



South American Fire Fund

Renaissance Philanthropy

JANUARY 2026

Executive Summary:

South America is facing an escalating fire crisis that threatens biodiversity in globally significant ecoregions, hard-won conservation gains, and millions of people.

The last five years have seen destructive megafires in the critical South American ecoregions of the Amazon, Cerrado, Chiquitania, Gran Chaco, and Pantanal. While fire has long been part of land management practices, the rapidly evolving convergence of climate-driven drought, with expanding deforestation and ecosystem degradation, has created new conditions and fire feedback cycles that are outpacing our capacity to address them.

There is a current, but limited, window of opportunity in which philanthropic leadership can change this trajectory before it becomes irreversible. Here, we detail a targeted and strategic set of approaches, based on a comprehensive theory of change, for an exploratory fund to address fire in five key South American ecoregions. The Fund will focus on three Core Strategies:

01

Fire Prevention & Resilient Stewardship:

Proactively prevent fires by changing the incentives for setting them through behavior change programs, land titling, new bioeconomies, financial tools and incentives, and targeted enforcement of illegal burning, and use innovation to accelerate recovery of highly diverse, newly burned ecosystems to create a bulwark against future fires.

02

Enhanced Detection & Coordinated Rapid Response:

Harness foresight analysis and pre-position critical resources to get ahead of fires, detect and monitor fires early, often, and precisely, and rapidly respond through coordinated and enhanced human and technical capacity and, when possible, automated fire response and suppression.

03

Integrated Fire Information & Decision Systems:

Build and democratize data-driven backbone systems for detection and monitoring, risk forecasting, new financial tools, decision support, post-fire impact assessment, and learning.

Across these three Core Strategies, the fund will embed transformative innovation and seek to shift incentives and behaviors. The proposed fund will target integrated approaches in high-opportunity municipalities and Indigenous territories, and through a deliberate monitoring and evaluation approach, generate evidence and momentum for success over the next two to three years and beyond - to a medium-term and larger-scale initiative.



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Section 1:

Introduction to the Problem Space



1.1: Overview

Destructive fire is accelerating around the world,¹ and so is its impact on biodiversity, economies, and people. In 2024, for the first year on record, fires surpassed all other causes as the leading driver of tropical primary forest loss globally.² During that year, Brazil lost 44.2 million acres of the Amazon, an area equivalent to the entire state of California.²

This is building on an exponential trend. The Brazilian Amazon already experienced a significant increase in fires in 2023, with at least 26.4 million acres burned, marking a 35.4% rise from 2022. Changing land use and ecosystem degradation, combined with climate-driven changes, including more frequent and severe drought and longer dry seasons, have created conditions that stoke catastrophic fires. Moreover, fires themselves drive climate change globally and regionally, accelerating feedback loops.

While fires in the Amazon and Pantanal have received the most attention, the lesser-known and fire-adapted ecosystems of the Cerrado and Gran Chaco are critically threatened and have also seen a dramatic uptick in destructive fires. The biodiverse Chiquitania region dry forests and savannas are also threatened by increased fire. The Pantanal, one of

the world's largest and most important wetlands, has suffered from extreme drought; an astonishing one third — 4.5 million hectares — burned in 2020.³

We are moving beyond the capacity of even fire-adapted ecosystems to adapt, and fire risk is outpacing current prevention and response efforts. Fires can lead to ecosystem degradation across the region, with broader impacts such as loss of atmospheric vapor transpiration, reduced rainfall, and ultimately ecosystem transformation. Resulting greenhouse gases and increased temperatures contribute even more to forest and biodiversity loss and further climate warming. This dangerous feedback loop is only getting stronger.

We are currently at a critical moment of opportunity. To safeguard the conservation gains of the last

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1. United Nations Environment Programme (2022). [Spreading like Wildfire – The Rising Threat of Extraordinary Landscape Fires](#). A UNEP Rapid Response Assessment. Nairobi.
 2. World Resources Institute. (2025). [Global Forest Review: Deforestation trends and analysis](#). Global Forest Watch.
 3. Shimabukuro, Y. E., de Oliveira, G., Pereira, G., Arai, E., Cardozo, F., Cerqueira Dutra, A., & Mataveli, G. (2023). [Assessment of burned areas during the Pantanal fire crisis in 2020 using Sentinel-2 images](#). *Fire*, 6(7), 277.

two decades, we need to prepare and equip governments and communities to effectively predict, detect, prevent, and respond to fires, and to recover biodiversity in affected ecosystems. In parallel, we must address the underlying socioeconomic drivers of fire — most fires in the Amazon and adjacent ecosystems are intentionally set — and make standing forests more valuable than cleared land. In this strategy, we propose a targeted and strategic set of approaches to achieve significant and measurable impact on fire in five key South American ecoregions: the Amazon, Cerrado, Chiquitania, Gran Chaco, and Pantanal. Timely and strategic philanthropic engagement can play a critical role in addressing this crisis by testing and proving new, innovative approaches and interventions, catalytically unlocking new funding, and mobilizing key partners.

1.2 Role of Philanthropy

Progress made with multi-decade philanthropic investments is now threatened by fire. Here, we outline a comprehensive strategy to change fire dynamics in South America. Initially focused on a two-to-three-year test phase to identify the most catalytic levers, this strategy proposes building integrated, sub-national response systems that bring together governments, the private sector, civil society, and Indigenous and local communities to reduce the likelihood of fire escape, improve fire management and response, and accelerate post-fire stewardship.

To succeed, the South America Fire Fund will need to mitigate the underlying drivers that have accelerated the clearing of forests. This will include aligning economic incentives with maintaining standing forests, and addressing land tenure and perverse incentives to clear land for agriculture and land speculation.

Through literature reviews, expert interviews, and program analysis, we have uncovered and shaped three core strategies to move the needle on fire dynamics in five critical ecoregions in South America.

Core Strategies (Proximate Causes)

- I. **Fire Prevention & Resilient Stewardship:** Proactively prevent fires by changing the incentives for setting them through behavior change programs, land titling, new bioeconomies, financial tools and incentives, and targeted enforcement of illegal burning, and use innovation to accelerate recovery of highly diverse, newly burned ecosystems to create a bulwark against future fires.
- II. **Enhanced Detection & Coordinated Rapid Response:** Harness foresight analysis and pre-position critical resources to get ahead of fires, detect and monitor fires early, often and precisely, and rapidly respond through coordinated and enhanced human and technical capacity and, when possible, automated fire response and suppression.
- III. **Integrated Fire Information & Decision Systems (pre-, during-, post-fire):** Build and democratize data-driven backbone systems for detection and monitoring, risk forecasting, new financial tools, decision support, post-fire impact assessment, and learning.

These three core strategies will be reinforced in investments of the South America Fire Fund via three **Cross-cutting Themes:** *Transformative Innovation, Incentives & Behavior Change, and Monitoring & Evaluation.*

Given limited human and financial resources for such a vast problem, dependence on fire for agriculture and land management, and the urgency of near-term action, we propose that this fund integrate efforts and fill gaps in target subnational areas (states, Indigenous communities, or departments/municipalities, depending on country context). These will be strategically chosen for ecosystem, landscape-level, and cross-jurisdictional impact, and with an eye to scaling successful models upon evidence of impact.

Below, we lay out this strategy in more detail, including the context and theory of change, an overview of current efforts and key opportunities, the outlines of a monitoring and evaluation plan, risks and assumptions, potential cornerstone grants for each strategic pillar, and a timeline of fund activities.

1.3 Purpose, Methodology & Strategic Framing

This strategy serves both as a compelling case for philanthropic leadership and a rigorous assessment of whether and how such leadership can meaningfully shift the trajectory of fire in South America. It is both an argument that philanthropy is uniquely positioned to catalyze transformative change at scale—and detailing how that change can be tested, measured, and adapted over an initial two-to-three-year period.

The methodology used to develop this strategy reflects a combination of strategic synthesis, expert insight, and programmatic grounding. It draws upon more than 50 in-depth interviews, across South America and globally, with experts across fire science and technology, Indigenous and community fire stewardship, restoration ecology, fire detection and risk modeling, conservation, finance, development, technology, and policy. This was complemented by extensive desk research across peer-reviewed science, policy analyses, and investment landscapes. The strategy builds directly on two decades of work in South America, as well as insights from the Wildfire Resilience Initiative. This work was also informed by on-the-ground experience, lessons, and innovation models, and those consulted over the last six months.

1.4 Problem Statement: Causes and underlying drivers of fires

The loss of primary tropical forest, tropical dry forests, and biodiverse savannas to destructive fire is both a long-running trend and an increasingly acute problem. South American fires are linked to

complex and interacting socio-economic, political, and environmental factors. Proximate causes include the basic fire triangle elements of fuel, oxygen, and ignition sources. Figure 1 shows the classic multi-scale fire triangle adapted for fire regimes and impacts in these South American ecoregions (see Box 1, page 14, for more information). Climate change and related drought (with extended reduction of soil moisture) are causing deliberately set, accidental, and escaped fires (including those few started by lightning)⁴ to spread faster and burn hotter than ever before. These positive feedback cycles can prompt a fire regime shift across broad areas if not addressed with new approaches now.

4. NASA Earth Observatory. (2003). [From Forest to Field: How Fire is Transforming the Amazon](#). NASA Goddard Space Flight Center

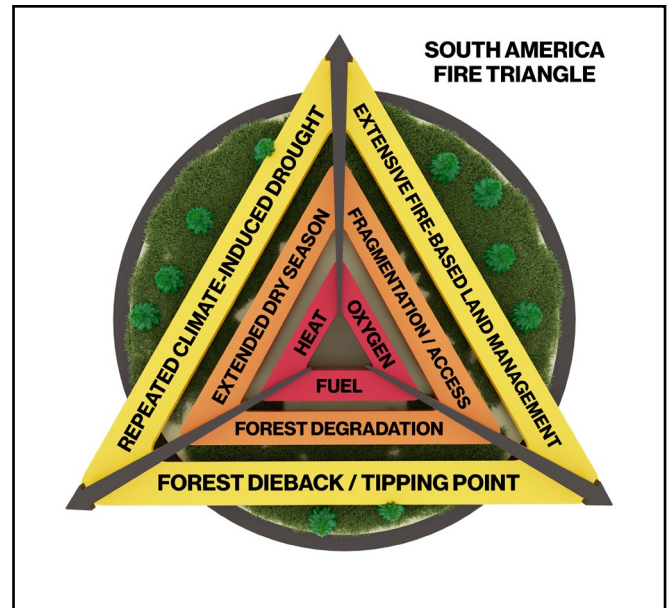
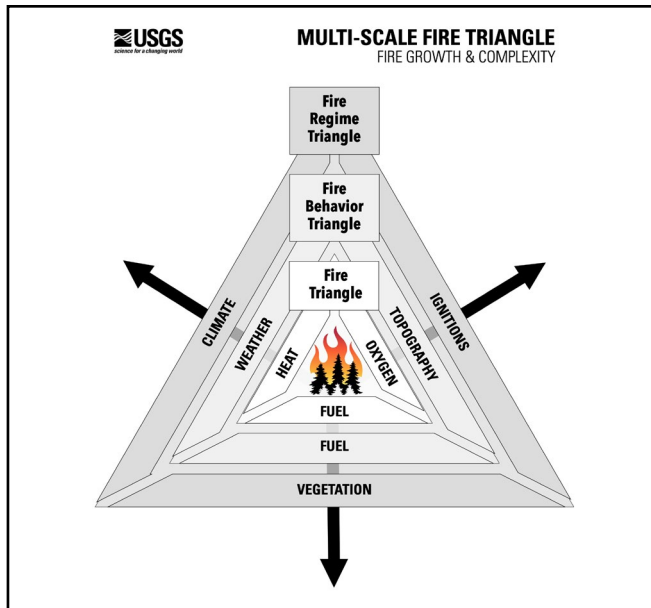


Figure 1: Multi-scale fire triangle (left) applied to fire behavior and regime for key South American ecosystem dynamics (right). The right-hand diagram shows the standard inner Fire Triangle of heat, fuel, and oxygen, while the middle Fire Behavior Triangle shows the (current) interaction of extensive fragmentation and forest degradation with an already extended dry season due to land use and climate change. The outer Fire Regime Triangle shows the potential for these ecosystems to shift to a positive feedback loop of extensive fire-based land management accompanied by ecosystem change (forest dieback) and fueled by repeated climate-induced drought. The strategy detailed here aims to arrest this process by targeting fragmentation/access and land management (ignitions) through fire prevention and stewardship (Opportunity 1) and forest degradation and potential dieback through rapid fire detection and response (Opportunity 2) all underpinned with state-of-the-art data and decision-support systems (Opportunity 3). Restoring ecosystems and reducing fire will also contribute to mitigation of climate-induced drought and dry season length. Credits: Left-hand graphic: [USGS](#). Design for right-hand graphic adapted from [E. Brain](#).

In this strategy, we focus on fires in five key South American ecoregions—the Amazon, Cerrado, Chiquitania (dry forests and savannas), Gran Chaco, and Pantanal (see Box 1). Fires in these ecoregions can be divided into four types based on their origin and location: (1) agricultural fires, used for agricultural and pasture land management; (2) deforestation fires, deliberately set to clear forests or burn slash after initial cutting; (3) forest fires, which burn standing forest understories and may result from escaped deforestation or agricultural fires or other ignition sources, and (4) savanna fires, which occur in savannas and savanna-forest ecotones, which include fire-adapted ecosystems.

1.4.1 Agricultural Fires

Indigenous and traditional communities have used fire sustainably for millennia, to clear land for shifting cultivation, to create nutrient rich soil for agroforestry (e.g., Amazonian black earth or *terra preta*) and other crop cultivation, and for hunting, especially in open savanna areas. Unlike North America, most fires in South America are intentionally set. Fire is the cheapest and most effective method for clearing land and for enriching the poor soils of agricultural land and pastures. In addition to subsistence practices, fires are frequently used to manage existing pastures and croplands at scales that vary from a few to thousands of hectares. Such fires have become a regular seasonal occurrence; however, as the climate has changed, there has been a dramatic increase in

fire escape into adjacent forests, especially those disturbed by fragmentation, edge effects, or timber extraction. Such escaped fires jeopardize adjacent areas, discouraging fire-free land management systems (such as agroforestry) and creating a feedback loop in which land management systems favor fire use (to avoid risking assets destroyed by a neighbor's escaped fire).

1.4.2 Deforestation Fires

Standing forests are considered less valuable than cleared land. In many South American countries, insecure land tenure, low penalties, traditional cultural practices, and insufficient financial incentives in favor of standing forests encourage both legal and illegal clearing. Fire provides the fastest and cheapest method, accessible to all. Fires are traditionally set in the dry season in areas where at least some trees have been previously cut and left to dry; under the extreme droughts of recent years, this first step has not always been necessary. In many areas, undesignated public lands cleared by fire can then be claimed with fraudulent titles, speculated on the black market, and eventually “laundered” into “legal” land registries. This dynamic also occurs in conservation units and Indigenous lands and in any area with weak or unclear tenure. In Brazil, such deforestation fires of the last decade are overwhelmingly illegal,⁵ and these lands mostly end up as low-density cattle pastures.

In other cases, smallholders follow or create new roads and use fire to clear land for settlement. A

single road can cause drying of adjacent forest (via edge effects), while allowing for easier access to clear forests.⁶ In Colombia, this has increasingly happened as long-standing guerilla-held regions become safer for settlement.⁷ Although such fire use is generally illegal, titles are often only granted for cleared land. Though historically associated with smallholder settler farmers, these dynamics are increasingly driven by large-scale landowners, including those outside the region and/or linked to organized crime. In recent times, under changing climate conditions, some of these fires have transformed into conflagrations that burned thousands of hectares. Thus, *the main underlying causes of fire are resource extraction and land speculation*. Seen in this way, fire is the tool whereby the forest is cleared to make way for extractive economic activities.

1.4.3 Forest Fires

In wet tropical forests, such as the Amazon, humidity and remoteness have historically excluded fire, and the thought of such fires was unimaginable. Most fires occurred overwhelmingly near roads⁸ and in fragmented areas. This has now changed. Drought, dry season length, and temperature anomalies linked to climate change are leading to many more fires burning in relatively undisturbed forests. For example, Peruvian fires increased 63% in 2023-2024 compared to 2019 and almost two-thirds of these were in primary forests. Most of these fires were human-caused.⁹ In Brazil, thousands of hectares of undisturbed forests burned in Roraima and Amazonas state in 2024. Though these fires were

5. IPAM. (2024, September 16). [Unallocated public lands are the most affected by fires in the Amazon rainforest from January to August](#). Brasil de Fato. IPAM. (2023). [30 years of IPAM: A history of love for the Amazon](#). Instituto de Pesquisa Ambiental da Amazônia.

6. Nepstad, D. C., Carvalho, G., Barros, A. C., Alencar, A., Capobianco, J. P., Bishop, J., Moutinho, P., Lefebvre, P., Silva, U. L., & Prins, E. (2001). [Road paving, fire regime feedbacks, and the future of Amazon forests](#). Forest Ecology and Management, 154(3), 395–407.

7. González-González, F., Clerici, N., & Murillo-Sandoval, P. (2023). [Everyone decided to declare war on the forest: Between territorial peace and pacification in the Colombian Andean–Amazon](#). Ecology and Society, 29(4), 46.

8. Adeney JM, Christensen NL Jr, Pimm SL (2009) [Reserves Protect against Deforestation Fires in the Amazon](#). PLOS ONE 4(4): e5014.

9. World Resources Institute. (2025). [Global Forest Review: Deforestation trends and analysis](#). Global Forest Watch.

predicted months in advance, lack of capacity, equipment, and preparation resulted in many of them burning for weeks. Such understory fires will have widespread and irreversible impacts, as forests burned once are much more likely to burn again and to transition to degraded grasslands.

Tropical dry forests are also vulnerable to fire. The Cerrado, Chiquitania, and Gran Chaco ecoregions all contain tropical dry forests with high importance for biodiversity and ecosystem services. In general, endemic savannas and tropical dry forests are highly threatened with clearing, but they have not received the same attention and recognition as have humid and montane tropical forests. Although these areas have some fire-adapted plants and historically have seen more frequent fire return times than humid tropical forests, the increase in frequency, extent, and severity of fires in tropical dry forests has created a critical and rapidly growing threat.

1.4.4 Savanna and Grassland Fires

All ecoregions in this strategy contain natural savannas and savanna-forest (both dry and humid) ecotones. These ecosystems have historically experienced much more frequent (<20 year), low-intensity fire return intervals, as Indigenous people have used fire for millennia for land management and hunting. A complex set of interactions between ecosystem, climate, and land use dynamics (including grazing intensity) determines the fire regime and its resulting impacts on biodiversity and ecosystem health. The fire regime impacts the savanna-forest ecotone, as fires of differing intensities can maintain open areas or burn off grasses and shrubs, enabling forest encroachment.

In recent decades, extensive use of these areas for cattle grazing has changed both the vegetation structure/community and the fire regime. Importantly, fire is often used to release a flush

“We knew [the huge fires of] 2023 w[ere] coming, and you could see it 9 months away. Being ready for the next drought is something we really, really need to do. We know what drought does and we know how challenging it can be when large landscapes become flammable at the same time.”

Doug Morton, a fire and remote sensing scientist at NASA

of nutrients for pasture regeneration, but too frequent, or too intense fires result in loss of the soil organic matter and microbiome, leading to soil mineralization and desertification.¹⁰ In this document, we use the terms ‘grassland’ and ‘pasture’ somewhat interchangeably, to denote open, degraded areas used for grazing that no longer contain the characteristics and biodiversity of natural savanna ecosystems, which have inherent conservation value. Savannas and savanna-forest ecotones present an important strategic opportunity for cultural fire and Integrated Fire Management practices; however, even these ‘fire adapted’ ecosystems are at risk from the high-intensity, drought-driven fires that are becoming increasingly the norm, and which are exacerbated by fire-heavy land management systems.

1.4.5. The Changing Impact of Fire

Fire has been part of South America’s diverse ecoregions and cultures for thousands of years. Fire comes in a variety of frequencies, intensities, underlying causes and impacts. However, in a changing climate, fires are also changing, and past

10. Vidal-Riveros, C., Souza-Alonso, P., Bravo, S., Laino, R., Ngo Bieng, M.A. (2023). [A review of wildfires effects across the Gran Chaco region](#). Forest Ecology and Management, Volume 549, 121432, ISSN 0378-1127.

knowledge may not always be a good indicator of future fire behavior. Climate conditions affect risk in non-linear ways that demand more nuanced guidance for behavior change, law, and land management practices (P. Brando *pers comm*). Fires are not all equally harmful: fires burning in primary forests are much more damaging than agricultural fires, while fires burning in once-burned humid tropical forests take those areas to a point of no return.

Now, the increased duration, intensity, severity, and frequency of fire requires adaptive new thinking and approaches. Increasing fire frequency and intensity imposes greater risks of irreversible forest loss, transforming forests into ecosystems increasingly vulnerable to degradation, and diminished in biodiversity. As we detail in the strategy below, responses should focus on preventing and addressing these most harmful fires while encouraging ecosystem stewardship for burned areas and behavior change for responsible use of fire when necessary or beneficial.

Box 1. Critical fire-affected ecoregions in South America

- A. **Amazon:** The world's largest tropical rainforest, with dense, humid vegetation not adapted to fire. Fires are almost exclusively human-induced, fueled by deforestation and drought.
- B. **Cerrado:** A highly biodiverse and threatened fire-adapted tropical savanna of grasses and sparse trees. Historic fire cycles are being intensified by invasive grasses and expanding agriculture.
- C. **Chiquitania:** Dry forests and savannas rich in biodiversity and endemic species, shaped by seasonal fires. Increasingly threatened by deforestation and high-intensity burns.
- D. **Gran Chaco:** A vast mosaic of dry forests, savannas, and scrublands. Naturally fire-scarce, but increasingly burned for deforestation and pasture expansion.
- E. **Pantanal:** The world's largest tropical wetland, not fire-adapted. Once rarely affected, now experiencing catastrophic fires driven by extreme drought and land-use shifts.



These ecoregions span ten countries and are interconnected across Brazil, Bolivia, Paraguay, and Peru. Fires often cross biome and national borders, underscoring the urgent need—and strategic opportunity—for regional coordination and a diverse, ecoregion-specific fire resilience strategy including integrated fire management where appropriate.

	Area (million ha) and Location	Burned (Last 10 yrs)	Deforestation (2000–2023)	Conservation Status & Threats
A	Amazon ~670 M ha Brazil, Peru, Colombia, Venezuela, Ecuador, others	~6% burned (2011–2021); +0.5% in H1 2024	~12% deforested	Globally vital. Main threats: deforestation, mining, agriculture, droughts.
B	Cerrado ~200 M ha Brazil, Paraguay, Bolivia	~36% burned (2011–2021); +0.5% in H1 2024	~10% cleared (2003–2020); ~50% native cover lost overall	Heavily degraded. Pressures: soy/cattle, fire frequency, water loss.
C	Chiquitania ~24 M ha Bolivia	~6% burned (2019 fire alone)	No precise %; forest area ~8.6 M ha in 2013	High endemism. Threats: fire, land clearing, cattle, soy expansion, warming.
D	Gran Chaco ~110M ha Argentina, Paraguay, Bolivia, Brazil	~1.4%/yr burned post-2010 (~14% in 10 yrs)	~6% lost since 1998	Rapidly vanishing. Drivers: deforestation, fire, weak regulation.
E	Pantanal ~16–18 M ha Brazil, Bolivia, Paraguay	~13% burned in 2020; ~8% in H1 2024	<0.5% deforested in 2023	Unique wetland. Pressures: drought, fire, land use, dams.

Section 2: Vision, Theory of Change & Measurable Outcomes



Residents flee as a forest fire burns out of control in the Pantanal

The proposed South America Fire Fund would address five diverse ecoregions with varied historic fire regimes. They range from intensely humid Amazonian rainforests and flooded ecosystems of the Pantanal to the fire-adapted savannas and dry forests of the Cerrado and Gran Chaco.

In recent years, three major human impacts are affecting fire regimes in all of these ecoregions: (1) climate change has caused increasingly fire-favorable conditions;¹¹ (2) major land use changes have resulted in ecosystem degradation, reduced resilience, and resulting increased fuel loads; and (3) a dramatic increase in the number of human-caused ignitions linked to access (e.g. road-building) and fire-based land clearance and management regimes. Together, these forces create ideal conditions for the destructive megafires that we have seen in recent years.

11. Feron, S., Cordero, R. R., Damiani, A., et al. (2024). [South America is becoming warmer, drier, and more flammable](#). *Communications Earth & Environment*, 5, 501.

While reversing the effects of climate change will require global effort, our theory of change finds that substantial progress can be made to reduce the incidence of destructive fire by addressing the forces of land use change and ignitions while also increasing the effectiveness, speed, and capacity of fire response.

2.1 Vision

Twenty-year Vision: By 2045, fire is excluded from, or rapidly-contained in, fire-sensitive South American ecoregions; fire used in land management or fire-adapted ecosystems is safe and beneficial, leading to an improvement in biodiversity and ecosystem integrity; and incentives for maintaining standing forests and ecosystems and preventing fire escape are greater than incentives for removing and degrading forests.

Ten-year Vision: Destructive fire is dramatically reduced across critical South American ecoregions due to strategic interventions in, and coordination between, target areas; incentives for removing standing forests are decreased; and land management practices are shifting significantly towards fire-safe approaches.

Fund Outcome: *By 2029, compelling evidence indicates that a meaningful reduction in destructive fire in target areas across the Amazon, Cerrado, Chiquitania, Gran Chaco, and Pantanal ecoregions could be achieved due to coordinated application of key interventions around three core strategies.*

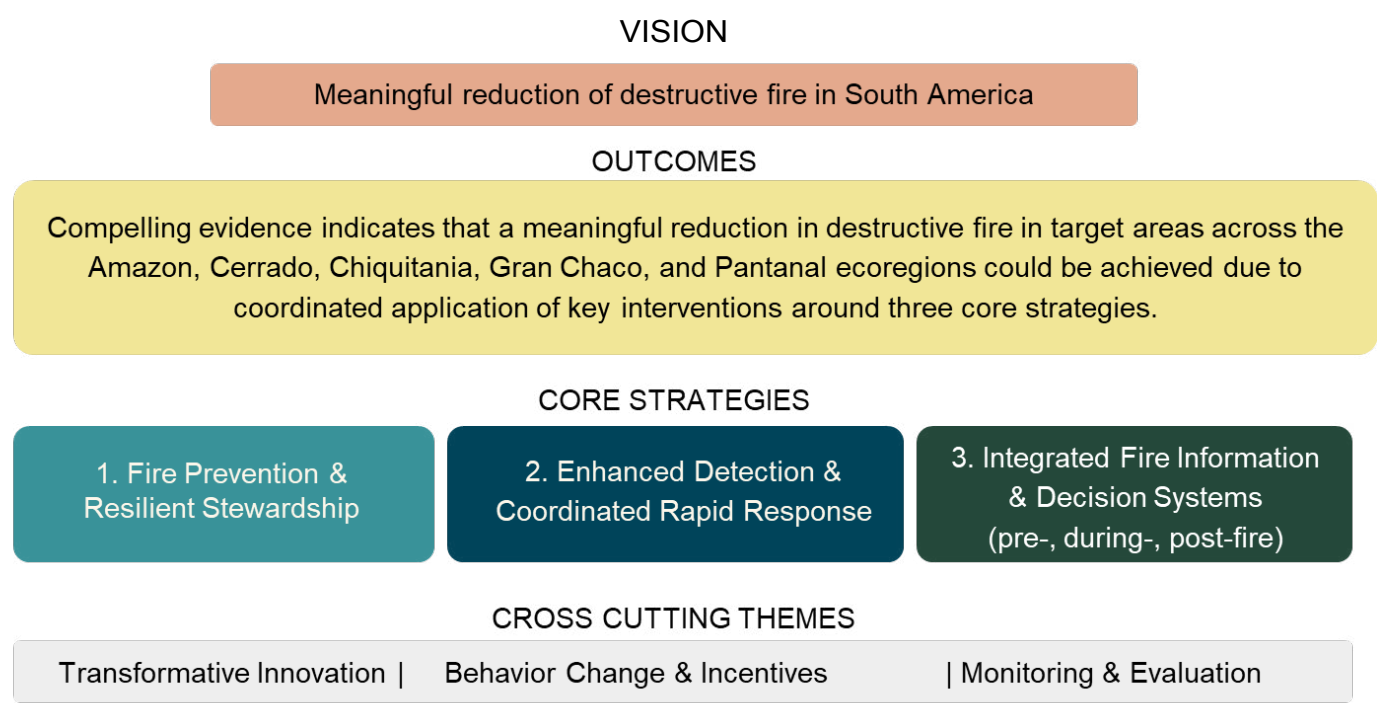


Figure 2: South America Fire Fund Strategy Hierarchy showing the high level longer-term vision, fund outcomes, Core Strategies, and cross cutting themes.

2.2 Theory of Change and Outcomes

Based upon substantial research, analysis, and expert input, our theory of change for catastrophic fire in South America concludes that the primary drivers, and therefore the opportunity for solutions, result from human activity (Figure 3). Ultimately, fires in these ecoregions are caused by economic pressure to clear land, due to standing forests being worth less than cleared forests, combined with higher fuel loads stemming from ecosystem fragmentation and degradation. Exacerbated by climate change-related increases in heat and water stress, including longer dry seasons and extreme drought, both deliberate and accidental fires are now escaping more frequently into primary or degraded forest, and continue to burn more intensely and longer. Fire suppression and response is hampered by lack of human, technological, and logistical capabilities, decision support and information resources, and financial and other behavioral incentives, as well as lack of coordination to address fires over huge areas.

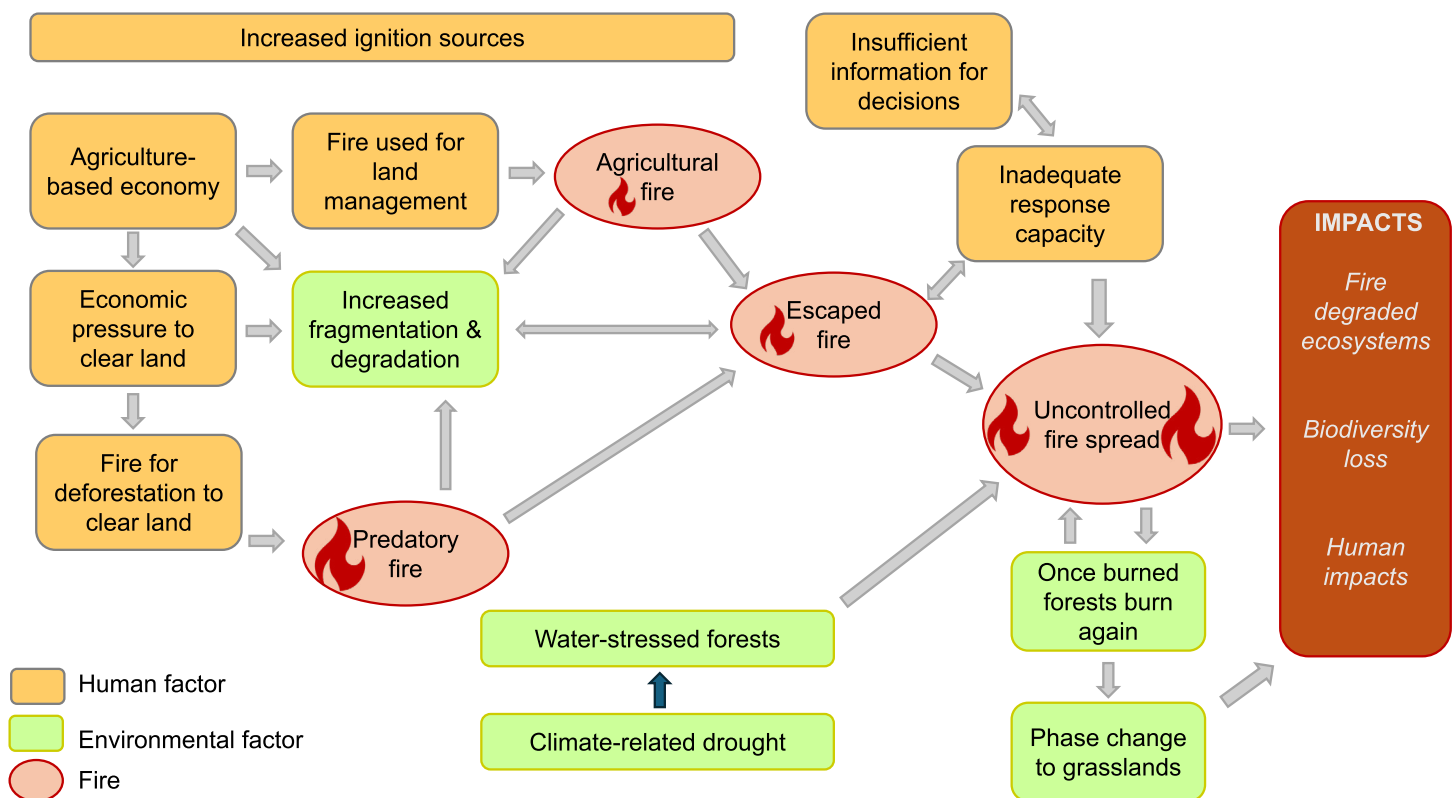


Figure 3: Simplified conceptual model showing the interaction of proximate and ultimate causes of fire and response in key South American ecoregions.

2.2.1 Core Strategies

To reduce destructive fire across the Amazonian, Cerrado, Chiquitania, Gran Chaco, and Pantanal ecoregions, we have identified three tightly connected, innovation-driven strategies. Each represents a catalytic point where change is possible—even in fragmented governance environments—and where philanthropic funding can provide evidence of the potential to make a measurable difference in the near term. Figure 4 shows these three core strategies embedded into a contextual theory of change.

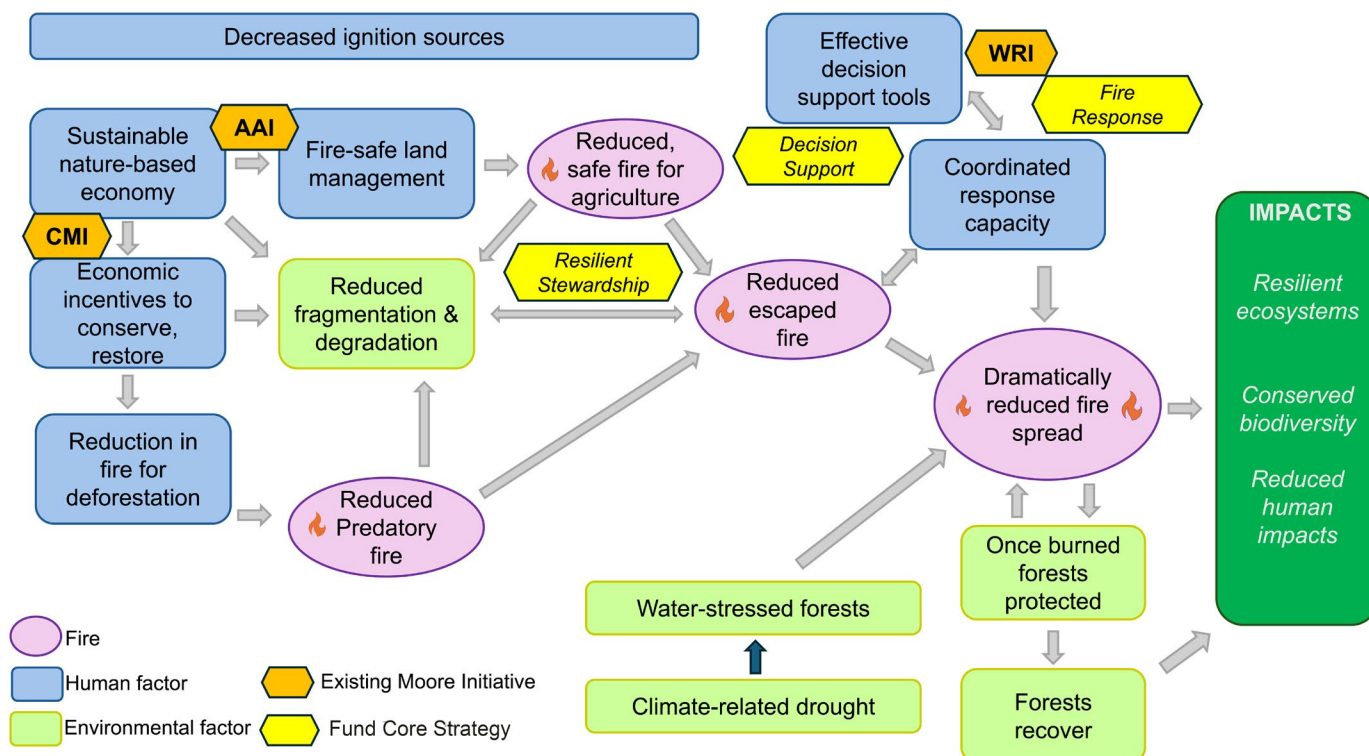


Figure 4: Simplified contextual Theory of Change with Core Strategy shown as yellow hexagons.

Core Strategy 1 - Fire Prevention & Resilient Stewardship - Goal: By 2029, evidence and accelerated results from successful early pilots indicates that escaped fires could be meaningfully reduced in target areas through innovative ecosystem stewardship, including enhanced management and prevention plans, shifting incentives and behavior, including through innovative finance, and accelerated recovery of biodiversity.

First, the most effective solution for destructive fire is preventing ignition and escape. **Fire Prevention & Resilient Stewardship** will enable agencies, communities and the private sector in target areas to prevent escaped and destructive fire through accelerated recovery of biodiversity in newly burned areas, enhanced management and prevention plans, behavior change strategies, financial tools and incentives, and targeted enforcement.

Specifically, funding the development and coordination of management and fire prevention plans (pre-fire) with communities and private landowners in target geographies, can assist communities to manage land without fire and reduce the risk of escape. These plans and community behavior change campaigns would be informed by scientific information (such as fire risk categories and burn/no-burn windows), and coupled with incentives to encourage shifts towards fire prevention.

Biodiversity recovery will abet these prevention measures by increasing ecosystem resilience against future fires, and prevent the Amazon from tipping into a grassland. Most South American ecosystems can be severely affected by a single fire; tropical forests in general recover very slowly, if at all, requiring decades to grow back. Through this South America Fire Fund, we would invest in breakthrough technologies and nature-based solutions that would accelerate recovery of biodiversity after these initial fire events in biologically important ecosystems, moving recovery from decades to years. These breakthroughs may include aerial large-scale seeding of native trees, promoting natural water flow to wetlands, creating ecological corridors with an eye to future conditions, and harnessing endemic microbial soil probiotics. The fund will also increase capacity and incentives for resilient post-fire stewardship, such as establishing fire resistant buffers in sensitive areas. The aim will be to protect once-burned areas from burning again, maintain the forest-atmosphere water cycle, and incentivize land management without fire.

Finally, the Fund will support financial incentives to shift the underlying drivers of human behaviors that lead to destructive fire. As long as degraded or cleared land is worth more than intact ecosystems, enduring solutions to the challenge fire poses will remain elusive. We can test ways to reverse the economic calculus in favor of intact forests through new financial policies (including municipal-level incentives), financial platforms (such as biodiversity and carbon credits), and introduction of new bioeconomy opportunities aligned with standing forests.

Core Strategy 2 - Enhanced Detection & Coordinated Rapid Response - Goal: *By 2029, evidence and accelerated results from successful early pilots indicates that fire detection and response times can be meaningfully reduced in target areas via enhanced pre-positioning of resources, strengthened fire brigade capacity, response planning and coordination, adoption of innovative tools for early, often and precise detection and monitoring, and rapid and, when possible, automated fire response and suppression.*

The second Core Strategy, **Enhanced Detection & Coordinated Rapid Response** (during fire) will advance innovation for fire incident response. High priority programs in target pilot areas include: pre-positioning resources for rapid response, enhancing capacity of agencies, communities, and the private sector, new platforms to detect and monitor fires early, often, and precisely, including under the canopy; developing and adopting innovations to rapidly address and extinguish escaped fires; and regional coordination.

Under changing climatic regimes, escaped fires need to be extinguished faster—within seven days. Emerging satellite and remotely-sensed platforms with higher cadence and resolution, like that of the Earth Fire Alliance FireSat mission, will allow for earlier, more frequent, more precise, and smarter detection, while improved, specialized weather forecast systems and fire behavior models can guide fire suppression efforts.

Finally, this core strategy will focus on improving the speed, coordination, and scale of responses. Specifically, through foresight analysis, and prepositioning - ideally months in advance - of resources, we will be able to respond to fires before they are beyond control. In parallel, we will equip fire brigades with the equipment, information, and logistical support needed to rapidly and effectively target the most critical areas, such as escaped fires in primary and once-burned forests, and put them out.

Core Strategy 3 - Integrated Fire Information & Decision Systems - Goal: *By 2029, evidence and accelerated results from successful early pilots indicates that stakeholders, including fire and technical agencies, civil society, and communities, can better manage fire and ecosystems through coordinated decision making underpinned by integrated systems and tools that transparently generate, share, and apply data on fire detection, risk forecasting, operational response, and post-fire impacts.*

Integrated Fire Information & Decision Systems (pre-, during-, post-fire) will provide the data-and-information backbone crucial to the success

of the previous two Core Strategies. Better and more timely fire detection, monitoring, and impact information, rapidly analyzed and disseminated to key decision makers as integrated decision-support tools, can help direct resources and people most effectively to address critical fires. Advances in artificial intelligence and machine learning (AI/ML) provide potential for highly-scalable resources that reduce costs and time. Improved, finer-scale fire risk modeling can inform targeted burn/no-burn windows to greatly increase fire safety above blanket bans. Furthermore, analysis of smoke and human health impacts, as well as fire damage in critical areas for restoration and stewardship efforts (e.g., fire-resistant buffer plants), can help the public better respond to and recover from fire.

Fund outcomes are organized around the Core Strategies and will be assessed for targeted areas by 2029. Tables 1-3 show specific sample outcomes, outputs, and indicators for the three Core Strategies.

2.2.2 Cross-Cutting Strategy

Cross-Cutting Strategy - Goal: *Monitoring, Evaluation, and a Validated Strategy for a Large-scale South America Fire Fund: By 2029, an updated and validated strategy for a large-scale South America Fire effort, which outlines medium-term scaling and sustainability of effective interventions, is developed based on data collected, analyzed, and synthesized, partnerships established, evaluation of strategic interventions, and funds leveraged and committed.*

This strategy includes a cross-cutting goal for **monitoring and evaluating** success which will enable completion of a sustainability and scaling plan for the medium-term, as well as a goal to integrate **transformative innovation** and a goal to align economic **incentives and behavior change** with maintaining standing forests.

Transformative Innovation: The growth in destructive fires is outpacing our ability to address them. But just as the conditions conducive to fire are changing exponentially, so too are the technologies and financial innovations that we can leverage to

address them. Sparking and leveraging innovation in all areas of intervention is a critical element of this strategy.

Incentives and Behavior Change: Humans created this problem, and humans can solve it. As virtually all fires in these ecoregions are human-caused, shifting incentives and changing behavior must be a cross-cutting outcome of these efforts. While we will leverage government agencies and favorable regulatory environments in target geographies (building ‘coalitions of the willing’), we will also create conditions, solutions, and incentives for behavior change that are not dependent on government action. Behavior change can be accelerated through technology and innovation as well as targeted public campaigns, and by deploying strategies that create economic opportunity from standing forests (Core Strategy 1).

Monitoring & Evaluation: With any difficult problem, it is critical to continually assess evidence of impact in order to manage adaptively and build solutions for scale. Robust monitoring and evaluation is critical for success. The key indicators, methods of tracking, and baseline and target information for the fund have been detailed in the outcome table. We will capture lessons and adapt as we learn more about the strategies we are testing, borrowing from DARPA program management approaches to stage-gating the impact of the fund’s investments during quarterly reviews.

2.2.3 Assumptions

This Theory of Change contains several key assumptions. First, this strategy is premised on the recognition that targeted philanthropic investment can catalyze long-term, large-scale change by providing strategic direction, fostering coordination, and de-risking early-stage solutions that will later be sustained by public and private financing. Crucial to this premise is that technological and data innovations can be made both accessible and actionable, can be adapted to low-connectivity and low-capacity contexts, and that local brigades and decision-makers will be equipped and motivated to

use them effectively. Importantly, this test fund is not about managing fire everywhere—it is about proving that the right approach, deployed in the right places, can deliver results worthy of larger-scale investment.

Second, while we envision solutions that are not dependent on governments, we also assume that we can capitalize on current regulatory environments, coordinating bodies, and existing efforts to lower the barriers of adoption and use, and rapidly implement and scale solutions across the three core strategies. This assumption works at multiple levels, including with local governments, state governments, and national governments across South America. Some government entities may see forest clearing as progress and undermine this assumption. **Because policy intervention is time-consuming and unstable, we have deliberately chosen *not* to include policy advocacy as a Core Strategy in the initial test fund.** Instead, we posit that given the many detrimental economic, social, and environmental impacts of fire, proving the concept that good fire management is possible, and can support economic growth, will provide support for those entities working to push governments towards better fire-related policy and regulations.

Third, we assume that with appropriate incentives, tools, and technical support, local actors—especially smallholders, Indigenous communities, and landowners—will shift toward safer land management practices, including fire-free or controlled-use systems. We assume that as part of this shift, enforcement actions and public engagement can reduce the incidence of predatory fires for land speculation and stop them before they get out of control. Financial innovation and incentives for landowners, captured in Core Strategy 1, will play a key role as well. One benefit of this South American Fire Fund will be to directly test this assumption.

Finally, we recognize that the ecoregions of interest are vast, and that solutions must be implemented rapidly, in coordination, and must move quickly to scale. Fortunately, an increasing number of innovation tools have proved incredibly powerful

in addressing large-scale and complex problems. Open Innovation, such as prizes and challenges, have shown the ability to identify and catalyze novel solutions, new communities of practice across wide geographies, and leverage additional funding of 10x-40x for innovations themselves. A powerful tool pioneered by the Gordon and Betty Moore Foundation, “Select Pilots Achieving Resilience by Key Indicators” (the target areas model from the Wildfire Resilience Initiative), has also proven to be an effective approach to de-risking and instigating adoption of such solutions. Thus, we propose the use of analogous target areas at the subnational level, using municipalities or departments. Solutions implemented in these target areas will incorporate monitoring, evaluation, and iterative adaptive management to prove effectiveness. We assume that this will both provide the necessary conditions to test these assumptions and also provide a basis to mobilize longer-term support to sustain and scale effective solutions.

2.2.4 Risks & Mitigation

The biggest risk of this investment isn’t the risk of action, but the risk of inaction — that philanthropy will not move quickly enough, experiment, and take sufficient, bold steps to change the current fire-driven regional trajectories. The investments at stake are tremendous. New tools and new approaches to address the changing nature of fire in South America would mitigate a quickly accelerating threat.

This strategy is designed to confront that threat head-on, initially by building out the evidence base through this test fund, and then ultimately charting a path for a larger effort to match the speed and scale of the problem. It seeks not only to defend philanthropy’s prior investments, but also to multiply this impact through smart, strategic, and timely action that enables others to follow. It is a bet that thoughtful, place-based philanthropy can outpace crisis, foster innovation, and chart a path to resilience—starting now.

The three Core Strategies do not depend on each other, thereby minimizing the risk that failure of one

undermines others. Nevertheless, there are other risks to mitigate.

Risk: Climate extremes, including worsening drought, impede success even with cutting-edge capacity, information, and tools.

Mitigation: Triage forest fire efforts to prevent catastrophic fires in the most important biodiversity areas, invest more heavily in prevention, including new financial incentives and accelerated recovery of biodiversity, and work in coordination with the foundation's initiatives to build new regenerative, nature-positive economies that create greater incentives and coalitions in favor of standing forests.

Risk: Agencies, landowners, and others are resistant to behavior change or slow to adopt game-changing innovations because of capacity, financial disincentives, regulatory, or social constraints. Underlying financial drivers of fire - such as the value of standing forest- remain unchanged, providing continued incentive for predatory and unsafe fire.

Mitigation: Work with the private sector (such as private equity firms, government investment agencies, or reinsurance companies) to change financial incentives in favor of nature. Provide the public with actionable information and incentives to prevent destructive fire; build bioeconomies to divert capital and people to focus on maximizing value from standing forests; build campaigns to shift public opinion including by emphasizing negative health and economic impacts of fire and smoke.

Risk: Donor and government funding is insufficient or not mobilized fast enough to meet the scale of the problem and ensure sustainability.

Mitigation: Bring together efforts of complementary philanthropic and private sector institutions to strategically coordinate, sustain, and scale proven effective

interventions. Work with governments to integrate efforts into, and leverage, existing programs and assets. A handful of foundations have already confidentially expressed interest in aligned and/or pooled funding. Private sector companies have offered to test accelerated restoration innovations, and invest in scaling those that are proven.

Prior philanthropic investments have been critical for protecting the larger ecosystem and slowing drivers of deforestation. **However, fire now presents a novel, nonlinear, and rapidly evolving threat to South America's extraordinary biodiversity.**

Addressing this new reality requires a systems approach that tackles fire across a larger set of geographies than the Amazon alone. Philanthropy will need to work in new ways with existing partners, add new partners, and catalyze new innovations. Philanthropic capacity for flexibility, innovation, and risk-taking is key here; given the scope, scale of and complexity of the effort needed, failure may result from insufficient risk taking rather than the inverse. Experimentation and innovation, brought together with world-class science, and deep partnership with key actors, including local organizations and people, will need to be at the heart of this effort.

Tables 1-4 show sample outcomes, outputs, and indicators for the three Core Strategies and the cross-cutting strategy.

Table 1: Core Strategy 1: Fire Prevention & Resilient Stewardship

Core Strategy	Objectives	Outputs	Sample Indicators
Fire Prevention & Resilient Stewardship: <i>Agencies, communities, and the private sector in target areas prevent escaped fires through innovative ecosystem stewardship, including enhanced management and prevention plans, behavior change strategies, and accelerated recovery of biodiversity.</i>	Escaped fires in target areas could be meaningfully reduced through the implementation of enhanced management and prevention plans, innovative tools, and state-of-the-art information.	- Community fire planning and prevention plans developed and implemented - Innovative tools, information, and improved risk forecasting systems identified, developed, and disseminated.	# of plans implemented # agencies collaborating # escaped fires in areas with plans
	Fire-free and 'fire smart' land management practices are tested and adopted by landholders in target areas	Innovative technologies and approaches identified, developed, and tested for fire-free and fire-smart land management.	# hectares under fire-free/fire-smart land management # landowners adopting fire-free/fire-smart land management tools
	Innovative and accelerated stewardship practices are developed, implemented, and showing measurable results in targeted burned, high-risk, or high-biodiversity areas.	Innovative and accelerated stewardship technologies and approaches identified, developed, and tested in prioritized areas.	# innovative stewardship technologies and approaches developed/deployed # hectares of post-fire area stewarded for resilience
	Innovative incentive systems, including new financial mechanisms, are implemented to maintain standing forests and reduce fire-related ecosystem degradation.	- New financial mechanisms such as fire credits, and/or carbon and biodiversity credits that incorporate fire dynamics, are developed. - Partnerships are established to advance development and implementation of financial incentives.	# of new financial mechanisms designed - Funding mobilized through the new mechanisms.

Table 2: Core Strategy 2: Enhanced Detection & Coordinated Rapid Response

Core Strategy	Objectives	Outputs	Sample Indicators
Enhanced Detection & Coordinated Rapid Response: <i>Agencies, communities, and the private sector collaborate to enhance fire detection and response times in target areas via enhanced planning and coordination, adoption of innovative tools, foresight and pre-positioning of resources, strategic response, and strengthened fire brigade capacity.</i>	Integrated fire response plans are developed in target areas, enabling enhanced coordination among strengthened full-time, volunteer, community, and Indigenous fire brigades, as well as with local, state, and national government entities.	- Integrated Fire Management and Response Plans. - Mechanisms and plans developed and implemented for coordination across jurisdictions, agencies, and brigades	- Fire detection time - Time to fire response
	Fire response times in target areas are meaningfully reduced through improved early detection, foresight, and prepositioning of resources.	Remote sensing satellite or other fire detection systems (e.g., FireSat, sensors, and/or others) developed and in place for early detection.	# of innovative fire suppression tools developed/deployed % of fires successfully suppressed
	Fire brigades in target areas show evidence of improved suppression effectiveness through the use of innovative, accessible equipment and enhanced emergency support for logistics and supplies on remote fire lines.	Innovative, cost-effective, and accessible equipment to address ecosystem-specific fire conditions and challenges identified, developed, tested, and deployed.	# hectares burned in prioritized sensitive areas
	Systems are developed to enable subnational fire-response personnel to exchange information on fire risk and incidents and to deploy support in real time across subnational and national borders.	Subnational cross-border information and coordination groups established and operationalized.	# systems/platforms developed for real-time fire risk and incident information exchange
	Fires in sensitive ecosystems (including primary or once-burned forests) could be reduced due to effective prioritization of areas.	Strategic priority areas identified, and systems developed to prioritize fire response.	Reduction in frequency or severity of fires in targeted sensitive ecosystems over time

Table 3: Core Strategy 3: Integrated Fire Information & Decision Systems

Core Strategy	Objectives	Outputs	Sample Indicators
Integrated Fire Information & Decision Systems: <i>Fire and technical agencies, communities and the public improve coordinated decision-making and accountability by using integrated systems and tools that transparently generate, share, and apply data on fire detection, risk forecasting, operational response, and post-fire impacts.</i>	Fires in target ecosystems are detected earlier and at finer spatial scales	Enhanced ecosystem-tailored fire detection technologies developed and deployed	Avg time to fire detection
	Enhanced fire risk models incorporate ecosystem-specific and non-linear dynamics at finer spatial and temporal scale	Enhanced fire risk models developed and tested	# of people reached by fire safety campaigns
	Agencies and the public access and use improved and transparent fire detection, risk information, and guidance to inform decision-making and behavior	Fire detection and risk data transmitted to the public in easy-to-understand formats and campaigns with behavioral implications	# of target agencies and brigades using integrated decision support tools
	Fire response personnel (agencies, brigades) are able to utilize coordinated, transparent, AI-enabled information to inform resource allocation and response before, during, and after fire.	- Data integrated from diverse sources into enhanced decision support tools. - Decision support tools tailored for, and deployed, into agency and brigade workflows, including coordination across jurisdictions.	% of fire response agencies/brigades with access to AI-enabled fire information platforms - Reduction in average response time to fire events in target areas

Table 4: Cross-Cutting Strategy: Monitoring, Evaluation, and a Validated Strategy for Scaling the South America Fire Fund

Cross-Cutting Strategy	Objectives	Outputs
Monitoring, Evaluation, and a Validated Strategy for Scaling the South America Fire Fund: <i>An updated and validated strategy for the South America Fire Fund is developed, outlining the medium-term scaling and sustainability of effective interventions, informed by collected and analyzed data, established partnerships, evaluation of Core Strategy Objectives, and leveraged and committed funding.</i>	Robust evidence is collected and analyzed, demonstrating the effectiveness of strategy interventions throughout fund implementation.	Robust monitoring and evaluation plan developed and implemented, and indicators collected and synthesized, throughout fund implementation
	A financial sustainability plan is developed and implementation has begun.	Size and types of investments needed to maintain and scale successful interventions are assessed, including government contributions, global credit markets, and a long-term philanthropic fund with target donors identified and initial commitments made
	A broad coalition of resource and implementing partners is established to collaborate on financing and implementing proven effective interventions	A formal coalition of initial members is convened to establish relationships and determine further finance, technology, and behavior change interventions needed
	A robust, evidence-based roadmap guides the medium-term scaling and sustainability of effective interventions, including technological innovations, to achieve strengthened fire and ecosystem management outcomes	Strategic plan developed for a longer-term initiative including a roadmap for medium-term interventions

Section 3:

Leverage Points & Force Multipliers



Wildfire advances near Porto Velho, Brazil.

Achieving transformative fire resilience¹² across South America can appear elusive, complex, and resource intensive. More than scaling known solutions, it will demand new talent, approaches, innovations, and institutions to confront a rapidly evolving and accelerating crisis.

Solutions rooted in innovation, technology, and science can stretch resources, expand capacity, rein in threats, realign incentives, spark creative approaches, make landscapes more resilient, and change the reality of what is possible. Before presenting an overview of current efforts, challenges, and opportunities, here we present some of the approaches that can lead to outsized impact on these difficult challenges.

3.1 Strategies for Sparking Innovation

We need new solutions and new solvers to address the rapidly evolving complexities of fire in South America and globally. A suite of proven approaches for sparking and accelerating innovation can source, develop, and scale novel solutions and collaborations that bring together the best of global and local knowledge and innovation. These include:

12. The Gordon and Betty Moore Foundation. (2025). [Wildfire Resilience Initiative: defining resilience – capacity to absorb disturbances, reorganize, and maintain function](#). Western Wildfire Resilience Index / Moore Foundation.

Accelerators and Foundries

Proven strategies from global innovation, such as DARPA's¹³ deep-tech innovation, commercial startup studios, corporate R&D labs, and innovation accelerators, can systematically identify high-impact problem statements and build new, mission-driven ventures to address them. Modeled on DARPA's approach, a Fire-focused Startup Foundry would assemble interdisciplinary teams of entrepreneurs, engineers, and scientists, pairing them with non-dilutive R&D capital, market access support, and long-term co-founding relationships. Potential venture focus areas, adapted for local contexts, could include drone-based and automated suppression tools, biodegradable IoT sensor networks for early fire detection, restoration/regeneration supply chains, fire-resilient agroforestry startups, and mobile-first platforms for Indigenous and rural fire management coordination. Such a mechanism would ensure the creation of startups purpose-built for fire resilience across South America—filling critical market and impact gaps that commercial venture capital often ignores. Partnering with regional accelerators, like the Amazon Sustainability Accelerator, and new or existing innovation hubs could help transition solutions from pilot to operational scales. Corporate partners have already indicated a willingness to pilot innovations and scale those that are proven through their own investments.

Matchmaking

South American contexts include their own local and regional challenges, contexts, and constraints. Local and Indigenous people know these best, and innovation is thriving already in these contexts. Matchmaking embedded into open innovation

mechanisms like those described below can pair local innovators, partners, and end-users with technical collaborators for co-development and scaling of innovation. This is a powerful mutual capacity building approach that ensures that innovations are locally relevant and effective, builds adoption and scaling mechanisms from the outset, and creates expanded opportunities for local stakeholders.

Innovation Hubs

Science, Technology, and Innovation Hubs¹⁴ can bring together the best of local and international innovation and catalyze the investment and capacity needed to build the science and technology-based regenerative solutions and economies of the future. Hubs can provide an institutional framework to house open innovation and direct grants and other mechanisms, while catalyzing broad economic opportunity through accelerating research-to-enterprise pipelines based in local economies. Such hubs can be a critical component of a medium-term approach to both developing fire solutions and creating the incentives for a regenerative bioeconomy needed to address fire's underlying drivers.

Open Innovation

Prizes and Challenges identify and motivate excellence, audacious ideas, and achievements, and even reshape people's perception to make what seemed impossible, possible. These competitions mobilize tremendous new talent from across sectors and geographies, create novel solutions and collaborations, and generate a powerful motivation to excel. They raise attention and ambition around the problem itself in society, serve as loudspeakers and influence public opinion, catalyze market demand and additional investment, and drive

13. Bonvillian, W. B., Windham, P., & Van Atta, R. (2019). *The DARPA Model for Transformative Technologies*. Open Book Publishers. <https://doi.org/10.11647/OBP.0184>

14. Adeney, J.M., Barata, L.E.S, Costa, F.A., Baptiste, B., Brandão, D.O., Vélez, B.J., Koch-Weser, M., Oliveira, G., Rogez, H., Silva, D.F.S., Varese, M., Arieira, J. (2024). *A Network of Science, Technology, and Innovation Hubs to Catalyze Regenerative Socio-Bioeconomies for the Amazon Region*. Policy Brief. Science Panel for the Amazon, United Nations Sustainable Development Solutions Network, New York, USA.

policy and regulatory changes to leverage the new innovations. For example, a regional South America Fire Grand Challenge—modeled on proven innovation competitions like Conservation X Labs’ Western North American Fire Grand Challenge and the XPRIZE Wildfire Challenge—would serve as a magnet for global talent and capital. A structured, time-bound competition could source, test, and scale fire solutions suited to South American ecosystems and societal contexts, including categories such as detection and response, decision support tools and information access, accelerated recovery of biodiversity, logistical and equipment challenges, and behavior change. A South America Fire Grand Challenge could offer multi-staged funding (seed, pilot, and scale) alongside access to regional testbeds, technical mentorship, and potential pathways to procurement by governments, NGOs, and the private sector. Corporate partners have already expressed interest in testing and scaling innovations in their own investments.

3.2 Financial Leverage and Sustainability

A key objective of this test South America Fire Fund is to convene a broad coalition of resource and implementing partners to collaborate around financing and scaling proven effective interventions. A formal coalition of initial members will establish needed relationships and contribute to a larger capital stack to support the test fund and establish the medium-term South America Fire effort. Conversations are already initiated, with a handful of foundations and other funding entities expressing interest.

Innovative finance force multipliers developed and supported by this group can blend catalytic capital, outcome-based payments, and MRV tech to flip the economic calculus toward standing forests and fast recovery of biodiversity. Early program concepts include: a **Fire-Free Producer Accelerator** with credit guarantees and technical assistance; a **Post-Fire Stewardship Advanced Market Commitment (AMC)** with corporate offtake for nature-positive claims; and a **Municipal Risk Financing Bundle** that links

parametric insurance, prevention investments, and outcome-based grants.

3.3 Catalyzing Behavior Change

Fire in South America, and indeed fire globally, has become a whole-of-society challenge, and behavior change is a critical, and cross-cutting element of this strategy. Force multipliers can be integrated into all three core strategies and should combine behavioral science, culturally grounded storytelling, financial and other incentives, and low-friction delivery channels so that guidance (e.g., burn/no-burn windows, smoke alerts) reliably changes day-to-day decisions. Examples of priority investments could include: (1) a rapid-experiment fund for community organizations to test behavior nudges; (2) a shared creative/translation studio for Indigenous, local, and rural media; and (3) integration of burn/no-burn guidance and smoke health alerts into municipal apps and radio scripts; (4) creating new financial tools – such as biodiversity credits or fire suppression credits, as well as creating new bioeconomies that provide value from standing forests and redirect capital and people in favor of forests. During implementation of the test South America Fire Fund, behavioral leverage points around fire use assessed in target areas will be tracked and measured using established methodologies (e.g., COM-B). Instrument campaigns with clear outcome metrics (e.g., adoption of burn guidance, reported compliance, time-to-response, escaped-fire incidence) and open dashboards can promote transparency and fast benchmarking and iteration by municipalities and partners.

3.4 Testing and Scaling for Rapid Impact

South America Landscape Interventions for Fire Transformation (LIFTs)

The SPARKs model, deployed in the Gordon and Betty Moore Foundation’s Wildfire Resilience Initiative, provides a framework for launching integrated, place-based target interventions

in high-risk and/or strategic jurisdictions. For this fund, target areas called LIFTs (South America Landscape Interventions for Fire Transformation) would serve as proving grounds for the strategy - new technologies, governance models, and incentive systems, with embedded monitoring and evaluation frameworks. Target areas will be selected using a set of criteria including ecoregion and biodiversity relevance, connectivity, existing efforts and key partners, and potential for impact, among others. By concentrating effort in a manageable number of municipalities, states, or Indigenous territories, these targeted areas allow rigorous testing of “whole system” fire resilience approaches, while also generating evidence and momentum for scale.

Together, these mechanisms provide a powerful toolkit to turn strategic investment into systems-level change. Whether through challenge-based innovation, venture creation, targeted funding, or network coordination, these force multipliers offer scalable pathways to fire resilience across South America’s most threatened ecoregions. The next section outlines current efforts and opportunities, and includes examples of these approaches set in greater context.

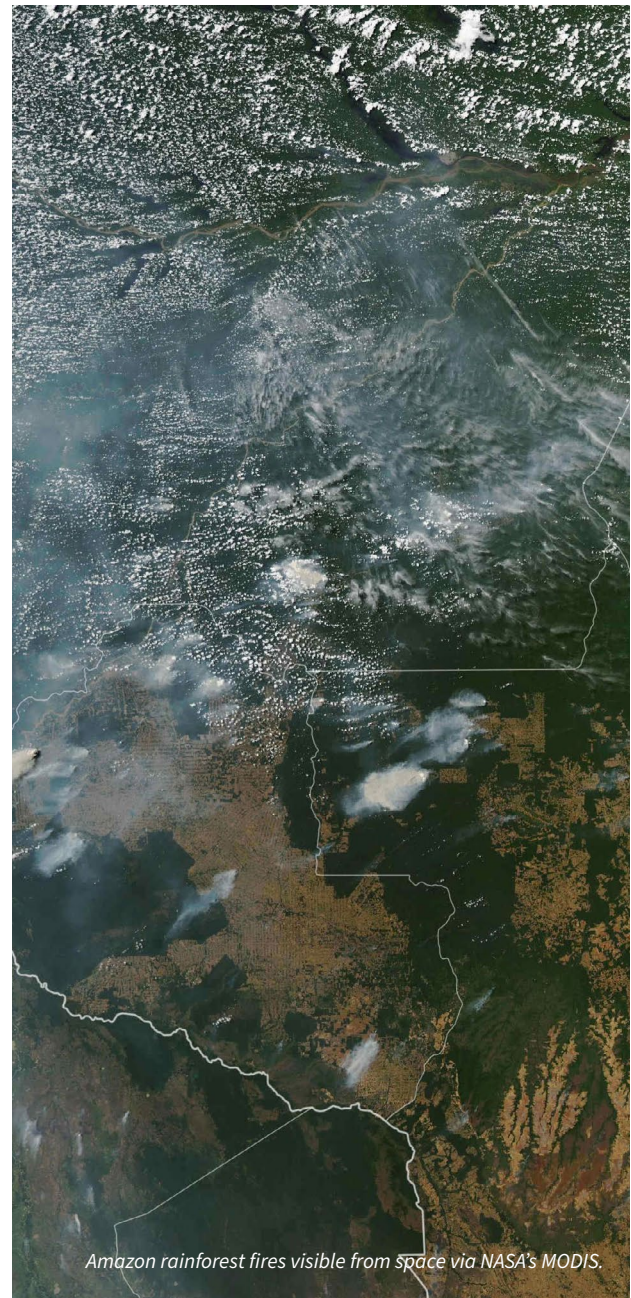
Section 4: Opportunities & Bottlenecks



There are many, however fractured, ongoing efforts to address fire in the target ecoregions. Here, we detail key solution examples, divided into five categories, that stand out among effective and innovative approaches and that could be more powerful if deliberately linked and tracked within a cohesive strategy.

This list is not exhaustive, nor do we expect that this test South American Fire Fund can address all these opportunities; instead this high-level overview can shed light on why we propose certain investment areas for immediate strategic engagement, with the goal of testing these areas to understand where a larger-scale medium-term fund could be most impactful. In each of five solution categories, we also highlight the strategy links and provide examples of high-leverage mechanisms that can serve as force multipliers: sparking innovation, accelerating deployment, building communities of practice, and aligning resources toward shared goals. These strategic interventions—ranging from innovation prizes to startup studios—can be deployed individually or in combination, and potentially across multiple solution categories as part of a broader intervention strategy.

We emphasize that solutions should be developed in collaboration and in parallel with Indigenous and local communities' management of their historic territories.¹⁵ Working directly with these groups to leverage



15. Sze, J. S., Carrasco, L. R., Childs, D., et al. (2022). [Reduced deforestation and degradation in Indigenous Lands pantropically](#). *Nature Sustainability*, 5, 123–130.

technology and innovation to enhance their capacity, in concert with traditional knowledge and practice, is one of the most promising avenues to long-term solutions.

4.1 Early Detection, Monitoring & Decision Support

Satellite Detection Systems for Fire Detection and Response:

Satellite-based fire monitoring has become an essential backbone of fire detection, monitoring, and response across South America. NASA's MODIS and NOAA's VIIRS sensors and geostationary platforms like NOAA's GOES-16 & 17, provide alerts that power platforms such as Brazil's INPE¹⁶ Queimadas system, FIRMS, and Global Forest Watch Fires. However, fundamental challenges persist. Significant limitations exist with the underlying data that feeds the multitude of existing platforms that track fire risk and spread, smoke, and burned areas, and enable community engagement. Existing satellite technologies fail to provide the needed combination of adequate revisit rates, spatial resolution, and detection of understory or underground fire or fire under heavy clouds - and it is about to get worse. MODIS, a key satellite system for fire detection, will reach end-of-life by the end of 2025; continued maintenance of systems like FIRMS are being threatened by changes in federal funding flows.

Fire detection capacity varies between and within countries, with both haves and have-nots. Even countries in the forefront are limited. While Brazil has its own constellations of earth-observing satellites, these are still lower temporal resolution, and less useful for addressing fires in real time. Brazil also purchases daily, country-wide, high-resolution PlanetScope data (3-5 m resolution). However, this data is primarily used by the federal police to map burned areas post-fire for very limited enforcement activities, not to monitor or address the active fires themselves.

A second challenge is that although substantial effort and resources have gone into curating satellite-based information into apps and decision-support platforms to assist with decision making and fire response, the access

and/or the human resource capacity to obtain, analyze, and respond to data to deliver timely and effective results remains a barrier. More robust monitoring, modeling, and forecasting is needed to translate data into actionable information to support early response and contribute to off-season and longer-term fire risk planning, including targeting fires that pose the biggest threat and need early response.

Tables 5 and 6 provide an overview of existing fire detection and monitoring technologies and decision-support platforms.

Gaps & Opportunities:

- **Enhanced real-time detection for rapid response:** Better detection capabilities, especially for under-canopy, under cloud, and nighttime fires and order of magnitude or better improvement in revisit rates, download speeds, and spatial resolutions, would transform the ability for rapid response and strategic decision making. New technologies like [FireSat](#)¹⁷—the multispectral satellite constellation purpose-built for real-time global fire detection—will dramatically improve available coverage and resolution for South America with an 80-meter average resolution, 5-meter hotspot resolution or better, and twice-daily revisit rates by 2026, with a goal of 20 minute global revisit rates when fully operational in 2030. One need to ensure full impact for South America is the on-the-ground infrastructure to download the data in real time as the satellites pass overhead, and the training and adaptation of the data for users.
- **Better fire risk modeling:** Fire risk changes non-linearly and varies geographically with soil moisture, microclimate, and forest recovery from past drought.¹⁸ Reducing the risk of catastrophic fire, while allowing for necessary agricultural fires, depends on reliable data to assess fire risk and set burn windows targeted to local conditions. Current fire risk prediction models are inadequate to do this effectively. Opportunities include unified platforms for risk, forecast, and coordinated response, including expanded use of AI/ML for dynamic threat detection and rapid response.

16. Sistema de Monitoramento de Queimadas por Satélites ([INPE BDQueimadas](#))

17. Earth Fire Alliance. (n.d.). [Earth Fire Alliance](#).

18. Brando, P. M., et al. (2020). [Amazon wildfires: Scenes from a foreseeable disaster](#). *Flora*, 268, 151609.

Improved specialized weather forecast systems and fire behavior models could guide fire suppression efforts and public engagement, hopefully months before the fire season starts.

- **Decision-support systems:** To fully realize the potential of these systems, satellite data must be translated into actionable insights for frontline users. While decision-support platforms proliferate, many are exceedingly general. As we have seen in North America, fire agencies in South America also often rely on fragmented GIS-based analyses that depend on specifically-funded projects, and which are not shared between jurisdictions, agencies, or with communities. Better decision support systems, including using AI/ML to extract key decision information out of reams of data from a variety of sources, are needed to enable fast, nimble direction of resources to priority fires.
- **Access to information:** Although connectivity is rapidly changing as new technologies (such as Starlink) become more widely accessible in South America, municipal authorities, fire brigades in remote areas, and communities on the front lines often lack information, equipment, and logistical support to inform response. Solutions can include building pathways to deliver tailored alerts and fire intelligence directly to community brigades, subnational governments, and enforcement agencies.

Table 5: Wildfire detection and monitoring tools

Satellite / Sensor	Spatial Resolution	Temporal Resolution	Processing Tools & Platforms	Strengths	Weaknesses	Projected Lifespan / Status
PlanetScope	~3–5 m	Daily (with subscription)	MapBiomas, RAISG, Google Earth Engine	Very high spatial resolution	Commercial cost, limited access	Commercial fleet maintained indefinitely
Sentinel-2 MSI	10–20 m	5-day revisit	Google Earth Engine, MapBiomas Alerta, Copernicus Hub	- High spatial resolution (10–20 m) - Good for burn scars	- Limited temporal frequency (5–10 days) - Affected by clouds	Ongoing; Sentinel-2A/B operational through ~2030
CBERS (China-Brazil)	~20–60 m	~5 days	INMET, INPE	Regional collaboration	Lower revisit rate and resolution than newer satellites	CBERS-4 operational; CBERS-4A to ~2027+
Landsat 8/9 OLI/TIRS	30 m (OLI), 100 m (TIRS)	16-day revisit	Google Earth Engine, academic research tools	- Accurate land cover & fire scar mapping - Historical data	16-day revisit - Not real-time	Landsat 8: ~2029; Landsat 9: ~2039
VIIRS	375 m	4 observations daily	NASA FIRMS, NOAA Hazard Mapping System	375 m resolution - Day/night coverage - Better for smaller fires	Still limited in detecting fires under canopy	Suomi NPP operational to ~2026-2027; NOAA-20 to ~2030
GOES-16 (NOAA)	500–2,000 m (depending on spectral band)	Every 5–15 minutes	INMET, INPE	Very high temporal resolution	Coarse spatial resolution	Operational through ~2036
MODIS (Terra & Aqua)	1,000 m (active fire), 500 m (burned area)	4 observations daily	NASA FIRMS	- High temporal resolution (2x/day) – wide coverage - Global baseline. - Long time series (>20 years) - Daily update.	- Coarse spatial resolution (1 km) - Misses small/understory fires	End of mission likely ~2026-2027
Sentinel-3 SLSTR	1,000 m (thermal)	Daily	Copernicus Global Land, EFFIS, GEE	- Real-time imaging (5–15 min) - Useful for fast-spreading fires - Daily observations	- Coarse resolution (2 km) - Not designed for hotspot detection. - Not optimized for small fires	Operational through ~2030
NOAA AVHRR	~1,000 m	Daily	NOAA Hazard Mapping System, NASA FIRMS (legacy)	Historical archive	Low spatial resolution, aging platform	Operational on MetOp series into ~2030s

Table 6: Decision-support platforms

Portal / Dashboard	Use Case	Institutions That Use These Platforms	Strengths	Weaknesses
Global Forest Watch Fires	- Real-time global fire alerts using MODIS/VIIRS - Used for emergency response, forest law enforcement, and environmental reporting.	WWF, WRI, national environmental ministries, local NGOs, journalists	Easy to use, integrates multiple datasets	Not tailored to national legal frameworks
INPE Queimadas (Brazil)	- Official fire alert system for Brazil - Supports fire prevention, land use enforcement, and disaster response.	IBAMA, Ministério do Meio Ambiente, state civil defense units, universities	Real-time, official source, extensive historical data	Brazil-only, less intuitive interface
MapBiomias Alerta	- Monitors and validates land-use change (deforestation, fire) - Supports legal action and local land governance.	Federal prosecutors (MPF), Observatório do Clima, NGOs like ISA	High-resolution, validated alerts with legal relevance	Primarily national scope, requires training to use fully
MAAP (Monitoring the Andean Amazon Project)	- Regional alerts with analytic reports on forest loss and fire - Supports advocacy and conservation interventions.	Amazon Conservation, Indigenous federations (e.g., FENAMAD), civil society platforms	Fast, visual reports, focused on Amazon hotspots	Not a public dashboard for custom analysis
RAISG – Amazonia Socioambiental	Combines environmental and social data for territorial governance, maps fire, deforestation, infrastructure.	COICA, national Indigenous organizations, academic researchers	Regional scope, socio-environmental focus, open access	Limited real-time alerts, less analytical flexibility
IDEAM (Colombia) – Forest & Carbon Monitoring	National system for REDD+, forest fire alerts, carbon accounting.	IDEAM, MinAmbiente, SINCHI, NGOs	Policy-relevant, country-owned data	Limited regional integration, occasional data delays
SISFRON (Bolivia)	- Monitors deforestation and fire alerts in Bolivia. - Supports national forest law enforcement.	ABT (Bolivia's forest agency), Ministry of Environment, firefighters	Aligned with national enforcement systems	No open API, limited user interface options
SOTER (Paraguay)	Visualizes land-use and fire-related environmental degradation in the Paraguayan Chaco.	MADES (Ministry of Environment), local universities, FAO Paraguay	Unique focus on the Chaco, national-scale monitoring	Broader than just fires, basic visuals
SOS Oré	Sends alerts on threats to Indigenous and protected lands (fires, deforestation, encroachment).	RAISG, COICA, Indigenous defense groups, environmental defenders	Targets high-risk territories, supports Indigenous rights	Not widely publicized or easy to access for general users

4.2 Rapid Fire Response

Context: For effective suppression, escaped fires must be addressed within a short window of a few days from ignition. This often doesn't happen, as fire suppression capacity across South America remains under-resourced and highly variable, particularly at the subnational and community levels. National agencies such as Brazil's [Prevfogo](#)¹⁹ and systems like SISFOGO²⁰ have begun to establish more structured coordination and protocols, and Indigenous brigades are increasingly active and visible. Innovations such as drone-assisted suppression, real-time command platforms, and AI-enabled fire triage are being piloted in select areas but remain nascent. Equipment shortfalls, bureaucratic hurdles, and limited air response capacity continue to undermine fire response across the region.

Gaps & Opportunities:

- **Bolster fire brigades with people and technical support:** Fire brigades are on the front lines of defense, and in the vastness of the Amazon, Indigenous and community brigades are often the only ones available to respond to remote ignitions. Despite programs such as the NGO Aliança da Terra or Brazil's Prevfogo (which supports over 700 Indigenous firefighters and offers integrated training), these models are often underfunded and lack the logistical, informational, equipment (including Personal Protective Equipment) and technological support necessary to respond adequately, let alone scale. There is a clear opportunity to professionalize and equip community and Indigenous fire brigades through targeted investment in cutting-edge tools, rapid-response logistics, and training systems.
- **Innovate transformative solutions:** Nighttime and remote fire suppression remain especially

challenging due to limited air response capacity and bureaucratic hurdles that slow emergency response. Field offices often lack boats, drones, vehicles, or communication infrastructure that are critical for reaching remote, high-risk fires in time. Innovative efforts, such as automated drone suppression, are underway, in some cases in other regions (e.g., BurnBot, RAIN, FireSwarm). However, these remain isolated pilots and need to be available and adapted for the diverse regional contexts of South America.

- **Scale impact through coordinated response:** While fires do not recognize geopolitical boundaries, agencies and brigades are often not equipped or enabled to assist each other or even exchange information. Government brigades are also not trained to work with community response teams. Regional coordination, including platforms that streamline logistics and connect suppression teams with real-time data, also represent a high-leverage intervention to prevent fires from escalating.

4.3 Ecosystem Management & Recovery of Biodiversity

Context: Fire is a fundamental tool for many smallholders, Indigenous peoples, and traditional communities across the Amazon and surrounding ecoregions. In fire-adapted ecosystems, controlled burning has long played a beneficial role. But under current conditions of drought, fragmentation, and degradation, even intentional fires can escape and become destructive. Expanding access to fire-free or fire-safe land management options—such as agroforestry, sustainable intensification, and data-informed cultural burn calendars—offers a path to reduce ignitions while maintaining livelihoods. Yet adoption of these systems remains limited, often due to lack of technical support, financial incentives, or

19. Prevfogo–Ibama. (n.d.). [Prevfogo–Ibama](#). Fundo Amazônia / Ibama.

20. Ibama. (n.d.). [Monitoramento – Manejo Integrado do Fogo](#). Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis (Ibama).

appropriate policy frameworks. These alternatives must be *economically viable*, *ecologically adapted*, and *culturally appropriate* to succeed at scale.

Additionally, post-fire stewardship and fire-resilient land systems can help prevent destructive fire, but practical implementation remains limited. Some promising pilots—such as fire-resistant agroforestry (e.g., Cyuma 2025), community-built fire breaks, and native species reforestation using drones—are showing technical potential. However, most stewardship planning and implementation remains reactive, underfunded, and lacking ecosystem-specific frameworks. In many cases, lands are left unmanaged, or planted with non-native species such as eucalyptus, undermining biodiversity and resilience.

Gaps & Opportunities:

- **Incentivize fire-free and fire-safe land management strategies:** There is a critical need—and opportunity—to expand access to fire-safe land management tools that are economically viable, ecologically adapted, and culturally appropriate. Successful approaches include technical assistance, incentives, and financial mechanisms to help land users shift away from fire-heavy practices in high-risk zones, while preserving safe, beneficial fire use where appropriate. Example interventions include community fire plans, burn/no-burn windows based on real fire risk, and land use practices such as fire breaks and agroforestry systems.
- **Accelerate recovery of biodiversity:** Post-fire ecological recovery of biodiversity and stewardship is one of the most underdeveloped components of fire management in South America. Needs include defining high-priority zones and protocols based on fire severity, ecosystem characteristics, and community stewardship potential. Tailored financial mechanisms—such as stewardship incentives, biodiversity credits, or bundled PES/carbon models, coupled with technological breakthroughs such as microbial probiotics, precision and data-driven forestry, native seed banks, and drone seeding—can help accelerate biodiversity recovery from decades to years. Combining advances in science, technology and innovation for improved stewardship with local

and traditional knowledge, offer new possibilities for ensuring resilience.

4.4 Public Engagement & Behavior Change

Context: Although most fires in these ecoregions are human-caused, public awareness and behavioral interventions remain underutilized. Urban populations remain disconnected from fire risk, and rural communities often receive top-down bans without tools or incentives to change practices. There are notable efforts: Indigenous media campaigns (e.g., the [work of the Uru-eu-wau-wau](#)), public campaigns around deforestation-linked consumer goods, and localized Firewise community trainings. Yet scalable, culturally resonant platforms for behavior change remain limited—especially around fire use norms, smoke health, and land stewardship. In some cases, policies criminalize traditional fire practices without offering viable alternatives, alienating rural and Indigenous communities and reducing compliance. On the other hand, predatory burning for land clearing often happens with no response from law enforcement.

Gaps and Opportunities:

- **Behavioral incentives:** For many rural and under-resourced communities, even a small financial incentive may be enough to deter fire use for land management, especially during high-risk periods. Non-financial, societal incentives can also be very powerful. Behaviorally informed strategies—such as participatory burn calendars, fire zoning tied to land rights, smoke and health-related campaigns, and local “fire safe council” models—can help shift norms and incentivize safe fire use. Examples include:
 - **Behavior track in a South America Fire Grand Challenge.** Deploy a dedicated behavior-change track to source, test, and scale high-integrity interventions (e.g., norm shifting, “commitment devices,” social proof, default options). Use rapid A/B testing and randomized rollout to identify what reduces escapes and illegal burns across languages and cultures; publish a shared “playbook” for municipalities and brigades.

- **Risk-to-action pipelines.** Pair early-warning/ risk forecasts with automated, hyper-local prompts (e.g., clear calls-to-action, opt-in pledges, and micro-incentives during high-risk periods) via WhatsApp/SMS, community radio, and offline-first apps. Integrate two-way feedback so brigades and residents can report hazards and request help.
- **Leverage technology for awareness and storytelling:** Regional storytelling platforms, immersive media (VR/AR), and youth engagement can create cultural momentum around fire resilience. Smoke and health awareness campaigns linked to early warning systems could also broaden the base of concern and engagement beyond fire-prone regions, galvanizing wider support for fire resilience.
 - **Trusted messenger networks.** Fund Indigenous and women-led “fire steward” promoters, youth brigades, and farmer associations as primary messengers; provide micro-grants for locally produced content (e.g., short video/radio spots, intercultural curricula, visual burn calendars) and equip them with portable comms and translation toolkits.
 - **Health-anchored campaigns.** Link smoke/ PM2.5 alerts to simple protective behaviors (e.g., masks, safe rooms, clinic guidance), expanding urban constituency awareness of fire risks and support for fire prevention.

4.5 Financial Incentives & Market-Based Instruments

Context: At the root of the deforestation and degradation crisis, including the role of fire, is that

standing forests and intact ecosystems are often worth less than degraded or cleared forests and ecosystems. Therefore, shifting financial incentives and market-based initiatives is critical to addressing destructive fire, including reducing the use of fire for land conversion (which will also reduce escaped fires). Examples of financial incentives for fire-free sustainable economic development include: payments for biodiversity, carbon, fire prevention and suppression, and ecosystem services (e.g., via Brazil’s Forest Code²¹ and Peru’s Payments for Environmental Services (PES) law and other mechanisms); tax incentives and conservation easements (e.g., Pará Conservation Easement tax incentives - Brazil; Obras por Impuestos program - Peru); and direct payments to landowners to forgo deforestation (e.g., [Conserv](#)²²).

When areas experience initial burns, there is a window of time to defend ecological function and integrity but often there are insufficient resources, incentives, and coordinated efforts to manage these affected areas for resilience, on public or private land. New business opportunities, including [public-private partnerships](#)²³, carbon credits, and emerging biodiversity credits, can be leveraged to bring together traditional knowledge and cutting-edge technologies and innovations. In the near to medium-term, building sustainable, innovative, regenerative new economies of the future that value healthy ecosystems and the intellectual properties they contain (for example, by creating sustainable, nature-based products—from alternative proteins to new materials and cosmetics) will be critical to eliminating the underlying drivers of fire. Gaps and opportunities discussed here expand upon the current funding and support landscape, which is presented for context in Appendix 2.

21. Mamedes, I., de Oliveira, P. T. S., Guerra, A., Godoi, R. de F., Rodrigues, D. B., & Garcia, L. C. (2023). [Brazilian payment for environmental services programs emphasize water-related services](#). *International Soil and Water Conservation Research*, 11, Article 100146.

22. Woodwell Climate Research Center. (n.d.). [CONSERV: Ending legal deforestation in Brazil’s agricultural frontier](#). Woodwell Climate Research Center.

23. Climate Policy Initiative and Amazon 2030. (2024, December 4). [Restoring Brazil’s Public Lands: Exploring Public-Private Partnership Options](#). Climate Policy Initiative.

Gaps & Opportunities:

- **Innovative Finance:** There is a need for new financial mechanisms that leverage the private sector, carbon and biodiversity credits, and business opportunities. Bundled financing (PES + carbon + NTFP revenue streams) and tailored financial incentives for post-fire recovery of biodiversity are also lacking. Incentives and subsidies for fire-free land management such as agroforestry can help reduce the incentive to use fire to clear land. Specific examples of innovative finance mechanisms that can be established and deployed include:
 - **Fire credits for avoided emissions.** Pilot and scale emerging open-data platforms such as [Centigrade.earth](#), which are building trusted infrastructure for carbon markets, which can be used to quantify and track the tons of carbon not emitted due to wildfire suppression — transforming fire prevention from a high-risk intervention into a standardized, auditable, and investable climate solution. Another example is CyberTracker, a digital platform used by Indigenous Rangers in Austria to monitor Indigenous fire management as part of a payment for ecosystem services scheme.²⁴ Notably, a Conservation X Labs North America Fire Grand Challenge finalist²⁵ is developing these techniques for dry forests in Mexico.
 - **Fire-free transition facility.** A blended-finance vehicle (first-loss + concessional tranches) that underwrites landholder transitions to fire-free or fire-safe systems (agroforestry, strategic grazing, mechanical clearing), with repayments or bonuses tied to verified compliance with burn guidance and reduced escapes.
 - **Recovery of biodiversity outcomes facility.** Advance market commitments (AMCs) and pay-for-performance contracts purchasing verified post-fire biodiversity recovery outcomes (e.g., hectares restored, canopy recovery, biodiversity indicators), enabling local providers to finance seedlings, labor, and maintenance at scale, with variable payments based on the speed and quality of activities. These can be supplemented by biodiversity and fire credits.
- **Demand-side instruments.** Corporate procurement MoUs and retailer standards for fire-free commodities, tax abatements for certified fire-safe production, and municipality-level “green label” programs that reward compliance.
- **MRV infrastructure for incentives.** Open, low-cost monitoring stacks (e.g., AI satellite analytics, acoustic/camera biodiversity sensing, mobile patrol apps) to verify prevention and restoration performance; pilot open registries and standardized contracts to reduce transaction costs for PES, carbon, and emerging biodiversity instruments.
- **Incentive kits.** In each target jurisdiction, deploy a bundled package—seasonal micro-incentives for compliance during no-burn windows, vouchers/equipment for fire-safe practices, and mini-grants for community restoration—tied to demonstrated measurable reductions in escaped fires and faster recovery.

4.6 Policy & Governance

Context: Fire and land-use policies in the countries and ecoregions of interest are evolving and provide both barriers and opportunities for effective fire-related management and governance. In many countries, the historic default solution has been blanket fire bans, which are often unenforceable and ineffective. This level of prohibition does nothing to inform conditions for safe use of fire for agriculture,

24. Ens, E., Finlayson, M., Preuss, K., Jackson, S., & Holcombe, S. (2012). [Australian approaches for monitoring Indigenous natural and cultural resource management programs](#). *Ecological Management & Restoration*, 13(1), 16–27.

25. International Savanna Fire Management Initiative (ISFMI). (n.d.). [International Savanna Fire Management Initiative](#). ISFMI.

which local populations have historically depended on for food resources.

Pro-active regulatory actions, such as Brazil's Integrated Fire Management Policy (passed in 2024 after more than two years of legislative effort) and Colombia's and Paraguay's fire laws, are still in their infancy. Such laws provide an opportunity to test more holistic approaches to fire management, including use of cultural and prescribed fire in fire-adapted ecosystems (e.g., Amazonian savannas, Cerrado, Gran Chaco savannas, and to some extent, the Pantanal). Neighboring countries and regional cooperation organizations (such as the Amazon Treaty Cooperation Organization) are looking to this example for potential solutions. Establishing knowledge, coordination, capacity, and tools to implement current integrated fire management laws effectively at the subnational level now can provide a roadmap to scale efforts across the broader region.

In other cases, regulatory actions have had the effect of encouraging large-scale forest clearing with fire, such as Bolivia's 2019 law reducing fines for escaped fires. Such policies work in concert with the lack of designation of public forests, insecure or unclear land tenure, antiquated laws granting title to cleared land, and poor enforcement capacity, and create incentives to set fire to forests for land speculation.

While our recommendations do not focus on policy reform, it is important to understand this context and address it via collaboration with other philanthropic initiatives (e.g., AAI's continued work on undesignated lands). Table 7 provides an overview of relevant policy environments for key countries addressed in the five target ecoregions for this proposal.

Gaps & Opportunities:

- **Enforcement:** Within the existing policy environment, land designation and enforcement capacity remain critical gaps. Enforcement capacity is often linked to lack of human resources in the agencies in question. Technological tools, such as AI enabled analysis of fire origins, combined with automated notifications to offenders, can boost compliance and agency ability to hold offenders accountable for illegal fires.
- **Coordination:** Policy and regulatory barriers impede exchange of information support across agencies, land designation types, and jurisdictional boundaries. Coordinating bodies, such as the subnational proposed Grupo Fogo (Bolivia, Brazil, Paraguay), FAO's Fire Hub, and ACTO's Amazon Network for Integrated Fire Management (RAMIF)²⁶ can assist with international fire response.
- **Implementation:** Nascent and subnational implementation of integrated fire management laws (Brazil, Colombia, Paraguay) present an opportunity to test innovative solutions, including cultural and prescribed fire²⁷ and targeted burn windows and safety protocols. Subnational target areas can be used to assess impact, leverage existing efforts and convening a coalition of the willing. For example, in Brazil, 70 municipalities will establish governance offices,²⁸ funded by the UNDP and FunBio, to reduce deforestation and fires.

26. Amazon Cooperation Treaty Organization (ACTO). (2024, June 4). [Lima hosts the first regional meeting of the Amazon Integrated Fire Management Network \(RAMIF\) of ACTO](#). ACTO.

27. Oliveras Menor, I., Prat-Guitart, N., Spadoni, G. L., et al. (2025). [Integrated fire management as an adaptation and mitigation strategy to altered fire regimes](#). *Communications Earth & Environment*, 6, 202.

28. United Nations Development Programme. (2025, March 20). [Municípios amazônicos terão escritórios de governança para monitorar e reduzir desmatamento e incêndios florestais](#). United Nations Development Programme

Table 7: Key features of policy and regulatory environments in the target countries for the five ecoregions in this strategy.

Country	Is Fire Use Legal?	Integrated Fire Management (IFM)	Community or cultural fire recognized?	Enforcement capacity	Other policy considerations
Bolivia	Explicit allowance of up to 20 ha/year for land clearing for agriculture	No	Community-based fire management is promoted by ACTO agreements and NGOs	Weak capacity; reactive bans	• 2019 - Presidential decree and low fines for escaped fires incentivized fire for land clearing • 2022 - National Contingency Plan for Forest Fires • 2024 - Draft Multinational Strategy for Forests and Climate Change; 2019 degree suspended due to wildfires • By 2030, plans to reduce burned areas by 60%
Brazil	Yes, with permit (regulated); cultural fire allowed	Law No. 14.944/2024: National Policy on Integrated Fire Management	Yes. IFM law allows for some cultural and prescribed burning in appropriate ecosystems	Strong legal basis but uneven enforcement; varies by state	• A MIF was recently passed in Brazil; this presents an opportunity for implementation and adaptation at state and municipal levels. • Responsibility for fire management depends on land designation (e.g., federal, state, private, Indigenous). • Undesignated public lands—covering approximately 16% of the Amazon—lack a responsible agency for fire management.
Colombia	Generally prohibited - allowable under strict conditions with authorization	No national IFM plan under development with UNEP and CTCN	No	Medium (regional variation)	• National Plan for the Prevention, Control, and Restoration of Affected Areas from 2002 being updating. • Fires treated under disaster management law. • By 2030, plans to reduce the areas affected by forest fires by 30% (compared to 2019).
Ecuador	Allowable with permits and seasonal bans	National Strategy for Integrated Fire Management 2021–2025	No	Weak	• Fire management under president Daniel Noboa Government is led mainly by the Ministry of the Environment and the Secretariat of Risk Management. • On July 24, 2025, Ecuador's Ministry of the Environment was assimilated into the Ministry of Energy and Mines, which now oversees both natural resource management and environmental regulation.
Paraguay	Allowable with licenses; criminal penalties	Law No. 6818/2021: Establishes IFM framework	No explicit legal recognition of cultural fire	Medium	• Fire management is carried out by the Ministry of the Environment and the National Emergency Secretariat. INFONA establishes time windows for prescribed fire.
Peru	Generally prohibited - allowable with permits and calendars	No IFM promoted via ITTO and ACTO	Cultural or traditional use of fire explicitly prohibited	Weak	• Recently launched Multisectoral Plan for Forest Fires 2025–2027. • 2024 approved Standardized Qualification and Curriculum System for Forest Fire Suppression

Section 5: Budget, Timeline, & Governance



A firefighter in a burned portion of the Amazon basin in Sorriso, Brazil

Fire will continue to be a significant threat to tropical and subtropical ecosystems in South America. Preventing catastrophic loss requires significant investment, coordination, and innovation — but the cost of inaction is even higher.

There is no single solution to this complex challenge, whether technological, financial, or even community-based. To be successful takes a combination of interventions to equip governments and communities to effectively predict, detect, prevent, and respond to fires, and to recover biodiversity in affected ecosystems. In parallel, we must simultaneously address the underlying socioeconomic drivers of fire.

5.1 Timeline

This strategy is designed to **test the effectiveness of targeted interventions** in five South American ecoregions, to convene a community of funders and stakeholders, and to develop a plan and create the conditions for a medium-term South American Fire effort. In this work as proposed, we expect a short ramp-up period of 3-6 months for selecting the target areas and designing initial two-year grants. Monitoring and evaluation will be on-going. Developing an evidence-based medium-term strategy will occur after initial evidence has been collected. Allowing for grant wrap-up and closing, we expect a two-to-three-year implementation period for the South America Fire Fund.

Appendices

Appendix 1: Key Stakeholders & Innovators



Addressing fire in South America involves a wide array of actors across sectors and scales. Below is a brief overview of the key stakeholders and innovators contributing to wildfire prevention and management.

Government Agencies and Regional Coalitions: National-level agencies such as Brazil’s [IBAMA](#) and its [Prevfogo](#) program are central to wildfire response, forming Indigenous fire brigades and coordinating suppression. [ICMBio](#) manages park protection and firefighting in reserves. [INPE](#) contributes high-resolution fire alerts through its Queimadas satellite program. In other Amazon countries, agencies like Peru’s [SERFOR](#) and Colombia’s Ministry of Environment enforce burn bans and support firefighting.

The [Amazon Cooperation Treaty Organization \(ACTO\)](#) recently launched the Amazon Network for Integrated Fire Management (RAMIF)²⁹, facilitating cross-border coordination and best practice exchange among all eight Amazon nations. Subnational governments also lead; for example, Pará used [Amazon Fund](#) support to enhance fire brigade capacity and establish fire-free agreements with farmers.

Private Sector Actors: Indigenous and community initiatives are critical frontline defenders, blending ancestral knowledge with modern firefighting practices. Programs like the Paiter Suruí Fire Brigade and the Ikpeng community’s controlled burns in Xingu Park demonstrate how locally-led strategies effectively stop wildfires at the boundaries of well-managed Indigenous territories.

Non-governmental organizations (NGOs) and civil society actors amplify these efforts by providing essential tools, data, and rapid-response capabilities. Organizations like [IPAM](#) and [WWF-Brazil](#) leverage technology, including drones and the *Alerta Clima Indígena* app, to equip Indigenous brigades and improve local decision-making. Additionally, platforms such as [Global Forest Watch Fires](#) offer real-time tracking of hotspots, enabling swift community and governmental responses.

Academic and research institutions, including [INPA](#), [EMBRAPA](#), and international partners such as [NASA](#), contribute foundational science to wildfire management. Through in-depth ecological research, remote sensing innovations, and collaborative knowledge-sharing networks, these stakeholders generate insights critical for evidence-based policy and adaptive management strategies.

Finally, private-sector innovators and tech companies inject fresh solutions and crucial investment into wildfire mitigation efforts. Startups like [Umgrauemeio](#) (with their AI-powered Panthera platform) and ambitious initiatives like the [ONE AMAZON](#) project’s “Internet of Forests” illustrate the potential for scalable, technology-driven approaches that blend conservation with economic incentives.

Together, these varied stakeholders form a powerful ecosystem, each strengthening the others’ impact. Strategic coordination and sustained funding across these groups—detailed further in the accompanying stakeholder table—are essential for building long-term wildfire resilience in the Amazon.

29. Amazon Cooperation Treaty Organization (ACTO). (2024, June 4). [Lima hosts the first regional meeting of the Amazon Integrated Fire Management Network \(RAMIF\) of ACTO](#). ACTO.

Table 8: Sample Key Stakeholders

Category	Actor / Program	Fire-Affected Ecosystem	Role & Core Activities	Key Tools / Approaches	Impact / Scale	Primary Backers / Partners
Indigenous & Community Initiatives	Paiter Suruí Fire Brigade (Brazil)	Amazon	Indigenous frontline brigade blending ancestral knowledge with IBAMA protocols	Trained crews, satellite alerts	Fires contained within territory borders	IBAMA; Suruí Carbon Project
	Ikpeng (Xingu Park, Brazil)	Amazon	Preventive, community-led controlled burns	Seasonal mosaic burning, participatory mapping	Reduced fuel loads, avoided large fires	Instituto Socioambiental
	Brigada Aliança (NGO-run)	Amazon, Cerrado, Pantanal	Trains volunteer brigades across biomes	Firefighting bootcamps, radio network	1,500 volunteers; hundreds of fires suppressed	Aliança da Terra
	Asháninka “Pa’amari” (Peru)	Amazon	Indigenous-led firefighting & monitoring	Community patrols, GPS mapping	Expanding to all villages in territory	Cool Earth; AIDESEP
NGOs & Civil Society	IPAM	Amazon, Cerrado	Fire-risk analytics & policy advice	Alerta Clima Indígena app, satellite analysis	Data feeds adopted by agencies	Philanthropic grants
	WWF-Brazil	Amazon, Pantanal	Gear & training for indigenous patrols	Drones, mapping apps, rapid-response fund	Drone-confirmed hotspots → police	Emergency Amazon Fire Fund
	Global Forest Watch Fires	Amazon, Cerrado, Chaco, Chiquitano, Pantanal	Open fire-alert platform	NASA VIIRS/MODIS, web dashboard	Millions of public alerts/yr	World Resources Institute
Academic & Research	INPA / EMBRAPA	Amazon, Cerrado	Fire ecology & sustainable land-use R&D	Field experiments, socio-economic studies	Informs Brazil's fire policy	Gov. science funds
	NASA + Brazilian partners	Amazon, Cerrado	Remote-sensing & emissions models	MODIS, SilvaCarbon, ML analytics	Official deforestation & fire datasets	NASA
Private-Sector & Tech	Umgrauemeio “Pantera”	Amazon, Cerrado, Pantanal	AI early-warning network	Tower cameras + satellites + ML	323 fires detected; 13.5 M ha monitored	Indicator Capital; Baraúna
	ONE AMAZON “Internet of Forests”	Amazon	Real-time IoT forest monitoring & finance	Biodegradable sensors, AI, blockchain	\$100 M commitment; pilots 2025-	Gorilla Tech; Global Edge Fund
	AWS / Google Earth Engine (platform)	Amazon, Cerrado, Chaco, Chiquitano, Pantanal	Cloud & geospatial backbone for multiple tools	Compute, Earth Engine, Firecast	Underpins dozens of monitoring systems	Amazon WS; Google
	Amazon Investor Coalition & Amazonia Impact Ventures	Amazon	Channels capital to fire-resilient enterprises	Deal rooms, themed accelerators	2023 forum on fundable fire solutions	Family offices; impact VCs

Appendix 2: Funding & Support Ecosystem



The funding ecosystem supporting wildfire prevention and response in the Amazon is diverse and evolving. It includes philanthropic foundations, NGOs, multilateral and bilateral donors, venture capital, corporate investors, accelerators, and open innovation platforms.

Current Funding Landscape

Philanthropic and NGO Support: Leading philanthropic actors include the Gordon and Betty Moore Foundation, who has supported Andes-Amazon conservation for 22 years, investing over US\$800 million and have made recent investments in wildfire resilience. The foundation is also a core partner in the Climate and Land Use Alliance (CLUA), which supports Indigenous land rights—key to reducing fire risk. The Bezos Earth Fund has committed over US\$50 million to Amazon biodiversity conservation, including US\$5 million for fire detection. Other foundations, including the Rainforest Trust, Arcadia Fund, Ford Foundation, the Mott Foundation, and Packard Foundation have funded protected areas, Indigenous reserves, sustainable land management to curb deforestation and fire, and understanding links between fire, climate, deforestation and human health. Fire in the Amazon has also attracted new funders, which provide opportunities for leveraging investments in technology, including [Google.org](https://www.google.org) and The Coca-Cola Foundation, which will be funding restoration efforts.

Following the 2019 Amazon fires, emergency grants flowed from groups like Earth Alliance and Bloomberg Philanthropies. Broader initiatives such as the Protecting Our Planet Challenge—backed by the Gordon and Betty Moore Foundation, the Bezos Earth Fund, Wyss Foundation, and others—have committed billions to global conservation goals, with Amazon wildfire reduction as a crucial co-benefit.

NGOs such as Re:Wild, WWF, The Nature Conservancy, Conservation International, and Rainforest Foundation US serve as intermediaries and re-granters providing resources, equipment, training, and technical assistance to community brigades and monitoring programs.

Government and Multilateral Funding: The US Agency for International Development was formerly one of the largest funders for biodiversity in Latin America, with US\$1.7 billion in development programming in 2023-2024. The elimination of USAID will be a serious blow to protection of the critical ecoregions at the target of this effort and makes a stronger case for the Gordon and Betty Moore Foundation's role in the Amazon, to protect its own investments. In particular, for many years USAID supported the US Forest Service International Program to build response capacity and work with communities and fire brigades in Brazil, Peru, and Colombia.

Outside of the United States, governmental and multilateral funding for the Brazilian Amazon is anchored by Brazil's Amazon Fund, which has a total of \$740 M for investment, and is financed by Norway and Germany and managed by Brazil's Banco Nacional de Desenvolvimento Econômico e Social (BNDES). The fund channels investments into fire prevention and sustainable land use. Other contributors include the European Union's Amazon Forever Initiative via the Inter-American Development Bank.

Multilateral Development Banks and International Financial Institutions: Multilateral institutions like the World Bank and the Inter-American Development Bank (IDB) play pivotal roles in shaping regional funding flows, technical assistance, and policy frameworks around fire resilience. These institutions often serve as conveners, co-financiers, and technical advisors to national governments and regional partners in the Amazon. However, these institutions are also significantly affected by recent changes in policy in the United States, which is their largest shareholder and contributor. The World Bank has supported numerous projects in Amazonian countries that integrate forest conservation, climate resilience, and disaster risk management. Brazil's Sustainable Landscapes and Forest Restoration projects emphasize improved fire monitoring systems and capacity-building at the state and municipal level. It also channels climate finance (e.g., through the Forest Carbon Partnership Facility and the Amazon Sustainable Landscapes Program) to fund fire-reducing forest management strategies.

Under the World Bank, the Global Environment Fund's Amazon Sustainable Landscapes Program (ASL) works to protect globally significant biodiversity and implement policies to foster sustainable land use and restoration of native vegetation cover including supporting fire management. The ASL national projects are led by environmental authorities in each participant Amazon country and are being executed collaboratively by national and international public and private agencies, supported by civil society and community organizations.

The Inter-American Development Bank (IDB) is similarly engaged through its Natural Capital Lab and Amazon Bioeconomy Initiative. It funds green infrastructure, supports policy development for deforestation-free value chains, and co-finances capacity-building in fire risk reduction across multiple countries. Notably, IDB has supported Indigenous and local governance strengthening programs, which directly align with fire prevention goals. Both institutions also invest in public data platforms and early warning systems, offering cross-country scalability.

Despite their influence, multilateral finance mechanisms are often inaccessible to grassroots actors and may prioritize large-scale infrastructure or policy reforms over early-stage innovation. Greater integration with innovation ecosystems, including prize-backed challenges or incubation programs, could enhance their effectiveness in spurring new solutions and empowering local responders.

Private investment and Venture Capital: The private sector is increasingly engaged in the Amazon. A significant initiative to safeguard the Amazon rainforest has been launched by Silvania, a carbon markets investor backed by Mercuria, a Swiss trading house, with a commitment of raising US\$1.5 billion, collaborating with Brazilian states, farmers, and local communities, to generate carbon credits linked to rainforest preservation. Mercuria has expressed interest in piloting new technologies around accelerated biodiversity restoration as part of Silvania, and scaling these technologies if successful, as well as in investing directly in fire technologies.

Other examples include Amazon's Climate Pledge Fund and Brazil-based investors like Baraúna Investimentos and Indicator Capital backing innovative wildfire startups like Umgrauemeio (as mentioned above). Mombak, another high-profile venture, secured US\$100 million for Amazonian reforestation, showcasing how carbon finance and private capital are converging around fire prevention.

Accelerators and innovation platforms: Accelerators like the Amazon Sustainability Accelerator support early-stage climate and conservation tech, while open competitions such as the XPRIIZE Wildfire challenge and Conservation X Labs' Fire Grand Challenge identify and fund high-potential innovations—although these have primarily focused in more temperate ecoregions like Western North America. The WEF's UpLink Amazon Bioeconomy Challenge has also spotlighted Indigenous and local-led startups with fire management relevance.

Integration with biodiversity conservation: Conservation programs are beginning to increase their focus on fire prevention, due to the growing threat that fire poses to conservation areas and Indigenous reserves. Programs like Brazil's [Amazon Region Protected Areas \(ARPA\)](#), managed by [WWF](#) and funded by the Gordon and Betty Moore Foundation, the Amazon Fund, and the [Global Environment Facility](#), combine biodiversity conservation with proactive fire management in key protected areas in the Brazilian Amazon.

Identified Funding Gaps

Despite notable investments, significant gaps remain in funding early-stage innovation, scaling and deploying mature wildfire solutions, community-based wildfire protection, and ecosystem restoration across South America.

Early-stage wildfire technology development:

There is a pronounced lack of seed funding specifically for fire technologies tailored to South American conditions, such as advanced satellite detection systems, drone-based suppression technologies adapted for rainforest conditions, and IoT sensor networks for early fire detection. Local innovators and researchers face significant barriers in accessing funding, severely limiting the advancement of these technologies from proof-of-concept to field deployment. Creating an innovation fund, or use of open innovation DARPA-like programs, could accelerate new breakthroughs sourced from South America and globally, and there may be opportunities to work with the North American Fire Program.

Scaling and deployment of mature solutions:

While some mature fire management technologies exist, their deployment in remote areas is constrained by logistical barriers and insufficient funding for infrastructure. Technologies like satellite-based fire alerts, drone surveillance, and communication networks remain limited in regional deployment due to high costs of transportation, training, equipment maintenance, and the need to adapt to local contexts. Existing funding structures often neglect these ongoing operational expenses, limiting sustained effectiveness. New sources of funding and approaches, such as advanced market commitments, blended finance, and first-loss guarantees can help move mature solutions to scale.

Community-based wildfire protection:

Indigenous and local communities, despite being the most effective frontline responders, receive minimal direct funding. Structural barriers—such as complex grant applications, short-term funding cycles, inflexible funding conditions, and burdensome reporting requirements—make it challenging for these communities to access necessary financial resources. There is a critical shortage of sustained operational funding to support community-led fire brigades, monitoring patrols, and capacity-building initiatives essential for long-term wildfire management effectiveness. Organizations like Fundo Casa, who provide small grants and capacity building for community-based organizations, or umbrella conservation programs such as the LIRA program run by IPE in the Brazilian Amazon and supported by the Moore Foundation and the Amazon Fund, can help fill these gaps.

Ecosystem stewardship and fire-resilient landscapes:

Funding for post-fire ecosystem stewardship and proactive landscape management remains sporadic and insufficient. These efforts often lack long-term, dedicated funding, leading to fragmented recovery efforts. Similarly, proactive measures like strategic controlled burns, agroforestry, and wetland stewardship, which

enhance landscape resilience to wildfires, rarely receive consistent financial support due to restrictive policies and fragmented funding priorities. New financial mechanisms such as biodiversity credits and breakthrough technologies could provide a powerful impetus for preventing the loss of critical South American ecosystems.

Appendix 3: Fire Fund Leadership



Dr. Alex Dehgan, Fire Fund Lead

Dr. Alex Dehgan co-founded and serves as the CEO of Conservation X Labs and is a Professor of the Practice of Sustainability and the Global Futures Fellow at Arizona State University. He previously served as the Chief Scientist at the U.S. Agency for International Development (USAID), with rank of Assistant Administrator. Dr. Dehgan founded and led the Office of Science and Technology (OST) and created the vision for and helped stand up the Global Development Lab, the Agency's DARPA for Development. Dr. Dehgan was also part of the founding team of USAID's Policy Bureau. Prior to USAID, he worked in multiple positions at the Dept. of State, including on the Policy Planning Staff and through overseas service under the Coalition Provisional Authority in Iraq, using science to support bilateral diplomacy, including Arab-Israeli relations, engagement with Iran, through leading the science aspects of President Obama's Cairo Initiative.

Dr. Dehgan was the founding country director of the Wildlife Conservation Society Afghanistan Program and helped create Afghanistan's first national park. He is the author of the book, *The Snow Leopard Project*, which describes the effort, which was selected by the journal *Nature's* book editor as one of the top five science books of 2019. He holds a Ph.D in Evolutionary Biology from The University of Chicago and a J.D. from the University of California, Hastings College of the Law. Dr. Dehgan has won multiple awards from the Departments of State and Defense, as well as being named an Icon of Science, the World Technology Award, and in 2020, being given the University of Chicago's Medical and Biological Alumni Association's highest honor.

Dr. Marion Adeney, Deputy Fire Fund Lead

Marion Adeney is a conservation ecologist with a broad interdisciplinary background, committed to working at the intersection of environmental conservation, science, and development. She serves as the Director of Amazon and Fire Programs at Conservation X Labs. Previously, Dr. Adeney served as a program officer at the Gordon and Betty Moore Foundation's Andes-Amazon Initiative from 2016-2021, where she focused on the conservation and monitoring of protected areas and Indigenous lands in the Brazilian Amazon.

Previously, Dr. Adeney was an American Association for the Advancement of Science (AAAS) Science & Technology Policy Fellow and Environmental Science Advisor at the US Agency for International Development in Washington DC and Lima, Peru. In Lima, she collaborated across sectors to better integrate science and the scientific community into programs and strategies for USAID's Amazon conservation work in Peru, Brazil, and Amazon-wide.

Dr. Adeney has a PhD in Conservation Ecology from Duke University and a Master of Arts in Ecology, Evolution and Conservation Biology from Columbia University. Her research has focused on interactions of fire and flooding with ecosystem dynamics and human interventions in tropical forests and on Amazonian white sand ecosystems. Her BA is in American Studies from the University of California at Santa Cruz.

An aerial photograph of a tropical landscape. A river flows from the bottom right towards the center, surrounded by dense, lush green forest. In the background, a large body of water is visible, with a bright light reflecting off its surface, possibly the sun. The sky is filled with soft, white clouds. The overall color palette is dominated by greens and blues, with a warm, golden light from the sun.

“Fire will continue to be a significant threat to tropical and subtropical ecosystems in South America. Preventing catastrophic loss requires significant investment, coordination, and innovation - but the cost of inaction is even higher.”

This strategy was developed with support from Renaissance Philanthropy and Conservation X Labs.