



INTERNATIONAL SAVANNA FIRE MANAGEMENT INITIATIVE

ISFMI *Revitalising Indigenous Fire Knowledge Globally*

The Climate Cost of Wildfire

Wildfires annually burn a total land area of over 4.6 million km², affecting every region of the world¹. They are a major driver of forest degradation and desertification, and lead to loss of life, property and livelihoods. In 2017, insured losses from wildfires totalled USD14 billion.² Wildfires have been estimated by the United Nations Office for Disaster Risk Reduction to destroy ecosystem services in the range of US\$146–US\$191 billion per year³, with net fire emissions accounting for approximately 3.8% of greenhouse gas emissions from all sources annually.⁴ One of the critical factors affecting wildfires is climate. The Intergovernmental Panel on Climate Change states that “climate variability is often the dominant factor affecting large wildfires”.⁵

Some landscapes, such as savanna and tropical dry forest, need fire. Fire in many such landscapes has traditionally been managed by Indigenous and local communities. With colonisation, however, much of this traditional fire management practice ceased. Peoples were often moved off traditional lands or otherwise prevented from using fire as a management tool. As a result, the frequency, intensity and spread of wildfire increased, as did the associated greenhouse gas emissions. Combined with the anticipated increase in wildfire that is predicted as a result of climate change, the cost of wildfire - to climate, ecosystems and communities - is expected to only increase over time.

Communities and Wildfire

The solution involves putting communities back at the forefront of fire management practice. Respect and recognition of Indigenous peoples’ and local communities rights and interests as leaders in their own futures is at the forefront of the Initiative’s priorities.

The North Australian Example

In the fire adapted landscapes of northern Australia, as in many other regions, Indigenous peoples traditionally managed fire in the landscape. Drawing from this experience, Australia has developed leading technologies for the management of wildfires. These technologies include the development of methodologies that measure emissions from fire, and, that when combined with

¹ Lizundia-Loiola, J., Otón, G., Ramo, R. & Chuvieco, E. A spatio-temporal active-fire clustering approach for global burned area mapping at 250 m from MODIS data. *Remote Sens. Environ.* 236, 111493 (2020)

² UNDRR (2019), *Global Assessment Report on Disaster Risk Reduction*, Geneva, Switzerland, United Nations Office for Disaster Risk Reduction (UNDRR). p239

³ <https://www.undrr.org/news/wildfires-rage-changing-climate>

⁴ GFED 4 www.globalfiredata.org; ISFMI. *The Global Potential of Indigenous Fire Management. Findings of the Regional Feasibility Assessments*. UNU, Tokyo, 2015; ‘Facts and Figures’ www.isfmi.org.

⁵ Also see Shi, K., Touge, Y. Characterization of global wildfire burned area spatiotemporal patterns and underlying climatic causes. *Sci Rep* 12, 644 (2022). <https://doi.org/10.1038/s41598-021-04726-2>.



satellite monitoring and adjunct tools, enable calculation of the emissions savings that result from managed burning in the early dry season, as opposed to the status quo of allowing the more intense fires that would otherwise occur in the hotter late dry season to take hold. Communities undertaking such fire management activities can verify the emissions reductions these activities have generated on an annual basis, and sell associated carbon offsets. This economic incentive to undertake fire management activities not only brings in income and other community benefits to remote Indigenous communities in the north of Australia, but takes pressure off state resources, while supporting ecosystem and biodiversity resilience.

Today there are 75 TFM-inspired Savanna Burning greenhouse gas emissions reduction projects, managing a quarter of Northern Australia's 1.2 million km² annually fire-prone savanna region, more than 30 of these projects Indigenous owned or led, putting Indigenous rangers and organisations at the front line of fire fighting and management across Northern Australia.⁶ Recent analysis finds that north Australian Savanna Burning projects have halved the frequency of wildfire on Indigenous lands over the last decade—an annual average reduction of nearly 3 million hectares. By 2025 it is estimated that Indigenous fire projects will have provided 600 to 1,100 part-time or casual jobs for rangers and Indigenous land managers, delivered significant environmental outcomes and reduced 3.2 million tonnes of CO₂e¹⁷.

toward revitalizing indigenous fire management and fire management techniques.

Since 2007, the ISFMI has been working globally to increase understanding of the potential of traditional fire management for a range of important climate, biodiversity and sustainable development goals. Through a global feasibility study the ISFMI established the potential of traditional fire management across much of the savanna and many of the dry forests of the world.

In 2018, the ISFMI began to take that experience to the field. Working with communities in northern Botswana, the ISFMI has supported San communities to employ early dry season fire management practices, with results that protected the important Tsodilo Hills World Heritage Area from a threatening wildfire incursion. In 2021 ISFMI demonstrated the technical feasibility of emissions reductions methodologies akin to those used in northern Australia in Botswana and other parts of Southern Africa.⁸

ISFMI is now working in collaboration with partner governments across Southern Africa, Mesoamerica, South-East Asia and Melanesia to develop approaches that address fire management challenges while reducing emissions, building ecosystem resilience, improving biodiversity, reinvigorating culture, improving food security and health, and supporting local livelihoods.

ISFMI contributes to the generation of knowledge and best practice around fire management through a Global Network of Indigenous and local community fire rangers, researchers, practitioners, policy makers and fire experts.

Sharing Experience Globally

The International Savanna Fire Management Initiative (ISFMI) is a non-profit organization working in partnership with Indigenous peoples, local communities, research institutes and governments

For more information consult our website www.isfmi.org or reach out to secretariat@isfmi.org.

⁶ For information on Australian savanna burning projects, consult the Indigenous Carbon Industry Network www.icin.org.au

⁷ Ibid.

⁸ Russell-Smith J, Yates C, Vernooij R, Eames T, van der Werf G, Ribeiro N, Edwards A, Beatty R, Lekoko O, Mafoko J, Monagle C, Johnston S. Opportunities and challenges for savanna burning emissions abatement in southern Africa. *J Environ Manage.* 2021 Jun 15;288:112414. doi: 10.1016/j.jenvman.2021.112414. Epub 2021 Apr 7. PMID: 33831642.



Cover page photo Courtesy Warddeken Land Management: Ray Nadjamerrek demonstrates fire management in West Arnhem Land, Australia.