

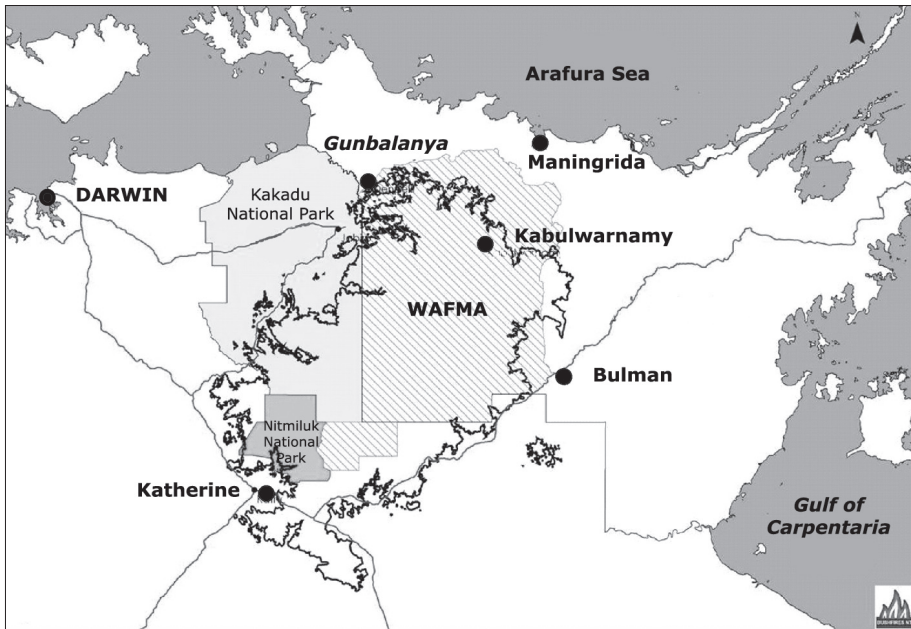


Chapter 12

Study: Western Arnhem Land fire management

Securing sustainable and just economic outcomes for Aboriginal traditional owners and residential communities in the remote regions of the Northern Territory has been an elusive goal for national and Territory governments, various public agencies and community groups for many years. The increasing value and intact environmental nature of much of the Indigenous estate across the North of Australia in a carbon trading context offers opportunities that could create sustainable on-country development for traditional owners in the region through new and exciting economies. The West Arnhem Land Fire Abatement (WALFA) project is the first of these opportunities to be put into operation. WALFA produces a carbon abatement¹ from improved fire management in West Arnhem Land, Northern Territory, that has been sold in a ground-breaking commercial agreement that is based on traditional Indigenous ecological knowledge. One of the strengths of WALFA is that it has the potential to deliver across the quadruple bottom line of: environmental, economic, social and cultural outcomes.

The WALFA project is a fire management project that produces a tradable carbon offset, through the application of improved fire management in West Arnhem Land. The WALFA project reduces the amount of country that is burnt in the project area each year and as a result reduces the emission of greenhouse gases that are released in wildfires. This reduction in greenhouse emissions is called creating a 'carbon abatement' because the project reduces (abates) the emission of greenhouse gases expressed as carbon dioxide equivalent. The WALFA project has been operating since 2006 and is popular with the local Indigenous people. Map 1, below, shows the WALFA (called WAFMA² in this map) project area in the West Arnhem region, Northern Territory.



Map 1: WALFA (WAFMA) project area and partner community locations.
Source: Russell-Smith (2007).

Fire management in West Arnhem Land

The WALFA project area was once home to many Indigenous people living in a traditional way and actively managing their land. The landscape in the WALFA project area (and much of Northern Australia) is tropical savannah characterised as 'woodlands with a grassy ground layer'.³ This tropical savannah landscape is particularly prone to fire. The WALFA project region experiences an annual wet season from December to March, during which annual grasses can grow to over three meters in height (see Plate 1). This is followed by a long dry-season where those grasses dry or 'cure' and the landscape becomes extremely prone to fire. Indigenous land managers have traditionally burnt much of the country early in the dry-season (from May until midway through July) as they travelled. This protected the landscape from high frequencies of large, late, dry-season wildfires (August onwards, until the start of the early wet season in September). Early dry-season burning creates firebreaks. Thus, large areas of land have the fuel load reduced so that, when late dry-season fires start and hit an area that has been burnt earlier in the season, they go out due to a lack of fuel.



Plate 1: Long grass in West Arnhem Land.
Source: Lendrum (2007).

Fires that burn early in the dry-season are relatively 'cool' and do not significantly damage the landscape; they do not burn the canopy of the trees or consume all of the fallen debris because there is still some moisture in the grasses and trees. An example of an early dry-season fire can be seen in Plate 2. Fires that burn late in the dry-season, however, burn very hot because the landscape has completely dried out or 'cured'. These late dry-season fires significantly damage the landscape, burn out the canopy of the trees and can burn out of control for months, destroying vast tracts of land. An example of a late dry-season fire can be seen in Plate 3. These fires emit greenhouse gases that account for 48% of the Northern Territory's total greenhouse gas emissions, and 2% of Australia's total emissions.⁴ And they significantly damage the landscape.



Plate 2: Early dry-season fire – notice the placid nature of the fire and the minimal damage being done to the upper canopy. Source: Lendrum (2007).



Plate 3: Late dry-season fire – notice the violent nature of the fire and the damage that is being done to the upper canopy. Source: Lendrum (2007).



Since European settlement, Indigenous people have moved from their traditional way of life 'on country' into towns and settlements⁵. This migration has left much of the landscape unpopulated and unmanaged. It has meant that the traditional fire regimes that protected the landscape from late dry-season fires has ceased, and that the landscape has become extremely prone to very hot destructive late dry-season fires. Indeed, Figure 1 shows that:⁶

- an average of 40% of the WALFA project area was burnt each year in the absence of traditional fire regimes between 1995 and 2004; and
- the vast majority of these fires (being late dry-season fires) consequently represents fires that are very hot and damaging to the landscape.

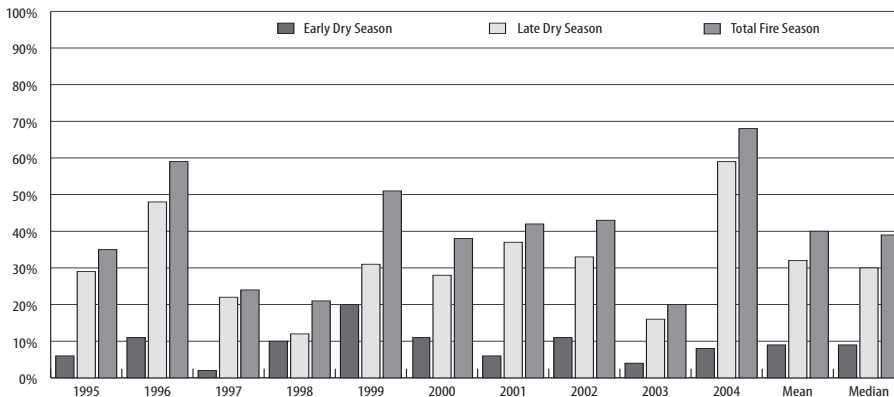


Figure 1: The proportion of area affected by fire of the 28,282 km² WALFA project area by season.
Source: Russell-Smith.⁷

The West Arnhem Land Fire Abatement project and how it works

The WALFA project reintroduces traditional Indigenous fire management regimes that reduce the total area of country burnt, and as a result, reduce the emission of greenhouse gases. This reduction in greenhouse gases has been sold in a commercial agreement and is discussed in more detail below. WALFA project burning is characterised by strategic burning early in the dry-season (from the end of the wet season in May until mid way through July), when the fires burn in a relatively sedate and controllable manner. This fire regime leaves the landscape in a 'mosaic of different post fire states'⁸ and creates effective fire breaks that stop the spread of out of control hot, extremely destructive, and highly polluting late dry-season wildfires.

WALFA project burning is primarily concerned with creating a combination of long intact firebreaks across the project area, and a patchwork of burnt and unburnt country within these long breaks. This fire management strategy reduces the total area of burnt country. It is because late dry-season fires can only burn relatively small areas of land before they encounter a burnt area and then go out.

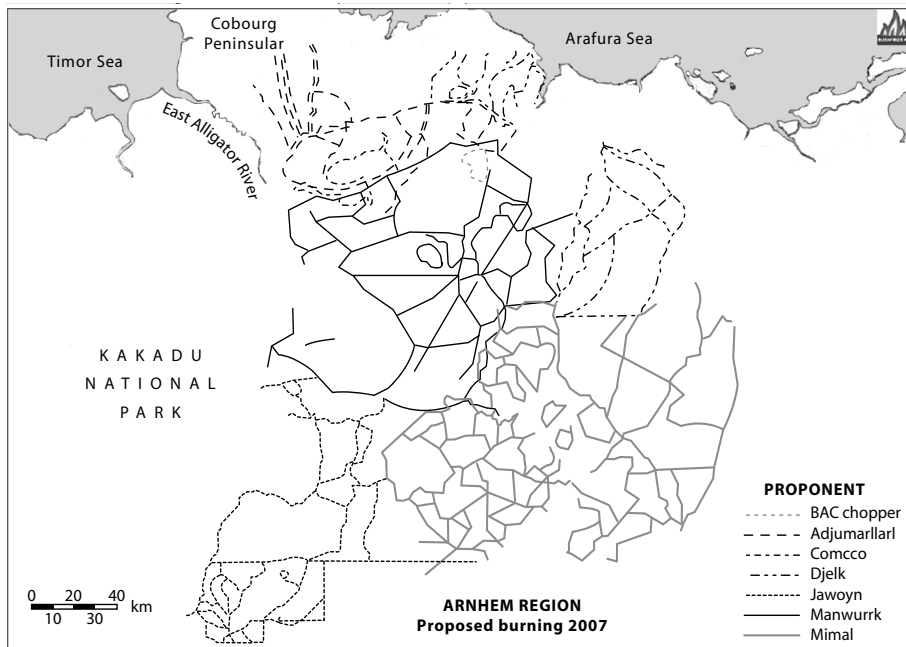


How is WALFA burning carried out?

WALFA project burning has been developed and is carried out under the management of the Northern Land Council in conjunction with the community ranger groups of five partner communities. The ranger groups are:

- Adjumarllarl Rangers based in Gunbalanya (north west area);
- Djelk Rangers based in Maningrida (north east area);
- Jawoyn Association based in Katherine⁹ (south west area);
- Manwurrk Rangers based in Kabulwarnamyo (central area); and
- Mimal Rangers based in Bulman (south east area).

The WALFA project burning for the year is planned in a meeting before dry-season fire – usually in early May – although the timing varies depending on the seasonal conditions each year. Land managers from the partner communities meet with the WALFA project coordinator, Peter Cooke, to discuss the coming season's required burning. These fire meetings produce a map that shows the firebreaks required from each ranger group for the coming season. The fire map for the 2007 season is shown in Map 2.



Map 2: 2007 WALFA proposed burning.
Source: WALFA fire meeting 2007.



The fire work required to create a regime that reduces the level of burning is carried out in two ways.

- The first burning method is 'on-ground' burning which involves rangers travelling across the country in vehicles, or on foot to burn the country. They create strategic firebreaks along roads, streams and tracks. The result is the landscape is left in a mosaic of different post fire states. This protects the land from being completely burnt out in an out of control late dry-season fire.

WALFA project funds pay rangers on a casual basis for doing the on-ground burning. It makes up part of a range of activities that these groups carry out on a fee for service basis. The WALFA project represents a stable income-stream for the different ranger groups, but is seasonal work and concentrated early in the dry-season.

The WALFA project is currently funded through the Community Development Employment Projects (CDEP) scheme. CDEP is a Government employment program in Indigenous communities (similar to work for the dole). It enables participants to earn a base wage that is then 'topped up' for work that is over the base requirement. The WALFA project pays the CDEP participants 'top up' in varying rates, depending on the community and the type of work. The WALFA project is an example of CDEP operating successfully.

- The second burning method mimics the on-ground burning, but applies it on a larger scale carried out from a helicopter. Aerial burning is very effective in West Arnhem Land because it can create long stable firebreaks in the very rugged and remote landscape (much of the WALFA project area).

Plate 4 shows the aerial incendiary device used. Both forms of burning create the same outcome: when fires start late in the dry-season they soon run out of fuel and go out when they reach an area that has been burnt early in the season.



Plate 4: Aerial incendiary device attached to Jawoyn chopper.
Source: Lendrum (2007).

Details of WALFA

The core focus of the WALFA project is to implement directed, controlled or prescribed burning of native vegetation on the unmanaged lands of West Arnhem Land in such a manner as to reduce the total amount and intensity of wildfires. This reduces the emission of greenhouse gases from fire in the region, and creates a tradable carbon abatement (carbon removed from the atmosphere by a human activity, in this case by applying improved fire management).

By implementing strategic fuel reduction burns early in the dry-season, the annual extent of burning in the project area is reduced from the regime of 1995–2004 that has been used as the baseline for the project (see Figure 1). The baseline represents a total mean burn of 40% per annum, with a mean of 8% burnt early in the dry-season and 32.5% being burnt in the late dry-season. The mean annual burning on this baseline data is used to compare subsequent burning regimes, to determine how much reduction there has been and how much abatement has been created.

While there will always be a combination of early and late dry-season fires due to the highly combustible nature of the landscape, the WALFA project aims to implement a regime that will produce the required abatement¹⁰ and significantly reduce the amount of country burnt in the late dry-season. Table 1 demonstrates a number of combinations of early and late season burning. It provides an indication of the abatement created by each combination. The horizontal rows represent a



hypothetical percentage of early burning, and the vertical columns represent a hypothetical percentage of late season burning. The shaded combinations represent a regime that will create the minimum 100,000 tonnes of carbon abatement. For example, a regime that represents 15% of the land burnt in the early dry-season coupled with 15% burnt in the late dry will produce an abatement of 127,000 tonnes of carbon dioxide equivalent greenhouse gas.

% Late burnt	% Early burnt					
	5	12	15	20	25	30
5	273	248	223	198	173	148
10	225	200	175	150	125	100
15	177	152	127	102	77	52
20	130	105	80	55	30	5
25	82	57	32	7		
30	34	9				

Source: WAFMA 2006 Annual Report.

The history of WALFA

A fire management program, the precursor to the WALFA project, called the Arnhem Land Fire Abatement (ALFA) project, had been underway in Arnhem Land since 1998. It was an attempt to tackle the out of control fire regimes that prevailed across Arnhem Land since the area had been largely depopulated after the 1950s. A group of land managers, which included many Indigenous managers, assembled in West Arnhem Land in 1998 in an attempt to implement a regional response to these fires.

The Northern Land Council (NLC) sourced \$768,040 initial funding and \$533,570¹¹ from the National Heritage Trust (NHT), and began a coordinated burning program that sought to replicate the traditional mosaic burning of Indigenous fire regimes. During the ALFA project a number of people (Jeremy Russell-Smith, Dick Williams and Peter Cooke amongst others) began to realise that improved fire management in West Arnhem Land could significantly reduce the emission of greenhouse gases. This realisation and the subsequent commercial arrangements led to the creation of the WALFA project (a joint initiative of the Northern Territory Government and NLC). It was the first carbon abatement project of its kind anywhere in the world.



The WALFA agreement

In 1997 Darwin Liquid Natural Gas (Darwin LNG) (a subsidiary of the mining giant Conoco-Phillips) applied to construct a Liquid Natural Gas processing plant at Wickham point in Darwin Harbour. This plant processes natural gas from two offshore gas fields in the Timor Sea.

The Northern Territory Government granted an Exceptional Development Permit that required Darwin LNG to:¹²

- take action to offset the greenhouse gas emissions from the plant (approximately 100,000 tonnes of carbon dioxide equivalent); and
- work with the Territory Government to identify a suitable area of dry rainforest in the region to be acquired for conservation purposes to offset the rainforest cleared to accommodate the plant.

Following a joint proposal prepared by the NT Government and the NLC, the WALFA project was chosen as the project that would deliver both these requirements. It was implemented in 2006. The WALFA project area is an area that has been particularly prone to devastating late dry-season wildfires. The area was chosen because:

- the area had a poor fire regime;
- it was Aboriginal land tenure;
- it was largely depopulated; and
- it received very little commercial development opportunities.¹³

The WALFA project includes a number of agreements. A significant one is between Darwin LNG and the Northern Territory Government, signed on 24 August 2006. It certifies that the WALFA project will create a minimum annual abatement of 100,000 tonnes of carbon dioxide equivalent. It was made because, as the WALFA project was the first of its kind, the commercial agreement required a government guarantee that the project would deliver the required carbon abatement.

Darwin LNG pays the Northern Territory Government approximately \$1 million each year, as a fee to create the carbon abatement¹⁴. This figure is based on \$10 per tonne for carbon abatement. The agreement includes some renegotiation clauses over the life of the project and this figure may be increased depending on the market value of carbon abatement in the future.

The Northern Territory Government pays the NLC (which provides bookkeeper and coordination support for the project). Subsequently the NLC distributes the money to the local Aboriginal partners in each community area. The partners carry out the work to create the abatement through a project coordinator.

The wages component of the WALFA project money is paid directly into bank accounts of the local Indigenous people engaged in the ranger programs, as income for providing the service of fire management by each ranger group (not to a small number of traditional owners).

The long-term advantage of the WALFA project is that the project can employ a large number of rangers from the five partner communities, for the 17-year duration of the contract. Currently, all of the available money is distributed as expenditure or wages. In the future, as the project reaches maturity and the start up costs of



the project are reduced, any excess could be invested on behalf of the traditional owners, or for on-country programs.

In 2007, of the \$1 million:¹⁵

- \$130,000 was paid to the Tropical Savannas CRC which monitors and audits the project;
- \$380,000 was paid in employment to carry out the required fire work; and
- approximately \$500,000 was spent on operations which includes providing vehicles, helicopter charter and fuel to carry out the required burning.

The science of WALFA: Creation of the offset

To determine the amount of abatement created by improved fire management, the amount of biomass burnt in different fire scenarios across the landscape setting must be measured and calculated.¹⁶ The WALFA project abates carbon dioxide equivalent in the form of methane and nitrous oxide only; the carbon dioxide released by fire is assumed to be reabsorbed by the landscape in the next growing season.¹⁷

The WALFA abatement is calculated using methodology approved by the National Greenhouse Gas Inventory (NGGI).¹⁸ In simplistic terms, the baseline mean figure (as displayed in Table 2 as 371.92 gigatonnes) is used as a pre-project baseline. Emissions in each year of the project's operation are subtracted from the baseline figure to determine the annual abatement (or if the project year is higher, the increase in emissions). Emissions are measured by satellite and a methodology that involves significant rigor in measuring the carbon emitted from a wide variety of fires across the project area.¹⁹

The fire patterns are highly variable from year to year. This requires WALFA to work on a 'banking' system – if the abatement falls below the 100,000 tonnes in a given year, credit built up in previous years can be used to make up the shortfall.

	1995	1996	1997	1998	1999
Early	58.63	97.58	20.57	95.83	186.4
Late	267.17	444.86	210.59	113.01	282.27
Total	325.8	542.44	231.16	208.84	468.66



	2000	2001	2002	2003	2004	Mean
Early	100.03	61.14	102.88	45.91	69.39	83.84
Late	245.29	331.1	304.1	137.97	544.46	288.08
Total	345.32	392.24	406.98	183.88	613.85	371.92

Source: WAFMA 2006 annual report.

Benefits of WALFA – quadruple bottom line outcomes

WALFA has the potential to:

- successfully produce positive outcomes in remote Indigenous communities through the creation of meaningful employment on country;²⁰
- create significant biodiversity and environmental benefits;²¹ and
- maintain and strengthen traditional cultural practices of fire management.²²

In this manner the WALFA project is seen as producing positive ‘quadruple bottom line outcomes’²³ – economic, environmental, social, and cultural – as is now described.

- **Environmental outcomes** reduce greenhouse gases and help to mitigate climate change. The WALFA project also creates positive biodiversity outcomes that are the byproduct of good fire regimes, and creates a healthy landscape that is managed in the manner that it has been for thousands of years. The landscape of West Arnhem Land has developed as a managed landscape that depends on fire for many seeds to germinate over many generations. A healthy landscape is a landscape that includes people as active land managers. Land managers keep the country healthy, and the management of fire is the principal land management tool available.²⁴ Dean Yibarbuk describes land management via the management of fire below:²⁵

Opening up the areas [sic] ... that is accessible for people walking making it more easy [sic] for plants and animals to be able to come together there. We burn and we encourage our environments, our ecosystems, to come alive again. For animals we encourage them by burning country; we bring them back onto the burnt area.

- **Economic outcomes** provide employment opportunities in remote Indigenous communities that are largely economically marginal and have very few inflows of investment of the type that the WALFA project represents. The capital that is created through the WALFA project is secure long term commercial funding (17 years of \$1 million per annum). It represents the opportunity to create sustainable cultures of change and growth in remote Indigenous communities because it is significantly different from much current government funding that operates within short funding horizons under high administrative burdens.



The WALFA project provides rare on-country employment opportunities because it employs and engages local ranger programs which offer culturally appropriate careers in the bush. They are often the only careers available in the region.

- **Social outcomes** provide opportunities for people to develop social capital²⁶ and social benefits from engaging together in the project at a local scale. The WALFA project provides the opportunity for people to meet and plan a regional scale fire management plan, and provides new emphasis for local fire expertise to be transferred to the next generation and to be developed further. The WALFA project also offers the opportunity for alternative lifestyles in the bush away from some of the negative social pressures such as 'grog culture' that can pervade townships in the region.
- **Cultural outcomes** engage with the cultural activity of fire and land management and the expansion and development of cultural capital.²⁷ The WALFA project allows people the opportunity to actively practice their culture and to get back to country with their families as part of the ranger programs. One of the major cultural advantages that the WALFA project gives is the ability to practice culture.

One example of this can be seen in Kabulwarnamyo as the senior traditional owner, Lofty Nadjamerrek, spends time painting and teaching art to his grandchildren in an on-country setting.²⁸ The teaching and intergenerational transfer of language, place names, and dreaming stories is also a significant cultural benefit of having a sustainable means of living on country.

The WALFA project offers opportunities for Indigenous people to actively practice and maintain their culture in an on-country setting in a similar manner across much of the project area.

Wider contexts of WALFA

The WALFA project has been created within a number of important contexts. They include climate change, carbon trading, and Indigenous land management technologies. They have created the opportunity for the project to be developed as a commercial agreement from its beginnings as a government funded project (ALFA) (described above). The local Indigenous context in which the project is carried out also creates many unique opportunities and challenges.

1. Climate change

The recent Stern Review²⁹ notes that 'climate change presents a unique challenge for economics: It is the greatest and widest-ranging market failure ever seen'. It is a failure because the market has not had to factor in the costs of the emissions of greenhouse gases into production so far. It is in response to this challenge, in the space created as the global economy attempts to enter a low- (or post-) carbon phase that industries such as the WALFA project have been developed.



Post-carbon industries such as the WALFA project aim to mitigate the effects of climate change by reducing the amount of greenhouse gases that are released into the atmosphere. The WALFA project helps to mitigate climate change because it reduces the emission of greenhouse gases caused by human-induced fires.³⁰ Reducing emissions from savannah fires is the same (in climate change terms) as reducing emissions from other activities such as powering homes, industries, and transport. Examples of post-carbon industries include carbon sequestration in forestry, soils, and oceans; geo-sequestration; biofuel technologies; direct carbon capture technologies from power plants; and other abatement projects such as WALFA.

WALFA has emerged as a cutting edge project that won the *2007 Eureka prize for innovative solutions to climate change*. It employs a combination of Indigenous knowledge and Western science known as a 'two tool kit' approach.³¹ The term 'two tool kit' is used because it demonstrates a pioneering and innovative approach to resource and environmental management in Australia that incorporates a combination of Indigenous and Western technologies and knowledges.

2. The Kyoto protocol and carbon trading

It has been the advent of carbon trading, born out of the Kyoto Protocol (1997) that has provided the specific framework for the WALFA project to develop as a post-carbon industry. Kyoto style carbon trading represents the integration of environmental pollution into the global market economy. It has created new economies in which the offset and abatement of greenhouse gases (measured as carbon dioxide equivalent) can be sold and traded.

The Kyoto protocol that has led to the reduction in greenhouse gas emissions being recognised as a tradable or saleable product. The WALFA project was developed in that context.

The Kyoto system is a market mechanism that seeks to engage international and domestic markets in developing the most efficient and cost effective technologies to move the global economy into a post- (or low-) carbon phase. It is a 'cap and trade' system where national emissions are capped at agreed levels and targets for reduction are mandated over time. Nations that have ratified the protocol are committed to meeting the reduced targets over time, either through actual domestic emissions reductions, or by purchasing excess carbon credits created in other countries. Under this system, nations that develop the most effective technologies, and reduce their emissions by more than they are committed, can sell any extra reductions in a global carbon market. The newly elected Labor party has committed to ratifying the Kyoto protocol for Australia.

Carbon trading is seen as only one step in a process to tackle climate change. By mandating that polluting industries and technologies have to be offset at a cost (i.e. purchasing carbon credits to match their emissions), it is hoped that clean energy technologies will become more economically viable.

The essential next step is that low (or non-) emissions technologies are developed and engaged to replace the polluting ones that have had their price inflated by paying to offset their emissions. Thus (in theory), through profit seeking and market forces, clean energy solutions are developed and the market is engaged in tackling climate change. Kyoto style carbon trading represents one framework



for carbon trading. Others may be developed over time such as the regional Asia Pacific carbon trading scheme that could include Australia, China, the US, Japan, South Korea and India.³²

The WALFA project has been developed to fit into international Kyoto-style carbon trading. If Australia ratifies the protocol in the future the opportunity to trade carbon offset credits developed in the same manner as the WALFA project may exist under the Kyoto rules for carbon offset projects.

WALFA conforms to the Kyoto protocol's rules for a carbon abatement project. Thus it will also qualify as producing a tradable carbon abatement within the domestic carbon trading scheme planned for introduction by the new Australian Government.³³

3. WALFA and the local communities

There currently exists a disparity across a number of key social and economic indicators between mainstream and Indigenous Australians. The unique local circumstances of different remote Indigenous communities create different opportunities and challenges.

The WALFA project operates in remote Indigenous communities where the local population is much more likely to be poor, uneducated, unemployed, develop a disability or long term health complication, be incarcerated, and live a significantly shorter life (life expectancy is 17 years less) than mainstream Australians.³⁴ There are many reasons for these conditions.

Some of the challenges that the WALFA project and the local populations experience include exclusion from mainstream market activities, structural racism, population factors such as the isolated and remote location, the economic marginality of many Indigenous communities and lands,³⁵ the absence of adequate service provision such as infrastructure, education and health, and cultural factors such as different priorities from mainstream Australia.

One of the major challenges that people in remote Indigenous communities face is the lack of culturally appropriate careers and job opportunities. The market economy is largely absent from these places, and projects need to be tailored to suit the specific local conditions.

WALFA is a project that fits perfectly into the remote communities that it engages with because it represents commercial opportunities from carrying out the cultural activity of fire management. The WALFA project offers appropriate careers in the bush and uses the skills that the local people have such as knowledge of their country and knowledge of the traditional practice of fire management.

Working on the WALFA fire abatement project, local people can practice their culture in a strong and traditional manner. They can experience many benefits that come from a strong culture such as increased self and cultural esteem, increased material wellbeing through having an income, and the ability to ensure that their culture is practiced and passed on to the next generation.

The WALFA project has the capacity to overcome some of the challenges faced by remote Indigenous communities because it represents culturally appropriate careers in the bush, for local community members, based around the concept of caring for country and the local ranger programs. These community ranger programs



are the key mechanisms to run the WALFA project in the five partner communities. It is the ranger groups that carry out much of the prescribed burning. And it is the ranger groups who have the required local fire knowledge and fire history, as well as the specific fire management techniques required to create the burning on a fine scale to maximise biodiversity and land management outcomes.

The ranger groups form a cornerstone in remote Indigenous communities in many different ways: economically, culturally, and socially. The rangers are role models for young people (they often represent the only full time equivalent paid jobs), and they represent career paths in these remote places that are culturally appropriate.

The ranger programs represent culturally appropriate employment because local Indigenous people are able to create sustainable futures on country in a manner that does not require transforming themselves or their activities to engage with the Western economic paradigm. They are able to begin to realise some levels of sustainable futures on country through alternative pathways that are focused on maintaining and practicing specific local cultural activities. In the WALFA case, the local rangers are able to begin to realise some levels of economic sustainability by carrying out the traditional cultural practice of fire management.

Ranger groups carry out fee-for-service work such as weed management, feral animal control, AQUIS (quarantine) work, native harvest, and fire management.³⁶

These jobs can be broadly defined as 'caring for country' and often require the application of traditional ecological knowledge, either on its own, or in combination with Western science in a 'two tool kit' approach such as that employed by the WALFA project.

Ranger programs represent an engagement with the dominant paradigm that does not require the normalisation and mainstreaming of life on country that have been the aims of much recent government policy. Instead, these 'caring for country' functions represent paid activities that Indigenous Australians carry out that do not require them to change to fit the dominant model.

I support this grassroots approach (rather than normalising and mainstreaming Indigenous communities).

The community rangers provide opportunities for local people to achieve economic, social and cultural sustainability from carrying out cultural practices such as fire management. They care for country and care for people in a setting that celebrates and engages with their roots. In this sense these ranger programs represent foundations that can be built on through engagement with the WALFA project, and similar future projects, to form a focal point for developing positive social and cultural outcomes on the ground in the communities.

Challenges and opportunities for WALFA

The challenge of the WALFA project and other similar future projects is to maximise local Indigenous benefit from these new and exciting opportunities. While the WALFA project has the potential to deliver across the 'quadruple bottom line' (described above) the economic and environmental outcomes have priority over social and cultural ones. The challenge as the WALFA project progresses is to include the social and cultural outcomes that are as important to the success of the project as the environmental and economic outcomes.



The WALFA project is currently guided by a steering committee with members from the Northern Land Council, Bushfires NT, Tropical Savannas CRC, Darwin LNG, and the five partner community organisations. This steering committee will be responsible for ensuring that the WALFA project:

- maximises the benefits for local Aboriginal people; and
- set the benchmark for a new industry that is set to follow in the footsteps of WALFA based on the creation and sale of carbon abatement through improved fire management.

The steering committee and the leadership role that the Northern Land Council is playing in the project will be critical in ensuring that the new revenue stream that the WALFA project represents is transformed into sustainable futures on country for local Indigenous community members.

The WALFA project, under its current level of funding at \$10 per tonne of carbon abatement does not currently create much surplus, or profit. The \$1 million per annum covers the costs of creating the abatement but does not leave much surplus money.

A report of the previous federal government into an emissions trading scheme³⁷ in Australia recommended that a national carbon price be set at around \$20 per tonne in future carbon trading schemes.

If the WALFA project was renegotiated (renegotiation clauses do exist in the agreement) to a level of around \$20 per tonne, the project would create a surplus that could be used to generate community development outcomes. If this happened, the Northern Land Council could expand its role and work in partnerships with the five partner community organisations. They could develop community-driven development projects with profit created from the WALFA project.

Conclusion

The WALFA project is the first in a number of similar projects being developed across the north of Australia on Indigenous lands. These projects represent new revenue streams into remote Indigenous communities that have suffered in the past from not engaging in the domestic market economy. These types of projects are special because they represent an engagement with the national market economy in a manner that does not require total transformation of traditional ways of life for Indigenous people in remote communities. Indeed, carrying out the required work that creates the carbon abatement is a continuation of the practice of traditional fire and land management that Indigenous people have practiced across the country for thousands of years.

The great strength of these projects lies in the culturally appropriate careers that they create in an on-country setting. They have the ability to lead to real benefits for the people who really matter in resource projects on Indigenous lands, the local Indigenous community members.



- 1 A carbon abatement refers to a net decrease in carbon dioxide through an activity – a reduction of carbon dioxide emissions.
- 2 WAFMA refers to the WALFA agreement itself and is an acronym for West Arnhem Fire Management Agreement; in many instances these terms are interchangeable.
- 3 Williams, D., and Cook, G., 'Savanna Landscapes', *Savanna burning – Understanding and using fire in northern Australia*, Darwin, 2001, p5.
- 4 Russell-Smith, J., *Emissions abatement opportunities from Savanna burning*, Paper presented at Workshop for greenhouse emissions offsets programs, Melbourne, July 2007.
- 5 Christie, 1992.
- 6 For further information on fire in the Australian savannas see: Williams, D., and Cook, G., 'Savanna Landscapes', *Savanna burning – Understanding and using fire in northern Australia*, Darwin, 2001; Russell-Smith, J., Start, T., and Woinarski, J., 'Effects of fire in the Landscape', *Savanna burning – Understanding and using fire in northern Australia*, Darwin, 2001; Myers, B., Allan, G., Bradstock, R., Dias, L., Duff, G., Jacklyn, P., Landsberg, J., Morrison, J., Russell-Smith, J., and Williams, D., 'Fire Management in the Rangelands – A report to the Australian Government Department of Environment and Heritage prepared by the Tropical Savannas and Desert Knowledge Cooperative Research Centres', CRC Australia, 2001.
- 7 Russell-Smith, J., *Emissions abatement opportunities from Savanna burning*, paper presented at workshop for greenhouse emissions offsets programs, Melbourne, July 2007.
- 8 Natural Resources, Environment and the Arts., 'Aboriginal Burning Practices', *Bushfire Council Publications NT*, Northern Territory Government, Darwin, 2006.
- 9 The Jawoyn nation is very dispersed across a wide area and do not have a typical Ranger core group; instead a wide range of people across a wide area carry out WALFA burning on a casual basis (Interview with Ray Whear, Katherine, June 14 2007).
- 10 An annual abatement of 100,000 tonnes is required under the WALFA project agreement; this is discussed in more detail below.
- 11 Natural Heritage Trust, 'Community Rangers tame Arnhem land bushfires', *The Journal of the Natural Heritage Trust*, Australian Government, Canberra, Autumn 2004, no 19.
- 12 For a detailed description of the plant and its environmental impacts see the EIA available online at: <http://www.nt.gov.au/nreta/environment/assessment/register/phillipsexpansion/pdf/assessmentreport39.pdf>.
- 13 Interview with Jeremy Russell-Smith, Darwin, 23 May 2007.
- 14 It is important to note that WALFA is not officially a carbon trading agreement. Darwin LNG cannot on-sell the credits as they were a requirement made for a development application. WALFA is instead seen as a fee for service arrangement that produces a carbon offset. This distinction has been made due to the fact that carbon trading in Australia is not yet operational and there are many uncertainties and no clear industry regulations. WALFA operating as a fee for service arrangement simplifies the agreement significantly.
- 15 These figures have been gathered from the 2007 WALFA project budget and only represent that year of operational budget. These figures will change over time depending on the amount of aerial burning required for each season.
- 16 Wildfires release greenhouse gases through the combustion of biomass in the form of grass, leaf litter, and trees etc.
- 17 Savannah fires also emit other greenhouse gases such as ozone and other volatile organic compounds. While these are not currently counted towards its abatement there is potential in the future to include these gases and increase the measured abatement.
- 18 For detailed information on the measurement of greenhouse gas abatement in Australian savannas see Meyer, C., *Establishing a Consistent Time-series of Greenhouse Gas Emission Estimates from Savanna Burning in Australia*, A paper prepared for the Australian Greenhouse Office, CSIRO Atmospheric Research, 2004.
- 19 For details on the science of the carbon abatement see: Meyer, C., *Establishing a Consistent Time-series of Greenhouse Gas Emission Estimates from Savanna Burning in Australia*, A paper prepared for the Australian Greenhouse Office, CSIRO Atmospheric Research, 2004.
- 20 Edwards, A., 'Community rangers tame Arnhem land bushfires', *N. H. Trust* 19, 2004.
- 21 Yibarbuk, D., Whitehead, P., Russell-Smith, J., Jackson, D., Godjuwa, C., Fisher, A., Cooke, P., Choquenot, D., and Bowman, D., 'Fire ecology and Aboriginal land management in central Arnhem Land, northern Australia: a tradition of ecosystem management', *Journal of Biogeography*, 2001, 28: 325 343.
- 22 Bowman, D., Cooke, P., Yibarbuk, D., and Fell, R., 'Traditional and non-traditional viewpoints Arnhem Land Fire Stories', *Tropical Savannas CRC*, 2001, 1 2.
- 23 Quadruple bottom line is an adaptation of the term 'triple bottom line' that is used widely in resource management to discuss a project in terms of its economic, environmental and social outcomes. Quadruple bottom line represents a more holistic means for discussing project on Indigenous lands because it expands the framework to include the cultural factors as well as the other three outcomes.
- 24 Interview with Shawn Ansell, Bawinanga Aboriginal Corporation, Maningrida, 7 June 2007.



- 25 Interview with Dean Yibarbuk, Chairperson of Demed Association and Fire Ecologist, Gunbalanya 29 May 2007.
- 26 Social capital in this instance is based on Edwards, R.W., *Measuring Social capital – An Australian framework and indicators*, Australian Bureau of Statistics, Canberra, 2004 and relates to the resources available within communities in networks of mutual support, reciprocity, and trust.
- 27 The term cultural capital refers to the accumulation and development of cultural knowledge.
- 28 Filed observation and interview with Lofty Nadjamerrek, Gunbalanya, 8 June 2007.
- 29 Stern, N., *Stern Review on the Economics of Climate Change*, Her Majesty's Treasury, UK, 2006, pi.
- 30 Studies have shown that almost all of the fires in the NT are actually started by humans in one way or another. They are started by accident, from backburning that has gotten out of control, or by arson.
- 31 Eureka, 2007, available online at: <http://www.austmus.gov.au/eureka/index.cfm?objectid=B8571ED8E569-EC02-3DF65CB2178B1DD8>, accessed 28 October 2007.
- 32 The Australian, 19 May 2007, available online at: http://www.theaustralian.news.com.au/story/0,20867,21757380601,00.html?from=public_rss, accessed 10 October 2007.
- 33 The newly elected Labor party has committed to introducing an effective emission trading scheme by 2010. See Swan, W., *Climate change, carbon trading*, doorstep interview, 2 November 2006, available online at: <http://www.alp.org.au/media/1106/dsitre020.php>.
- 34 For further details see: Trewin, D., and Madden, R., *The Health and Welfare of Australia's Aboriginal and Torres Strait Islander Peoples*, Australian Bureau of Statistics, Canberra, 2005.
- 35 Much of the land that has been claimed back under Land Rights in NT is marginal, remote and traditionally economically marginal (Altman, 2004).
- 36 Field interviews with ranger coordinators: Piers Peters (Adjumarllarl Rangers in Gunbalanya), Matthew Ryan & Shawn Ansell (Djelk Rangers in Maningrida), Ray Whear (Jawoyn association in Katherine), and Ben Lewis (Mimal Rangers in Bulman).
- 37 Available online at: <http://www.pmc.gov.au/publications/emissions/index.cfm>.