

COMMENTARY:

The co-benefits of carbon management on country

Donna Green and Liz Minchin

Carbon offsetting is a fraught science, but there are schemes that have additional benefits beyond their carbon-mitigation value.

On 1 July 2012, Australia became the latest country to introduce a carbon tax to reduce its greenhouse-gas pollution. Even more than the European Union's emissions trading scheme, Australia's target of cutting emissions to 5% below 2000 levels by 2020 is heavily reliant on carbon offsetting, with plans to allow industry to buy carbon credits to offset up to half of their required emissions cuts.

As Kevin Anderson of the UK's Tyndall Centre warned in *Nature Climate Change* recently¹, and as we have previously argued², it is risky to rely on carbon offsetting to reduce emissions because for the most part it is being used to avoid fundamental changes in industrial practice and individual behaviour. And we share Professor Anderson's concern that if people buy offsets as a way to reduce their guilt about consuming, travelling and polluting as before, the net result is likely to be higher, not lower, global emissions.

But given the reality that carbon offsetting is deeply ingrained in most carbon-pricing mechanisms worldwide, we argue that not all carbon offsets are the same — and where money is being spent on offsets, priority should be given to projects that do more than just mitigate emissions, but also achieve economic, social and cultural co-benefits. A small number of such 'quadruple bottom-line' projects are already operating in Australia. One of the success stories has been the Western Arnhem Land Fire Abatement (WALFA) project, which has dramatically reduced greenhouse-gas emissions from bushfires in Arnhem Land, covering an area in northern Australia about the size of Belgium. Developed collaboratively between indigenous elders, rangers and non-indigenous scientists, WALFA applies traditional land-management practices that have been used since 38,000 years BP³.

Each wet season, lush vegetation grows quickly across Arnhem Land. As the dry season sets in, the grasses and low-lying



Teddy Koonutta (left), senior traditional owner and songman from the Kendall River, discussing land-management issues with Bruce Martin (right), the CEO of APN.

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shrubs dry out and die back, creating a vast tinderbox primed for uncontrollable, high-temperature bushfires, which can be ignited by a lightning strike. By deliberately lighting early dry-season fires, indigenous rangers are able to reduce the occurrence of these unplanned and uncontrollable late-season fires, which if unchecked generate on average 52% more greenhouse-gas emissions⁴.

The WALFA project began in 2006 with an annual reduction target of 100,000 tonnes of greenhouse-gas emissions. The work is being carried out under a 17-year agreement with ConocoPhillips, which pays AUD\$1 million per year for the carbon credits generated by WALFA to offset emissions from its Darwin liquid natural gas plant. The original abatement target has been easily surpassed; in its first five years, 707,000 tonnes of emissions were avoided. Simultaneously, the controlled fires have helped to preserve biodiversity in the region and created 40 jobs, while demonstrating the relevance and value of traditional indigenous land-management practices. That list of achievements has

helped the WALFA project win Australia's two most prestigious environment awards, the Eureka prize and a Banksia award. However, its greatest impact is likely to be in inspiring other fire- and land-management projects, as well as setting an international example for scientifically sound, genuinely collaborative carbon-management projects using indigenous knowledge.

One of the fast-growing indigenous organizations in Australia is Aak Puul Ngantam Ltd, which trades as APN Cape York, a not-for-profit enterprise created in 2011 by the Aboriginal people of the area to the south of the community of Aurukun on the west Cape York Peninsula. In the *lingua franca* spoken in Aurukun, Wik mungkan, *aak puul ngantam* means 'Our father's father's country'. Its name reflects APN's vision of helping Aboriginal people to return to, and continue to care for, their ancestral homelands, and to maintain their traditional knowledge to pass on to future generations. That knowledge includes a long history of fighting fire with fire, just as other indigenous

people have done for millennia across northern Australia.

Thum nhoom, meaning 'healthy management of country through robust fire management', is so central to the traditional way of life that it has been chosen as the name of APN's steering committee. In its first 18 months, APN has had remarkable success: it has won more than AUD\$4 million in government funding, mostly from new schemes linked to the carbon tax; established research collaborations with the Commonwealth Scientific and Industrial Research Organisation (CSIRO) on carbon abatement, biodiversity and land management; run training schemes for rangers, elders and school children involving sharing traditional knowledge; and re-established a sustainable cattle enterprise that will provide ongoing jobs and income to keep expanding APN's work. In its first year, APN employed 36 people on a casual basis to work out on country. This year, they are employing 34 people full-time, and paying AUD\$1.3 million back into the community for local work.

The key to the success of the indigenous-led projects in Arnhem Land and Cape York has been their use of a 'two-toolkit' approach, combining the best of indigenous and western scientific knowledge and decision-making. For instance, as well as lighting fires on foot, indigenous fire managers use helicopters and aircraft to put in fire breaks quickly over larger areas. Non-indigenous researchers also have a crucial role to play, tapping into close-to-real-time satellite data on the location of fires, working with rangers to measure greenhouse-gas abatement and ensuring the integrity of the carbon offsets.

Bruce Martin, APN's dynamic 29-year-old chief executive, whose mother is an

Apalech woman and whose father is a non-indigenous anthropologist, embodies the value of applying the two-toolkit approach. Martin knows better than most the challenges facing a region with a history of forced displacement, alcohol abuse, violence and loss of culture. But he can see huge potential for his community to earn economic independence through collaborations with scientists, businesses and government, particularly through new schemes linked to the carbon tax. With that in mind, Martin has spearheaded APN's quadruple-bottom-line business strategy, which seeks to balance the needs of Cape York's environment, economy, society and culture.

As the projects underway in western Arnhem Land and Aurukun demonstrate, there are many co-benefits of funding indigenous carbon-offset schemes that go well beyond simply reducing greenhouse-gas emissions. For instance, biodiversity loss remains one of the world's biggest challenges, despite international recognition through the Convention on Biological Diversity that humans will ultimately pay the price for overconsuming natural resources. Indigenous traditional owners hold invaluable knowledge of local biota that can help in the preservation of many species. A recent partnership between APN rangers and CSIRO researchers caught and observed almost 200 different types of animal, including species that had never been recorded on the Cape. The monitoring has already produced several practical benefits. For example, when turtle monitoring revealed that turtle nests were being dug up and the eggs eaten by feral pigs, the rangers used the information to plan a more effective pig-culling scheme to better protect the turtles. Culling feral animals also helps reduce methane emissions

and has been approved as a way to earn carbon credits under the new national carbon farming initiative. So although pig culling is worthwhile in its own right to protect local biodiversity, it also has global environmental benefits.

Although Australia's unemployment rate is among the lowest of the nations in the Organisation for Economic Co-operation and Development, joblessness rates are significantly higher in remote indigenous communities. Of particular concern is that 40% of indigenous Australians aged 18 to 24 are neither employed nor studying, compared with 10% of their non-indigenous peers⁵. The only way to create sustainable futures for remote communities such as Aurukun is with meaningful livelihoods, which is why APN is putting so much effort into improving local education and training. This includes school camps, where elders and rangers take children onto their lands to learn about traditional knowledge and other practical skills, including navigation using global positioning systems and topographic map reading. Showing the practical value of science to children can have a powerful impact: after seeing rangers and scientists working together, there has been more interest from children in science lessons at school.

There are also social and cultural co-benefits of indigenous-run carbon- and land-management projects. On almost any measure of health, indigenous Australians, on average, fare much worse than non-indigenous Australians, with significantly higher rates of chronic disease and hospitalization and the likelihood that they will die a decade or more earlier. Yet indigenous healthcare expenditure accounted for 3.3% of national spending in 2006 to 2007 — a greater proportion than the 2.5% indigenous representation in the Australian population — which translates to AUD\$1.31 for every AUD\$1.00 spent on services used by a non-indigenous person⁶.

Part of this problem lies in the nature of government policymaking: problems such as health, community wellbeing and environmental protection are treated in isolation, ignoring the fact that for Aboriginal people in particular, there is a strong relationship between an individual's health and the health of their community and their country⁷. That relationship was tested in Arnhem Land over several years by a transdisciplinary team of traditional owners and medical, biophysical and social science researchers. As reported in the *Medical Journal of Australia*, the 'Healthy country, healthy people' study found that indigenous people involved with environmental and cultural management were more physically active, had better diets and suffered lower



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Wik and Kugu rangers from the Aurukun programme returning with magpie geese from Waakacham. Hunting on country provides a valuable alternative to store-bought food and maintains traditional hunting skills.

rates of obesity, diabetes, renal disease, cardiovascular disease and psychological stress — reducing the principal risks of premature death and disability for indigenous Australians⁸. As the researchers concluded⁹, “Investment in programs that help indigenous people undertake work maintaining the environmental health of their country has benefits for the environment as well as the physical, mental and cultural health of the indigenous people involved.” Although more economic research is needed, reduced health costs may be another significant co-benefit. One study of a remote Arnhem Land community found that active participation in land management would deliver net savings of AUD\$268,000 per year for that community alone, owing to lower rates of chronic disease and the reduced strain on primary health services¹⁰.

Worldwide, there is robust debate regarding approaches to indigenous-led carbon-abatement projects and the mechanisms through which indigenous people may benefit from payment for a variety of environmental services. The United Nations Environment Programme has estimated that indigenous lands and other protected areas

created to safeguard land rights, indigenous livelihoods, biodiversity and other values contain more than 312 billion tonnes of carbon¹¹. In Australia, a 2008 study by the CSIRO found that indigenous-held land accounts for more than half of all potential emissions reductions from Australia's fire-prone savannas and rangelands. Examining the carbon potential of six Indigenous Land Corporation properties across northern Australia, it estimated that 2.6 million tonnes of carbon could be prevented from entering the atmosphere each year, earning carbon offsets and creating more than 1,000 seasonal jobs in fire-, land- and feral pest-management each year¹².

In a perfect world, there would be no such thing as carbon offsets and nothing noteworthy about the use of a two-toolkit approach, combining the best of indigenous and western scientific knowledge. But in the real world, there are valuable lessons to be learnt from the growing number of indigenous-run carbon-mitigation schemes in northern Australia. Rather than tackling climate change, biodiversity, health and social inclusion challenges separately, we must put effort into funding projects that tackle

these problems simultaneously. Based on the Australian experience so far, we are likely to find that it is better value for money than trying to solve them in isolation. □

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