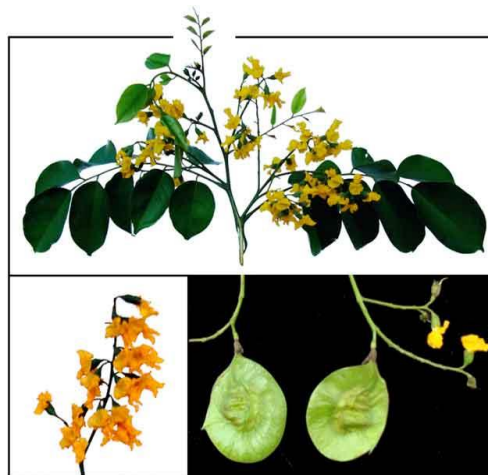


# Strengthening collaborative tree seed supply systems for restoration in Asia

Project Inception workshop  
11-12 May 2022 (virtual)



*In partnership with:*  
*Bangladesh Forest Department*  
*Institute of Forest Genetics and Tree Breeding, India*  
*National Research and Innovation Agency (BRIN), Indonesia*  
*College of Forestry & Natural Resources, University of the Philippines Los Baños*  
*Royal Botanic Garden Edinburgh*  
*OECD Forest Seed and Plant Scheme*

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## Introduction

This document reports the discussions and action points from the Inception workshop of the regional project “Strengthening collaborative tree seed supply systems for restoration in Asia”. The workshop was held virtually from 11 to 12 May 2022. The project is funded by the UK Darwin Initiative and runs from April 2022 to March 2024.

The project seeks to strengthen institutional and technical capacities to develop seed supply chains for native tree species in Bangladesh, India, Indonesia and the Philippines, so that forest and landscape restoration projects are linked with quality seed sources and local seed producers are linked with customers to support local livelihoods and sustainable forest management. The project will analyse gaps in the current availability of seed sources for pilot tree species in each country and support the identification of new seed sources and seed supply chains to fill the gaps.

The project is implemented as a collaboration of the following organisations:

- Alliance of Bioversity International and CIAT (lead)
- Bangladesh Forest Department
- Institute of Forest Genetics and Tree Breeding, India
- National Research and Innovation Agency (BRIN), Indonesia
- College of Forestry & Natural Resources, University of the Philippines Los Baños
- Royal Botanic Garden Edinburgh
- OECD Forest Seed and Plant Scheme

The inception workshop had the following objectives:

- Get to know each other and the project context in project countries
- Revisit project objectives and activities to ensure a common understanding of what the team wants to achieve and how
- Discuss data needs on species and seed sources, data availability and management
- Develop a detailed workplan for 2022

Workshop programme is given in Annex 1 and list of participants in Annex 2.

Workshop presentations are available from: <https://bit.ly/3b4dTvB>

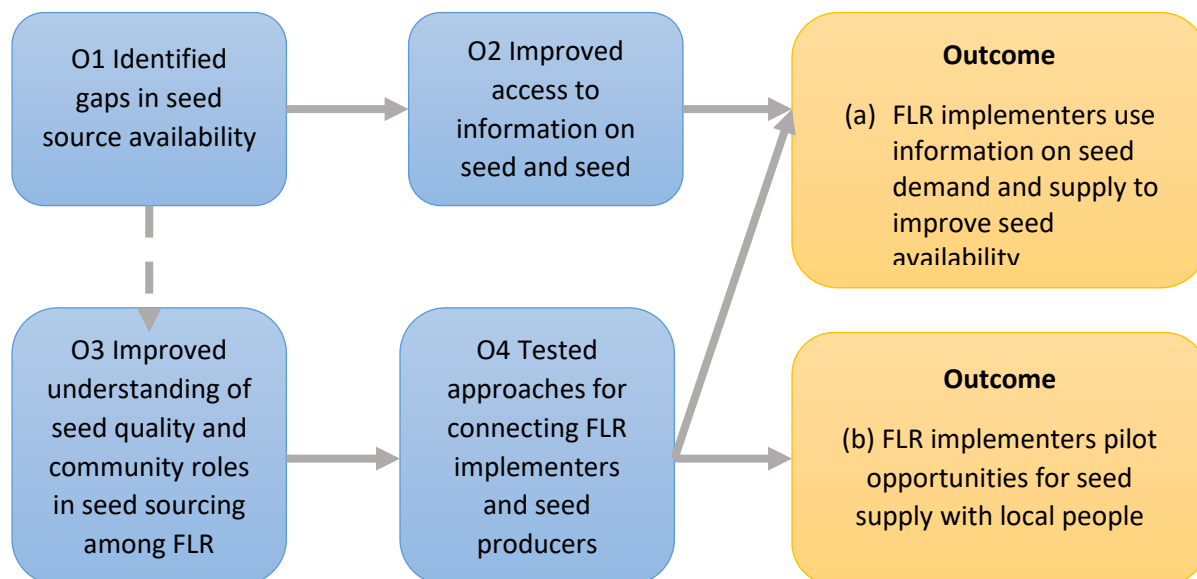
## Day 1

### Opening

**Dr Christopher Kettle**, Principal Scientist at the Alliance, welcomed the participants to the workshop. Participants introduced themselves to each other.

**Dr Riina Jalonen**, Project Coordinator at the Alliance, presented the project objectives and key activities. The project's expected outcome is that implementers of forest and landscape restoration (1) use information on native tree seed demand and supply to improve seed availability, and (2) pilot opportunities to involve forest-dependent men and women in seed supply. The project has the following outcome indicators:

- National or sub-national maps and databases on the availability of seed sources for native species (target: 1 per country)
- Number of FLR implementers with improved seed sourcing strategies (target: 10 per country)
- Number of new seed sources identified by species, seed zone and land tenure (target: 3 per country)
- Number of forest-dependent men and women identified as potential seed suppliers and receiving seed funding and skills training (target: 10 per country, >30% women)



**Figure 1.** Overview of project outputs (O1-O4)

### Introduction to project contexts in project countries

National coordinators provided an overview of the current status of tree seed supply chains in their countries.

**Dr Vivi Yuskianti** of the National Research and Innovation Agency (BRIN), Indonesia, explained how her country has set up an ambitious target to restore 2 million hectares of peatlands and 12 million hectares of degraded lands by 2030, according to the Updated Nationally Determined Contribution (2021). An estimated 20 billion seedlings are needed in the next decade to meet these targets (Updated NDC, 2021). Native species are recommended for restoration but no accurate information exists about the proportion of native species in restoration projects. Seeds and seedlings are produced by 36 watershed and forest reserve centres, 2 regional seed centres and 57 permanent nurseries under the Ministry of Environment and Forestry, as well as community nurseries, local technical implementation units and private companies. Certification system exists for the distribution of seeds and seedlings but documentation of seed supply chains needs to be further improved. It is regulated that all seed for FLR comes from certified sources for 11 native priority species. Certified seed sources are also available for other species. Previous regulation for certification of seed sources is valid for 5 years at a time. However, the current regulations do not limit the time, certificates can still be valid with regular reporting and monitoring. There is no regulation available to maintain the sources beyond that so they may be lost. Seed zone map exists but it is not widely used to guide seed sourcing. Seed supply is led by the central and local governments. Local communities have involved in seed supply through Village Nurseries (Kebun Bibit Desa, KBD) and People's Nurseries (Kebun Bibit Rakyat, KBR) under government project. An online database system to assist restoration practitioners is available, but the data are not comprehensive and rarely updated.

**Prof Dr Enrique Tolentino jr. and Dr Cristino Tiburan jr.** of the College of Forestry & Natural Resources, University of the Philippines Los Baños, explained how restoration efforts in the Philippines are spearheaded by the National Greening Program. The program was initiated in 2011 and aimed to plant 1,5 million hectares. In 2017 it was extended to cover the remaining degraded forest lands. Indigenous species cover only an estimated 1.32% of the over 2 million hectares planted so far. Department of Environment and Natural Resources introduced in 2021 a field manual for tree seed collection, processing and certification, and created six Forest Tree Seed Centers under the Ecosystem Research and Development Bureau. A seed Information system is being developed by the Mindanao Tree Seed Center which is a potential partner for the implementation of the project. Reliable seed source maps and databases are still lacking for priority native tree species, and seed availability constraints are exacerbated by climate risks to natural populations. Engagement of local communities in seed production, collection and trade needs to be strengthened and sustained. Potential field sites for the project are Agusan del Norte, Agusan del Sur and Surigao del Sur in Mindanao, as well as Palawan.

**Mr Md. Baktiar Nur Siddiqui** of Forestry Development and Training Center, Bangladesh Forest Department outlined restoration targets of the Bangladesh Government, including restoring degraded forest lands and conserving biodiversity in protected areas, expanding tree cover outside of public lands and involving local communities in forest management and restoration through collaborative arrangements. Bangladesh Forest Department requires large amounts of seed yearly for plantation and distribution to the public. Seeds are collected by department staff or contractors, based on annual targets for seedling production using an allocated budget. Local and private nursery owners also collect and trade seed, including selling seed to the Forest Department. There are over 400 division-level nurseries and 100 district level nurseries under the Department. Seed collection

process is not well monitored and records of seed sources, mother trees and seed quality are lacking. Recent trend is to raise native species for restoring degraded forest lands, and at least 20,000 ha are to be restored with native species. Two or three protected areas and adjacent homestead forests will be selected as target sites for improving seed supply chains in collaboration with local communities. These include Hajarikhil Wildlife Sanctuary in Chattogram, Madhakocchopia National Park in Cox's Bazar and Kaptai National Park in Rangamati.

**Table 1.** Tentative pilot species by country.

| Species  | Country     | Justification                  |
|--|-------------|--------------------------------|
| <i>Alstonia scaphula</i> (Boilam)                | Bangladesh  | Endangered                     |
| <i>Dipterocarpus alatus</i> (Dhaila Garjan)      | Bangladesh  | Endangered                     |
| <i>Bouea oppositifolia</i> (Uriam)               | Bangladesh  | Endangered                     |
| <i>Swintonia floribunda</i> (Civit)              | Bangladesh  | Endangered                     |
| <i>Hopea odorata</i> (Telsur)                    | Bangladesh  |                                |
| <i>Albizia lebeck</i>                            | India       |                                |
| <i>Dalbergia latifolia</i>                       | India       |                                |
| <i>Santalum album</i>                            | India       |                                |
| <i>Tectona grandis</i>                           | India       |                                |
| <i>Terminalia arjuna</i>                         | India       |                                |
| <i>Terminalia bellerica</i>                      | India       |                                |
| <i>Macaranga peltata</i>                         | India       |                                |
| <i>Xylia xylocarpa</i>                           | India       |                                |
| <i>Aquilaria malaccensis</i> (agarwood)          | Indonesia   |                                |
| <i>Dipterocarpus grandifloras</i> (keruing)      | Indonesia   | Endangered, NTFP, High price   |
| <i>Drybalanops aromatica</i> (kayu kapur)        | Indonesia   | Vulnerable, high price         |
| <i>Eusideroxylon zwageri</i> (ulin)              | Indonesia   | Timber, Vulnerable, high price |
| <i>Eurycoma longifolia</i> (Pasak bumi/Longjack) | Indonesia   | Medicine, NTFP                 |
| <i>Intsia palembanica</i> (merbau)               | Indonesia   | Timber                         |
| <i>Palaquium rostratum</i> (Nyatoh)              | Indonesia   | Timber, High price             |
| <i>Pometia pinnata</i> (Matoa)                   | Indonesia   | Fruit, high price, NTFP        |
| <i>Pterocarpus indicus</i>                       | Philippines | Vulnerable                     |
| <i>Xanthostemon philippinensis</i>               | Philippines | Critically endangered          |
| <i>Dipterocarpus alatus</i>                      | Philippines | Vulnerable                     |
| <i>Dipterocarpus gracilis</i>                    | Philippines | Vulnerable                     |
| <i>Dipterocarpus grandiflorus</i>                | Philippines | Vulnerable                     |
| <i>Shorea almon</i>                              | Philippines | Vulnerable                     |
| <i>Shorea contorta</i>                           | Philippines | Vulnerable                     |
| <i>Shorea negrosensis</i>                        | Philippines | Vulnerable                     |

A large restoration project Sustainable Forests and Livelihoods (SUFAL), funded by the World Bank, is currently implemented in hill forests, sal forests and coastal areas, aiming to restore 80,000 ha of degraded forest lands in collaboration with 600 forest-dependent communities. The project

collaborates with the National Herbarium in species identification and with the Bangladesh Forest Research Institute to develop nursery manuals. Seedling production is estimated at 5,1 million seedlings. However, seed supply for the project has not been established and seed is sourced from unidentified sources in natural forests, so seed quality cannot be ascertained.

**Dr Rekha Warriar**, Institute of Forest Genetics and Tree Breeding, India, could not attend the workshop due to an emergency but provided a presentation of the status of seed systems in India. The country has pledged to have a third of its total land area, or 95 million hectares, under forest and tree cover by 2030. Large restoration initiatives include the National Green India Mission to expand forest and tree cover on 10 million hectares of degraded lands, and the Compensatory Afforestation Fund Management and Planning Authority (CAMPA) that has established 1,7 million ha of plantations since 2009. Despite the large investments there is little attention to quality planting materials and none of the states have established regulations on forest reproductive material. Seed zones have not been defined and information about the origin of seeds and seedlings is mostly not available. Seed handling and propagation practices for many native species remain poorly understood. State Forest Departments, research institutes and universities have established Seed Production Areas, Seedling and Clonal Seed Orchards and other seed sources, but their adequacy for meeting the restoration targets is unclear.

#### Discussion

- Several dipterocarp species were proposed as target species. It may be difficult to facilitate seed production for these species as they fruit only every few years. In the Philippines, cuttings and wildlings are sometimes used to overcome seed shortage for dipterocarps.

**Table 2.** *Potential collaborators and stakeholders*

|  |
|--|
| Mindanao Tree Seed Center, Philippines   |
| The National Herbarium, Philippines  |
| Herbarium of the University of the Philippines, Los Baños                              |
| Kebun Raya, Indonesia  |
| Bangladesh Forest Research Institute   |
| Bangladesh National Herbarium  |
| Institute of Forestry and Environmental Sciences, University of Chittagong, Bangladesh |
| Khulna University, Bangladesh  |
| Shahjalal University of Science and Technology, Bangladesh                             |
| IUCN   |
| Botanic Gardens Conservation International   |

#### Project management

Riina Jalonen provided an overview of the project management, including annual reporting timelines and regulations on the use of funds. Funds allocated for each financial year must be spent within that year and carry forward of funds is not possible. A Letter of Agreement will be developed with each national partner organisation for project implementation.

**Ms Catharina Adaro**, Monitoring and Evaluation Specialist at the Alliance, provided an overview of project monitoring and evaluation. A results framework and a monitoring and evaluation plan will be developed based on the project proposal and donor's feedback. Monitoring will include progress towards targets but also quality of outputs and lessons learned during implementation. A Monitoring and Evaluation Advisory Group will be established with senior leaders from each partner organisation to review project progress and advice with implementation.

## Day 2

### Gap analysis methodology on seed source availability

Riina Jalonen and **Dr Tobias Fremout**, Research Fellow at the Alliance, presented the proposed methodology and data needs for assessing gaps in the availability of tree seed sources for restoration. Gaps will be identified through a comparison of seed zone maps<sup>1</sup>, species distribution models, and records of existing seed sources. The results will show the availability of seed sources for the pilot species in each seed zone under current and future climates. Zones that lack seed sources for the pilot species or that will be severely affected by climate change can then be targeted for follow up activities. The method requires species occurrence data for distribution modelling as well as data on seed source locations. Seed zone maps and species distribution models need to be validated by national and local experts to ensure they are feasible to implement and include known natural distribution areas of the species, respectively. Gaps in distribution modeling results are possible if input data on species occurrences is not representative of known distribution. Spatial analysis can also be used to identify potential areas for new seed sources within seed zones, e.g. by comparing results to land cover maps or carrying out an analysis of species vulnerability to various threats<sup>2</sup>.

### Data availability and data management

Vivi Yuskianti presented the availability of data on seed sources and seed supply in Indonesia. Seed and seedling production to support FLR (including mangroves and peatlands) is managed by the Directorate of Forest Plant Seeds (DPTH), Ministry of Environment and Forestry, and by local government through 13 Regional Technical Units (Unit Pelaksana Teknis Daerah/UPTD). They are responsible for certification and registration of seed sources and seed stands, data of seed distributors and permanent nurseries in their area. The databases are partly available online, and details can be accessed through contacting the respective government units. Online databases would benefit from improvement as data provided to users is currently incomplete and not

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<sup>1</sup> Fremout, T., et al. (2021). Dynamic seed zones to guide climate-smart seed sourcing for tropical dry forest restoration in Colombia. *Forest Ecology and Management*, 490, p.119127.  
<https://doi.org/10.1016/j.foreco.2021.119127>

<sup>2</sup> Fremout, T., et al. (2020). Mapping tree species vulnerability to multiple threats as a guide to restoration and conservation of tropical dry forests. *Global Change Biology*, 26(6), pp.3552-3568.  
<https://doi.org/10.1111/gcb.15028>

Gaisberger, H., et al. (2021). Tropical and subtropical Asia's valued tree species under threat. *Conservation Biology*. <https://conbio.onlinelibrary.wiley.com/doi/full/10.1111/cobi.13873>





necessarily up-to-date. Data management is still paper-based. Seed zone maps to facilitate seed transfer have been established in Indonesia since 2012 through the Directorate General Decree No. 30/V-SET/2012. Although a seed zone map exists, it is currently not well used. The map is not easily accessible for practitioners and can only be obtained from the Directorate. Seed transfer is also not properly monitored yet.

Enrique Tolentino jr. and Cristino Tiburan jr. presented data availability in the Philippines. Very little centralised information is available of species occurrence, mainly compiled by civil society and environmental groups. They also have some information on nurseries providing native species. Plus trees have been identified for some species based on phenotypic selection; progeny testing has not been carried out. Provenances have not been delineated and a seed zone map does not exist. Seed registration or certification systems are also lacking. Data on seed collections are limited and the information is rarely shared outside of projects. Mindanao Tree Seed Center is initiating a Seed Information System which would address some of these gaps. The Ecosystem Research and Development Bureau recently developed Operations and Field Manuals for seed collection and certification.

Md. Baktiar Nur Siddiqui presented data availability in Bangladesh. Data on tree seed sources is generally lacking. Bangladesh Forest Research Institute is maintaining some data on species occurrences. The Institute has established some seed orchards e.g. for *Dalbergia* spp., and together with the Forestry Department they have data on seed source locations and species phenology for a few species. Some local seed collectors also have data on seed sources. Data about seed production per species, seed availability, germination rate and other characteristics are not systematically recorded and existing databases are not well maintained. There is need for spatial databases and species distribution maps to help improve seed collection.

Rekha Warriar shared data availability for the proposed pilot species in India. Occurrence data is available for the planned species but is not well managed. Confirmed seed sources exist for two of eight species, while availability is not known for most species as data is not systematically managed.

**DATA SUMBER BENIH TANAMAN HUTAN  
BPTH BALI DAN NUSATENGARA**

**Gambar Tagetan**  
  
 Gambar (Sketsa) Lokasi  


|                    |   |
|--------------------|---|
| Nomor Sumber Benih | : 53.20.039   |
| Nama Sumber Benih  | : Sengon Buto Bolo  |
| Nama Botani        | : <i>Enterolobium cyclocarpum</i>   |
| Nama Daerah        | : Sengon Buto   |
| Lokasi             |   |
| Desa               | : Elibode   |
| Kecamatan          | : Sabu Tengah   |
| Kabupaten          | : Sabu Raijua   |
| Propinsi           | : Nusa Tenggara Timur   |
| Garis Lintang      | : 10° 27' 38,95" - 10° 27' 41,15"   |
| Garis Bujur        | : 121° 58' 55,25" - 121° 59' 56,91"   |
| Tinggi Tempat      | : 80 m dpl.   |
| Luas Areal         | : 0,33 Ha   |
| Ket. Lokasi        | : Dari kantor Dinas PPPK Kab. Sabu Raijua melalui jalan aspal sekitar 15 Km ke Desa Elibode. Dari Desa Elibode ke lokasi sumber benih sekitar 1 Km melalui jalan tanah. |
| Pemilik            | : Obed Nego Rata, Dusun I, Desa Elibode, Kec. Sabu Tengah, Kab. Sabu Raijua, Provinsi Nusa Tenggara Timur   |
| Tahun Tanam        | : 1999/2000   |
| Puncak Berbunga    | : Juni  |
| Puncak Buah Masak  | : Nopember  |
| Produksi Benih     | : 7,25 Kg   |
| Kelas Sumber Benih | : Tagakan Benih Teridentifikasi   |
| No. Sertifikat SB  | : ST. 31/BPTH.BNT/2014  |
| Tgl Sertifikat SB  | : 12 Mei 2014   |
| Masa Berlaku       | : 31 Mei 2019   |

**Species name** → Nama Botani  
**Location** → Nama Daerah, Desa, Kecamatan, Kabupaten, Propinsi  
**Owner** → Pemilik  
**Predicted seed production** → Produksi Benih  
**Seed source certificate** → No. Sertifikat SB, Tgl Sertifikat SB, Masa Berlaku

**Figure 2.** Example of seed source registration in Indonesia.

**Dr Peter Wilkie**, Royal Botanic Garden Edinburgh (RBGE), provided a brief commentary on the country situations. He recommended that botanic gardens be included as data sources as they collect a lot of seed for their own nurseries research purposes and have relevant data, including on phenology. Good collaborators include the herbarium at Los Baños, the National Herbarium in Manila, Philippines, and the Kebun Raya garden in Bogor, Indonesia. Data from the Global Biodiversity Information Facility (GBIF) is generally of quite low quality, and taxonomically focused databases are a better source of occurrence data. Old literature has a lot of information on species and their distributions that can be made use of, and Peter is happy to help interpret taxonomic literature where needed. Other types of data that would importantly support seed and seedling production for restoration are phenological data on flowering and fruiting and information on propagation techniques. The Botanic Gardens Conservation International (BGCI) has compiled information on propagation techniques on the Global Tree portal, and RBGE has developed guidelines for seed collection that can be shared.

The conservation community has expressed serious concerns that the massive seed needs for restoration are leading to indiscriminate seed transfer over long distances that introduces alien material affecting local biodiversity. Where seed availability is limited, restoration targets should be tempered until seed production has been built up. Indigenous peoples who act as custodians of biodiversity should be involved in access and benefits discussions according to the Nagoya Protocol.

### **Discussion**

- Is seed transfer allowed between islands?
  - In Indonesia, transfer is allowed within the same seed zone (zones may span several islands). In practice, long distance transfer of seedlings is difficult as seedlings risk being damaged.
  - In the Philippines, seed is moved between islands. Recent rules restrict transfer but these are not well implemented.
- Is seed kept separate by seed lot after collection? This would be important to understand variation in germination and other characteristics.
  - In the Philippines, species and seed selection for native species for FLR is based on availability; any available species are planted in the identified priority areas to meet restoration targets. There is no information on variation between seed sources, except possibly in grey literature where it is difficult to access. Documentation of information in grey literature is starting but some important information may have already been lost.
- What should be done when only isolated mother trees exist? Can seed still be collected from these and is it useful to mark such trees as mother trees?
  - Mating systems and pollen dispersal vary between species and so hard rules do not exist. Isolation is not necessarily an issue for self-compatible species. Research shows that depending on species, isolated trees can also act as pollen sinks and produce diverse seed. It is still best to collect seed as widely as possible. More

information is needed on the species of concern to plan collection strategies to maximise diversity.

- What other organisations that the public sector could benefit from the project activities? Can we collaborate e.g. with private sector or communities to help track seeds and seedlings in their nurseries?
  - Involving indigenous peoples in project activities is complicated in the Philippines as Indigenous People's Rights Law requires lengthy procedures to obtain permissions to work in these areas. Given the time constraints the project will focus on seed sources on public lands
  - In Indonesia communities already work closely with the Forestry Department and many schemes exist to involve communities in seed production. However, communities are generally dependent on government funds, and few have self-sustained businesses around seed collection. Activities often stop after project funding ends.

## Templates for data collection

Riina Jalonen presented proposed templates for the collection of data on species occurrences and seed sources (Table 3). The template for documenting seed sources is based on the minimum requirements of the OECD Forest Seed and Plant Scheme.

### Discussion:

- While many additional data could be collected, it is best to focus on core data as in the proposed templates. Detailed data requirements are difficult to fulfil and so not realistic.
- Proposed data on seed sources is feasible in Indonesia and in line with the data requirements by the Directorate.
- It is important to include voucher specimens of parent trees in seed sources to enable verifying the species. Original parent trees may disappear over time.
  - Herbaria specimen can be collected in Bangladesh and the Philippines, capacity for this exists.

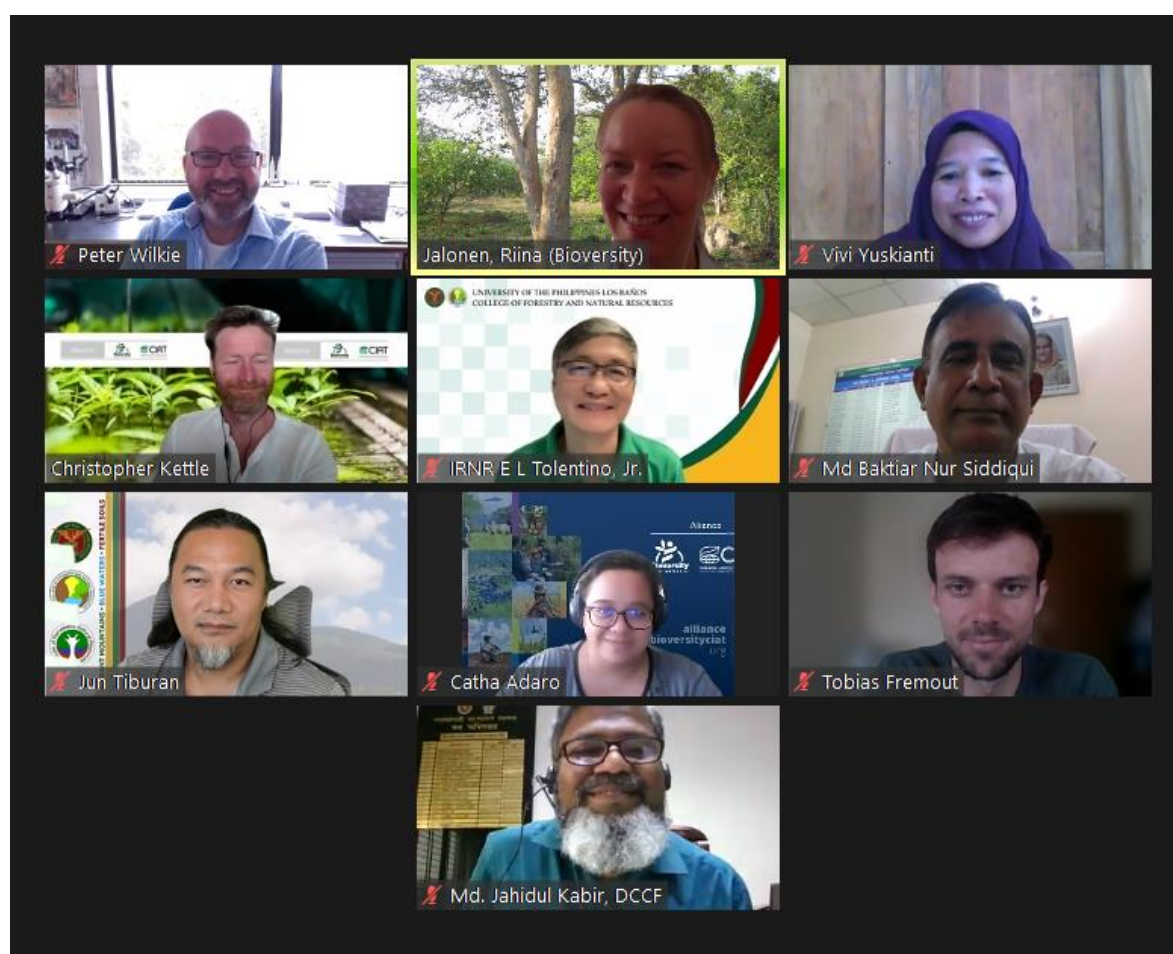
After discussion, project partners agreed to use the proposed templates, with the addition of collecting herbaria specimens of mother trees where possible.

## Work plan

A draft work plan for 2022 was reviewed and refined collectively (Annex 3).

**Table 3.** Proposed data needs

| Species occurrence data  | Data on seed sources  |
|--|---|
| <ul style="list-style-type: none"> <li>• <b>Species</b></li> <li>• <b>Location name (province/region, district, site..)</b></li> <li>• <b>GPS coordinates (<math>\geq 2</math> decimal points)</b></li> <li>• Coordinate uncertainty</li> <li>• Coordinate datum (e.g. WGS84)</li> <li>• Georeferencing method (e.g. GPS, software)</li> <li>• Elevation</li> <li>• Collection date</li> <li>• Status of sample (e.g. natural, planted)</li> </ul> | <ul style="list-style-type: none"> <li>• Identification no. / code</li> <li>• Botanical name</li> <li>• Purpose of the seed source</li> <li>• Category of material (<i>source-identified</i> or <i>selected</i>)</li> <li>• Type (<i>seed source</i> or <i>stand</i>)</li> <li>• Location               <ul style="list-style-type: none"> <li>• Name</li> <li>• Region of provenance</li> </ul> </li> <li>• Altitude</li> <li>• Area (ha)</li> <li>• Origin (autochthonous/indigenous or not)</li> </ul> |



**Figure 3.** Workshop participants.

## Annex 1: Programme

Philippines: 16-18 hrs / Indonesia: 15-17 hrs / Bangladesh: 14-16 hrs / India: 13.30-15.30 hrs  
 CET: 10.00-12 hrs / UK: 9.00-11.00 hrs

| <b>Day 1 – 11 May (GMT+8)</b> | <b>Overview of the project</b>   |
|-------------------------------|--|
| 16.00-16.15                   | Welcome and introductions<br><i>Chris Kettle, Alliance</i>   |
| 16.15-16.45                   | Review of project objectives and activities<br><i>Riina Jalonen, Alliance</i><br><br>Discussion  |
| 16.45-17.45                   | Introduction to project contexts in project countries (8 mins per country)<br><i>Rekha Warriar, Institute of Forest Genetics and Tree Breeding, India</i><br><i>Md Baktiar Nur Siddiqui, Forest Department of Bangladesh</i><br><i>Vivi Yuskianti, National Research and Innovation Agency, Indonesia</i><br><i>Enrique Tolentino jr., University of the Philippines Los Baños</i><br><br>Discussion |
| 17.45-17.55                   | Project management<br><i>Riina Jalonen</i>   |
| 17.55-18.00                   | Closing of Day 1   |

| <b>Day 2 – 12 May</b> | <b>Focus on Outputs 1 and 2: Availability of seed sources and related information</b>   |
|-----------------------|---|
| 16.00-16.05           | Recap of Day 1  |
| 16.05-16.15           | Gap analysis method and data needs<br><i>Riina Jalonen and Tobias Fremout, Alliance</i>   |
| 16.15-16.40           | Data availability and data management on species occurrences and seed sources in project countries (5 mins per country)<br><i>Rekha Warriar, Md Baktiar Nur Siddiqui, Vivi Yuskianti, Enrique Tolentino jr.</i> |
| 16.40-17.00           | Data management on species occurrences and seed sources: good practices<br><i>Peter Wilkie, Royal Botanic Garden of Edinburgh</i><br><i>Csaba Gaspar, OECD Forest Seed and Plant Scheme</i><br><br>Discussion   |
| 17.00-17.30           | Discussion: Templates for data collection   |
| 17.30-17.55           | Workplan 2022 <ul style="list-style-type: none"> <li>• <i>Validation of seed zone maps</i></li> <li>• <i>Data collection</i></li> <li>• <i>Spatial analyses</i></li> <li>• <i>Training workshop</i></li> </ul>  |
| 17.55-18.00           | Closing   |

## Annex 2: Participants

Md Baktiar Nur Siddiqui, Bangladesh Forest Department

Md Jahidul Kabir, Bangladesh Forest Department

Vivi Yuskianti, National Research and Innovation Agency (BRIN), Indonesia

Enrique Tolentino jr., College of Forestry & Natural Resources, University of the Philippines Los Baños

Cristino S. Tiburan, College of Forestry & Natural Resources, University of the Philippines Los Baños

Peter Wilkie, Royal Botanic Garden Edinburgh, UK

Tobias Fremout, Alliance of Bioversity International and CIAT

Catharina Adaro, Alliance of Bioversity International and CIAT, Philippines

Christopher J Kettle, Alliance of Bioversity International and CIAT, Italy

Riina Jalonen, Alliance of Bioversity International and CIAT, Malaysia

### *Apologies:*

Rekha Warriar, Institute of Forest Genetics and Tree Breeding, India

Csaba Gaspar, OECD Forest Seed and Plant Scheme

## Annex 3: Workplan 2022

| What  | Who   | Month of 2022 |   |   |   |   |    |    |    | 2023 |
|---|---|---------------|---|---|---|---|----|----|----|------|
|   |   | 5             | 6 | 7 | 8 | 9 | 10 | 11 | 12 |      |
| <b>O1. Identified gaps in seed source availability for native species in four countries</b>   |   |               |   |   |   |   |    |    |    |      |
| <b>1.1 Develop methodology for gap analysis on tree seed sources</b>  | <b>Alliance, inputs from all</b>            | x             |   |   |   |   |    |    |    |      |
| <b>1.2 Develop seed zone maps for current and future climates in target countries and validate them with experts</b>  | <b>Alliance, National coordinators (NC)</b> | x             | x |   |   |   |    |    |    |      |
| <ul style="list-style-type: none"> <li>Share existing seed zone maps if any</li> <li>Review and comment on initial seed zone maps</li> <li>Prepare a few map options based on feedback</li> <li>Meeting to discuss &amp; select maps</li> </ul>   | NC  | x             |   |   |   |   |    |    |    |      |
|   | NC  | x             |   |   |   |   |    |    |    |      |
|   | Tobias                                      | x             | x |   |   |   |    |    |    |      |
|   | All   |               | x |   |   |   |    |    |    |      |
| <b>1.3 Identify data sources and access options on species distributions, seed sources and land uses</b> <ul style="list-style-type: none"> <li>Prepare brief list of criteria for species selection as guidance</li> <li>Finalise species selection</li> <li>Finalise data templates</li> <li>Obtain access to databases where needed</li> <li>Compile occurrence and seed source data</li> <li>Species distribution modeling</li> </ul> | <b>NC, Alliance, RBGE, OECD</b>             | x             | x | x | x | x |    |    |    |      |
|   | Riina                                       | x             |   |   |   |   |    |    |    |      |
|   | NC  | x             | x | x |   |   |    |    |    |      |
|   | All   | x             |   |   |   |   |    |    |    |      |
|   | NC  | x             | x | x |   |   |    |    |    |      |
|   | NC, Alliance, RBGE                          |               | x | x | x |   |    |    |    |      |
|   | Tobias                                      |               |   |   |   | x |    |    |    |      |

| What  | Who                           | Month of 2022 |   |   |   |   |    |    |    | 2023 |
|---|-------------------------------|---------------|---|---|---|---|----|----|----|------|
|   |                               | 5             | 6 | 7 | 8 | 9 | 10 | 11 | 12 |      |
| <b>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)</b> <ul style="list-style-type: none"> <li>· Brief concept note of training</li> <li>• Identify participating experts</li> <li>• Select venue &amp; time</li> <li>• Plan programme</li> </ul> | <b>Alliance and NC host</b>   |               |   | x | x | x | x  | x  | x  | x    |
|   | Alliance                      | x             | x |   |   |   |    |    |    |      |
|   | NC                            |               | x | x |   |   |    |    |    |      |
|   | Alliance                      |               | x | x |   |   |    |    |    |      |
|   | Alliance with inputs from all |               |   | x | x |   |    |    |    |      |
| <b>O2. Improved access to information about seed sources and seed origins by forestry authorities and FLR implementers</b>  |                               |               |   |   |   |   |    |    |    |      |
| <b>2.1 Validate results of the gap analysis with forestry authorities and other stakeholders</b>  | <b>NC, Alliance</b>           |               |   |   |   |   |    | x  | x  |      |
|   |                               |               |   |   |   |   |    |    |    |      |
|   |                               |               |   |   |   |   |    |    |    |      |
| <b>2.2 Evaluate and improve existing databases on seed sources in collaboration with stakeholders</b>   |                               |               |   |   |   |   |    |    | x  | x    |
|   |                               |               |   |   |   |   |    |    |    |      |
|   |                               |               |   |   |   |   |    |    |    |      |
| <b>General</b>  |                               |               |   |   |   |   |    |    |    |      |
| <b>Subcontracts</b><br>TOR and budget development<br>Contract signing   | <b>Alliance with NC</b>       | x             | x |   |   |   |    |    |    |      |
|   | Alliance, NC                  | x             |   |   |   |   |    |    |    |      |
|   | Alliance, NC                  |               | x |   |   |   |    |    |    |      |



| What   | Who                                  | Month of 2022 |   |   |   |   |    |    |    |  | 2023 |
|--|--------------------------------------|---------------|---|---|---|---|----|----|----|--|------|
|  |                                      | 5             | 6 | 7 | 8 | 9 | 10 | 11 | 12 |  |      |
| <b>Monitoring and evaluation</b>                 | <b>Alliance with inputs from all</b> | x             | x |   |   |   |    |    |    |  |      |
| Develop results framework & M&E plan & circulate | Catha                                | x             | x |   |   |   |    |    |    |  |      |
| Develop TOR for Project board                    | Alliance with inputs from all        |               | x |   |   |   |    |    |    |  |      |
| Identify & nominate board members                | NC                                   |               | x | x |   |   |    |    |    |  |      |
| First meeting of board                           | Members                              |               |   |   |   | x |    |    |    |  |      |
| <b>Communications</b>                            |                                      |               |   |   |   |   |    |    |    |  |      |
| Compile project logos, comms materials           | Riina                                | x             | x |   |   |   |    |    |    |  |      |
| Set up project webpage                           | Riina                                |               | x |   |   |   |    |    |    |  |      |
| <b>Plan stakeholder engagement</b>               |                                      |               |   |   |   |   |    |    |    |  |      |
| List relevant stakeholders by country            | All                                  | x             | x |   |   |   |    |    |    |  |      |
| <b>Data management plan</b>                      | <b>Alliance with inputs from all</b> |               | x | x |   |   |    |    |    |  |      |