



Case Study

Old ways for new challenges: Indigenous Adaptation to Climate Change

Overview: Facing challenges

The case studies presented here provide a collection of several initiatives undertaken by Australian Indigenous peoples settled in coastal areas, in their efforts to adapt to the impacts of climate change. Indigenous climate adaptation initiatives provide inspirational examples of positive and passionate responses to the greatest challenge of our time, and highlight that the 'old ways' still offer a guide to the survival of future generations. Integration of these traditional ways with the strengths of Western science can deliver effective solutions to climate change risks. Indigenous peoples have built partnerships with government, industry, research and non-governmental organisations to adapt to change in innovative ways.

Indigenous peoples have lived in Australia for over 60,000 years and during that time successfully managed their land and sea—called country. Country is a term that means a continuous and seamless connection with the land and sea, and Indigenous peoples do not, as Western societies do, separate out geographical features in terms of their management (Nursey-Bray and Jacobsen 2014). Country encompasses all the ecological, as well as cultural and social features of the landscape: *"It's not taught to you, it's built in you. It's in your soul, that that's your Country"* (Roy Kennedy, Ngijampaa Elder 2015).

With over 500 Indigenous groups across the nation, and multiple countries and languages, there is now a huge body of rich and diverse traditional knowledge about Australia's environment. However, having survived colonisation, Indigenous peoples now face the challenge of climate change. The impacts they face include loss of community, environmental and cultural heritage sites, increased risk of heatwaves, longer drought periods, greater bushfire risk, increased risks of flood events and more frequent coastal flooding and associated impacts such as coastal erosion (Low Choy et al. 2013). Moreover, these challenges will be disproportionately more difficult to deal with, as many Indigenous people remain amongst the most socio-economically disadvantaged groups in Australia. Overall, climate impacts will have profound effects on Indigenous peoples and their country.

Figure 1 shows the location of the case studies: coastal areas that provide good examples of Indigenous peoples facing the impacts of climate change, and/or locations where Indigenous peoples are undertaking initiatives to overcome these impacts.



Figure 1: Location of Indigenous groups and coastal areas described in the case studies. The numbers are used throughout the document to identify groups and areas. Source: Developed by the author.

Indigenous peoples and climate change impacts

Indigenous peoples are already experiencing the impacts of climate change in Australia. The following are examples of changes they perceive in some coastal areas around the country.

Queensland: Indigenous peoples along Queensland’s east coast have noticed changes in relation to the abundance and location of totemic marine animals, such as turtles and dugongs, which are culturally significant species for many groups, as well as important for traditional hunting (Figure 2). For example, the green turtle’s (*Chelonia mydas*) reproductive cycle is heat sensitive, with male eggs occurring at cooler temperatures and female eggs at higher ones (Spotila et al. 1987). Thus, over time, and with global warming, more females than males will hatch causing reproductive imbalance and ultimately affecting hunting regimes. Similarly, sea-level rise and erosion are causing some beaches to disappear. Turtles have a magnetic imprint which enables them to always return to the same beach to breed, and there is a risk for some that their beaches are disappearing. Increased storms, ocean acidification and warming will also affect dugongs, and the seagrass habitats on which they depend, which in turn is likely to affect their range and distribution over time.



Figure 2: Climate change will affect the reproductive biology and habitat of important cultural species such as the green turtle. Photo: © Pixabay image.

South Australia: Local Anangu people (No. 1 in map) in South Australia historically have experienced storm surges, which have inundated low-lying campsites. They have also observed unusual fish and other species appearing as a result of changes in ocean currents and temperatures (Bardsley and Wiseman 2012a). They are now concerned about changing coastal patterns, rising sea levels and further storm surges, and the potential impact of all of these hazards on habitats for important cultural species and erosion of cultural camp areas (Bardsley and Wiseman 2012b).

Northern Western Australia: In the Kimberley region (No. 2 in map), coastal communities of the Keep River Miriwoong, the Gija people (Warmun community) and Karajarri Traditional Lands Associations are all worried about increases in extreme storm events. Their concern is that these will cause more flash flooding and affect community infrastructure, including water supplies, sewerage and stormwater systems, transport and communications (Leonard et al. 2013).

Tasmania: In Tasmania, sea-level rise is causing increased wave action which, in turn, is threatening coastal rock art sites as well as eroding shell middens that are thousands years old (Figure 3), and washing them into the sea. Sites at risk include the Preminghana Indigenous Protected Area (IPA) (No. 3 in map), a significant rock art site on the west coast, and oyster middens at Hazards Beach on the Freycinet Peninsula.



Figure 3: Middens under threat in Tasmania. Photo: © Government of Tasmania, Aboriginal Heritage Tasmania 2016.

Fighting Back

Caring for country: The work of Indigenous rangers

Indigenous peoples across the nation are fighting back. Using the strength of their traditional knowledge systems they are creating multiple programs to adapt to the changes and threats to their country from climate change. These are all forms of caring for country, which is a two-way approach that combines traditional and modern scientific means of environmental management to respond to climate challenges. For example, across the nation there are currently 600 Indigenous rangers working on caring for country initiatives. In teams they work to manage feral animals, protect sacred and special sites, build educational awareness and transmit knowledge about their country, and work with Government on multiple land and sea management initiatives including climate change.

These rangers also work on projects within the *Indigenous Protected Area program*, many of which are located in coastal regions, and assist in emergency service work at times of natural (and climate change related) disasters. For example, rangers from Giringun in Cardwell and Dhimurru (Nos. 4 and 5 in map, respectively) in the Nhulunbuy Region both manage coastal/marine Indigenous Protected Areas, undertake coastal site maintenance work, run turtle and dugong management programs and assist in clean-up work after cyclones and flooding. They do so by combining traditional and scientific knowledge—and governance systems—in their day-to-day work.

Collectively, Indigenous rangers constitute an incredible national network that looks after a vast amount of Australia's outstanding environmental resources.



Educating the young: Learning on Country Modules

Dhimurru and Yirralka Rangers (Nos. 5 and 6 in map, respectively) from North-East Arnhem Land have been working with their local schools to deliver a [Learning on Country program](#) for primary school age children at Yirralka, on understanding climate change and its effects on seasons and the abundance of natural resources. In this program, Elders take students to some key areas around Nhulunbuy, sharing cultural stories about important sites, sea levels, tides, seasons and changes to the landscape through song and dance (Figure 4). Students then interpret and reflect on these stories. Funded by Northern Territory NRM, the Learning on Country program involves Elders, rangers and schools, and links natural and cultural resource management with the secondary school curriculum. It is planned that the program will be expanded over time.



Figure 4: Teaching the younger generations. Photo: Dhimurru Aboriginal Corporation.

Using traditional knowledge: The Miriwoong Seasonal Calendar

The Miriwoong people (No. 7 in map) of Keep River, Northern Territory, have developed a climate adaptation tool using traditional ecological knowledge based on the weather and observed environmental change. Designed by the Mirima Language and Culture Centre and the Kimberley Land Council through a process of extensive community engagement, this project has produced an interactive seasonal calendar (Figure 5). This enables the Miriwoong people to discuss ongoing and future weather patterns, and helps to ensure younger generations can adapt to those changes.

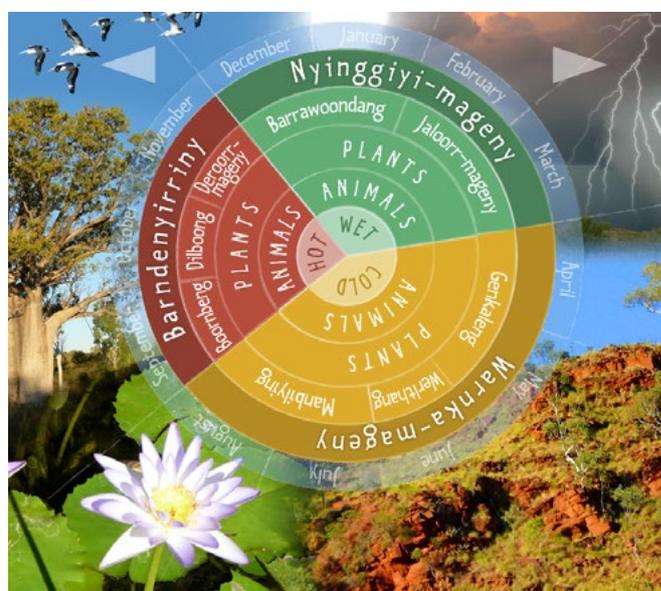


Figure 5: The Miriwoong Calendar. Source: © Mirima Council 2015.

Looking after the north: NAILSMA – Northern Aboriginal and Islander Land and Sea Management Alliance

NAILSMA undertakes mitigation and adaptation work across northern Australia on behalf of many coastal Indigenous groups. Their work takes a culture-based economics approach and focusses on building economically and socially viable local communities while caring for country. A key climate change program is the [Carbon Program](#) which has developed a Savanna Burning Methodology under the Carbon Farming Initiative—a legislated offset scheme of the Australian Government (Figure 6). This approach uses and builds on traditional Indigenous fire management knowledge and practices while incorporating the latest scientific research.



Figure 6: The Carbon Project promotes Indigenous Knowledge as an integral part of land and fire management © NAILSMA Ltd. 2012.

Staff at NAILSMA also work with researchers and governments in a wide suite of marine and coastal research projects that include, amongst others, looking at the impacts of climate change on key cultural species such as turtle and dugong. In 2012, NAILSMA also set up the [Indigenous Salt Water People Network](#). Rangers in this Network build alliances across coastal regions to manage climate change and other environmental issues.

Planning for the Future: Ngarrindjeri Nation Yarluwar-Ruwe Plan: Caring for Ngarrindjeri Sea Country and Culture

The Traditional Owners of the Coorong, the Ngarrindjeri (No. 8 in map), recognise and are concerned about climate change: *"In recent years we have observed changes in our local environment that tells us that climate change is a reality. We see that the breeding behaviour of birds is changing, and the fruiting and flowering of our bush foods is changing. We have watched our fresh water holes dry up or turn salty and we've seen our coastal camping places and middens washed away by rising sea levels. When we lose these places we lose not only part of our cultural heritage, but we also lose an irreplaceable record of Ngarrindjeri adaptation to climate change in the past"*.

They have developed a management plan for their coastal resources called the [Yarluwar-Ruwe Plan](#). Their vision for this is: *"Our Lands, Our Waters, Our People, All Living Things are connected. We implore people to respect our Ruwe (Country) as it was created in the Kaldowinyeri (the Creation). We long for sparkling, clean waters, healthy land and people and all living things. We long for the Yarluwar-Ruwe (Sea Country) of our ancestors. Our vision is all people Caring, Sharing, Knowing and Respecting the lands, the waters and all living things."* In this plan, the Ngarrindjeri endorse the Kyoto Protocol and other climate agreements, and commit to furthering their objectives and building partnerships with others to help implement climate management programs.

Policy and Partnerships: The National Indigenous Climate Change Project

Established in 2008, the [National Indigenous Climate Change \(NICC\) Project](#) is a collaborative forum established by Indigenous leaders. It provides policy dialogue between representatives of corporate Australia, Indigenous peoples and other experts about issues, risks and opportunities associated with climate change and participation in carbon markets. This is an important forum providing support for adaptation and mitigation efforts driven by Indigenous leaders and a channel for experience from these efforts to be incorporated more broadly into Australian climate change response activities. Using cultural governance processes, this project is yet another example of how Indigenous peoples across multiple levels are trying to address and build responses to climate change in their country.

References

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