

Coping with change

Recent research in an indigenous coastal community in Australia's Northern Territory reveals women's strong preference for climate change adaptation and aquaculture development

By **Lisa Petheram** (lisa.petheram@gmail.com), Australian National University and **Natasha Stacey** (natasha.stacey@cdu.edu.au), Charles Darwin University

Off the coast of northern Australia lies the island of South Goulburn, home to the small indigenous coastal community of Warruwi. English is not usually the first language spoken here; in fact the islanders may speak two, three or more different Aboriginal languages, most commonly Maung. Particularly in the dry season, there is a high degree of mobility to and from other regions, commonly to the mainland of Arnhem Land, and the city of Darwin, 280 km to the southwest, which is connected to the island by a 'mail plane'. The Warruwi community has always depended upon marine resources and engaged in subsistence harvesting activities but today the community faces an increasingly uncertain future because of the deleterious impacts of climate change.

As part of our research on climate change, in 2012-2013, we carried out a series of interviews and workshops with the women of the Warruwi community to improve understandings of dependency on marine resources, perspectives on climate change, and aquaculture as a means towards adapting to climate change.

LISA PETHERAM



The Warruwi community has always depended upon marine resources and engaged in subsistence harvesting activities. Woman collecting oysters in Warruwi coastal area

A warming planet would undermine the food security of the Warruwi community due to a number of interlinked reasons. First, a portion of the community's customary diet or 'bush foods' are fished, hunted and gathered from coastal ecosystems threatened by climate change. Second, if the balance of these coastal ecosystems is upended, then dependence on external access (for delivery of expensive supplementary food and other resources and services) may increase to compensate for locally sourced food shortages. Meanwhile dependence on external access may be compromised if access to the island is obstructed by the evermore frequent, unpredictable and severe weather events expected from future climate change.

In our research we used a number of participatory and visual techniques—diagramming, board games, videos and eBooks. We focused mainly on interviewing and talking to the women, although some men were also included to ensure that we weren't missing out on any important information.

Indigenous communities in northern Australia maintain intricate and complex connections with various aspects of the environment. Harvesting marine resources is important in providing fresh food for families and extended kin groups; promoting physical exercise and emotional and mental health; and maintenance and transfer of customary knowledge. An awareness of customary knowledge, particularly relating to the marine ecosystems, is an integral part of the construction of the islander's self and identity.

All the people we spoke to practiced harvesting to different degrees but they also regularly bought large proportions of food from the local store that imports commonly refined (and expensive) foods. There was variation in the amount and frequency of harvesting among different families, genders, age groups and seasons. Harvesting was believed to be practiced much less today than 50 years ago, but there was still a strong desire that many expressed for greater opportunity to harvest more. Lack of transport, poor health and mobility, and family and work commitments were often cited as the chief barriers to harvesting.

The people we met had a limited understanding of the concepts associated with climate change, such as global warming

and greenhouse gases. Many thought climate change was a phenomenon occurring only elsewhere in the world. However, in deeper conversations, many reported observing unusual and inexplicable patterns of environmental change—beach erosion, sea level rise, new weather patterns, and changes in distribution, abundance and taste of some plant and animal species. Many, particularly those who were older, expressed concern both at these changes and the fact that the community was moving away from certain customary practices and losing its local knowledge. The unpredictability of the environment was worrying and potentially disempowering to many people.

Despite the newness of the issues, we found that when discussions got underway and were followed up by workshops and later interviews, people could easily grasp the idea that climate change was resulting from human impacts on the environment. It fitted well with their own view of the environment as highly interconnected, a dynamic web of components involving humans and the broader world. People wanted to know more about the reasons for climate change and how other communities were dealing with it.

In terms of future adaptation, most people emphasized community capacity building and using customary knowledge. Many were also open to the idea of incorporating western scientific knowledge, where appropriate, into management and planning. Independence, empowerment and autonomy were ideas that found frequent echo in the conversations. Many people felt that greater communication with the community, more education among adults and at the school, and the involvement of the community in decision-making processes were vital for adaptation. Networking with coastal communities dealing with climate change in Australia and the Asia-Pacific region was also suggested. People were not aware of the adaptation policies being developed by the Territory and Federal Governments, and many expressed a strong desire to be involved in the local decision-making around adaptation.

In the research discussions, participants of different ages seemed to have strong relationships with their past and current selves but less of an emotional relationship with their 'future' selves. Their views of the future contrasted sharply with typically Western viewpoints. The Western notion of

time is usually linear—one in which time travels uni-directionally in a bounded matrix of space and time, open to deliberate human intervention. In contrast, people from Warruwi, like many other indigenous peoples, have a cyclical notion of time. This is revealed, for instance, in indigenous story telling which, as some researchers point out, tends to be directed towards the origins of creation—people come from the earth and go back to the earth at death. This difference in perspective has significant implications for the way climate change adaptation policy is discussed and developed between policy makers, indigenous local people and other stakeholders.

As a viable adaptation strategy, the women in Warruwi are very open to the development of aquaculture in the region, especially to farm local species including oysters, sea cucumbers and giant clams. We therefore tried to link our research to the Northern Territory (NT) government strategy aimed at development of community-based low-tech aquaculture on Goulburn Island.

There was however limited understanding of the logistics and scale involved in commercial aquaculture, with a strong preference for low intensive aquaculture, respectful of culture and directed by the community, with some support from NT Fisheries and other scientists. Many expressed faith in the newly established Yagbani Aboriginal Corporation on decision making related to aquaculture and adaptation. They also expressed confidence in the advice and abilities of fisheries scientists. However, it was clear that communication between the community and fisheries scientists, currently carrying out trials, needs to be improved. In fact, for aquaculture to succeed as a viable adaptation strategy, external stakeholders would have to respect local customs and worldviews, with adequate attention paid to developing communication, trust, genuine support, engagement and involvement of the community in decision-making.

Because there are no 'off-the-shelf' designs of aquaculture systems for remote NT indigenous communities under climate change uncertainty, a project to support aquaculture development should be based on principles that draw from 'adaptive management' and best-bet ideas for culturing marine species and enterprise management. Furthermore, the approach must also be highly flexible.

There was a strong preference for low maintenance aquaculture carried out in a way that is respectful to culture and primarily directed by the community.

The use of carefully designed visioning exercises with all stakeholders to ensure shared cultural framings for future plans and understanding is recommended. The engagement of knowledge brokers, including translators to work between the community and other stakeholders may also be important to help make key concepts of climate,

adaptation, aquaculture and planning more easily understandable and accessible. New partnerships would need to be forged. Networks among various indigenous groups and stakeholders may help provide support, encourage learning among groups and lead to new ways of integrating different ways of viewing, and being in, the world. ❏