *Recommendation 4:*

That a feasibility study be undertaken to investigate and recommend the most suitable renewable energy systems for servicing the Torres Strait region, including the investigation of tidal, wind, solar and other systems suitable for the region's environmental conditions and demand for power.

### *Recommendation 5:*

That the Torres Strait region is considered as a potential case study for small-scale trials of solutions to coastal erosion and inundation problems, as well as sustainable housing and building design and construction for remote communities in tropical environments.

## BACKGROUND

The impact of sea level rise in combination with extreme weather events leading to inundation and island erosion is of significant concern for residents of the Torres Strait.

On 10 October 2006, Queensland Labor Senator Jan McLucas, delivered a speech to the Senate on the impacts of climate change on Torres Strait Islanders, urging action from the Federal Government to address this issue.

In December 2005, Natural Heritage Trust funding was approved for a Coastal Erosion Impacts Project in the Torres Strait to be undertaken by James Cook University with the communities of Warraber, Masig and Poruma Islands. The project commenced in April 2006 and is about to be completed. The project has recently been extended to Iama Island.

The project has a focus on community participation in active research, in order to raise the level of awareness and understanding of island erosion processes amongst local island communities. This research has improved knowledge of climate change and the likely effects on islands, reefs and communities, and has supported communities and other decision-makers to begin planning suitable long-term adaptive responses to the problem.

The Environmental Protection Agency recently completed a rapid assessment shoreline erosion project with six islands, including Saibai, Boigu, Iama, Warraber, Poruma and Masig. The information assists in prioritising and identifying options to mitigate against immediate threats.

A Natural Heritage Trust funded Sustainable Land Use Planning Project is currently underway, which supports participating island communities to understand the impacts of development on the natural environment and plan for and manage their island environments sustainably into the future.

The project utilises geo-spatial and other relevant datasets about a range of issues of concern (eg. population carrying capacity of the islands, available space suitable for future residential expansion or infrastructure development, significant vegetation communities and heritage sites, erosion, inundation or landslide prone areas, water supply and waste management implications). This information is incorporated in maps or data layers which form a basis for developing land-use plans that take into consideration all of these factors, as well as community and cultural priorities. Constraint mapping undertaken will include information on land use zones, slope analysis, coastal information (inundation areas, H.A.T areas, erosion prone areas and coastal management districts), vegetation, key biodiversity habitat areas and waterways. The project currently involves Masig, Iama, Erub, Saibai, Boigu and Dauan Islands. Future funds in 2008/2009 will support the extension of the project to the nine remaining communities.

A Marine and Tropical Research Facility (MTSRF) project, *Climate change impacts in the Torres Strait: Building resilience and planning adaptation*

*strategies*, is designed to establish ways to increase communities' abilities to deal with environmental change by integrating scientific and traditional knowledge. This will involve the collecting and compiling of this knowledge for presenting at a regional workshop. The resulting information from the workshop will be used to prioritise areas of strategic adaptation planning for the future.

A further research project entitled *Understanding Sea-level change in Torres Strait* by James Cook University and the University of Wollongong seeks to accurately survey, sample, and date material collected from reef flat corals known as microatolls to reconstruct the pattern of sea-level change from around 6000 years ago to present on islands from east to west across the Torres Strait. Understanding how sea level has changed in the past, and the influence of this history on island and shoreline dynamics, can provide very important information useful to understanding likely shoreline responses to predicted future rates of sea-level rise

Researchers from Griffith University and the Department of Natural Resources and Water have also recently put in place monitoring equipment which will assist the mapping of the possible impacts of tsunamis, sea level rise induced inundation and storm surge flooding. Currently the data does not exist for modelling and predicting the impact of these events on Torres Strait communities. The research will include a network of sea-bed mounted tide gauges combined with land-based height gauges and atmospheric pressure sensors, linked with a network of satellite navigation and positioning systems. The Department of Natural Resources and Water's surveyors will use the University's tide gauge findings to precisely position the islands relative to the Queensland mainland.

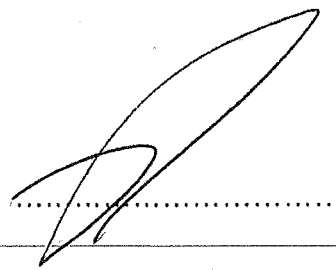
Another project underway by James Cook University researchers is investigating the impacts of climate change and sea level rise, including coastal erosion and inundation events, on turtle nesting success. A number of Torres Strait Islands constitute important rookeries for many endangered species of marine turtles. In recent years, communities and researchers have observed nesting turtles dying from unsuccessful attempts to reach nesting grounds that have been severely eroded.

Further studies of projected climate change impacts on other significant species and ecosystems found in the Torres Strait, as well as on the fishing sector, as the region's most important economic base, are needed.

Support is also required to ensure that island communities and decision-makers have access to reliable data and projections as to the likely impacts of climate change and sea level rise to enable appropriate long-term planning and mitigation of immediate hazards.

The Torres Strait region has many attributes that make it suitable for trialling renewable energy options and sustainable housing and building design to take into account the need to minimise greenhouse gas emissions. The Torres Strait Coastal Management Committee would be a possible forum for progressing whole-of-government support for these innovations.

**Approval:**



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