



Darwin Initiative Capability & Capacity Annual Report

To be completed with reference to the "Project Reporting Information Note":
(<https://www.darwininitiative.org.uk/resources/information-notes/>).

It is expected that this report will be a maximum of 20 pages in length, excluding annexes)

Submission Deadline: 30th April 2024

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Darwin Initiative Project Information

Project reference	DARCC006 Darwin Initiative Capability & Capacity
Project title	Strengthening collaborative tree seed supply systems for restoration in Asia
Country/ies	Bangladesh, India, Indonesia, Philippines
Lead Partner	Bioversity International
Project partner(s)	Bangladesh Forest Department Institute of Forest Genetics and Tree Breeding (IFGTB), India National Research and Innovation Agency (BRIN), Indonesia University of the Philippines Los Banos (UPLB) Royal Botanic Garden of Edinburgh (RBGE)
Darwin Initiative grant value	£200,000
Start/end dates of project	1 April 2022 to 31 March 2025 (24 + 12 months; extension granted in October 2023)
Reporting period (e.g. Apr 2023 – Mar 2024) and number (e.g. Annual Report 1, 2, 3)	1 April 2023 to 31 March 2024, Annual Report 2
Project Leader name	Riina Jalonen
Project website/blog/social media	https://www.apforigen.org/initiatives/strengthening-seed-supply
Report author(s) and date	Riina [REDACTED], Tobias [REDACTED], Md Zahidur [REDACTED] Tauhidor [REDACTED], Rekha [REDACTED], Vivi [REDACTED] Enrique [REDACTED], Cristino [REDACTED], Peter [REDACTED] 8 May 2024 (short extension was requested)

1. Project summary

The multi-billion dollar investments in forest and landscape restoration (FLR) provide an unparalleled opportunity to restore and simultaneously conserve native, threatened tree species while enhancing ecosystem services and supporting local livelihoods. However, large-scale planting of native tropical tree species for other than purely commercial purposes is a recent phenomenon, and several institutional and technical factors constrain their wider use in FLR programmes, including (i) lack of native tree seed to meet the ambitious FLR targets, (ii) lack of information about effective seed sourcing strategies under changing climate, (iii) lack of information about seed quality and origin, and (iv) lack of integration of informal seed suppliers

in supply chains to meet national FLR targets and support livelihood opportunities ([Bosshard et al. 2021](#)).

The remaining natural populations in forests, woodlands and farms that constitute the only available seed sources for most native tropical species are poorly documented, while also threatened by continued forest loss and degradation. The problem is aggravated by the fact that seed markets are underdeveloped and many FLR projects source seed on their own. Therefore, an overview of seed demand and supply for native species is lacking. Such an overview would help assess the adequacy and conservation status of seed sources for diverse environmental contexts and FLR objectives, and ensure that seed collection relying on natural sources is sustainable.

At the same time, the importance of species genetic diversity and origin of native seed for restoration success remains poorly understood by FLR practitioners. Information about it is typically not documented and passed on in seed value chains to help practitioners select seed for their project needs. The choice of species and seed often depends on what happens to be available at the time of planting, instead of what would best suit the FLR objectives and site conditions and guarantee population viability.

These two constraints are intertwined: when seed quality is neglected, the need to conserve and sustainably manage natural seed sources also end up overlooked. Importantly, the lack of information about seed origin makes it difficult to help small seed producers, forest-dependent communities and seed source owners participate in seed value chains and channel resources and capacity development to them, so as to support income generation and incentivise sustainable forest management.

We work with forestry authorities, FLR implementers and forest-dependent communities in Bangladesh, India, Indonesia and the Philippines to strengthen institutional and technical capacities, so that FLR projects are linked to quality seed sources and local seed producers to customers so as to support local livelihoods and sustainable forest management. The project was designed and the proposal written collaboratively between all formal partners, based on a joint desk study that highlighted seed availability challenges for restoration in project countries ([Bosshard et al. 2021](#)).

2. Project stakeholders/ partners

Partner involvement in activities

The project proposal, objectives, workplan and budget were developed collaboratively between all partners in 2021, based on a [joint background study](#) that demonstrated the need for such a project. In Year 2 of implementation, the project team held approximately bi-monthly team meetings online and one four-day results workshop, to together review progress, share experiences in implementation, and plan upcoming activities. The results workshop was hosted by the National Research and Innovation Agency of Indonesia (BRIN) and held in Bandung, Indonesia, 27 February to 1 March 2024.

Since project inception, the in-country partners have selected and established collaboration with key organisations and units responsible for tree seed production, forest restoration and forest biodiversity conservation in their countries as follows:

- India: Tamil Nadu and Kerala Forest Departments, NGOs
- Indonesia: The Directorate of Forest Tree Seed (DFTS) at the Ministry of Environment and Forestry; Regional Technical Implementation Unit (UPTD) for Certification and Forest Tree Seeds of West Java Provincial Forestry Service
- The Philippines: Mindanao Tree Seed Centre; Forest and Wetland Research, Development and Extension Center, Ecosystems Research and Development Bureau, Department of Environment and Natural Resources.
- Bangladesh: Bangladesh Forest Department: Botanical Garden, Resource Information System Unit, Management Plan Unit, and FLR Project implementing Forest Divisions to ensure seed source identification, mapping, conservation and supply chain development for FLR.

The sub-contract with the Bangladesh partner did not progress despite multiple attempts, although a Memorandum of Understanding was signed between the Government of Bangladesh and Bioversity International as the project lead. Hence, country-level targets for Bangladesh under outputs 2 to 4 had to be dropped, and the reserved funds were reallocated for organising the results workshop (approved Change Request CR23-059).

Achievements, lessons, challenges

Year 2 saw the initiation of the in-country activities in India and Indonesia, with strong buy-in from the above-mentioned government organisations. Targets for capacity needs assessments and skills training in seed and seedling production were exceeded manifold: Capacities of 308 stakeholders were assessed to establish training needs (431% of target over 2 years), and 243 stakeholders received training (910% of target over 2 years, 44% women) across the Philippines, India, and Indonesia. Seed funding for improving seed and seedling production and delivery was distributed to 3 community nursery groups in Indonesia and 10 local nursery operators in the Philippines, based on contextual needs identified through the training workshops. Information Systems for forest tree seed were developed in Indonesia and the Philippines to document and monitor seed availability and distribution for restoration.

In the first half of the Year 2, the project team continued to face major delays in signing collaborative agreements in 3 of 4 countries (all except the Philippines), as already reported in Y1. Subcontracting was expected to take some time and the project work plan was prepared in such a way that activities in the first 6-9 months were funded directly by the lead partner until contracts could be signed. Due to local institutional requirements and negotiations on the contract terms, the contracts with the Indian and Indonesian partners were, however, only completed in May 2023, and due to further delays in opening project bank accounts and with international banking regulations, both partners only received the funds and started on-the ground implementation in October 2023. An extension to a third year of implementation in these two countries was, therefore, sought and approved (Change Request CR23-059).

While the delays were unfortunate, the process developed the capacities of the in-country teams to set up international projects and understand contract terms and requirements for receiving international funding. Moreover, it stimulated broader agreements for long-term institutional collaborations; the lead partner was invited to sign a Memorandum of Understanding with government institutions in both India and Bangladesh to further collaboration on forest restoration and conservation. While contracting universities (as in the Philippines) is generally easier than contracting government institutions, formal agreements with government organisations facilitate collaborations with those organisations which are better able than universities to adopt and implement project results and recommendations in practice.

In a setback, five planned trainings with three with private nursery producers in India from 15 to 31 March 2024 had to be cancelled when the parliamentary elections were announced to be held from 19 April onwards. Staff in government offices, including the implementing partner IFGTB, were called on duty to prepare for voting process. Funds reserved for these trainings could not be reallocated and were left as unspent balance.

Participant selection

Participants for activities on capacity training for restoration practitioners (Activity 3.3) and collaborative seed sourcing (Activities 4.1 and 4.2) were selected based on the results of the gap analysis on seed source availability (geographical focus), capacity needs assessments (Activity 3.2), and gender equity and social inclusion targets (at least 30% women).

3. Project progress

3.1 Progress in carrying out project Activities

1.1 *Develop methodology for gap analysis on tree seed sources*
Completed and reported in Year 1.

1.2 Develop seed zone maps for current and future climates in target countries and validate them with experts

Completed and reported in Year 1.

1.3 Identify data sources and access options on species distributions, seed sources and land uses

Completed and reported in Year 1.

1.4 Train and mentor 3 experts per country to implement gap analysis (Spatial analysis, R statistics, data on forest cover and land tenure) (1 regional workshop, 15 participants)

Completed and reported in Year 1.

2.1 Validate results of the gap analysis with forestry authorities and other stakeholders

Philippines: Completed in Y1

India: Results of the gap analysis on seed availability for restoration were presented to Indian Forest Service Officers across different States during a one-week training on Forest Genetic Resource Management and Tree Improvement in September 2023, and again during a three-day workshop 12-14 December 2023. The officers showed interest for the results and the discussions centred around extending the analysis from the project's southern target states to the northern states of India. Further, the transfer of seeds of common species across states to meet demand for planting was also discussed. The officers expressed concern that many times seeds and planting material is indiscriminately transferred across agro-ecological zones without taking into consideration their adaptability – an issue which the seed zone maps from the project will help address. Participants identified a need to sensitise seed suppliers on the availability of such information and enable transfer following species-site match.

Indonesia: Validation of the results on seed source availability was postponed to mid-2024. This was due to the late receipt of funds in Y2 and the need to prioritise other activities, namely: (1) on-site trainings for community-based nurseries which had been specifically requested for by the West Java Provincial Forestry Service, (2) identifying candidate seed sources, and (3) preparing for the project-level results workshop which Indonesia was requested to host.

2.2 Evaluate and improve existing databases on seed sources in collaboration with stakeholders (Y1 Q4 to Y2 Q1)

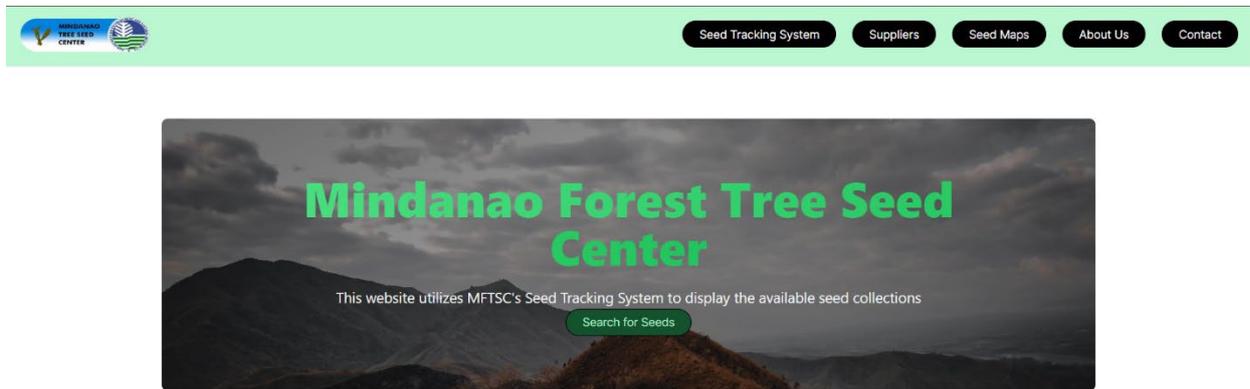
India: IFGTB maintains a website and a listing of forest genetic resources conserved in the states of Kerala and Tamil Nadu, and has also developed a Mobile App on “Forest Seed Science and Technology” with seed handling techniques for 100 forest tree species. The seed zone maps and the availability of seed sources by seed zone will be published on the website and the app, to help select suitable germplasm sources and to assess and fill in gaps in the availability of suitably adapted seed for different environmental conditions. Information on seed and plant suppliers among 35 government, 60 private sector, and 30 community nurseries was collected in Y2 through surveys and interviews. Their locations, contacts and modes of procurement will be added to the website and the mobile app in Y3.

Indonesia: A prototype of a national digital information system on forest tree seeds was developed in Y1, to replace the existing paper-based system (Figure 1). In Year 2, the information system received approval from the Director General of Watershed Control and Forest Rehabilitation, Ministry of Environment and Forest (MoEF), for use nationally and was subsequently introduced at the National Coordination Meeting for Updating the Seed Source Database in August 2023. This was the first step to gather input from the representatives of the central and regional governments who are responsible for managing tree seed sources throughout Indonesia. Other efforts in Year 2 focused on establishing the institutional arrangements for the nation-wide deployment of the database: implementing of a one-stop information system arrangement by the MoEF, signing of a collaboration agreement between

BRIN and the Directorate of Forest Tree Seed (DFTS), and the registration of intellectual property right (copy right). These were in progress as of March 2024.



Figure 1. Examples of the contents of the Tree Seed Information System in Indonesia: (a) landing page / dashboard showing information e.g. on seed sources, seed production, production of certified seed, and seed transactions, (b) registry of seed sources.



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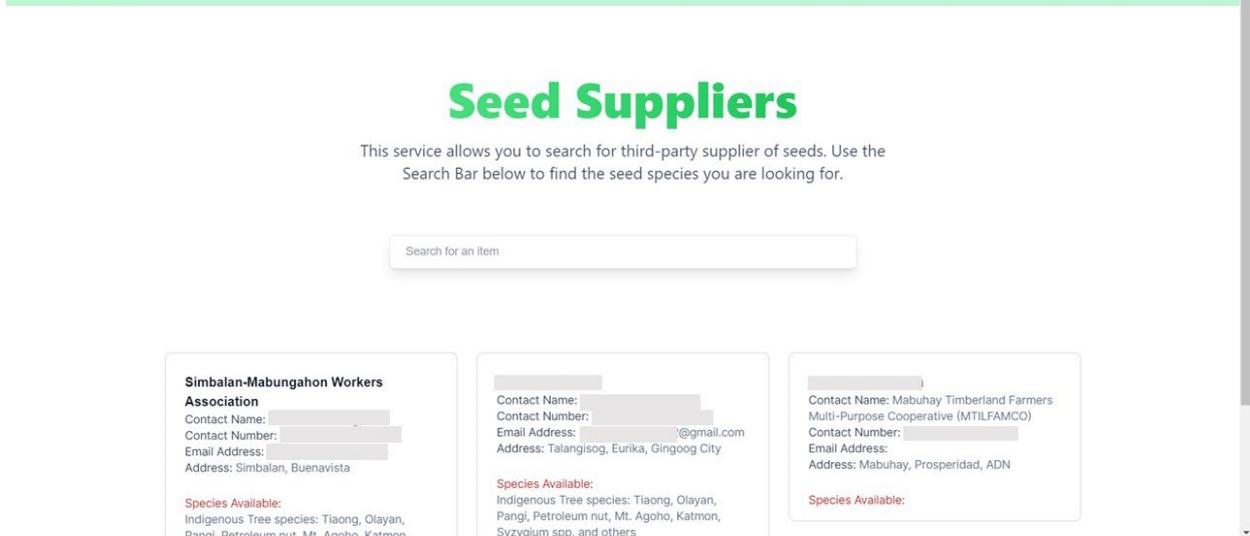
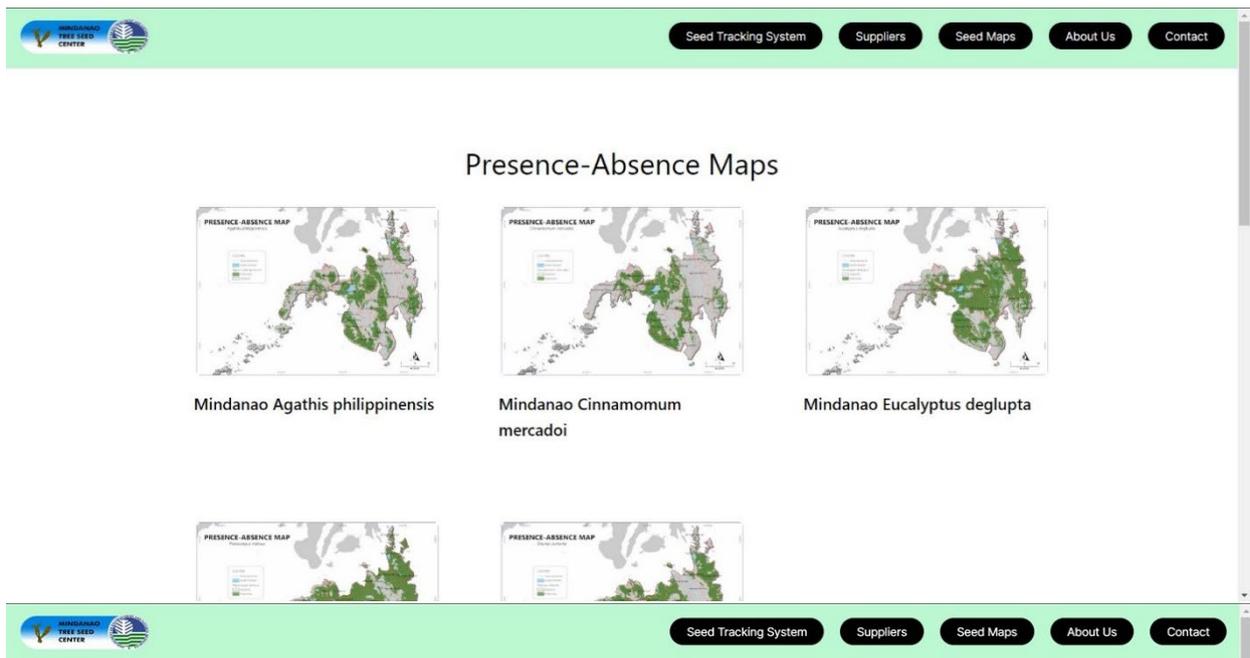


Figure 2. Examples of the contents of the Tree Seed Information System established with the Mindanao Forest Tree Seed Center: (a) landing page, (b) species distribution maps, (c) seed suppliers.

Philippines: The Mindanao Forest Tree Seed Center (MFTSC) has a Seed Information Database System containing information on seed collections, seed record registry, and seed disposition from the center. It, however, lacks information on seed zones. Moreover, MFTSC leadership has Darwin Initiative C&C: Annual Report Template 2024

expressed a need for a centralized data repository including species occurrence data and seed sources to be established by the Department of Environment and Natural Resources (DENR), covering all regions and agencies. The repository would allow identifying gaps and so consolidating and improving information on seed availability. It can also ensure data integrity and security, increase scalability, and improve collaboration among regional offices and even partner agencies which currently each operate their own systems. In Year 2, seed funding was provided to MTFSC to update their database with information on seed zones and advocate the database as a model for establishing a centralised information system. Furthermore, a website was developed to provide access to key information from the MFTSC database to restoration practitioners and other members of the public. This includes information on the species distributions, available seeds from the MFTSC, as well as other producers of native tree seedlings in the region (Figure 2). The website is expected to be launched in June 2023.

2.3 Make analysis methods and results publicly and freely available

A draft manuscript of the methods and results has been prepared and awaits for the completion of the validation process in Indonesia, scheduled for mid-2024. At the project's result workshop, the participants agreed to develop online training materials on the analysis methods to allow disseminating them more widely. In Y2, the methods and the preliminary results were publicised at four national and international conferences as follows:

- 10th *World Congress of the Society of Ecological Restoration*, Sydney, Australia, September 2024
- 59th Meeting of the *Association for Tropical Biology and Conservation* held at Coimbatore, India, 2-6 July 2023
- Hybrid webinar on the *Role of Forest Tree Seeds in Supporting FLR*, involving different stakeholders in Indonesia with more than 500 online participants (60% women) and around 60 offline participants (60% women) in Bogor, West Java, 17 July 2023.
- APAC Watershed Congress 2023 at Manila, Philippines, 24-26 October 2023, attended by 193 participants from 9 countries, including representatives of the Department of Natural Resources and Environment (DENR).

3.1 Identify target districts / regions and training participants based on the gap analysis

Completed in Year 1.

3.2 Assess current capacities and constraints of FLR implementers in sourcing quality native tree seed from local communities and smallholders

India: 100 nursery operators, seed suppliers and seedling distributors were interviewed to assess current capacities and capacity development needs (Annex 1, Figure 3). The data is being analysed as of March 2024. It was observed that the seed production process is well managed by the public extension centres: identified and well-documented seed sources (Seed Stands, Seed Production Areas, Seedling Seed Orchards and Clonal Seed Orchards) are maintained in an organised manner and seed collection and supply happens from the sources. Unfortunately, a huge gap exists between the demand and supply of quality seed of native species. Private family-run and small- to medium-sized nurseries often source and distribute seeds and seedlings between states without attention to seed zones, and operations suffer from poor germination rates and propagation success.



Figure 3. Nurseries visited for capacity needs assessment in Tamil Nadu, India. Photo: IFGTB.

Indonesia: Initial capacity assessment results based on 30 respondents showed generally good awareness of the existing regulations and certification systems on tree seed, but gaps in the use of seed zone maps, information on the impacts of climate change on restoration sites, and propagation techniques (Figure 3). Most commonly cited problems in seed availability were overall lack of seed sources (59% respondents), lack of seed sources of preferred provenances or origin (53%), and degradation or fragmentation of seed sources (50%). Additional respondents will be surveyed in Y3 to expand analysis, given the widespread interest for the project methods and tools.

Philippines: Another 23 supply chain actors were surveyed in Y2, especially seed source managers, increasing the total number of respondents to 258 (23 seed source managers, 62 seed and seedling suppliers, and 173 end-users who collect, produce or purchase tree seeds or seedlings for their own purposes, mainly from People’s or farmers’ organizations). Results show that end-users lack access to resources that would support effective planning and implementation of seed sourcing. Only 35% of respondents used registries of seed sources, 34% used registries of seed suppliers when planning their activities, and the majority of the remaining respondents did not know of the existence of such resources or did not have access to them. When facing a lack of seeds or seedlings of native tree species, 41% of respondents frequently changed to exotic species and 39% resorted to collecting wildlings. Majority of the respondents also lacked information of how to increase the resilience of restored forests against climate change (Figure 3). Most commonly cited skills or knowledge that respondents felt they needed to improve were advanced propagation techniques; seed selection, collection, processing, storage and germination, control & management of diseases, identification or viable and quality seeds, and knowledge on planting other tree species. The results will be developed into a journal manuscript in Y3.

3.3 Organise one training in each target district / region on sourcing quality seed from communities and seed source conservation, based on the capacity needs assessment

India: Three trainings were organised for 88 forest department staff (including 30 women) in Tamil Nadu who are involved in collecting seeds of native species and raising seedlings for distribution under the Tamil Nadu Green Mission programme. The first training was inaugurated by the Principal Chief Conservator of Forests and Chief Project Director, Tamil Nadu Biodiversity Conservation & Greening Project – a five year long programme of the state. The first training in was held at the partner institution IFGTB, Coimbatore, and the other two were held in collaboration with the Krishi Vigyan Kendra (Agricultural extension center), Madurai.

Indonesia: In total four trainings were held in Year 2, one for professionals and three for farmer groups, with a total of 137 participants (63 women).

- Training for Forest Tree Seed Quality Examiners for 30 participants (12 women) from the Technical Planning Units (UPTD) of the Provincial Forest Services of West Java and South Kalimantan provinces on 22 – 30 November 2023 in Jatinangor, West Java (Annex 3).
- On-site trainings on Handling Forest Tree Seeds and Seedling for FLR, total of 107 participants from 3 Farmer Groups who manage community-based nurseries in West Java (Annex 4):
 - Giri Jaya Forest Farmer Group in Nagrog Village, Bandung on 22 February 2024; 30 participants (19 women)
 - Kausar Forest Farmer Group in Cibodas Village Bandung on 27 March 2024; 37 participants (11 women)
 - Tani Makmur I Farmer Group in Pakemitan Kidul Tasikmalaya on 29 March 2024; 40 participants (21 women)

Philippines: Completed training for 18 participants (14 women) from 21 to 23 February 2024, entitled, “Seed and Seedling Production of Native Trees in Mindanao for Forest and Landscape Restoration in a Changing Environment” held in Bislig City and the nursery of Mindanao Forest Tree Seed Center (MFTSC; report in Annex 5). The participants included foresters, members of People’s Organizations, and cooperatives producing nursery-raised native tree species.

4.1 Guide FLR implementers (training participants) in developing collaborative work plans for seed collection and production with male and female community members

India: In Year 2, discussions were initiated with Tamil Nadu State Department to plan programmes for the State on implementing guidelines for quality seed collection and seedling production. The activities will be implemented in collaboration with private tree nurseries who are familiar with the demand of the species and their handling.

Indonesia: Collaborative work plans for seed collection and production with 107 participants from 3 community-based nurseries in West Java were prepared during the training workshops. In general, all farmer groups do not have adequate seed sources. In many cases, seeds are collected from a few parent trees – in extreme condition sometimes only from one tree. This practice will reduce the quality of the seeds and seedlings produced, survival of restored trees, as well as income generation potential of the nursery groups. The following strategies to address seed availability constraints were jointly identified with participants: (1) identify additional tree seed sources around farmer groups to increase access to certified seed sources, (2) seed gathering and sharing between farmers who have limited parent trees (plus trees), (3) establish new certified seed sources, if possible. These will be followed up on in Y3.

Philippines: Participants in the training workshop were guided by resource persons to assess their seed and seedling production activities, issues and challenges. From these, the proposed strategies and enabling environment to achieve improved seed and seedling quality were crafted together by the participants and resource persons. Assimilating improved and specific technologies and practices for raising native tree species is an important strategy that most participants identified. Likewise, securing more tools and equipment for improved seed collection and planting stock production.



Figure 4. Trainings on native seed production and supply organised by the project. *Top:* India, with staff of Tamil Nadu Forest Department, *Middle:* Indonesia, Giri Jaya Forest Farmers' group, *Bottom:* Philippines: training for representatives of community organisations and local government, Mindanao.

4.2 Identify and address priority needs for seed funding, using participatory and gender-responsive approaches

India: Training workshops for private nursery producers had to be postponed to Y3, and a more detailed identification of needs will be carried out then. Needs identified so far through interactions with beneficiaries include identification guides for native species; training on the basic aspects of seed and seedling production of native trees; increasing and enhancing seed sources of native trees; and basic tools and equipment in seed collection, processing, handling and nursery seedling production. In Y3 it is planned to provide simple manuals in vernacular languages for the private nursery farmers and financial assistance to improve seed and seedlings production capacities in their nurseries.

Indonesia: Main needs identified through the training workshops and surveys include the need for basic equipment such as seed collection tools, handling seeds and seedlings in nursery, as well as follow-up training to increase farmer groups' knowledge and awareness of the importance of seed sources and seed and seedling handling. The lack of certified seed sources or parent trees, especially for native tree species, are an obstacle for all farmer groups, and they have expressed interest in establishing their own seed sources, but such activity is beyond the scope of the project. Support for increasing production capacity is especially important for the Tani Makmur I Farmer Group where forest tree nurseries are the main income source for the members. Additionally, Kausar Farmer Group which is actively involved in the identification, collection and planting of more than 100 native and local tree species in Bandung requested support for their initiatives and programs to increase awareness and love for these species such as by making books or visiting schools. Each of the 3 farmer groups were provided 10,000,000 IDR (approx. 498.60 GBP) were allocated to each of the 3 farmer groups to address the identified needs (Table 1). Additional support for implementing the identified activities can be sought from the village governments.

Philippines: The needs for seed funding were identified through the workshop discussions and focus groups as part of the training (Annex 5). Briefly, these are: (1) trainings on the various aspects of seed and seedling production of native trees; (2) increasing and enhancing seed sources of native trees; (3) basic tools and equipment in seed collection, processing, handling and nursery seedling production. In response, seed funding worth approximately GBP 1,400 was used to purchase requested seed collection and nursery supplies and materials and distributed them to 10 local nursery operators (Table 1)



Figure 5. Distribution of nursery supplies to farmer groups in Mindanao, Philippines. *Left:* Simbalan-Mabungahon Workers Association, Buenavista; *Middle:* SONATA, Higaonon Tribe, Gingoog City; *Right:* Bukidnon Umayamnon Tribe Kapu-unan To Mga Datu (BUKDA), Bukidnon.

Table 1. Farmer groups and People’s organizations receiving seed funding and nursery equipment for improving seed and seedling production capacity for native tree species.

Organization	Address
<i>Philippines</i>	
Simbalan-Mabungahon Workers Association	Simbalan, Buenavista, Mindanao
SONATA, Higaonon Tribe	Talangisok, Eurika, Gingoog City, Mindanao
Mabuhay Timberland Farmers Multi-Purpose Cooperative (MTILFAMCO)	Mabuhay, Prosperidad, ADN, Mindanao
Mindanao Agroforestry Center Incorporated	Malaybalay City, Mindanao
Bukidnon Umayamnon Tribe Kapu-unan To Mga Datu (BUKDA)	Cabanglasan, Bukidnon, Mindanao
Xynara Therese Nursery	Kalasungay, Malaybalay City, Mindanao
USTP- Best Friend Forest Movement	Cagayan de Oro City, Mindanao
Casilayan Softwood Development Corporation	Talacogon, Agusan del Sur, Mindanao
Malasag Womens Multi-purpose Cooperative Gina Alcisio (Nursery operator)	Malasag, Cugman, Cagayan de Oro City, Mindanao Bingcongan, Bislig City, Mindanao
<i>Indonesia</i>	
Giri Jaya Forest Farmer Group	Nagrog Village, Bandung, West Java
Kausar Forest Farmer Group	Cibodas Village Bandung, West Java
Tani Makmur I Farmer Group	Pakemitan Kidul Tasikmalaya, West Java

4.3 Document and share lessons learned

Success stories and lessons learned were shared at the [project’s result workshop](#) held in Bandung, Indonesia, 27 February to 1 March. These include:

India:

- Current policies dictate priority species and limitations in introducing native tree species restoration.
- The public sector can be key in improving access to nurseries bringing quality seeds and seedlings closer to the market.
- There is a need to refine the process for seeds assessment, collection, production, and distribution and seed laboratories to establish a unified registration process for monitoring and evaluating sources, enforce the use of quality seeds for raising plantations, and document seed zones and knowledge on which seeds can be grown.

Indonesia:

- Information systems and seed zones map are critical for decision-making related to forest and landscapes restoration as these tools would enable decision-makers and forest restoration implementers to identify areas without seed sources or those with limited numbers.
- Collaboration with local communities is a key ingredient to increasing the number of certified seed sources for native species.
- Government policy regarding large-scale nurseries needs to be reviewed because it can limit the role of community and has the potential to kill smallholders or small entrepreneurs involved in the providing seeds/seedlings for restoration

Philippines:

- There are few quality seed sources for native tree species in the country as exotic tree species are perceived to be far more productive (i.e. fast growth) and provide better market opportunities due to higher demand and prices.
- Access to and availability of native tree seed-related and FLR-needed information remain a challenge for restoration practitioners in the country and is exacerbated by the changing

climate. Up-to-date species- and site-specific decision-support for restoration planning is required.

- Capacity development and material support in seed source establishment and native tree seedling production needs to be provided to People's Organizations, especially indigenous people's groups actively engaged in native tree species planting.

A policy brief on lessons will be developed for each country in Y3.

3.2 Progress towards project Outputs

Output 1 Identified gaps in seed source availability for native species in four countries

All outputs were reported completed in Y1:

- Availability of gap analysis methodology (*report on methodology*)
- Number of experts trained and skilled in gap analysis methods, by country and gender (target: 12, >30% women) (*Pre-and post-training assessments, number of species analysed by experts*)
- Availability of species distribution, seed zone and seed source maps (target: 20 native species) (*Data repositories*)

Output 2 Improved access to information about seed sources and seed origins by forestry authorities and FLR implementers

- Validated priority maps and databases on the availability of seed sources (*Data and publication repositories*)

Reported completed in Y1.

- Number and type of recommendations made and implemented for improving data management on seed sources and seed origins (*Records of stakeholder consultations and feedback; Database structures and content before and after interventions, Financial records on the uses of seed funding*)

Baseline: Paper-based information on seed sources existed in Indonesia, maintained by the Directorate of Forest Tree Seed. In the Philippines, there is no centralised database on seed sources. Individual organisations such as different DENR offices and the Mindanao Forest Tree Seed Center (MFTSC) maintain some data on seed sources, but it is fragmented and difficult to access. Likewise, the public, particularly the restoration practitioners and tree planters, have no direct access to these information. Databases on seed sources did not exist in India and Bangladesh.

Change to date and evidence: A digital information system for Forest Tree Seed was developed in Indonesia and institutional arrangements for its adoption are currently in progress. The database of MFTSC was updated to include the seed zone maps developed through the project, and a website was developed to provide access to information on existing seed sources and suppliers to the public (website to be launched in June 2024). Improvement of existing databases is underway in India (see section 3.1, Activity 2.2).

Output 3 Improved understanding of seed quality considerations and community roles in sourcing native tree seed among 30 FLR implementers in 3 countries

- Capacity needs assessment for improving the supply of and demand for quality seed among FLR implementers, forest-dependent communities and other stakeholders (target: 120 stakeholders) (*Reports and records of capacity Assessment*)

Baseline: A previous study by the project team members in 2020-2021 indicated gaps in institutional capacities in three of four project countries (India, Indonesia and the Philippines), for example seed and seedling shortages of native trees for meeting restoration targets, and lack of information on choosing site-adapted seed for current and changing environmental conditions ([Bosshard et al. 2021](#)). The study focused on national mechanisms based on a limited number of expert interviews and did not include roles of local actors in seed supply chains.

Change to date and evidence: So far, in total over 380 stakeholders from government, private sector and community organisations were surveyed during the capacity needs assessments in India, Indonesia and the Philippines (431% of target). Including online surveys and widespread interest from stakeholders enabled exceeding the targets manifold. The results are in line with the previous baseline assessment, showing widespread problems in awareness of seed quality and access to quality planting material for native tree species (for details, see Section 3.1, Activity 3.2).

- Number of FLR implementers trained, by country and gender (target: 30, >30% women) (*Pre- and post-training assessments of knowledge, skills and attitudes*)

Baseline: We are not aware of any previous trainings in project countries that would have focused specifically on seed quality and seed supply chains for forest and landscape restoration.

Change to date and evidence: In total 273 stakeholders were trained in Years 1 and 2 (44% women) (910% of target). Strong buy-in and support from governments especially in Indonesia allowed training several farmer groups (for details, see Section 3.1, Activity 3.3.)

Output 4 Identified and tested approaches for connecting FLR implementers and local seed producers

- Number of new seed sources identified by species, seed zone and land tenure (target: 12 of which at least 8 on communal or smallholder lands) (*Records and maps of seed sources, inclusion in databases*)

Baseline: Information on existing seed sources was documented and reported in Year 1. For the 21 target species, only 0-25% of identified seed zones had documented seed sources (median 0%).

Change to date and evidence: Five seed source populations identified in the Philippines: an area of 3,787 ha belonging to the Higaonon Tribe under the Certificate of Ancestral Domain was identified having seed source populations for all the project's five target species in the Philippines, namely *Agathis dammara*, *Cinnamomum mercadoi*, *Eucalyptus deglupta*, *Pterocarpus indicus* and *Shorea contorta* as well as other native species, such as *Shorea negrosensis*, *S. almon*, *S. palosapis*, *Parashorea malaanonan*, and several *Syzygium* spp). The Tribe was added to the seed supplier database of the MFTSC, invited to the trainings and provided seed funding for nursery improvement.

- Number and type of activities carried out to link forest-dependent seed suppliers with FLR projects (by country and gender of participants; use of participatory approaches and gender equity and social inclusion in activity design and funding allocation) (*Field activity reports, participant interviews; Financial records of the uses of seed funding and related decision-making Processes*)

Baseline: We are not aware of other projects specifically focused on linking tree seed suppliers to projects.

Change to date and evidence: Based on needs identified with seed producers, they were experiencing relatively good demand for seeds and seedlings, and prioritized investments in

production rather than marketing. Seed funding for nursery equipment was provided to 3 farmer groups who manage community-based nurseries in West Java, Indonesia. Each group received IDR 10,000,000 (approx. 496 GBP) to purchase seed collection tools and nursery equipment such as polybags, and water pump. Similarly, in the Philippines, 10 People's organizations (community organizations) were provided with a variety of seed and nursery supplies and tools for improved and increased production of native tree seedlings worth approx. 1,400 GBP. (Figure 5, Table 1)

- Recommendations for improving community-based seed supply for FLR (*Reports of recommendations*)

Baseline: Project countries have multiple initiatives around community nurseries, but we are not aware of other projects that would focus on improving the genetic diversity and quality of produced planting material as a means to improve access to markets and premium pricing.

Change to date and evidence: Recommendations have been identified through capacity assessments, training workshops, stakeholder consultations (Annexes 1-5), and the [project's results workshop](#), and will be published as policy briefs in Y3.

3.3 Progress towards the project Outcome

FLR implementers in 4 countries use information on native tree seed demand and supply to improve seed availability and pilot opportunities to involve forest-dependent men and women in seed supply.

- National or sub-national maps and databases on the availability of seed sources for native species (target: 4) (*Data repositories and evidence of use*)

Progress: Reported completed in Y1.

- Number of FLR implementers with improved seed sourcing strategies (target: 30) (*Pre-and post-training reports, FLR project workplans on seed sourcing*)

Progress: 125 staff of local government units (38% women) trained in India, Indonesia and the Philippines (Y2, Annexes 2,3, 5). Current status 516% of target. Impact of trainings on skills and restoration practices will be monitored in Y3.

- Number of new seed sources identified by species, seed zone and land tenure (target: 9)

Progress: 5 seed source populations identified in the Philippines in a single location (single seed zone), within a Certificate of Ancestral Domain. Current status 56% of target.

- Number of forest-dependent men and women identified as potential seed suppliers and receiving seed funding and skills training (target: 30, >30% women) (*Field activity reports, participant interviews, financial records*)

Progress: 118 community members (51% women) of 13 farmer groups and People's Organizations identified as seed suppliers in Indonesia and the Philippines, and provided training and seed funding. Current status 393% of target.

Indicators are considered adequate and the project is expected to exceed the expected outcome.

3.4 Monitoring of assumptions

Assumption 1: Project partners obtain access to data on species distributions, seed sources and FLR projects in target landscapes

Related activities were reported completed in Y1, no longer monitored

Assumption 2: Staff with adequate background in data analysis are available for training and mentoring

Related activities were reported completed in Y1, no longer monitored

Assumption 3: FLR leaders and managers are supportive of project activities to improve restoration success, including collaborating with forest-dependent communities

Comments: Assumption has held and consulted stakeholders have expressed interest and support for the project activities in all four countries, as evidenced by the exceeded training targets for forestry and restoration professionals. While the signing of contracts was delayed in three countries, this is due to administrative aspects only and no questions were raised about the project objectives or activities in negotiations.

Assumption 4: Suitable pilot sites exist in target landscapes where viable populations of target species exist and are accessible to community members, there is social capital and trust between key stakeholders (community members across social groups, forestry authorities), and shared interest to integrate conservation and livelihood objectives

Comments: Assumption has held and targets for training forest-dependent seed suppliers were exceeded nearly four-fold, demonstrating the relevance and demand for project activities among beneficiary groups.

3.5 Achievement of positive impact on biodiversity and poverty reduction

The identified short-term targets (updated based on Change request CR23-059 to exclude in-country targets in Bangladesh) are:

- 12 national experts (at least 30% women) have gained skills in seed supply design and data analysis. Women and early- to mid-career staff will be prioritised in the selection of training participants.

Progress to date: Reported completed in Y1

- Forestry and FLR authorities in 3 countries have increased data and improved data management on native tree seed sources relevant to FLR

Progress to date: Seed zone maps were prepared, validated and made publicly available (Y1). Results of the gap analysis in seed source availability were presented to stakeholders in each country (Y2). Tree seed information systems were developed in Indonesia and the Philippines in collaboration with end-users (Y2).

- 30 local forestry department staff and other FLR implementers (at least 30% women, except Bangladesh) have gained skills in evaluating and sourcing quality, genetically diverse seed, documenting seed origin, collaborating with local communities in seed supply and incentivising sustainable management of seed sources.

Progress to date: 155 local government staff and FLR practitioners trained across years 1 and 2 (32% women) (516% of target). Impact of training on skills will be monitored in Y3.

- At least 9 potential new seed sources, of which at least 6 in community forests, other communal lands or smallholders' lands, have been identified to fill in gaps in the supply of quality seed of known origin for native species. Process for registering seed sources has been initiated but may extend beyond project duration.

Progress to date: 5 new seed source populations identified (56% of target) in the Philippines on an Ancestral Domain.

- At least 40 rural men and women (at least 30% women) have gained information about income opportunities and skills related to seed production, developed working relationships with forestry authorities, established connection with FLR implementers and potential seed buyers in their area, and had access to seed funding to support local seed enterprises.

Progress to date: 118 community members (51% women) of 13 farmer groups and People's Organizations identified as seed suppliers in Indonesia and the Philippines, and provided training and seed funding. Current status 393% of target. Impact of training on production capacity and entrepreneurial skills will be monitored in Y3.

Expected long-term changes, and project contributions up to Year 2 where relevant:

- 400 rural men and women within and beyond the project's target districts gain jobs and income from tree seed collection and production

Contribution to date: The project has reached 118 community members (51% women) of 13 farmer groups in Indonesia and the Philippines.

- 400 rural men and women within and beyond the project's target districts develop mutual trust through engaging in collaboration around sustainable forest management

Contribution to date: The project results demonstrate the widespread shortage of tree seed sources required to meet national forest restoration targets and for local nurseries and seed enterprises to generate jobs and income. In Indonesia, some communities are keen to establish their own seed sources, while in the Philippines the project has highlighted the importance of indigenous lands as seed sources.

- Forestry departments and other FLR implementers in four countries improve their access to quality seed of native tree species, which improves the resilience, productivity and conservation value of restored forests

Contribution to date: The new digital directory of tree seed sources in Indonesia allows monitoring of the availability of sources by species, identification of gaps, as well as easier access to information by seed users which is expected to promote the use of adapted quality seed and motivate conservation of seed sources, directly supporting the tasks of the Ministry of Environment and Forests. The information system developed in the Philippines for Mindanao island's Forest Tree Seed Center serves as a prototype for local government units in other regions of the country to support harmonisation of and access to data of tree seed production and supply.

- Genetic resources of 100 native, threatened species are safeguarded through properly integrating them in FLR and through providing incentives to conserve remaining natural seed sources

Contribution to date: Gaps in the availability of seed sources as genetic reserves for 7 threatened (including 2 CITES-listed) species were identified and communicated to forestry departments across four countries. Gaps in the availability of information for conservation planning for another 4 threatened (including 2 CITES-listed) species were identified and communicated. Trained in-country experts from 4 countries successfully applied the analysis methods to in total 21 native species, setting foundation for expanding the analyses to additional countries.

- Enhanced regional collaboration and exchange of information and experiences between 100 FLR experts from 4 countries, and extended to additional South and Southeast Asian countries through the Asia Pacific Forest Genetic Resources Programme through which the project was conceived.

Contribution to date: Useful policy and legal frameworks for seed source management of native tree species were identified as learning opportunities, and incorporated in the regional strategy of the Asia Pacific Forest Genetic Resources Programme of 15 countries which was subsequently presented to the Asia Pacific Forestry Commission. One expert from Lao PDR was trained to conduct gap analysis on seed source availability

(with co-funding from OneCGIAR, Y1). Experts from Vietnam and Malaysia were invited to join the project's results workshop in Bandung, Indonesia, February 2024. The project's approaches were incorporated in a new funding proposal for Malaysia.

4. Project support to the Conventions, Treaties or Agreements

Project countries have extensive FLR targets, totaling over 49 Mha by 2030. The project supports the achievement of these targets by improving the availability of adapted, quality seed of native tree species, which has been identified as a key constrain for effective restoration in several recent studies ([Jalonen et al. 2018](#), [Bosshard et al. 2021](#), [FAO 2021](#)). Species targeted for improved quality seed supply include *Aquilaria* and *Dalbergia* spp. species listed in CITES Appendix II. The project also supports countries in meeting the targets of the Global Biodiversity Framework, which include maintaining and restoring the genetic diversity of native wild species to maintain their adaptive potential through *in situ* and *ex situ* conservation and sustainable management practices (Target 4). Indicators under Target 4 make specific reference to halting the extinction of CITES-listed species.

India is among the first Asian countries to commit to the Bonn Challenge with a 26 million hectare restoration pledge. India has established national forest-related targets including National Biodiversity Targets and included forest-related goals and FLR targets in its NDC (2016). India's National Biodiversity Action Plan (Addendum, 2014) calls for immediate attention to conserve and multiply rare, endangered and endemic tree species.

Indonesia's emission reduction targets in the updated NDC in forestry sector include rehabilitating 12 million ha of degraded lands and restoring 2 million ha of peatlands by 2030 (Updated NDC, 2021). In addition, the Presidential regulation No. 120 (2020), accelerated rehabilitation of 500,000 hectares of mangroves.

The Philippines requires adequate supply of quality seeds of native tree species to pursue its Enhanced National Greening Program (ENGP) that targets planting 8.6 million hectares by 2028. The Expanded National Integrated Protected Areas System (ENIPAS) will benefit from the increased protection of important seed sources that the project will identify. These two major programs are core components of the country's NDC (2021) for climate change adaptation in terms of ecological and environmental stability.

5. Gender Equality and Social Inclusion (GESI)

Gender equity and social inclusion are relevant in three aspects: availability of seed for species prioritized by marginalized groups for FLR, opportunities for women to participate in seed production, and access to trainings and other forms of support from the project.

Species selection in FLR projects is often based on what is available rather than what the FLR objectives and land users' needs are (Jalonen et al. 2018; Elias et al. 2021). We considered the relevance of the target species for women and marginalized groups as a criterion during species selection, and selected species include those for fruits, resin and edible seeds in the processing and consumption of which women have an important role. Species selection also influences women's opportunities to participate in seed collection. Our selected species include species that can be collected from the ground after seed dispersal, without requiring climbing trees (e.g. *Pterocarpus* spp. and *Dalbergia latifolia*).

Providing seed collection equipment and establishing nurseries and seed production areas close to homesteads support women's participation in seed value chains. Seed extraction and processing also offer income opportunities for women. The project's targets for including at least 30% of women in training activities for both professionals and community members were exceeded in all cases. Training participants from communities who also decided on the seed funding needs were 48% women in Indonesia and 82% in the Philippines. [A news article published in Inquirer.net](#) in March 2024 highlights how tree seed production has improved incomes of rural Pilipino women and made them role models in their communities. The article tracks long-term developments but was inspired by this project, with interviews of project partner Mindanao Forest Tree Seed Centre and project leader Riina Jalonen.

Please quantify the proportion of women on the Project Board ¹ .	50%
Please quantify the proportion of project partners that are led by women, or which have a senior leadership team consisting of at least 50% women ² .	50%

GESI Scale	Description	Put X where you think your project is on the scale
Not yet sensitive	The GESI context may have been considered but the project isn't quite meeting the requirements of a 'sensitive' approach	
Sensitive	The GESI context has been considered and project activities take this into account in their design and implementation. The project addresses basic needs and vulnerabilities of women and marginalised groups and the project will not contribute to or create further inequalities.	
Empowering	The project has all the characteristics of a 'sensitive' approach whilst also increasing equal access to assets, resources and capabilities for women and marginalised groups	X
Transformative	The project has all the characteristics of an 'empowering' approach whilst also addressing unequal power relationships and seeking institutional and societal change	

6. Monitoring and evaluation

The project has the following expected Outcome: *FLR implementers in 4 countries use information on native tree seed demand and supply to improve seed availability and pilot opportunities to involve forest-dependent men and women in seed supply*, and the following outcome indicators (updated in Y2):

- National or sub-national maps and databases on the availability of seed sources for native species (target: 4)
- Number of FLR implementers with improved seed sourcing strategies (target: 30)
- Number of new seed sources identified by species, seed zone and land tenure (target: 9)
- Number of forest-dependent men and women identified as potential seed suppliers and receiving seed funding and skills training (target: 30, >30% women)

The M&E plan was revised in Year 2 with field-level output targets brought down by 25%, because the contract could not be signed with Bangladesh partner (Approved change Request No. CR23-059).

¹ A Project Board has overall authority for the project, is accountable for its success or failure, and supports the senior project manager to successfully deliver the project.

² Partners that have formal governance role in the project, and a formal relationship with the project that may involve staff costs and/or budget management responsibilities.

To demonstrate that project activities and outputs contribute to the outcome, we are documenting the following considerations through bimonthly project meetings:

- Identified data gaps
- Ability to attract trainees with capability to train others and influence decision-making at their organisations
- Pre- and post-training evaluations of knowledge, skills and attitudes and evidence of trainees' progress in applying the new skills and knowledge
- Gender-responsiveness and social equity in the design of community-level activities and decision-making on seed funding
- Number and type of connections formed between FLR implementers, seed collectors and small-scale seed enterprises

Biodiversity International as the lead organisation is responsible to ensure M&E across all project activities and operations, and appointed a M&E specialist to guide the process. An Advisory Group on M&E between senior representatives of partner institutions was planned at the outset of the project, but could not be established given the delays in signing the formal contracts with partners.

7. Lessons learnt

Activities in Year 2 affirmed the value of regional collaboration and exchange of experiences in developing seed systems for native tree species. Partners in Indonesia and Philippines shared information about the functionalities and architecture of the Tree Seed Information Systems that they were developing, allowing building in best practices. The results workshop that was held in Bandung, Indonesia, in March 2024, also allowed other countries to learn about Indonesia's experiences in organising tree seed systems. The project partners are members of the same regional network, Asia Pacific Forest Genetic Resources Programme (www.apfor-gen.org) and know each other for several years, which contributed to an atmosphere of mutual trust and collegiality between partners from the outset, key for sharing of experiences especially in multi-country projects.

The project budget did not include staff cost for national partners, as they work for government research institutes and universities and are already fully paid. However, this arrangement added to the workload of the partners without easy access to assistants for implementation. Future proposals should pay special attention to the workload and adequate staffing, including assistants, at public sector partner institutions, to ensure activities and implementation schedules are feasible. Arrangements for hiring complementary staffing at some partner organisations differed from donor regulations, with some partners having budgeted them as operational costs, which prompted an additional Change Request in February 2024 to reallocate funds between budget lines.

Year 2 ended with some unspent funds in India, where the national project team was working hard to catch up with implementation schedules after the delays with the sub-contract. Several trainings planned for March could not be implemented after national elections were announced and project staff were called on election duty as government officials. In the final year of the project, subcontracts have already been scheduled to end a month earlier than the project, to avoid risks of underspending.

8. Actions taken in response to previous reviews (if applicable)

Please see below our responses to the comments on the previous annual report:

- a) *Inception workshops refer to species as 'pilot' species; in Section 5 of the report, the project indicates that selected species included those for fruits, resins and edible seeds. The project could discuss in more detail its full criteria for pilot species selection.*

Response: Criteria for species selection were discussed at the inception workshop in May 2022. Agreed criteria are shown in Table 2. Species selection and the pilot species approach were based on the recognition that (a) the project countries include multiple

megadiverse countries with thousands of native tree species as well as extremely high socio-cultural diversity, (b) because of its limited scale, the project could only cover a handful of species per country, (c) selection of a few ‘priority’ species is futile or even counterproductive because of the high biological and socio-cultural diversity and different values attached to the species by different stakeholders, (d) a more meaningful approach was deemed to be selecting ‘pilot’ species used in restoration projects with which the project’s methods and approaches could be easily demonstrated within the project scope, and then training to capacitate national partners to apply the methods to many other species of interest in their countries.

Several of the initially selected pilot species had to be changed, due to the lack of data on species occurrences to enable the analyses. For example, CITES II -listed *Aquilaria cumingiana* in the Philippines and *A. filaria* in Indonesia had to be dropped. This does not compromise the value of the project, but rather validates its importance, given how little is known about the distributions of many native tropical tree species of interest in restoration initiatives.

- b) *The reviewer appreciates that the species chosen are a relatively small number of ‘pilot’ species, but to facilitate future expansion of its methodology, will it advise stakeholders on the choice of different species for different forest types in FLR, including restored native forest (natural forest ecosystems), livelihood native forest and agroforestry?*

Response: The project is not focused on species selection for restoration, which requires its own methods, but on ensuring the availability of seeds and seedlings for species selected by stakeholders – a crucial yet widely neglected question in operationalising restoration. The developed method is applicable to any species and demonstrated with different types of species, with conservation, ecosystem service, and/or livelihood purposes. The expansion of the methodology has been facilitated by training national experts in applying it to species of their choice, and by communicating the widespread gaps in seed and seedling availability revealed by the analysis on pilot species.

Table 2. Agreed criteria for pilot species selection in target countries (May 2022)

<p><i>Main criteria</i></p> <ul style="list-style-type: none"> • 5 native species per country • Species not already covered by the APFORGIS project (see annex; APFORGIS species can be included but as additional) • Focus on species already used in FLR projects (seed demand exists) but for which seed quality and origin are of concern <p><i>Additional criteria</i></p> <ul style="list-style-type: none"> • Species prioritised for FLR in the country, if priority lists exist (political support) • Socio-economically important species, including food tree or other NTFP species and species providing important ecosystem services (emphasised by Darwin) • Some CITES II -listed species if possible (<i>Aquilaria</i>, <i>Dalbergia</i>, <i>Gonystylus</i>; emphasised by Darwin) • Other endangered species where relevant (but species that are not listed as endangered may still be vulnerable to genetic erosion in parts of their range)
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- c) *Lack of understanding of seed storage and propagation could also be considered in the criteria listed in the opening paragraph of the report’s introduction.*

Response: This was not the original focus of the project, but the capacity needs assessments indeed highlighted its importance as yet another bottleneck for wider use of native tree species in restoration. Project trainings and seed funding were adapted to also provide support for storage methods and propagation.

9. Risk Management

Risks associated with delayed signing of subcontracts in Y1 were realised in Year 2. Due to the delays, India and Indonesia could only start implementation in October 2023, while the process stalled in Bangladesh. A change request (CR23-059) was submitted and approved in Oct-Nov 2023 to allow India and Indonesia to rebudget part of their funding to Y3 to allow successful completion of the project, while funds intended for Bangladesh were reallocated to a results workshop in February 2024.

10. Sustainability and legacy

Evidence for increasing interest and capacity resulting from the project in project countries:

India: A Memorandum of Understanding was signed with the Ministry of Environment, Forest and Climate Change through the Indian Council of Forestry Research and Education. Tamil Nadu Forest Department has demonstrated high interest for the project, hosting training events and sending staff of the Tamil Nadu Green Mission to attend trainings. The inaugural training was graced by the Principal Chief Conservator of Forests of the state.

Indonesia: Strong support for project activities was received from the central government (Directorate of Forest Tree Seeds), local government (West Java Forestry Department) as well as farmer groups who manage community-based nurseries. The Tree Seed Information System developed by the project was endorsed by the Directorate of Forest Tree Seeds and institutional processes are currently underway for its nationwide adoption. Representatives of the central and local government attended the project's result workshop in Bandung in February 2024, and the local government hosted workshop participants during field visits.

Philippines: The project collaborated closely with the Mindanao Forest Tree Seed Center in improving the Center's information systems and organising trainings. Collaboration was also established with DENR regional offices for collecting data for species distribution modelling, development of seed zone maps, seed source maps and suitability maps.

Bangladesh: Memorandum of Understanding was signed with the Ministry of Environment, Forest and Climate Change, to support the implementation of the project, adoption of its results and follow-up activities. Nevertheless, signing of the sub-contract for project implementation did not progress in Y2, and because of constraints to rebudgeting project funds, a decision was made to drop the in-country activities.

Exit strategy

We have worked closely with key stakeholders in each country from the outset (listed in Section 2), to strengthen ownership and adoption. Results and lessons are integrated in the strategies and processes of lead FLR implementing organisations to support replication and scaling. Key processes and stakeholders for exit strategy include:

India: Engaging with State Forest Departments in Kerala and Tamil Nadu which work with several local communities on FLR. The project partner under the Indian Council of Forestry Research and Education (ICFRE) is mandated to provide capacity strengthening for the State Forest Departments, which offers an established pathway to adoption and scaling.

Indonesia: Collaborating closely with the Directorate of Forest Tree Seed (DFTS) in the Ministry of Environment and Forestry which is responsible for managing and registering seed sources for many FLR tree species at national level, and at regional level with the Regional Technical Implementation Unit (UPTD) under the Governor in West Java. Collaboration with central and local institutions provides effective capacity development for the many actors involved in tree seed supply system such as FLR practitioners, seed source managers and seed suppliers. Already in Y1, the Directorate of Forest Tree Seed expressed interest to continue funding the activities after the project support ends. The online information system on seed sources has the potential to become a flagship program for the Ministry (documented in Y1 Annual Report). The information system is groundbreaking for the Ministry as it not only replaces the difficult-to-maintain paper-based databases, but also helps monitor the distribution of forest tree seeds in public FLR programs, which has been a key challenge for the Ministry. The project team has

initiated discussions with the Directorate of Forest Tree Seed and UNEP for a GEF-8 project to scale out and scale up the project's methods and approaches.

Philippines: The project collaborated with the Department of Environment and Natural Resources (DENR) to identify opportunities to expand the project's approaches to People's Organizations and indigenous peoples in the uplands where potential seed sources are located. We also collaborate with the Ecosystems Research and Development Bureau (ERDB) of the DENR to embed the project's findings and recommendations in existing information management systems about seed sources and protected areas. We are following up with Mindanao Forest Tree Seed Center to document the value of the newly identified seed source on the Certificate of Ancestral Domain. With Free and Prior Informed Consent of the Indigenous Peoples, the populations of the native tree species in the area need to be mapped and the protocol on seed source recognition by DENR-ERDB can be employed (DENR Administrative Order No 21-21). In addition, other ancestral domains in the region with intact forests warrant analysis of their potential as seed sources of important native tree species.

Bangladesh: There is no specific exit strategy given that the project could not be implemented in-country in the end. However, collaborators at the Bangladesh Forestry Department who attended project trainings and face-to-face workshops in Years 1 and 2 are keen to implement the approaches and lessons on seed source availability in their other work.

The project is designed to reduce identified barriers to scaling up the restoration and conservation of native tree species, by simultaneously addressing factors that affect the demand and availability of quality seed. The approach is necessarily knowledge-intensive and scaling it up requires increased capacities and resources for data analysis and data management. To help overcome these constraints, the project has been designed and is implemented collaboratively with public research institutions, and in each country, staff from several units and institutions were trained on the methods to build broader capacity and strengthen networking between institutions as a precondition for effective information management around native seed sources.

Recommendations based on the emerging results of the project were incorporated in the new [regional strategy](#) of the Asia Pacific Forest Genetic Resources Programme (APFORGEN, www.apforgen.org). The APFORGEN network has 15 member countries across South and Southeast Asia. The strategy spans years 2023 to 2030 and its targets are explicitly aligned with those of the Kunming-Montreal Global Biodiversity Framework. The project's national coordinator for India, Dr Rekha Warriar, presented the strategy in October 2024 to the Asia-Pacific Forestry Commission, FAO's highest forestry-related decision-making body in the region, with the commission members expressing their support to the strategy. Recommendations from the project have also been communicated to FAO's Regional Office for Asia and the Pacific, which is developing a regional framework for forest and landscape restoration (RAIN/RESULT Asia).

The project's approaches were incorporated in two project proposals submitted to UK Pact and the UK Global Center for Biodiversity Conservation, with a combined funding bid of over 2 Million GBP. As mentioned above, efforts are also underway to develop a GEF-8 proposal for Indonesia.

Two new Memoranda of Understanding, with the Ministry of Environment, Forest and Climate Change of Bangladesh, and the Indian Council of Forestry Research and Education, India, were signed in 2023 to support the implementation of the project, adoption of its results and follow-up activities.

[Seed zone maps](#) from the project have already been published on the project website and are freely available for download, and incorporated in the national/sub-regional tree seed information systems. We have set aside funds for publishing an open-access journal article on the methods developed under the project. In 2023, the project methods and results were presented at several congresses as outlined in Section 3.1

11. Darwin Initiative identity

Darwin Initiative and UK government logos were used in all major events related to the project:
Indonesia:

- 3 trainings for staff of Tamil Nadu Forest Department in Coimbatore and in collaboration with local agricultural extension centres, India, March 2023 (distinct identity for Darwin) (Annex 2)
- Hybrid webinar on the Role of Forest Tree Seeds in Supporting FLR in Bogor, Indonesia, July 2023 (part of a larger programme)
- National coordination Meeting on Updating the Seed Source Database in Bogor, Indonesia, August 2023 (part of a larger programme)
- On-site training for 3 forest department staff groups who manage government-based nurseries in March 2024, Indonesia (distinct identity for Darwin) (Annex 3)
- On-site training for 3 farmer groups who manage community-based nurseries in 3 locations in West Java, February and March 2024 (distinct identity for Darwin) (Annex 4)
- Training for People's Organizations and Department of Environment and Natural Resources, Butuan City, Agusan del Norte, 21-23 February 2024 (distinct identity for Darwin) (Annex 5)
- [Results workshop of the project](#) in Bandung, Indonesia, February 2024 (distinct identity for Darwin)

The project has a [website](#) (microsite) on the portal of APFORGEN. Project activities were promoted on the social media accounts of APFORGEN (@APFORGEN) and the Alliance of Bioversity and CIAT (@BiovIntCIAT_eng).

12. Safeguarding

Has your Safeguarding Policy been updated in the past 12 months?	No
Have any concerns been reported in the past 12 months	No
Does your project have a Safeguarding focal point?	Yes (Ronaldo [REDACTED])
Has the focal point attended any formal training in the last 12 months?	Yes: Safeguarding Code of Conduct, Organisation's Fraud Prevention Policy, and training on CEO Fraud. Additional relevant training completed in Y2 include Sexual Harassment Policy, and Anti-Trafficking in Persons Policy.
What proportion (and number) of project staff have received formal training on Safeguarding?	Past: 14% (1 of 7 staff) Planned: 14%
Has there been any lessons learnt or challenges on Safeguarding in the past 12 months? Please ensure no sensitive data is included within responses.	
There are no safeguarding lessons or issues to report in Year 1. The project did not work directly with local communities in Year 1. Similarly, there are no safeguarding issues raised or received from local communities in Year 2.	
Please describe any community sensitisation that has taken place over the past 12 months; include topics covered and number of participants.	
There was no community sensitisation on safeguarding-related aspects in 2024.	

Have there been any concerns around Health, Safety and Security of your project over the past year? If yes, please outline how this was resolved.

No concerns identified.

13. Project expenditure

Table 1: Project expenditure during the reporting period (1 April 2023 – 31 March 2024)

We are currently in the process of consolidating expenses. Project expenditure will be reported in the financial report due 31 May 2024. Bioversity International's internal policies require clearances for all financial information reported, and hence we are not able to disclose indicative figures.

Project spend (indicative) since last Annual Report	2023/24 Grant (£)	2023/24 Total Darwin Initiative Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (see below)				
Consultancy costs				
Overhead Costs				
Travel and subsistence				
Operating Costs				
Capital items (see below)				
Others (see below)				
TOTAL	200,000			

Table 2: Project mobilised or matched funding during the reporting period (1 April 2023 – 31 March 2024)

	Secured to date	Expected by end of project	Sources
Matched funding leveraged by the partners to deliver the project (£)			
Total additional finance mobilised for new activities occurring outside of the project, building on evidence, best practices and the project (£)			

The Korean Government through the Asia Pacific Association of Forestry Research Institutions (APAFRI) funded 7 participants from Philippines, Malaysia, and Vietnam to attend the project's result workshop and learn from experiences. The costs were directly paid by APAFRI and estimates are not available.

An UK Pact -funded project proposal to scale the project's approaches to Malaysia was submitted in March 2024 and approved in April 2024, with a total value of approx. 1.5 Million GBP. Further details will be reported in the Annual report of Y3.

14. Other comments on progress not covered elsewhere

None.

15. OPTIONAL: Outstanding achievements or progress of your project so far (300-400 words maximum). This section may be used for publicity purposes.

Annex 1: Report of progress and achievements against Indicators of Success for Financial Year 2023-2024

Project summary	Progress and Achievements April 2023 - March 2024	Actions required/planned for next period
Outcome FLR implementers in 4 countries use information on native tree seed demand and supply to improve seed availability and pilot opportunities to involve forest-dependent men and women in seed supply		
Outcome indicator 0.1: National or sub-national maps and databases on the availability of seed sources for native species (target: 4)	Completed in Y1: <u>National or subnational seed zone maps</u> available in four countries; maps on seed sources by seed zone available for in total 21 species in 4 countries.	India: Integrate maps and results in existing databases Indonesia: Launch national tree seed information system Philippines: Launch seed information and supplier database of Mindanao Forest Tree Seed Center
Outcome indicator 0.2: Number of FLR implementers with improved seed sourcing strategies (target: 30)	Progress to date: 155 implementers trained (32% women) (516% of target)	All: Document impact of training on skills
Outcome indicator 0.3: Number of new seed sources identified by species, seed zone and land tenure (target: 9)	Progress to date: 5 seed sources (one each for five different species) at one location on indigenous land in Mindanao, Philippines (56%) target	India and Indonesia: Identify at least 3 seed sources per country Philippines: explore opportunities to carry out population studies in the identified and other indigenous lands (with FPIC)
Outcome indicator 0.4. Number of forest-dependent men and women identified as potential seed suppliers and receiving seed funding and skills training (target: 30, >30% women)	Progress to date: 118 community members (51% women) trained and provided seed funding in Indonesia and the Philippines (393% of target)	India: identify and train beneficiaries, provide seed funding. Indonesia and the Philippines: monitor impacts of training and seed funds on skills and market opportunities
Output 1. Identified gaps in seed source availability for native species in four countries		
Output indicator 1.1 Availability of gap analysis methodology	Completed in Y1: Achieved, reported in <u>inception workshop report</u> , p.6.	
Output indicator: 1.2 Number of experts trained and skilled in gap analysis methods, by country and gender (target: 12, >30% women)	Completed in Y1: 13 experts trained (46% women), reported in <u>workshop report</u>	(Highlight key actions relevant to this indicator planned for next period)

Output indicator 1.3: Availability of species distribution, seed zone and seed source maps (target: 20 native species)	Completed in Y1: Distribution maps for 21 species, seed zone maps are published at www.apforgen.org/initiatives/strengthening-seed-supply/	
Output 2. Improved access to information about seed sources and seed origins by forestry authorities and FLR implementers		
Output indicator 2.1 Validated priority maps and databases on the availability of seed sources	Progress to date: results validated in India (Y2) and Philippines (Y1)	Indonesia: Complete validation process with local government representatives
Output indicator 2.2 Number and type of recommendations made and implemented for improving data management on seed sources and seed origins	Progress to date: New information systems developed in Indonesia and Philippines	India: improve existing website and app by integration project results on seed zones and seed sources
Output indicator 2.3 Manual on gap analysis methodology and online catalogues on seed sources	Progress to date: Draft manuscript exists	Submit manuscript after validation of results in Indonesia Publish results as an online catalogue
Output 3. Improved understanding of seed quality considerations and community roles in sourcing native tree seed among 40 FLR implementers in 4 Countries		
3.1 Capacity needs assessment for improving the supply of and demand for quality seed among FLR implementers, forest-dependent communities and other stakeholders (target: 90 stakeholders)	Progress to date: Capacities of 308 stakeholders assessed (342% of target)	Manuscript on results
3.2 Number of FLR implementers trained, by country and gender (target: 30, >30% women)	Completed in Y2: 155 implementers trained (32% women) (516% of target) (Annexes 1-5)	
Output 4 Identified and tested approaches for connecting FLR implementers and local seed producers		
4.1 Number of new seed sources identified by species, seed zone and land tenure (target: 9 of which at least 8 on communal or smallholder lands)	Progress to date: 5 seed sources (one each for five different species) at one location on indigenous land in Mindanao, Philippines (56% target)	India and Indonesia: Identify at least 3 seed sources per country
4.2 Number and type of activities carried out to link forest-dependent seed suppliers with FLR projects (by country and gender of participants; use of participatory approaches and gender equity and social inclusion in activity design and funding allocation)	Progress to date: needs identified through workshops and seed funding distributed in to in total 13 community groups in Indonesia and the Philippines	India: identify and train beneficiaries, provide seed funding.
4.3 Recommendations for improving community-based seed supply for FLR	Progress to date: recommendations identified through workshops and stakeholder consultations	Publish a policy brief on recommendations in each country

Annex 2: Project’s full current Indicators of Success as presented in the application form (unless changes have been agreed)

Simplified logframe template

For use by Darwin Initiative Capability & Capacity and IWTCF Evidence projects.

DARCC-006: Strengthening collaborative tree seed supply systems for restoration in Asia

	SMART Indicators	Means of Verification
Outcome: FLR implementers in 4 countries use information on native tree seed demand and supply to improve seed availability and pilot opportunities to involve forest-dependent men and women in seed supply	1. National or sub-national maps and databases on the availability of seed sources for native species (target: 4 sets of maps, 3 databases) 2. Number of FLR implementers with improved seed sourcing strategies (target: 30) 3. Number of new seed sources identified by species, seed zone and land tenure (target: 9) 4. Number of forest-dependent men and women identified as potential seed suppliers and receiving seed funding and skills training (target: 30, >30% women)	1.1 Data repositories and evidence of use 1.2 Pre-and post-training reports, FLR project workplans on seed sourcing 1.3 Field activity reports, participant interviews, financial records
Output 1. Identified gaps in seed source availability for native species in four countries	1.1 Availability of gap analysis methodology 1.2 Number of experts trained and skilled in gap analysis methods, by country and gender (target: 12, >30% women) 1.3 Availability of species distribution, seed zone and seed source maps (target: 20 native species)	1.1 Report on methodology 1.2 Pre-and post-training assessments, number of species analysed by experts 1.3 Data repositories
Output 2. Improved access to information about seed sources and seed origins by forestry authorities and FLR implementers	2.1 Validated priority maps and databases on the availability of seed sources 2.2 Number and type of recommendations made and implemented for improving data management on seed sources and seed origins 2.3 Manual on gap analysis methodology and online catalogues on seed sources	2.1 Data and publication repositories 2.2 Records of stakeholder consultations and feedback 2.3 Database structures and content before and after interventions 2.4 Financial records on the uses of seed funding 2.5 Workshop report and Insight note

	2.4 Regional results workshop to communicate good practices and reflect on lessons learned	
Output 3. Improved understanding of seed quality considerations and community roles in sourcing native tree seed among 30 FLR implementers in 3 countries	3.1 Capacity needs assessment for improving the supply of and demand for quality seed among FLR implementers, forest-dependent communities and other stakeholders (target: 90 stakeholders) 3.2 Number of FLR implementers trained, by country and gender (target: 30, >30% women)	3.1 Reports and records of capacity Assessment 3.2 Pre- and post-training assessments of knowledge, skills and attitudes
Output 4 Identified and tested approaches for connecting FLR implementers and local seed producers	4.1 Number of new seed sources identified by species, seed zone and land tenure (target: 9 of which at least 6 on communal or smallholder lands) 4.2 Number and type of activities carried out to link forest-dependent seed suppliers with FLR projects (by country and gender of participants; use of participatory approaches and gender equity and social inclusion in activity design and funding allocation) 4.3 Recommendations for improving community-based seed supply for FLR	4.1 Records and maps of seed sources, inclusion in databases 4.2 Field activity reports, participant interviews 4.3 Financial records of the uses of seed funding and related decision-making processes 4.4 Reports of recommendations
Activities		
<p>1.1 Develop methodology for gap analysis on tree seed sources</p> <p>1.2 Develop seed zone maps for current and future climates in target countries and validate them with experts</p> <p>1.3 Identify data sources and access options on species distributions, seed sources and land uses</p> <p>1.4 Train and mentor 3 experts per country to implement gap analysis (Spatial analysis, R statistics, data on forest cover and land tenure) (1 regional workshop, 15 participants)</p> <p>2.1 Validate results of the gap analysis with forestry authorities and other stakeholders</p> <p>2.2 Evaluate and improve existing databases on seed sources in collaboration with stakeholders</p> <p>2.3 Make analysis methods and results publicly and freely available</p> <p>3.1 Identify target districts / regions and training participants based on the gap analysis</p> <p>3.2 Assess current capacities and constraints of FLR implementers in sourcing quality native tree seed from local communities and smallholders</p> <p>3.3 Organise one training in each target district / region on sourcing quality seed from communities and seed source conservation, based on the capacity needs assessment</p> <p>4.1 Guide FLR implementers (training participants) in developing collaborative work plans for seed collection and production with male and female community members</p>		

4.2 Identify and address priority needs for seed funding, using participatory and gender-responsive approaches

4.3 Document and share lessons learned

Important Assumptions: Please describe up to 6 key assumptions that, if held true, will enable you to deliver your Outputs and Outcome

Assumption 1: Project partners obtain access to data on species distributions, seed sources and FLR projects in target landscapes

Assumption 2: Staff with adequate background in data analysis are available for training and mentoring

Assumption 3: FLR leaders and managers are supportive of project activities to improve restoration success, including collaborating with forest-dependent communities

Assumption 4: Suitable pilot sites exist in target landscapes where viable populations of target species exist and are accessible to community members, there is social capital and trust between key stakeholders (community members across social groups, forestry authorities), and shared interest to integrate conservation and livelihood objectives

Annex 3: Standard Indicators

Table 1 Project Standard Indicators

DI Indicator number	Name of indicator using original wording	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
DI-A01	Number of people from key national and local stakeholders completing structured and relevant training	People	35M, 8F	42	125		167	92
DI-A03	Number of local/national organisations with improved capability and capacity as a result of project	Number of organisations		6	13		19	9
DI-A04	Number of people reporting that they are applying new capabilities (skills and knowledge) 6 (or more) months after training.	People	7M, 6F	13	13		13	42
DI-B01	Number of new/improved habitat management plans available and endorsed			-	5		-	9
DI-B02	Number of new/improved species management plans available and endorsed			4	-		4	4
DI-B07	Number of people participating in community-based management groups and/or Payment for Ecosystem Service schemes	People	58M, 60F	-	118		119	30
DI-C03	New assessments of habitat conservation action needs published			-	-		-	1
DI-C13	Number of webinar attendees	People	Gender disaggregation not available	80	480		560	60

DI Indicator number	Name of indicator using original wording	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
DI-C15	Number of Media related activities.	Number	2 newspaper articles 1 blog	3	9		12	5

Table 2 Publications

Title	Type (e.g. journals, manual, CDs)	Detail (authors, year)	Gender of Lead Author	Nationality of Lead Author	Publishers (name, city)	Available from (e.g. weblink or publisher if not available online)
Strengthening Tree Seed Supply System for Forest and Landscape Restoration: Good Practices, Lessons Learned, and Collaboration Opportunities	Report	Lee Y, Galeon AP, Jalonen R. 2024	F	Philippines	Alliance of Bioversity and CIAT, Penang, Malaysia	www.apfor-gen.org/fileadmin/user_upload/Darwin_Results_Workshop_Report_-_March24.pdf
*Strengthening collaborative tree seed supply systems for restoration in Asia: Inception	Report	Jalonen R, 2022	F	Finland	Alliance of Bioversity and CIAT, Penang, Malaysia	www.apfor-gen.org/fileadmin/user_upload/Darwin_Inception_workshop_report_2022_-_FINAL.pdf

workshop report						
*Assessing the availability of tree seed sources for forest and landscape restoration: Training workshop report	Report	Jalonen R, 2022	F	Finland	Alliance of Bioersity and CIAT, Penang, Malaysia	www.apfor-gen.org/fileadmin/user_upload/Darwin_Training_workshop_report_2022_-_FINAL.pdf
*Seed zone maps	Map	Fremout T, Nur Siddiqui B, Warriar R, Yuskianti V, Tolentino jr E, Tiburano jr C, Jalonen R, 2022	M	Belgian	Alliance of Bioersity and CIAT, Penang, Malaysia	www.apfor-gen.org/initiatives/strengthening-seed-supply/activities

Annex 4: Onwards – supplementary material (optional but encouraged as evidence of project achievement)

Link expires 30 June 2024

Checklist for submission

	Check
Different reporting templates have different questions, and it is important you use the correct one. Have you checked you have used the correct template (checking fund, type of report (i.e. Annual or Final), and year) and deleted the blue guidance text before submission?	Yes
Is the report less than 10MB? If so, please email to BCF-Reports@niras.com putting the project number in the Subject line.	Yes
Is your report more than 10MB? If so, please discuss with BCF-Reports@niras.com about the best way to deliver the report, putting the project number in the Subject line.	No
Have you included means of verification? You should not submit every project document, but the main outputs and a selection of the others would strengthen the report.	Yes
If you are submitting photos for publicity purposes, do these meet the outlined requirements (see section 15)?	N/A
Have you involved your partners in preparation of the report and named the main contributors	Yes
Have you completed the Project Expenditure table fully?	No (see note)
Do not include claim forms or other communications with this report.	