



International Savanna Fire Management Initiative Botswana Pilot Study

Report of the Inception Meeting



Introduction

Savanna fires release methane and nitrous oxide, which are strong greenhouse gases. The current fire regime across much of the world's tropical savanna is dominated by late dry season wildfires. These hot, intense fires tend to burn most of the fuel available, including the canopies of trees and can burn for many days. They decimate biodiversity and lead to forest degradation and land erosion. Emissions from savanna fires can be reduced by shifting burning from the late dry season towards the early dry season and reducing the area that is burnt each year. This approach reduces emissions because the fires are less intense and burn less country each year. It also protects biodiversity, wildlife and infrastructure from wildfires.

In Australia, the traditional indigenous approach to managing wildfires in savannas through managed burning (i.e. savanna burning) and known as Traditional Fire Management (TFM), has been re-established as a key method to address climate change and manage landscapes. Over the last 10-15 years substantial work has been undertaken to develop methodologies, set up monitoring reporting and verification (MRV) frameworks, build capacity, engage communities and establish legal and governance frameworks. TFM can lead to reductions of wildfire GHG emissions by as much as a half, with significant further emissions mitigation through carbon sequestration over the long term. TFM also has significant potential to deliver a number of co-benefits including improved food security and sustainable agricultural practices.

Reinvigorating TFM practices represents the only viable adaptation mechanism to the increased wildfire predicted to occur as a result of climate change. It could lead to reductions of wildfire emissions by as much as half, with significant further emissions mitigation through carbon sequestration over the long term. TFM also offers a number of co-benefits including creating jobs, promoting biodiversity, restoring degraded land, preventing and reversing soil erosion, supporting tourism through retention of biodiverse landscapes, reinvigorating culture and improving food security and health. As the suitability of TFM to African landscapes is developed, it can encourage countries to generate revenues through international carbon markets.

This Project seeks to build the foundations to pilot Australia's TFM in Botswana, Africa where savannas are key ecosystems both in terms of being home to communities living on them and in making important contributions to agriculture, wildlife tourism and biodiversity. Botswana has been chosen as the region is among the most affected globally by savanna fires with a high level of suitability for the application of fire management methodologies akin to those used in Australia. Nearly one-quarter of the country was burned in 2010. The region has suitable climactic conditions (one wet season and one dry season annually) to be an optimal pilot site. Furthermore, Botswanan communities have experience in community-based natural resource management projects which suggests an in-built domestic capacity that could help accelerate successful implementation. Agriculture and tourism are two of the major three economic activities in Botswana and both are affected by savanna fires, with fires in agricultural areas tending to disproportionately affect women, who head the majority of poor rural households.

The Project will draw on Australia's expertise and experience in developing methodologies for emissions offset schemes with Australia's domestic Emissions Reduction Fund having generated economic returns for forest and other land-use activities that abate and sequester emissions. In this regard, the Project will draw on, and transfer, Australia's capabilities in methodology and project development, MRV, and carbon market design and development.

Finally, the Project builds on the solid bilateral relationship the Australian and Botswanan Governments have, including the fire management activities provided by the NSW Rural Fire Service and others supported by Pretoria Post. It also builds on the partnership with the Australian Government, the United Nations University (UNU) which involved a three year, \$3m detailed assessment of the feasibility of transferring the Technology to countries in Asia, Africa and Latin America ([Feasibility Study](#)) as part of the International Savanna Fire Management Initiative (ISFMI).

Project Launch and Inception Meeting: Gaborone November 2018

The Project held its inception meeting from Wednesday 7 November to Friday 9 November 2018 at the University of Botswana Conference Centre, Gaborone.

The inception meeting provided a significant opportunity for discussions with experts including Jomo Mafoko, Division Head of Fire Management from the Ministry of Environment, Natural Resources, Conservation and Tourism (MENT); Professor Pauline Dube, University of Botswana, Chair of the Botswana Global Environmental Change Committee (BGCC) and former coordinator of the Southern Africa Fire network (SAFnet); Professor Maitseo Bolaane, Director, San Research Centre; and Innocent Lefatshe Magole, National Project Coordinator, Ngamiland Sustainable Land Management, United Nations Development Programme, Botswana. A full list of participants is available in Annex 1 of this Report.

Over the three days detailed discussions were held on the experience with fire management and savanna burning in Botswana and Australia. The importance of engaging with local communities was highlighted and the experience with TFM in Australia with respect to the development of methodologies and MRV frameworks, building capacity, engaging communities and establishing legal and governance frameworks was shared.

Opening remarks

Associate Professor Pauline Dube welcomed meeting participants to the University of Botswana and Mr Nkosiyabo Moyo from National Disaster Management Office, Office of the President, provided background on the relationship between Australia and Botswana in relation to fire management. The 2008 destructive wildfires in Botswana caused significant damage to property and loss of lives. There was a call for international assistance and from this devastating incident a 10 year partnership with the NSW Rural Fire Service was established. Mr Moyo also reflected on the difficulty in getting people to volunteer to put out fires and the lack of insurance cover.

International Savanna Fire Management Initiative (ISFMI) Introduction

Sam Johnston, ISFMI Programme Leader, provided an overview of the project including the significance of savannas as a global source of greenhouse gas emissions, as well as, the close link between rural communities, indigenous knowledge, savanna landscapes and fires around the world. The presentation was followed by a short video on the [Western Arnhem Land Fire Abatement](#) Project in Northern Territory.

Fire Management in Botswana - Government of Botswana Policy, Strategies and Priorities

Jomo Mafoko, Head, Fire Management Division at MENRCT, provided an overview of the national fire management strategy that was prepared in response to the frequency and destructive nature of wildfires in Botswana. Wildfires have negative social, economic and environmental impacts and in extreme cases have led to loss of human life. The NSW RFS trained 5000 fire fighters from government and rural communities however the issue of payment for fire services is a concern that comes up frequently in rural communities. Jomo explained that the National Firebreak Network is not intended to stop the fires but to reduce the spread from one location to the other. To be effective a holistic strategy that manages fire operations across national, district, local and fire incident level should be elevated into a standalone fire agency.

San Research Centre at the University of Botswana

Professor Maitseo Bolaane, Director of the San Research Centre at the University of Botswana, explained that the Majority of San people in Botswana are not formally recognised as indigenous people and there is a need to identify San communities as vulnerable indigenous communities. The San Research Centre is a multidisciplinary research centre that informs stakeholders about San culture, socio-economic and political issues. The Centre pursues innovative strategies that provide access for San people to higher education;

compiles local knowledge and expertise on the San; forms policy positions on San development; and facilitates San self-representation and choices in development.

Fire knowledge and research, Department of Environmental Science, University of Botswana

Associate Professor Pauline Dube, from the University of Botswana shared experience from the Southern Africa Fire Network and, suggested the factors that drive wildfires in Botswana are closely linked to climate, ecosystems and land use. Botswana as is the case with the rest of southern Africa still operates under fire suppression policies inherited from colonial regimes, these approaches alienate fire users from fire management and law enforcement strategies have not been successful. Within local and rural communities there is a lot of traditional fire knowledge and people in communal areas rely on fire for everyday activities. Most fires start in communal areas and spread into protected areas so there is a need to link protected areas with communal area fire planning and management. One of the issues is land tenure as communal land belongs to nobody and everybody so no one takes responsibility when problems happen. There is a need to put communities into the centre of fire management and this can be achieved by recognising their need to burn and then work with them to transform local fire regimes. Governance is critical to success - it is essentially going to involve some decentralising of power to local communities - people need to make decisions at the local level and share in the benefits. An integrated national fire management strategy that incorporates knowledge of ignition sources, community education and controlling fuel load was suggested.

Ngamiland Sustainable Land Management Project, United Nations Development Programme

Innocent Lefatshe Magole, National Project Coordinator for UNDP, presented a pilot project in north-west Botswana with 3 focus areas: Haina Veld Ranches, Lake Ngami and Tsodilo Hills. These sites were chosen due to the high level of fire risk and the aim of the project was to build capacity of communities to manage the forest. The project found that because fire is criminalised local farmers don't adhere to safety and regulatory measures when using fire and authorities are not notified if a fire escapes. Strategies to reduce fire included ignition management, hazard reduction (including prescribed burning), community education, protection of property (which could include prescribed burning) and preparedness. Throughout the project quarterly dialogues were held and community people came to discuss fire and other community issues. In the training people were taught that fire is not criminal and they can continue to use fire but in a safe way by combining new knowledge with traditional practices. Since the intervention there has been a large reduction in the number of fires in Ngamiland, although this could be attributed to low rainfall experienced in addition to the education of the community.

Transdisciplinary Research on Climate Change Adaptation for Vulnerable Indigenous Communities in Sub-Saharan Africa

Nigel Crawhall, Chief of Small Islands and Indigenous Knowledge Section in the Natural Sciences Sector of UNESCO, spoke of the important agreements at the international level around indigenous and local knowledge. The UNFCCC COP21 Paris negotiations recognised that human rights and climate decisions need to sit together. Based on the Paris Agreement governments were invited to include indigenous and local knowledge in local action plans and now indigenous and local knowledge is seen as central to adaptation and mitigation. At a local level UNESCO have been working on indigenous pastoralist knowledge of climate change and how they forecast what the weather is going to do in a changing climate. In western science the specialists are very narrow so the meteorologists can't talk about impacts on ecology whereas indigenous knowledge encompasses a broader body of interconnected knowledge systems. Botswana has two world heritage sites in areas where fire is a major issue and the role of UNESCO is to apply innovation in managing risk. UNESCO supports indigenous people working towards national as well as local resilience.

Savanna Fire Management in Southern Africa and Brazil – Trends, Challenges and Opportunities

Robin Beatty from 321 Fire, gave an international overview of savanna landscapes and traditional uses and explained that a global history of colonialization caused a departure from traditional fire management methods. He explained it takes about 3 years of retraining to change the local fire regime. To achieve this an integrated approach is required with government, land holders and local communities all working together. One of the biggest risk factors is securing funds to engage local people in long term sustainable fire management strategies.

Community based fire management in northern Australia: the experience of the KLC

Ariadne Gorring, Business Manager at the Kimberly Land Council, explained that Aboriginal people traditionally used fire for cultural and ceremonial purposes, traveling through country, hunting and reinvigorating bush foods as certain plants rely on fire for regeneration. Australia was colonised by British and Aboriginal people were moved off traditional lands resulting in a huge shift in Australia's fire regime. The introduction of the native title Act reconnected indigenous people to their traditional lands. Across the Kimberley 13 ranger groups manage native title lands and are reinvigorating traditional fire management combined with new technology and science. The training model is built on a learning while doing on the job training approach. The fire planning process brings together cultural advisors, Aboriginal community members, on country Indigenous rangers and local landholders to agree on a fire plan based on traditional knowledge, science and fire scar mapping technology.

Australian methodologies and remote sensing

Professor Jeremy Russell-Smith, from the Darwin Centre for Bushfire Research, explained that the savanna fire method was developed after opportunity was realised based on the Kyoto Protocol. There are 3 types of methods, which have been approved by the Australian Government or are under development, that include abatement and sequestration of greenhouse gasses. The ISFMI Botswana pilot will focus on using prescribed burning to reduce methane and nitrous oxide that are emitted from hot wildfires. To do this requires historical mapping of fire scars and so there is a need for local people to be upskilled in community GIS systems. A research program to verify the emissions from different vegetation types at the pilot sites will require safe combustion experiments - probably using fire breaks – in the wet and dry season. Gasses from the combustion sites will be captured and analysed. There is a project being run by Professor Guido van der Werf, University Research Chair, Vrije Universiteit, Amsterdam, to calculate emissions from fire which will require a comprehensive science based field work program in this region over the next couple of years which presents an ideal opportunity to work together. Once the data is collected calculating emissions reductions is fairly straightforward. Setting up the MRV platform is probably beyond the scope of this project but will be required for verifying the reductions in emissions and calculation of carbon credits.

Savanna Burning legal issues in Australia and Botswana

Martijn Wilder AM and Lauren Drake, from Baker McKenzie law firm, spoke about the laws and policies that enable savanna burning to be successful. They highlighted the need to demonstrate the legal right to carry out a carbon project and referred to often complex land tenure issues, as well as, the need for regulatory approvals for research and fire burning permits. They spoke of the potential to trade in carbon markets as a source of income to support rural communities to undertake good fire management and the need for free, prior and informed consent from community to participate and benefit from the project. Issues related to ownership of emissions reductions (carbon credits) and accounting for emissions reductions under the Paris Agreement would need to be considered in relation to Botswana's climate policy.

Copies of the presentations are provided in Annex 2 of this Report.

The Project was then launched on Friday 9 November by the Minister of Environment, Natural Resources, Conservation and Tourism of Botswana, the Hon Tshekedi Khama and The Australian High Commissioner, the Hon Adam McCarthy.

Conclusions of the Meeting

Scoping Report

The meeting considered and agreed that the Scoping Report prepared in September was a fair and accurate summary of the situation in Botswana. A copy of the Scoping Report is provided in Annex 3 of this Report.

Pilot Sites

Based on these discussions and the Scoping Report three potential key pilot sites were identified:

Tsodilo Hills in the Ngamiland district: the advantages of this site include the UNDP facilitated Ngamiland Sustainable Land Management project that developed a local wildfire management plan, a community Trust facilitates CNRM; there are tour operators that may be interested in supporting the savanna fire management project; its in the high rainfall and fire frequency area; there are transboundary fires crossing into the Caprivi region of Namibia; the site is World Heritage UNESCO listed (due to the rock paintings); the Department Museums and Attractions manages the area, there is good road access and mobile network coverage; there is good fire equipment; the Indigenous community has been engaged in fire management with leadership from elders; and there are diverse vegetation types in the region.

Lesoma Village inside Kasane Forest Extension, Chobe District: the advantages of this site include: strong community leadership and a community Trust; a youth population that has technical skills and expertise including vocational education training certificates; the Elephant Valley Lodge (private enterprise) may be interested in participating; the region has high rainfall frequent fires; the Department of Forestry and Range Resources manages this area; there are transboundary fires going into Zimbabwe; there is easy road access to the area; there is good mobile network with cellular data which would allow the use of GIS data for fires; the NSW Rural Fire Service pilot site so there is a lot of fire equipment there; and the community has some controlled burning experience.

CKGR region: the advantages of this site are that there is strong indigenous knowledge in the community; it is a large landscape area of major international interest; the ISFMI could provide an alternative source of livelihood for communities thereby reducing pressure on the Game Reserve; fire is common in the region but there is a need for more analysis regarding frequency of fires; the area is in the lower rainfall zone so a new > 600ml rainfall method would need to be developed in collaboration with desert region of Australia; wilderness safaris and mining companies operate in this area so there is a good private sector interest; the wilderness safaris have research capacity and may have an interest in carbon offsets; the area is managed by the Government Department of Wildlife and National Parks; access to the area needs further investigation, but there are fire breaks and mining transects. The mobile network is patchy and cellular data connectivity is limited. This will change in future with the proposed Kalahari Research Institute by the University of Botswana BGCC. In addition to the CKGR there are wildlife management areas in the proximity of CKGR that are managed by communities.

Agreed priority needs to develop Community Based Fire Management in Botswana

As noted above, the traditional indigenous approach to managing wildfires in savannas through planned burning (i.e. savanna burning) has been re-established in Australia over the last 10-15 years. A savanna carbon method that addresses climate change and delivers social and economic co-benefits has been approved, with substantial work invested into MRV frameworks, building capacity, engaging communities and establishing legal and governance frameworks. This expertise will accelerate the ability to test and adapt TFM in Botswana. It provides a strong foundations to pilot Australia's TFM in Botswana at a series of pilot sites and design an MRV framework to support these sites. It will not however be possible to fully implement TFM in Botswana under the current Project funding.

The following activities that will leverage on existing capacities were identified as a priority for project implementation:

- Conduct Free Prior Informed Consent consultations;
- Undertake a detailed country level assessment of the policies, laws, regulations and institutional arrangements relevant to the implementation of the Technology in Botswana and identify possible barriers and solutions to address them;
- Identify necessary Activity consents, authorisations and licences, and where feasible assist in obtaining them;
- Provide specific legal, policy and governance expertise with respect to implementing any reforms related to developing regulatory frameworks to enable and support the Technology in Botswana;
- Conduct a baseline fire review, and prepare seasonal fire maps, fire frequency maps, and biodiversity baselines for the Pilot Sites;
- Prepare a validated vegetation fuel type map for the Pilot Sites;
- Design a concept for a platform for collecting relevant fire satellite data similar to North Australian Fire Information (NAFI) Service platform for the area concerned and/or the development of a tool to measure the impact of the Technology adapted from the Savanna Burning Abatement Tool (SavBAT 2.1) (MRV);
- Design and implement a research program for measuring GHG abatement generated by the introduction of TFM (e.g. Gold Standard or VCS Method);
- Develop a fire management programme to deploy the Technology; and
- Identify Traditional Knowledge and promote its application in the Project;

The following activities were identified as important opportunities for developing capacities:

1. Annual Botswana Pilot Project Partner Meetings with a view to:
 - Working with Government law and policy makers, to establish the correct policies, laws, regulations and institutional arrangements to enable the implementation of the Technology in Botswana, as well as, ensure the appropriate protections for vulnerable indigenous and local communities and FPIC;
 - Providing training in Australia and Botswana for rangers and local communities and relevant government officials to ensure the interaction of savanna burning TFM practices with national GHG accounting, national policies, supply side constraints, market demand, developing ITMOs or projects under Article 6 of the Paris Agreement, donor engagement strategies and measuring and valuing co-benefits; and
 - Facilitating the broader involvement for officials from other countries and potential future TFM project proponents from other Kavango-Zambezi Basin countries (Angola, Namibia, Zambia, Zimbabwe).
2. Exchange Program for the deployment of the Technology, including:
 - Arranging two-way exchanges between local people associated with the identified pilot sites and knowledge holders from organisations in Australia which could include Traditional Owners, Kimberley Land Council, Indigenous Land Corporation, private sector partners, experts from key institutions and government officials;
 - Organising pilot site stakeholder visits to Northern Australia (to be timed to maximise exposure to active fire season management and an appropriate Australian event, such as the KLC Ranger Forum or Garma);
 - Arranging a visit to Botswana towards the end of the Project that could include Australian knowledge holders as well as potential future TFM project proponents from other target regions in Africa and other savanna regions of the world; and
 - Facilitating access to Australian scholarship programmes to assist in on-going capacity building and knowledge exchange.
3. The ISFMI Network, an active international network of expertise and community of practice including:
 - Facilitating active engagement in the pilot sites, learning exchange and outreach by Indigenous organisations as well as partners from Botswana;
 - Promoting the Project at appropriate meetings (e.g. UNFCCC meetings and the CMI Summit);

- Identifying partners from other target sites in Africa to participate in the networking and knowledge exchange aspects;
- Encouraging engagement and co-investment from donors (current and potential) in the Project and other potential opportunities to expand the Technology in Africa; and
- Developing and implementing a communication strategy.

Annex 1

List of Participants

International Savanna Fire Management Inception Meeting

Government of Botswana

- The Hon Tshekedi Khama, Minister for Environment, Natural Resources, Conservation and Tourism, Botswana
- Dr. Manthe-Tsuaneng, Director, Department of Forestry and Range Resources, Ministry of Environment, Natural Resources, Conservation and Tourism
- Jomo Mafoko, Head, Fire Management Division, Department of Forestry and Range Resources, Ministry of Environment, Natural Resources, Conservation and Tourism
- Gaanewe Mogotsi, Deputy Director, Development Programmes, Ministry of Finance and Economic Development
- Nkosiyabo Moyo, National Disaster Management Office, Office of the President
- Dorcas Masisi, SNC Coordinator, Department of Meteorological Services, Ministry of Environment, Natural Resources, Conservation and Tourism

Government of Australia

- The Hon Adam McCarthy, Australian High Commissioner, Australian High Commission, Pretoria
- Ana Kabalu, Program and Research Officer, Australian High Commission, Pretoria

Botswana experts

- Professor Maitseo Bolaane, Director, San Research Centre, University of Botswana
- Associate Professor Pauline Dube, Environmental Science, University of Botswana
- Dr. Mulalu Mulalu - Geospatial and Satellite Fire Field Receiving Station, University of Botswana
- Dr. Kebonye Dintwe, BITRI, Remote Sensing Fire & Climate Change Expert
- John Molefe - Remote sensing fire expert - BUAN
- Sesafeleng Mosotho – Remote sensing fire expert - SADC AMESDA/MESA
- Gape Radinaane – Remote Sensing Fire - University of Botswana
- Leema Hiri, San Research Centre, University of Botswana
- Masego Phiri, MSc Student, University of Botswana

UNDP Botswana

- Innocent Lefatshe Magole, National Project Coordinator – Ngamiland SLM, United Nations Development Programme, Botswana

FAO regional office

- Rene Czudek, FAO Representative in Botswana and to SADC

Forest Conservation Botswana (FCB)

- Joshua J. Moloji, CEO
- Emmanuel Zuku

Botswana Consultants / NGOs

- David Parry, Director, Ecosurv
- Unopa Sikuku, Service Berry

UNESCO

- Nigel Crawhall, Chief of Small Islands and Indigenous Knowledge Section in the Natural Sciences Sector of UNESCO

Kalahari Conservation Society

- Thelma Sechotho

Other attendees' affiliation not registered:

- Olaotswer Kgosikoma

ISFMI Partners

- Martijn Wilder, Baker McKenzie
- Lauren Drake, Baker McKenzie
- Ariadne Gorring, Kimberley Land Council
- Professor Jeremy Russell-Smith, Darwin Centre for Bushfire Research, Charles Darwin University
- Anja Hoffmann, Integrated Fire Management Specialist
- Robin Beatty, 321 Fire
- Sam Johnston, Law for Development Initiative

Annex 2
Presentations

Available at <https://protect-au.mimecast.com/s/GZYaCzvOL5hQgEyVs4UfSo?domain=dropbox.com>.

Annex 3
Project Scoping and Initial Fact-Finding Report
25 September 2018