**Traditional Fire Management:**

*Preliminary Draft Outcomes of the UNU Feasibility Study
An Initiative financed by the Government of Australia through Australian Aid*

Summary

Traditional fire management (TFM) recognises indigenous people have been managing the land for generations by lighting low-intensity, early dry season fires to create fire breaks and prevent the build up of ground vegetation, which, if left alone, led to later dry season destructive wildfires. The United Nations University (UNU) Assessment shows this traditional technology is globally relevant. Launching a proof of concept phase soon could provide an important contribution to the post 2020 United Nations Framework Convention on Climate Change (UNFCCC) regime, the Sustainable Development Goals (SDGs) and the post-2015 framework for disaster risk reduction. This brief proposal outlines the key findings of the assessment and identifies the practical next steps required to deliver a proof of concept phase.

1. **Global Impact of Wildfire**

Wildfires annually burn a total land area of between 3.5 and 4.5 million km², equivalent to India and Pakistan together, or more than half of Australia. Wildfires affect every region of the world. Reported losses generated by wildfires over the past decade (2002–2011) were on average US$2.4 billion per year. Wildfires have been estimated by the Economics of Ecosystems and Biodiversity (TEEB) to destroy ecosystem services in the range of US$146–US$191 billion per year.

The prevalence of wildfire is predicted to increase as a result of climate change, especially in drier fire dependent landscapes.

![Global fire activity variations](http://www.nasa.gov/topics/earth/features/fiery-past.html)

**NASA predicts that global fire activity could increase by between 5 and 35 percent**

The latest Intergovernmental Panel on Climate Change (IPCC) assessment (5AR) concluded that wildfires represent an important source of greenhouse gases, contributing about 10% of global greenhouse gas emissions. The IPCC in 5AR concluded that impacts from wildfires reveal
significant vulnerability and exposure of some ecosystems and many human systems to current climate variability. The IPCC also highlighted the greater likelihood of injury and death due to more intense fires and a major health impact of climate change in throughout the 21st Century.

The following maps show the amount of carbon emitted from wildfires each year and the dominant type of wildfires.

*Annual fire carbon emissions (gCm^-2year^-1)*

Fire dependant ecosystems such as tropical dry forests and savannas cover around one-sixth of the global land surface. A major problem in these landscapes is poor fire regimes result in the prevalence of large destructive fires that emit more greenhouse gases than well-managed areas. Furthermore, it is in these areas that the various models, such as the NASA modelling, predict will increase in fire by 2100.

The history of fire dependant landscapes around the world is remarkably similar. Historically all of these landscapes were dominated by fire regimes that were actively managed by the indigenous people by lighting low-intensity, early dry season fires to create fire breaks and prevent the build up of fuel, which minimised later dry season destructive wildfires. The stability of this fire regimes on a global scale is illustrated in NASA’s Global fire activity variations map above where fire activity was fairly constant between 850 until 1750. With colonisation by Europeans of these landscapes the fire management activities of indigenous people was supressed for a variety of reasons. This resulted in an increase in late dry season fires and overall increase of fire activity between 1750 and 1950. Since the 1950s fire activity has dropped globally, which reflects the conversion of savannas and tropical dry forest to western style agriculture, such as cattle ranching, soya bean and palm oil production.
2. **Traditional Fire Management and Climate Change in Australia**

Australia is leading the world in terms of experience in managing wildfires and understanding the role that fire plays in climate change. In Northern Australia, Aboriginal people have managed land for generations by using TFM. The first project to use TFM to generate carbon credits was the Western Arnhem Land Fire Agreement (WALFA) that started in 2006. The adjacent fire maps for Western Arnhem Land illustrate the impact of the reintroduction of traditional fire. Under the Carbon Farming Initiative (CFI), there are now 34 TFM projects, with 14 either indigenous owned or have significant indigenous involvement.

![Fire maps for Western Arnhem Land illustrating the impact of traditional fire reintroduction.](image)

The methodology for measuring the reduction of greenhouse gas emissions and NASA based satellite monitoring systems for reporting and verifying the carbon credits under the CFI are ground breaking regulatory developments with global implications.

The application of TFM has also generated substantial additional or co-benefits including creating market based jobs in remote and vulnerable communities, improving biodiversity, reinvigorating culture, improving food security and health.

3. **Global Assessment**

With support from the Government of Australia and a range of partners, UNU has undertaken a two year detailed assessment of the feasibility of transferring savanna burning “technology” developed under the CFI to countries in Asia, Africa and Latin America (the Assessment).

The Assessment, which is due to be completed in 2015, has already produced many key outcomes anticipated in the project design, including:

- Learning tools, workshops and learning exchanges in and among three main savanna regions of the world - Southern Africa, Latin America and Asia;
- Feasibility assessments identifying other promising regions of the world;
- Monitoring international policy developments and awareness raising at international meetings, such as UNFCCC Conference of Parties 18 and 20; and
- Exploration of market interest in the technology.

Further details are available at [http://www.unutki.org](http://www.unutki.org).
4. Preliminary Conclusions

The Initiative's Global Assessment, supported by the three detailed Regional Assessments are due to be published in the second half of 2015. Preliminary conclusions include the following.

Mitigation
The Assessment concluded that methodology for measuring the reduction of greenhouse gas emissions could be adapted to many other fire dependant landscapes around the world and that satellite monitoring and data is available and can be easily further built upon for all regions for reporting and verifying the carbon credits.

The Assessment found that better fire management, through the application of the proven Australian technology of TFM, could lead to reductions of wildfire emissions by as much as a half, reducing global greenhouse emissions by more than 1GtCO\(_2\)e/year, with significant further emissions mitigation through carbon sequestration over the long term.

Adaptation
It also concluded that this technology represents an important – in many cases the only viable – adaptation mechanism to the increased wildfire predicted to occur as a result of climate change.

Interest
The Assessment confirmed strong interest in the technology in many key countries, including in Indonesia, Timor Leste, Papua New Guinea, Myanmar, Cambodia, Namibia, Mozambique, South Africa, Tanzania, Botswana, Angola, Zimbabwe, Zambia, Madagascar, Peru, Mexico, Brazil, Colombia, Venezuela, Guatemala and Belize. Indigenous people, philanthropic organisations and companies such as ConocoPhillips, INPEX and BHP Billiton are also interested in this technology. In many of these countries there is interest, readiness and a strong desire to begin immediate on the ground practical work.

Co-benefits
The Assessment confirmed that the technology has great potential to deliver the types of extra benefits seen in Australia under the CFI. These include creating market based jobs in remote and vulnerable communities, promoting biodiversity, supporting tourism through retention of biodiverse landscapes, reinvigorating culture, improving food security and health.

Market interest
The Assessment confirmed strong market interest in using the Australian technology internationally. The methodologies developed under the CFI meet all international or national standards. Major multinational companies are interested in considering how this technology might be useful for their operations. The Gold Standard and Verified Carbon Standard are developing methodologies equally applicable for other countries based on the CFI methodologies. Any uncertainty surrounding the future of a global carbon market does not extinguish interest in this technology as there are several models of financing TFM possible. The WALFA project, for instance, is funded by a carbon abatement arrangement with ConocoPhillips that runs from 2006 to 2023. Despite significant changes in the global and Australian carbon market since 2006 both ConocoPhillips and the traditional owners remain fully committed to the original agreement of an indexed $10/eCO\(_2\).

Proven mature technology
The Assessment concluded that because traditional fire management relies upon local communities applying proven technologies to generate annual abatement of wildfire emissions it
avoids many significant problems that tend to arise with other land uses, such as REDD+, like, permanence, land tenure, governance issues and monitoring, reporting and verification issues (MRV).

The Assessment found that programs to reintroduce traditional fire practices for cultural and environmental reasons have already taken place in other countries, but none of these incorporate methodologies to quantify emissions reductions, like those developed under the CFI. Several of these projects, despite proven significant social and biodiversity benefits, have ended due to the lack of sustainability in funding models reliant on one off public and philanthropic grants. Where this is happening to add the technology would be a relatively straightforward matter that would markedly increase the viability of these efforts.

5. **Next Steps**

Traditional fire management represents a significant “new” method of land use. As REDD+ has demonstrated, implementing new land uses is a complex process. REDD+ also illustrates the risks of internationally driving such change in the absence of on the ground practical experience.

The Assessment has therefore concluded that scaling-up this “technology” in a phased manner with the next stage being a proof of concept stage is appropriate and demand driven. This proof of concept phase would centre on several distinct but related activities, namely a series of pilot sites, supported by international work on MRV, awareness raising and institutional support.

**Pilot Sites**

The first would be developing a series of pilot sites where promising communities are supported to reintroduce TFM. Criteria for choosing promising sites include:

- Wildfire mitigation and adaptation potential
- Co-benefits (e.g. economic, social, health, cultural and biodiversity conservation benefits)
- Supportive enabling environment (e.g. Community access and rights to savanna, supportive capable government and finance)

The Assessment has found that promising sites can be identified in most fire dependant landscapes. Specific sites in developing countries that have expressed an interest in participating in pilot studies include:

- Nusa Tengarra region, Indonesia
- The woody savannas of the northwest region of Timor Leste
- North Central Region, Myanmar
- Caprivi and Zambezi region, North-East Namibia
- Miombo woodlands region, Mozambique/Tanzania
- Savanna woodlands of northeast Namibia, southeast Angola, northern Botswana, southwest Zambia and northern Zimbabwe
- Machu Picchu, Peru
- Pampas des Heath, Peru
- Pino Gordo, Chihuahua, Mexico
- La Sepultura Biosphere Reserve, Chiapas, Mexico
- Grasslands in Sonora Dessert, Sonora, Mexico
- Sierra Madre Oriental, Mexico
- Ocampo Protected Areas, Savanna region, Chihuahua, Mexico
- Cerrejon, Columbia
- Middle Magdalena Basin, Colombia
- Roraima, Raposa Serra do Sol Indigenous Land, Brazil
- Ilha do Bananal, Brazil

Although the level of capacity varies among these sites, the Assessment found that all the relevant communities and governments do not have the resources to adopt the TFM technology. Also the vast majority of the holders of the relevant technology in Australia, such as the traditional owners across Northern Australia, do not have the resources to support the export of this technology. Consequently, the Assessment concluded that financial and technical support is needed to develop the capacity of traditional owners, local communities and governments. The Assessment has undertaken a detailed feasibility assessment of the type of support required for each pilot site, which is available on request. Based on the experience of gained in Northern Australia and the CFI the Assessment concluded that for the most pilot sites would typically require $2m of financial support over 5 years.

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**Developing Monitoring, Reporting and Verification**

Supporting the on ground work with these pilot sites will be regional and international activities to develop the necessary monitoring, reporting and verification procedures based on the CFI and North Australian Fire Information (NAFI) service. Global satellite fire data is freely available from agencies such as NASA and ESA dating from 2001. This satellite data allows for historical and real time monitoring of fire and provides baseline data for the CFI methodologies anywhere in the world. As a result the Assessment concluded that web based platforms that monitor, report and verify fire are feasible for any region on the world. Potential range of such systems could be regional (e.g. Southern Africa or Indonesia/Timor), national or local. The Assessment estimated that to establish a NAFI type MRV system would require approximately 1-2 year(s) and $600,000 for each region.

**Demand Side**

The Assessment concluded that the voluntary market is an important demand side option, and that resources will be needed to support the further development of voluntary standards for TFM projects tailored to conditions in specific regions.

**Awareness Raising**

The Assessment concluded that promoting awareness and working closely with relevant organisations such as ASEAN, APEC, SADC, IPCC and UNFCCC is essential if the opportunity this technology provides is to be realised.

**Institutional support**

The Assessment concluded to properly support a proposal of this duration, complexity and size will be best supported by a dedicated institutional home. Important institutional criteria in this regard include; strong links with indigenous organisations and other relevant expertise and be both internationally and Australian based. A well-suited institution and thoroughly explored option would be a dedicated UN centre on traditional fire management based in Australia.