



South America Fire Fund

ANNEX:
Accelerated Restoration &
Post-Fire Stewardship



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Executive Summary

Post-fire restoration in the Amazon, Chiquitania, and Pantanal is not a downstream cleanup activity — it is an urgent, frontline fire prevention strategy. Forests that burn once are highly vulnerable to reburning; forests that burn twice rarely recover. When active intervention does not occur within the first months after a severe fire, invasive grasses colonize burned soils, soil microbiomes collapse, seed banks are depleted, and the pathway to ecosystem recovery closes. At current restoration rates, the gap between forest loss and forest recovery is three orders of magnitude. Closing that gap requires not incremental improvement but a step-change in how restoration is conceptualized, resourced, and executed.

The Accelerated Restoration component of the South America Fire Fund was designed around this challenge. In March 2026, Conservation X Labs, UC San Diego, and Renaissance Philanthropy convened 28 leading researchers, practitioners, technologists, and innovators at the Accelerated Restoration Big Think in La Jolla, California. Over two days, participants mapped the problem landscape, identified the most critical bottlenecks, and co-designed potential challenge statements for an open innovation competition to catalyze breakthrough solutions. The findings from that convening, combined with insights from the South America Fire Fund's LIFT partner communities gathered at the Panama convening days later, form the basis of this annex.

Key Findings

1. The restoration window is measured in months, not years — and we are systematically missing it. The post-fire window for natural regeneration is critically narrow. Within the first weeks and months after a severe fire, invasive species — particularly aggressive grasses like brachiaria — colonize burned soils and create conditions that prevent native seedling establishment for years or permanently. Restoring soil microbial communities, establishing initial canopy cover, and suppressing invasives must be treated as emergency interventions, not planning activities. Big Think participants framed this as a “Forests ICU” problem: burned tropical forests need immediate diagnosis and treatment, not triage-by-committee.
2. Restoration at landscape scale is impossible without landscape-scale seed supply chains — which do not yet exist. Participants identified a fundamental infrastructure gap: there are no robust, scalable, cost-effective supply chains for native seeds at the volumes required for landscape-scale restoration. Current seed collection is artisanal, species coverage is thin, germination protocols for many native species are poorly understood, and seed delivery systems are not adapted to remote, post-fire terrain. The voting results from the Big Think were unambiguous — a Grand Challenge focused on “Seeding a Resilient Future” received the most support of any challenge design, reflecting expert consensus that without addressing this upstream constraint, innovations further down the restoration pipeline cannot scale.
3. Restoration outcomes are highly variable and that variability is destroying investor confidence. A major structural problem in the restoration ecosystem is that outcomes are unpredictable. Managers lack decision-making frameworks, site-level data, and reliable predictive tools. When restoration efforts fail — due to invasive pressure, soil conditions, drought, or reburning — the losses erode trust among funders and communities alike, creating boom-bust cycles that undermine long-term investment. Reducing outcome variance through better data infrastructure, standardized protocols, and robust monitoring was identified as a critical enabling condition for scaling.
4. Communities must be architects of restoration, not recipients of it. Across both the Big Think and the LIFT assessments in Panama, a consistent finding emerged: restoration projects that do not generate visible, near-term economic value for local communities will not persist. Communities are willing to test and champion new approaches — but only when they can see financial returns, maintain land ownership, and exercise agency over design. The gap between high-level tech-and-finance activity and what local people experience on the ground is one of the primary

reasons restoration efforts fail to achieve permanence.

5. Economic and financial incentives for restoration are structurally misaligned. Current land economics in fire-affected regions actively discourage restoration. Standing forest is worth less than cleared land in many contexts. Carbon markets remain immature in South America. Agroforestry income covers maintenance but rarely emergency costs. Fire-based land management remains the economically rational choice for many small producers. Unlocking private capital for restoration at scale requires new financial instruments — fire suppression credits, biodiversity credits, blended finance structures, and bioeconomy value chains — that change the incentive landscape fundamentally.
6. The restoration challenge requires new invention, not just deployment of existing tools — and a Grand Challenge can build the cohort needed to deliver it. While promising technologies exist in isolation — drone seeding, microbial inoculants, AI-assisted site planning, biochar — significant invention is still needed across multiple fronts. Germination protocols for the vast majority of native South American species remain unstudied. Seed pods and delivery systems capable of surviving remote terrain and post-fire soil conditions do not yet exist at meaningful scale. Microbial consortia tailored to the specific post-fire soil chemistry of the Amazon, Pantanal, and Chiquitania are largely undeveloped. MRV systems affordable and practical enough for community-level use remain elusive. Financial instruments that can reliably reward fire suppression outcomes are nascent. No single technology, and no single solver, holds the answer. One of the most powerful arguments for an open innovation challenge is precisely this: a well-designed competition does not just surface individual breakthrough solutions — it

assembles a cohort of innovators working across the restoration pipeline who can learn from each other, test their tools in combination, and build the kind of integrated, community-of-practice that the field currently lacks. The Big Think surfaced challenge framings that span from soil microbiology to satellite sensing to finance design — the goal is to bring solvers from all of these domains together around a shared problem, and to create the conditions for their innovations to be tested and deployed as a system, not in isolation.

Proposed Interventions

The Accelerated Restoration strategy operates primarily under **Fire Prevention & Resilient Stewardship** — the recognition that restoring post-fire landscapes is itself a prevention strategy against future fires. It also intersects with **Integrated Fire Information & Decision Systems**, particularly through the data, monitoring, and decision-support tools needed to make restoration evidence-based and adaptive.

Fire Prevention & Resilient Stewardship

Intervention 1: Accelerated Restoration Grand Challenge

The centerpiece intervention is a structured open innovation competition — the Accelerated Restoration Grand Challenge — designed to source, validate, and scale breakthrough solutions for the most critical bottlenecks in post-fire restoration. Informed directly by the Big Think process, the challenge would be structured around the highest-voted themes: seed supply chain infrastructure, rapid post-fire triage and first-response protocols, decision support and

outcome de-risking, and community-integrated restoration models. The competition would be multi-staged, offering seed funding for early-stage concepts, milestone-based pilot funding for field-tested approaches, and scale funding for solutions demonstrating impact at 100+ hectares. Critically, it would be designed with LIFT communities as co-designers and test partners, ensuring solutions are adapted to the ecological and social contexts of the Amazon, Chiquitania, and Pantanal.

Intervention 2: Restoration First-Response Protocols and Toolkits

Drawing on the “Forests ICU” and “Act in the Critical Window” challenge designs, the Fund would support the development and deployment of rapid-response restoration toolkits — pre-positioned materials, protocols, and decision trees that enable community brigades and field teams to begin restoration interventions within the first 3 months after a fire. These toolkits would include invasive suppression protocols, emergency soil amendment approaches (biochar, organic mulch), direct seeding kits adapted to specific ecoregions, and community training. Brigade members — currently dismissed during the rainy season when restoration work peaks — would be retrained and retained year-round as restoration first-responders.

Intervention 3: Native Seed Supply Chain Development

Responding directly to the top-voted Big Think challenge, the Fund would invest in building regional native seed supply chains across LIFT areas. This would include expanding and professionalizing community-based seed collector networks (modeled on Brazil’s Xingu Seeds Network), establishing regional seed banks with proper storage and viability protocols, funding germination research for understudied native species, and piloting AI-assisted

identification of remnant seed source populations near fire-affected areas. The target: demonstrate a pathway from 100K to 1M to eventually 1B native seeds available for landscape-scale deployment.

Intervention 4: Restoration Finance Innovation

The Fund would support the design and piloting of new financial instruments for restoration, including fire suppression credits that reward landowners and communities for vegetation maintenance that reduces ignition risk, biodiversity credits tied to measurable ecological recovery, and blended finance vehicles that bring private capital alongside philanthropic and public funding. This work would be closely linked to bioeconomy value chain development — enabling communities to generate income from restored landscapes (non-timber forest products, agroforestry, ecotourism) in ways that create durable incentives for stewardship.

Integrated Fire Information & Decision Systems

Intervention 5: Restoration Decision Support and Outcome Monitoring

To address the variability problem identified by Big Think participants, the Fund would invest in tools that give restoration managers better site-level data and predictive frameworks. This includes remote sensing-based site characterization (soil type, fire history, proximity to seed sources, invasive pressure), AI-assisted restoration planning tools that optimize species mix and planting patterns for specific site conditions, and standardized monitoring protocols that generate comparable outcome data across LIFT areas. A key product would be a regional restoration outcomes database that progressively builds the evidence base for what works, under what conditions, at what cost.

Strategic Relevance

Adaptive, Iterative, and Evidence-Based. The Grand Challenge model is inherently adaptive: solutions are funded in stages, with milestone-based disbursement tied to demonstrated performance. Field testing with LIFT partners generates real-world data under varying ecological and social conditions. The restoration outcomes database systematically builds the evidence base over time, replacing anecdote with data as the basis for scaling decisions. The process that produced the challenge design — the Big Think itself — modeled this approach: rapid expert synthesis, structured voting, and iterative refinement before any dollar is committed.

Flexibility for Accelerated Execution and Operational Efficiency. The open innovation mechanism is specifically designed to access solutions and talent that traditional grantmaking cannot reach. By defining the problem rather than the solution, it invites unexpected innovators — including those from engineering, materials science, logistics, and finance — who bring approaches that restoration specialists would never commission. Multi-staged funding allows the Fund to place many small bets early, then concentrate resources on what works, without locking into long-term commitments to unproven approaches.

Force Multiplier. A well-designed Grand Challenge mobilizes resources far beyond the prize purse. CXL's track record — including the Western North American Fire Grand Challenge and the Global Cooling Prize — demonstrates that prize competitions attract media attention, catalyze private investment, and build communities of practice that persist long after the competition ends. In the restoration context, the challenge can serve as a magnet for global restoration capital, connecting innovators in South America with investors, technology companies, and philanthropic actors worldwide who are seeking

proven, deployable solutions. The seed supply chain and finance interventions, similarly, are designed to unlock orders-of-magnitude more restoration activity than the Fund's direct investment alone.

Regional Legitimacy and Co-Design with Local Actors. The Big Think deliberately centered local practitioner knowledge alongside global research expertise. The LIFT assessment process in Panama — conducted days after the Big Think — grounds the emerging challenge design in the actual needs, constraints, and opportunities of the communities where solutions will be deployed. Challenge criteria will be co-designed with LIFT partners; field testing will be done on LIFT landscapes; and community members will be involved in solver selection and validation. The goal is not to deliver restoration to communities but to invest in communities as the primary agents of restoration in their own territories.

*** We are only proposing to run the Accelerated Restoration Grand Challenge but offer the other options as ideas for additional activities around restoration and post-fire stewardship.**

Envisioned leverage: A well-executed Grand Challenge at the \$10M level has demonstrated capacity to catalyze 3–5x in matched private investment and in-kind support. The seed supply chain and finance innovations are specifically designed to unlock private capital at scale — restoration finance mechanisms alone could mobilize tens of millions in private restoration investment per year across the region if initial credit pilots are successful. LIFT communities' role as co-designers and field-testing partners also mobilizes substantial in-kind contribution — land access, local labor, institutional knowledge, and community networks — that does not appear in the Fund budget but is essential to the program's impact.