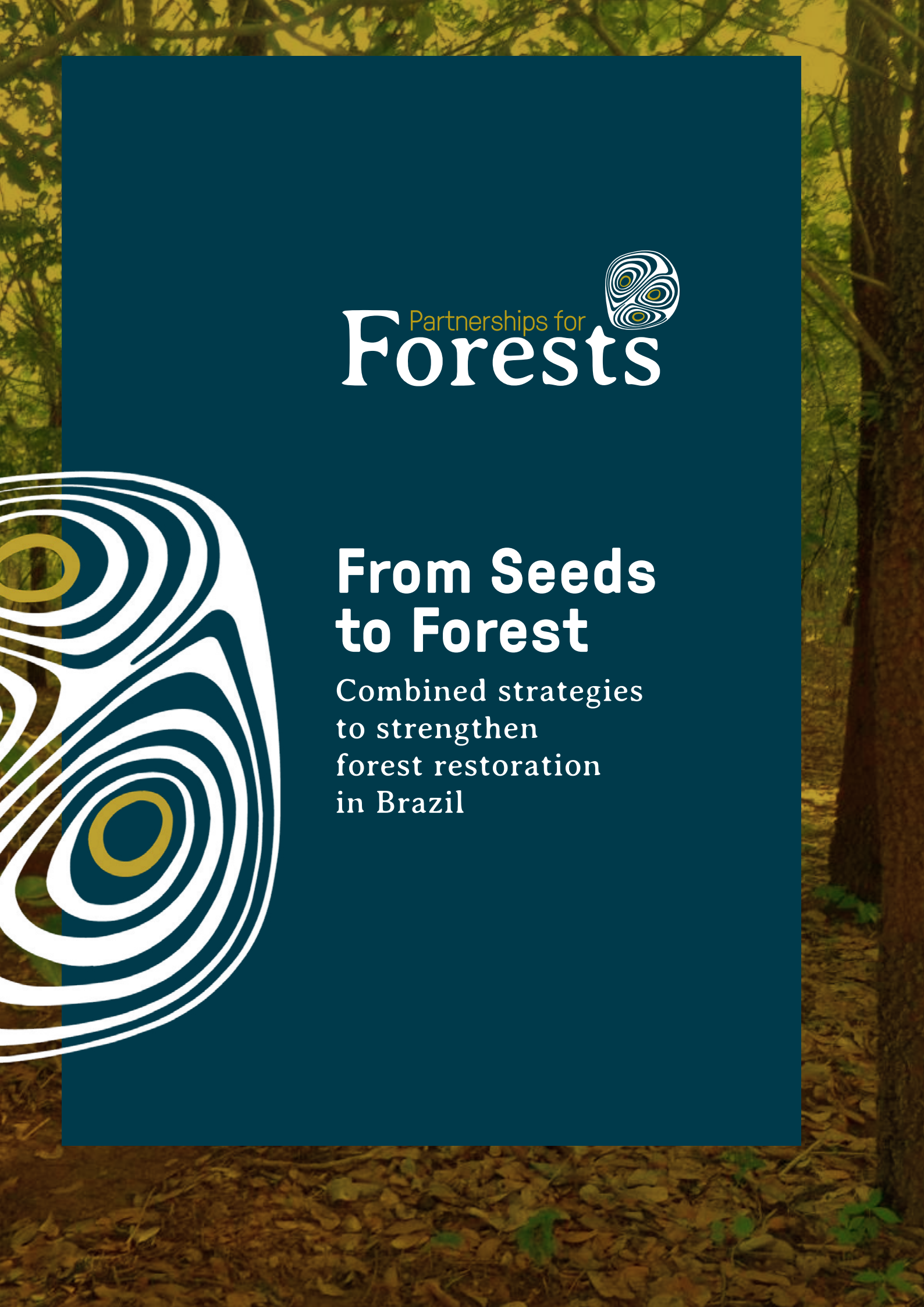


Partnerships for Forests

From Seeds to Forest

Combined strategies to strengthen forest restoration in Brazil

Context

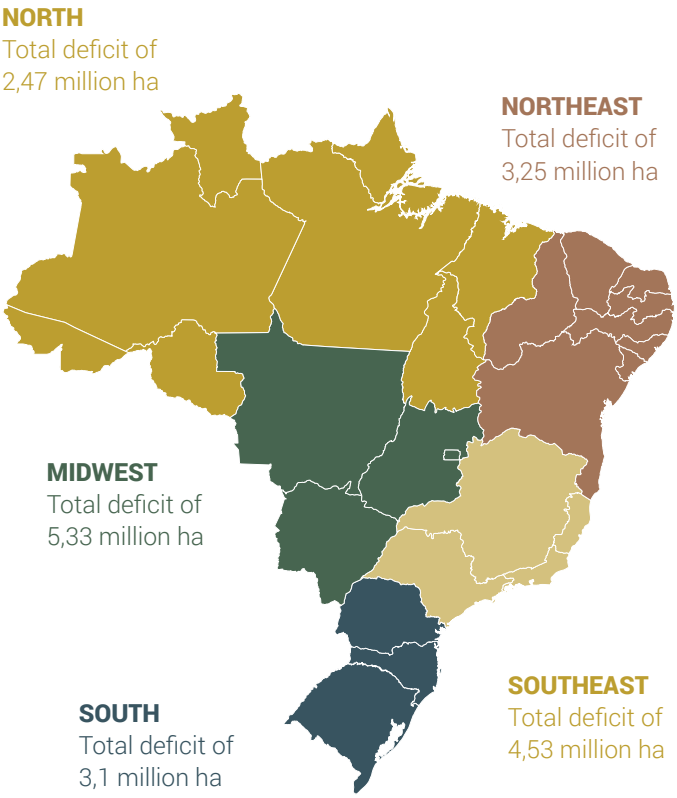
Restoration in Brazil is a legal imperative, numerically expressed in national and international targets.

The Brazilian Forest Code is a piece of national legislation on natural resource management that legally requires that landowners in Brazil preserve or restore vegetation across a set proportion of their land as forests. As the situation currently stands, Brazil needs to restore around 19 million hectares to comply with the Forest Code.

In parallel, and overlapping with the Forest Code target, as part of their Nationally Determined Contributions, Brazil has committed to restore 12 million hectares of forests by 2030.

Despite the legal obligation, the reality on the ground points to demand for restoration in Brazil coming mostly from forest compensation of infrastructure projects in sectors such as mining and energy or individual properties agreements with Public Prosecutors via other legal mechanisms.

Lack of law enforcement is a disincentive for landowners to meet the requirements of the Forest Code. Forest Code compliance deadlines related to restoration of forest areas inside rural properties have been poorly enforced, and discussions for flexibilization of the law are ongoing within the Federal Government, generating a sense of impunity around non-observance of the legislation. Command and control efforts are limited to emblematic cases and, given the current changes in the political scenario in Brazil, there is a general lack of political will to enforce obligations that are seen as an extra burden for actors in the land use sector.



(8Mha of APP and 11Mha of RL). Source: Geolab/Imaflora, 2017

Restoration also faces practical barriers:

HIGH COSTS AND LOW RETURNS: Traditional restoration methods such as the use of seedlings are expensive and resource intensive;

LACK OF KNOWLEDGE: Relevant actors that need to embrace restoration (e.g. rural producers) are not trained on how to restore forests. Limited technical assistance has resulted in low capabilities in the field;

UNSTRUCTURED SUPPLY CHAIN TO MEET THE NEEDS OF RESTORATION: Obstacles in the supply chain include the lack of appropriate regulation and access to credit, and the absence of a strong marketplace for supply of seeds.

Given this scenario, Partnerships for Forests took the challenge of designing a strategy to support the restoration sector in addressing the mentioned barriers impeding restoration efforts in Brazil. This strategy included an Enabling Condition initiative, the Seed Paths Initiative, aimed at increasing the adoption of a more cost-effective technique for restoration – the direct seeding technique – aligned with the improvement of the business case of the Xingu Seeds Network, currently the largest supplier of native species' seeds in Brazil.

The case of the Seed Paths Initiative

A multi-partner initiative created to strengthen forest restoration in Brazil by means of increasing the usage of the direct seeding technique – a low-cost, high return restoration method with social and environmental benefits.

The Seeds Path Initiative aims to **increase by 3x** the use of direct seeding in Brazil by 2020, raising the area recovered with the technique from 700 ha/year to **2,100 ha/year;**

DIRECT SEEDING

Direct Seeding refers to a set of techniques for forest restoration based on the direct planting of native tree seeds into the soil. This is opposed to the traditional seedling technique that relies on planting young trees (seedlings) for forest restoration. While seedling planting for restoration is an adaptation of traditional commercial forestry techniques to produce wood, the objective of the direct seeding approach is to mimic the natural forest regeneration process by planning and implementing the reproduction of a forest ecosystem.

BENEFITS OF DIRECT SEEDING

Economic

- It uses the farmers' knowledge of seed planting and makes use of their own machinery, aiding their involvement in the recovery of native vegetation;
- It costs about three times less than traditional planting of seedlings;
- It can include different species, including those that have a commercial value.

Ecological

- The recovery process is similar to natural forest regeneration, recreating ecological interactions involving competition, forest succession and attractiveness to dispersers;
- It results in trees with well-developed roots, straight trunks and a high level of resistance to drought;
- There is an appropriate seed combination for each type of biome. The method has been used successfully in the Amazon, the Cerrado, Caatinga and Atlantic Forest.

Social

- The main source of native tree seeds in Brazil are community seed collection networks, such as the Xingu Seeds Network.
- These businesses create jobs and generate income for socially vulnerable or marginalised communities, including indigenous peoples and other traditional populations, as well as smallholders and rural settlers, mainly through the collection and sale of seeds;
- As the predominant model of seed production is community-based it also helps promote integration among the diverse groups and associations in seed collection networks;
- It makes use of traditional knowledge and promotes engagement in standing forest conservation through the economic use of non-timber products;
- Within indigenous communities' fruit and seed collecting activities are traditionally done by women. Therefore, the direct seeding approach creates income for women, promoting female economic equality in gathering communities;

Divided into two phases, the **Seed Paths Initiative** had in its first phase the goal of understanding critical barriers to the wider adoption of direct seeding and developing a roadmap of how to address those barriers, enabling greater investments in the sector.

The first phase of the Seed Paths Initiative was divided into four main activities:

1. Diagnostic of the sector and stakeholder mapping;

2. Evaluation of barriers to expand the use of direct seeding;

3. Identification of initiatives to reduce identified barriers and implementation risks;

4. Development of a roadmap to implement the identified initiatives.

A multi-partner initiative

CLICK TO WATCH THE VIDEO

"With the Seed Paths initiative, a network has been created that brings together people from the private sector, farmers, governmental agencies, researchers and organizations from civil society organizations to look at the obstacles and opportunities to the expansion of this ecological restoration method and to implementing an effective action plan with short and long term actions."

Roberto Resende, President of Iniciativa Verde.

Between collectors, private businesses, researchers, buyers and regulators, the initiative has mapped more than 160 key players in the restoration sector. All these actors have unique roles and interests.

The lack of coordination and exchange between these actors resulted in a situation whereby:

- Native tree seeds are hard to obtain in the common seed market.

- Seed production and commercialization regulations establish minimum quality parameters that consider seeds for agricultural purposes as the standard. This puts native tree seed commercialization in a legal limbo, because the minimum standards for classifying the quality of (e.g.) soybean seed are inadequate and unreachable for native tree seeds.

- Given restoration through seedling is traditionally the mainstream technique for forest restoration, direct seeding still needs support from the research and scientific community to strengthen the technique and highlight its benefits and obstacles.

- The actors who are required by law to restore forests are not aware of the direct seeding approach, and even when they are aware, they do not have the necessary skills and knowledge to implement it properly.

Therefore, interaction and coordination between these actors are essential for strengthening the restoration sector and promoting more effective solutions. The new stakeholder governance structure proposed by The Seed Paths Initiative considers that:

- The seed production segment is vital to the success of the initiative. Native seed producers guarantee the supply of seeds while also ensuring positive impacts in terms of increased income generation for collecting communities. Seed producers consist of individual producers or seed collection networks in addition to nurseries that have their own collection networks for internal consumption.

- Rural producers are the group carrying most of the environmental liabilities and yet who have the fewest resources allocated to invest in restoration. They are therefore one of the greatest potential beneficiaries of the technique.

- Academia and research institutions play a crucial role in providing scientific evidence to support the credibility of the technique. Studies range from planting models to experiments that can address technical gaps.

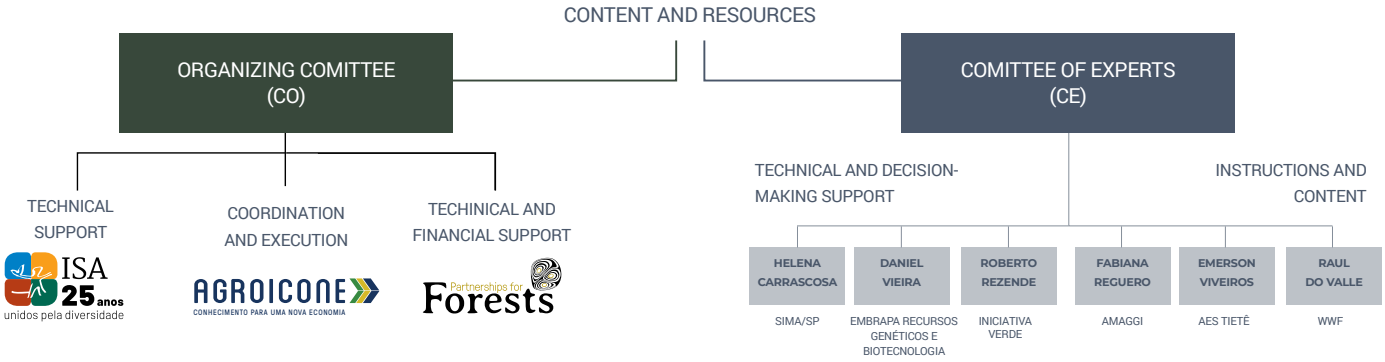
- Enterprises with restoration liabilities individually have the largest areas to be restored. These include energy, transportation and mining companies.

- Government agencies are directly engaged in public restoration policies and enforce environmental legislation in all spheres.

- Public Prosecution & the State Secretariats of Environment (SEMAs) are two major players representing the public sector, responsible for the legal framework for advancing the acceptance of the direct seeding technique, as well as being responsible for the Conduct Adjustment Agreement (TAC), which obligates producers to comply with environmental legislation;

- NGOs engaged in the land use sector are strong advocates and influencers. Additionally, they lead restoration programs that can benefit from the direct seeding technique, creating expertise for replication.

The governance structure



The governance structure of the initiative was designed to enable the identification and prioritization of barriers and the most efficient planning of actions.

The agro-environmental think-tank Agroicone is the lead organization of the project, responsible for the technical work conducted during its initial phase, as well as for the coordination and the secretariat of the initiative. They were supported in this role by the NGO Instituto Socioambiental (ISA), an active advocate for the use of native seeds in the Brazilian restoration efforts, as well as the founding organization of The Xingu Seeds Network.

Committee of Experts (CE)

The committee of experts is composed of six relevant specialists involved in the restoration chain, representatives of the public and private sector, civil society and research institutions. The selection of the members was done by Agroicone with the support of Instituto Socioambiental.

The role of the Committee of Experts (CE) is to guide all the processes with technical inputs and support in the engagement of potential new stakeholders, thanks to the multiplying capacity of each of the members. The CE holds monthly meetings to provide feedback and advice around project development. It also plays a decisive role in the process of consolidating the priority barriers to be tackled and the actions to be implemented within the second phase of the initiative.

Workshops

THE WORKSHOPS WERE DESIGNED TO ENCOURAGE PARTICIPATION FROM ALL STAKEHOLDERS WHILE MAINTAINING THE FOCUS OF THE DISCUSSION INTO GENERATING CLEAR RESULTS. TO ACHIEVE THIS A SPECIALIZED CONSULTANCY CALLED LAB WAS INVITED TO SUPPORT IN THE FACILITATION OF THE WORKSHOPS USING SPECIFIC METHODOLOGIES. THIS WAS LAUNCHED WITH:

• One general workshop to validate the initial diagnostic. This diagnostic was the first deliverable of Agroicone who assessed the state of the art of the direct seeding approach, identifying initial potential barriers to increasing use of the technique in Brazil. During the workshop the identified barriers were validated and new ones were pointed out, resulting in a list of 30 barriers and 30 core actions to address them.

43 participants, comprising the technical team from 35 institutions. Organizations included NGOs, public prosecutors, public and regulatory agencies, independent consultants, agribusiness companies such as sugarcane mills, rural producers, cross-sector entities, universities and other representatives of the private sector (hydroelectric and transportation).

• Two regional workshops to validate, prioritize and initially ramp up the actions in the city of Cuiabá, Mato Grosso do Sul State and São Paulo.

FIRST PHASE NUMBERS

+250 PEOPLE INVOLVED

+160 ORGANISATIONS

+40 INTERVIEWS WITH SPECIALISTS

31 ACTIONS IN THE ACTION PLAN

3 WORKSHOPS

13 PRIORITY ACTIONS COVERING 2 STATES: SÃO PAULO AND MATO GROSSO

30 IDENTIFIED BARRIERS

Results

SPREADING THE SEEDS

ORPLANA, a sugarcane producers association from São Paulo State with 1.25 million hectares of restoration liabilities, is the first organization to formally sign a Technical Cooperation Agreement for the dissemination of the direct seeding technique. The signed commitment between Agroicone, implementer of The Seeds Initiative, and ORPLANA included partnerships for promoting courses and workshops on the direct seeding restoration approach for technicians working in the Etanol Mais Verde Protocol, a programme led by ORPLANA and the State of São Paulo to increase sustainability in the ethanol supply chain. This first agreement is an important indication of corporate interest in and commitment to implementing the direct seeding approach, which has the potential to unleash additional demand for ARSX's seeds in the medium and long term.

Activities have already started. The first workshop took place on the 10th of September. A second workshop is planned to happen on the 27th November, when the direct seeding implementation process will be presented *in loco*.

Additionally, more than **15 partners** have made steps to apply the direct seeding technique as a result of the engagement promoted by The Seed Paths Initiative, demonstrating and securing their intentions through the signing of purchase commitments or purchase request communications. ARSX establishes supply requests to collectors based on the demand expected and calculated through interest of purchase. According to current calculations based on the most recent purchase interest from participants of the Seed Paths Initiative, the total area to be restored to which ARSX will expect to sell seeds in 2019 comes to almost **180 hectares**. The hectares to be restored by the electricity company AES Tietê is already committed as match funding for the second phase of the Seed Paths Initiative.

"I had heard of the technique before, but didn´t have enough information. What most caught my attention was understanding that the direct seeding can reduce the costs for restoration."

Samuel Terenciani Campoy,
Santa Isabel Sugar-Cane Plant.The Santa Isabel Sugar-Cane Plant is one of the private entities that have committed to test the direct seeding technique in 7 hectares of land inside one of their plants.

TABLE OF COMMITED AREAS TO BE RESTORED USING DIRECT SEEDING IN SÃO PAULO AND MATO GROSSO STATES

BUYER	HECTARES
ABD+Unesp Botucatu	0.25
AES Tietê	5
AES Tietê	2
AES Tietê	2
AES Tietê	2
AES Tietê	2
Amaggi	3
Amaggi	7
Da Serra	5
Iniciativa Verde	0.5
Iniciativa Verde - Barra do Turvo/SP	15
Iniciativa Verde - Piracicaba/SP	5
IPE - Instituto de Pesquisas Ecológicas	0.5
Municipality of Extrema/SP	0.5
RENOVA and CEPAM (MG and ES)	100
Rural Association of São Paulo	15
Saint Isabel Sugar-Cane Plant - SP	7
SIMA/MMA-TDR/SP	6
TNC+ACEVP	0.5
UFSCar Lagoa do Sino/SP	1.5
TOTAL	**179.75**

BREAKING A CULTURAL BARRIER

Cultural barriers to the adoption of the technique were identified as one of the most significant obstacles to promoting the direct seeding approach, but also possibly the one over which the Initiative itself could exert greater influence already in the first phase of the project. For that reason, the Initiative conducted a series of communication activities, namely the production of a video and printed materials for hand-out among key stakeholders, including a technical folder for rural producers. The Initiative also took part in the Latin America and Caribbean Climate Week, an event held in Salvador, Bahia, in August 2019, where it had the chance to launch the initiative to the wider public and engage with the press.

Between September, 24th and 28th the Society for Ecological Restoration (SER) held the 8th World Conference on Ecological Restoration in Cape Town, South Africa. Agroicone used this opportunity to present the Action Plan from the Seed Paths Initiative to an international public composed by scientists and stakeholders involved in the restoration chain.

Among the highlights of the dissemination of the direct seeding was the engagement of Joaquim Levy, former Ministry of Finance, director of the World Bank and president of the Brazilian National Development Bank (BNDES). Levy acknowledged the efforts of The Seed Paths Initiative during an event and took the initiative of getting in touch with Agroicone for more information. His interest in the matter was reflected in an article authored by him for the Valor Econômico newspaper, the most widely read business newspaper in Brazil.

"There is a certain lack of awareness about this technique, a certain prejudice, so it is important for us to get the information out there, share positive experiences and help others learn from the mistakes that were made in the past"

Roberto Resende, President of Iniciativa Verde.

The case of The Xingu Seeds Network: a shift towards a business mindset


credit: Tui Anandi / ISA

"This is the first time that a board of directors is really engaged in making the changes necessary for the Xingu Seeds Network to grow"

Rodrigo Junqueira, Coordinator at Instituto Socioambiental (ISA)

The Xingu Seeds Network (ARSX) is the most mature seed network in Brazil. It was created in 2007 as an initiative of the Instituto Socioambiental (ISA), an NGO whose work focuses mainly on supporting indigenous communities in the Amazon. ARSX is responsible for managing the collection, logistics, storage and sales of the native seeds. Since its creation, ARSX has cumulatively produced 200 tons of seeds from 270 native species. The network is composed of more than 570 seeds collectors, distributed in 27 nuclei including urban areas, rural settlements and indigenous villages. As of now, the ARSX has contributed to around 6,000 hectares of restoration, in projects located in the Amazon and Cerrado.

The ARSX has grown significantly over the past 10 years, achieving +12% growth p.a. and reaching £127,000 revenue in 2018. Nonetheless, it is still a donor-dependent business that is not yet financially sustainable without grant money. Though it is currently still operating like a non-profit entity with strong links to its mother entity, the Instituto Socioambiental (ISA) and members of the ARSX have acknowledged the urgent need to transform its model towards a business-oriented mindset in order to sustain its long-term operation.

The business consultancy Sense Lab was selected to conduct a 4-month diagnosis to understand the main features of the operation of the ARSX and develop a business-plan. The key take-aways from this process were the need to consolidate and professionalize the team, improve physical infrastructure, secure financial and organizational processes, offer additional training and exchange opportunities for collectors, and implement marketing and sales strategies, which are virtually non-existent.

The main result of this first stage was a one-year implementation roadmap for the levers identified in the business plan. It also includes a matrix classifying the levers under 'Impact Potential' and 'Ease of Implementation'.

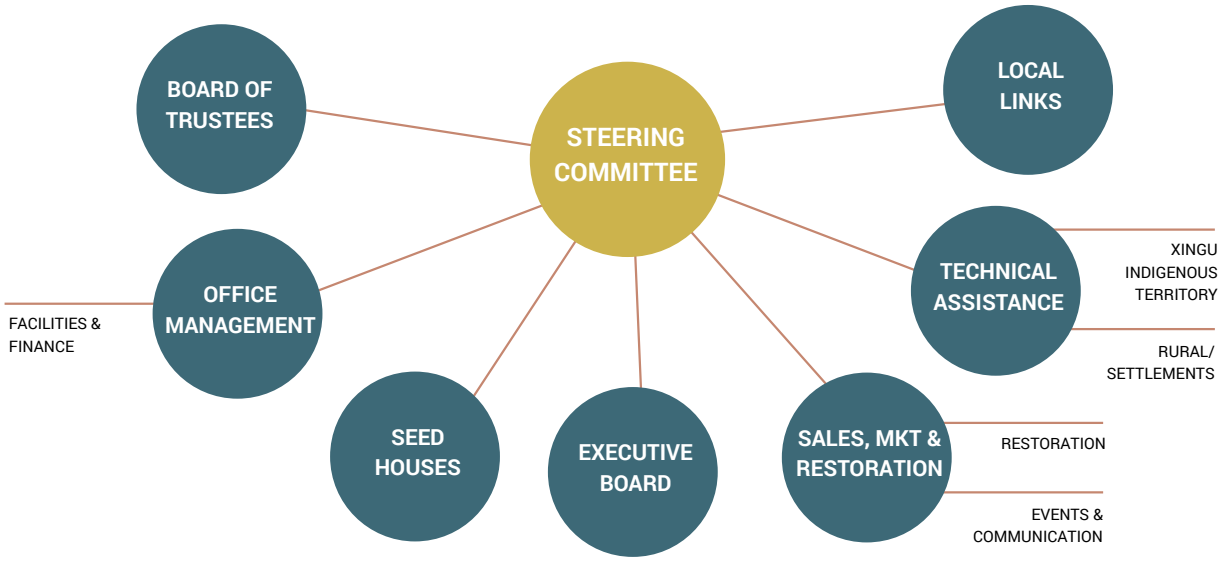
In this matrix, it was possible to identify two quick-win levers, that were already discussed in ARSX's General Assembly: a review of the governance structure to a more participatory format and a review of the compensation of local collector 'Links'.

Local Links are a fundamental part of ARSX's operational process. They are the individuals who organize the groups of local collectors and link the demand with the supply. Therefore, maintaining Local Links in their roles for a longer period is important to improve the process and its productivity, given that these links establish critical trust relationships with the collectors. The loss of these individuals may lead to a loss of productivity and, in extreme cases, the fragmenting or dissolution of Local Nuclei. The existing compensation mechanism is unclear to members and is not effective among the Links. Sense Lab proposed and had approved in ARSX's General Assembly a financial recognition model that provides an increase in the incentives for the Links.

The other significant quick win identified in the diagnosis phase refers to changes in the governance structure of the Network, more specifically the relationship between their Board of Trustees, the Executive Board and the Manager's Group. A new proposal was built based on the need to evolve the governance structure to a more participatory format, improving stakeholder engagement within the initiative. The diagnosis identified that the Board of Trustees lacks enough proximity to the daily work of the Network in order to effectively support the Executive Board, which ends up managing with low effectiveness and autonomy. On the other hand, the Manager's Group, which is formed of collectors and others who are seen as potential leaders in the network, is representative of the network but lacks formal space in decision making. A review in the composition of the Board of Trustees was proposed to develop a more strategic work agenda and the establishment of a Steering Committee, which can act as a more agile and dynamic body, strengthening the voice of collectors in the organization. This will eventually evolve into a more organized format that assists the Executive Board in making tactical and operational decisions. These changes are currently being implemented.

Before

After




credit: Rogério Assis/ISA

The need for a solid Sales & Marketing strategy that can fully bridge the gap between the Network and the growing demand for native seeds will be key for the development of the ARSX. The initial diagnosis mapped a few relevant stakeholders that should be engaged in the short-term, such as public sector organizations, capital goods industries and large farming groups. Regardless of the sector, one of the main conclusions that arises from the plan is the need to focus on increasing awareness of the direct seeding technique among the relevant players in each sector, an activity which links the development of this project with the success of The Seed Paths Initiative in the longer run. As a direct result of this first phase of work, the Network has already received seed requests coming from COPEL, AES Tietê, Santa Isabel Sugar-Cane Plant and Iniciativa Verde, all stakeholders from within the Seed Paths Initiative.


credit: Ana de Francesco - ISA

"It became clear to us that strengthening the supply of seeds is a crucial step to make the direct seeding work at scale. On the other hand, the more demand there is for seeds, the more networks will start to arise to fill this gap", **Emerson Viveiros,** representant from AES Tiête, one of the biggest electric power generators in Brazil, comprising nine hydroelectric power plants and three small hydroelectric plants in the State of São Paulo.

Over the past decade, ARSX's processes have evolved and the Network has consolidated its role and legitimacy as a hub for local collectors. Collectors nuclei support, order management and stock management are relatively solid. The proposed switch of mindset, from a network that sees itself as a social and environmental project to a vision of a business that demands focus on growth and revenue has proven to be a challenging change, but one that is starting to be fully embraced by the Association.

Moving foward

THE ACTION PLAN

A five-pillar Action Plan emerged as the result of the first phase of the Seed Paths Initiative, comprising 13 prioritized actions to be implemented in the course of one year.

CAPACITY BUILDING

- Develop capacity building courses and training for rural producers, technical assistance suppliers, environmental agents and regulators (e.g. Environmental and Agriculture Secretariats and Public Prosecution) to implement and monitor direct seedings restoration.

- Create a network of demonstration units of areas restored with direct seedings for visiting and capacity building. Provide data and monitoring of selected areas.

TECHNICAL ASSISTANCE

- Implement direct seeding in new areas. Expected impact of at least 15 new direct seeding restoration areas in key regions in the Brazilian States of Sao Paulo and Mato Grosso, to be used as demonstration sites.

- Provide online technical assistance by setting up a virtual environment to handle requests with ten specialists providing support on a monthly base.

- Assessment of the real demand for restoration over the next five years by means of identifying legal agreements in course for restoration in priority states of Brazil.

SEEDS

- Identify and compile a list of best species suited for direct seeding.

- Professionalize seed networks by improving management capacity.

- Develop a seed production management tool suited for improving seed control, sales and supply chain management capacity.

REGULATION

- Support the regulation of herbicide use in ecological restoration.

- Publish whitepaper study on ecological metrics and indicators for monitoring results of direct seedings.

KNOWLEDGE SHARING

- Organize and disseminate existing information about direct seeding and its various forms of implementation in easily accessible, plain language.

- Elaborate a communication strategy for direct seeding dissemination and materials for local and international press.

- Establish partnerships with producers and leaders from other sectors (e.g. public and academic) to act as direct seedings spokesmen.

Conclusion

The Seed Paths Initiative and Xingu Seeds Network are complementary projects that have potential to transform the restoration approach across multiple sectors in Brazil. The Seed Paths Initiative provides an important awareness raising function to generate demand for the direct seeding approach, which creates business for the Xingu Seeds Network. On the other hand, the work that the Xingu Seeds Network is engaging in to strengthen and improve their management capacity is critical to ensure that the increasing demand can be sustainably and effectively met.

How has P4F helped?

The combined strategies designed by Partnerships for Forests to strengthen forest restoration in Brazil have demonstrated important results in its first phase. The Seed Paths Initiative enables more private investment in restoration by promoting a more cost-effective technique that increases the demand for seed collection. This increased demand will in turn benefit seed collectors' networks such as the Xingu Seeds Network Association and others by means of creating more awareness about the market and generating more business. Lastly, both initiatives have identified the need to focus on their relationship with stakeholders, either via creating a multi-partner action for the dissemination of the direct seeding technique, or by means of improving their gov-ernance structures, ensuring that the projects are inclusive and broadly representative of all key stakeholders.

- The Seed Paths Initiative, a P4F supported initiative led by Agroicone, is a clear national multi-partner initiative designed to enable private investment in forests and sustainable land use, as it gathers several stake-holders involved in the Brazilian restoration supply chain to create and implement a strategy to increase the adoption of a more cost-effective technique for restoration, the direct seeding technique.
- The Seed Paths Initiative is designed to unlock investments in the reforestation sector by means of promoting a more cost-effective technique. It also increases the demand for seeds collection, since direct seed-ing demands a high quantity of seeds. In this sense, the Enabling Condition not only broadened the awareness of the direct seeding technique, but also successfully committed stakeholders to spread it further, as shown in the example from ORPLANA.
- ARSX clearly benefitted from the Enabling Condition as the Seed Paths Initiative increased the awareness of direct seeding and the demand for seeds from ARSX. It tackles one of the levers identified in ARSX's business plan: focus on the awareness of direct seeding technique, still quite unknown. In addition, the EC in-creased the demand for seeds by committing private actors to implement direct seeding with ARSX seeds and technical assistance (AES TIETÊ, AMAGGI, Iniciativa Verde and Saint Isabel Sugar cane plant).
- ARSX's General Assembly approved changes in the network's governance structure to achieve a more participatory format, improving stakeholder engagement within the initiative. The result raises the voices of the collectors in the business model to contribute to the way ARSX functions.