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|  | Asia-Pacific Forest Genetic Resources Programme |

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**Strategy 2018-2022:**Implementing the Global Plan of Action on Forest Genetic Resources in Asia-Pacific

**[FINAL DRAFT]**

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| APFORGEN welcomes comments to this draft document from forestry authorities, researchers and other stakeholders in the Asia-Pacific region. Please send comments to APFORGEN Secretariat (Prof Zheng Yongqi, zhengyq@caf.ac.cn) by **30 November 2017**. For other contact details please see end of the document. |

**APFORGEN** is a regional programme and network that brings knowledge and use of Asia’s forest biodiversity to a new level – from a traditional focus on ecosystems or species diversity to include genetic diversity that underlies ecosystem functioning, productivity and adaptive capacity. APFORGEN brings relevant genetic knowledge from laboratories and specialists to forest managers, conservationists, restoration practitioners and policy-makers in an easily understandable form, helping them to manage the region’s tree diversity for environmental and societal benefits.

Through its network of geneticists, forestry professionals and funding partners in 15 Asian countries, APFORGEN shares knowledge and good practices, implements multi-country research and development projects, operates a Regional Training Centre and serves as a one-stop-centre on forest genetic resources information and initiatives in the Asia-Pacific.

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| **Our objectives 2018-2022**1. Mobilize political and financial support for the implementation of the global plan of action on forest genetic resources in the Asia-Pacific region
2. Make available information about the forest genetic resources in the Asia-Pacific region
3. Develop conservation and sustainable use strategies for regionally important and threatened tree species
4. Strengthen tree seed supply systems to facilitate ecosystem restoration, support local livelihoods and climate change adaptation and mitigation
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|  | APFORGEN’s member countries (2017) |

**SAFEGUARDING THE GLOBALLY IMPORTANT FOREST GENETIC RESOURCES OF ASIA AND THE PACIFIC**

According to the first-ever report on the ***State of the World’s Forest Genetic Resources***, more than a thousand tree species in Asia and the Pacific are actively managed, for diverse purposes such as timber, non-timber forest products, energy and other ecosystem services[[1]](#footnote-1) – a reflection of the enormous ecological and cultural diversity of the region.

Yet, the region also has more threatened tree species than any other part of the world, numbering more than 1700, according to the same report1. The high prevalence of endemism in Asia and the Pacific makes tree species extremely vulnerable to habitat degradation. This, in turn, undermines their ability to provide food, other goods and ecosystem services for the region’s 4.5 billion people and rapidly growing economies.

**Why is genetic diversity needed?**

Genetic diversity provides the foundation for the survival of tree species, their growth and productivity, and adaptation to a changing environment. It forms the basis for present and future selection and breeding programmes, and contributes food sources for humans and animals, including at times when annual crops fail.

Hence, tree genetic diversity provides the foundations for forest and landscape management projects and programmes – for example, sustainable management of production forests, forest and landscape restoration, ecosystem-based approaches to mitigating climate change, community forestry and species conservation programmes. The genetic diversity and evolutionary potential of tree species can only be effectively conserved if it is integrated in the implementation of wider programmes and strategies of sustainable management.

**Challenges in genetic conservation**

Conservation and sustainable use of forest genetic resources (FGR) is made difficult by the fact that knowledge of genetic diversity patterns is only available for a fraction of all tree species – at a global level, for less than 1% of all species[[2]](#footnote-2). Genetic resources are rapidly being eroded before we even begin to understand their extent and potential value. In light of this race against time and with limited financial and human resources, regional collaboration and coordination are of utmost importance for the conservation and sustainable use of tree species and their genetic resources.

Distributions of most tree species do not follow national boundaries, and they hold great potential for improvement and enhanced sustainable use across country borders. At the same time, trees are threatened by illegal cross-border trade and unsustainable resource acquisition. Through regional networking it is possible to gain synergy in research and conservation activities, avoid overlapping efforts, accelerate learning and manage the constraints posed by limited resources[[3]](#footnote-3).

**APFORGEN’s approach**

The Asia Pacific Forest Genetic Resources Programme (APFORGEN) has developed this five-year Strategy 2018-2022 in recognition of the unique ecological and socio-economic value of the region’s forest genetic resources and the urgency to conserve them. The strategy is aligned with the ***Global Plan of Action for the Conservation, Sustainable Use and Development of Forest Genetic Resources*** of the Food and Agriculture Organization of the United Nations (FAO) that identifies priority actions at national, regional and international levels based on an extensive global study of the current status of these resources. The objectives of the strategy were identified by APFORGEN’s National Coordinators, building on the national and regional needs and priorities that emerged during the preparation of the first State of the World’s Forest Genetic Resources report.

APFORGEN, established in 2003, is the only network in Asia and the Pacific that focuses on the conservation and sustainable use of forest genetic resources. APFORGEN’s broad membership and long-term experience in developing and implementing collaborative research and capacity development initiatives make it ideally placed for coordinating the implementation of the Global Plan of Action in the region in close collaboration with FAO and other relevant national, regional and international organizations.

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| **15 years of regional collaboration on forest genetic resources**  |
| **2003** | APFORGEN was established as a network of 14 Asian countries |
| **2004-2006** | Annual meetings of National Coordinators |
| **2006** | Grant from the International Tropical Timber Organization for strengthening national programmes on forest genetic resources |
| **2006-2008** | Annual training workshops for young scientists and forest managers |
| **2009** | International Symposium on forest genetic resources |
| **2010** | Training workshop for scientists and forest managers |
| **2011-2012** | Regional workshops to support the development of the State of the World’s Forest Genetic Resources Programme |
| **2014** | APFORGEN aligns its programme of work with the Global Plan of Action on Forest Genetic Resources  |
| **2016** | Regional Training Centre on Forest Genetic Resources is established |
| **2017** | Republic of Korea joins APFORGEN as its 15th member country |

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| **What is the Global Plan of Action on Forest Genetic Resources?** |
| The Global Plan of Action on Forest Genetic Resources (FGR) is a strategic framework for the conservation and sustainable use of genetic resources of trees and other woody plants. It is based on the findings of the first *State of the World’s Forest Genetic Resources* report, published by FAO in June 2014. The report was developed on the basis of 86 country reports covering 85 percent of the world’s forested area, input from regional consultations and a series of thematic studies developed by experts around the world. The Global Plan of Action on FGR was agreed on by the FAO Commission on Genetic Resources for Food and Agriculture in its 14th session in January 2013, and subsequently adopted by FAO Conference in its 38th session in June 2013. The Commission of Forestry, the highest FAO Forestry statutory body, recommended the implementation of the Global Plan of Action on FGR in its 22th session in June 2014.The Global Plan of Action has 27 Strategic Priorities, grouped into four areas: (1) improving the availability of, and access to, information on FGR, (2) conservation of FGR (*in situ* and *ex situ*), (3) sustainable use, development and management of FGR, and (4) policies, institutions and capacity-building.The Strategic Priorities for Action constitute a comprehensive global programme of work. They can assist countries in integrating FGR conservation and management needs into wider policies, programmes and frameworks of action from local to national, regional and global levels, and in developing sound technical and scientific programmes for the successful management of FGR. Implementation of the Global Plan of Action will strengthen the sustainability of FGR while contributing towards the Aichi Biodiversity Targets and the Sustainable Development Goals. The Commission on Genetic Resources for Food and Agriculture, in its 14th session, requested FAO to develop an implementation strategy for the Global Plan of Action on FGR, and encouraged the mobilization of adequate financial resources, preferably from voluntary contributions, particularly to support developing countries in the implementation of the Global Plan of Action. The Global Plan of Action on FGR is available from <http://www.fao.org/3/a-i3849e.pdf> |

**APFORGEN’S OBJECTIVES 2018-2022**

In a meeting of its National Coordinators in March 2017, APFORGEN identified four objectives for regional collaboration to support the implementation of the Global Plan of Action on Forest Genetic Resources for the years 2018-2022.

**1. Mobilize political and financial support for the implementation of the Global Plan
of Action on Forest Genetic Resources in the Asia-Pacific Region**Although FGR in many Asian countries have been severely depleted, there is limited recognition about their crucial ecological and societal importance, including for timber production, forest and landscape restoration and adaptation to and mitigation of climate change. Political and institutional support for conserving the resource base have not kept pace with the economic development in the region. National forest- or biodiversity-related strategies and action plans typically lack mention of genetic conservation measures for tree species. Forest managers and conservationists are often not well informed about the relevance of genetic aspects to meeting their objectives. Lack of understanding of FGR and their importance for policy and practice constrains conservation and sustainable use of tree species, increases genetic risks in subsequent generations and limits adaptation to climate change. These challenges highlight the need for strengthening efforts to raise awareness about the contribution of forest genetic resources to societies, and to share knowledge, experiences, and good practices in their conservation and sustainable use.

This objective has the following targets:

* Forest genetic resources are incorporated into relevant national and regional planning and implementation processes regarding sustainable forest management, ecosystem restoration and conservation
* Funding is secured to sustain APFORGEN through projects that address the strategic priorities of the Global Plan of Action
* At least 150 forest genetic resources professionals trained by the Regional FGR Training Centre by 2022.

The work under this objective contributes, in particular, to the following Strategic Priorities of the Global Plan of Action on FGR:

* Update FGR conservation and management needs and integrate them into wider policies, programmes and frameworks of action at national, regional and global levels (Strategic Priority 19)
* Establish and strengthen educational and research capacities on FGR to ensure adequate technical support to related development programs (Strategic Priority 21)
* Reinforce regional and international cooperation to support education, knowledge dissemination, research, and conservation and sustainable management of FGR (Strategic Priority 24)
* Strengthen efforts to mobilize the necessary resources, including financing, for the conservation, sustainable use and development of FGR (Strategic Priority 27)

**2. Make available information about the forest genetic resources**

**in the Asia-Pacific region**

Development of effective conservation strategies for tree genetic diversity starts with understanding the species’ natural distribution. Unfortunately, even this basic knowledge is largely incomplete for tropical tree species. At the same time, it is ideally suited for regional collaboration, given that the distribution ranges of many socio-economically important species span several countries. Up-to-date estimates of species distribution will provide the necessary basis for studies on genetic diversity and its distribution, assessing climate change impacts on tree species, and designing networks of gene conservation units and seed production areas to support tree planting and restoration efforts.

This objective has the following targets:

* Natural distribution maps compiled for 50 priority tree species native to the Asia-Pacific region
* Seed sources and patterns of genetic diversity documented for 10 priority tree species

The work under this objective contributes, in particular, to the following Strategic Priorities of the Global Plan of Action on FGR:

* Promote the establishment and the reinforcement of FGR information systems (databases) to cover available scientific and traditional knowledge on uses, distribution, habitats, biology and genetic variation of species and species populations (Strategic Priority 4)
* Identify priority species for action (Strategic Priority 10)

**3. Develop conservation and sustainable use strategies for
regionally important and threatened tree species**

Tree genera of *Dalbergia* (Rosewood), *Shorea* (Dipterocarp family) *and Tectona* (Teak), all native to Asia, include many highly valuable tree species. They are important for timber production and other ecosystem services, especially as terrestrial carbon sinks. Some species such as *Shorea stenoptera*, *S. macrophylla* and *S. robusta* also serve as sources of non-timber forest products (resins and oil production from seed) and generate income for local communities. However, because of their high economic value, growing demand for timber and agricultural land, these species are threatened by overexploitation, illegal logging and habitat conversion. Their conservation status is further hampered by unsustainable seed collection practices, limited natural regeneration and limited interest to establish plantations for commercial purposes (with the exception of Teak) because of slow growth rates. As the commercially most desired species are fast depleting, pressure is shifting on a widening group of related species.

Recognizing these threats, the Convention on International Trade on Endangered Species (CITES) in 2016 placed trade restrictions on the entire genus of *Dalbergia*. Endangered *Shorea* species on the IUCN Red List of Threatened Species include, among many others, *S. leprosula*, *S. lamellata*, *S. lumutensis*, *S. hemsleyana ssp. hemsleyana*, *S. peltata*, *S. roxburghii*, *S. stenoptera* and *S. teysmanniana*. Yet, the actual conservation status of many of the species is uncertain at the lack of up-to-date information on their distribution and population status.

There is an urgent need for concerted efforts to conserve these species and their genetic diversity and to develop strategies for their sustainable use across their distribution range, to contribute to local, national and regional economies. There are existing models for conserving and sustainably using the tree genetic resources through involving local communities and contributing to their livelihoods, and such models could be adapted to other species and countries in the region.

This Objective has the following targets:

* Genetic diversity and phylogeography of *Dalbergia spp.* and *Shorea* spp. is assessed
* Conservation strategies and germplasm collection guidelines established for selected *Dalbergia* spp. and *Shorea* spp.
* Germplasm of *Dalbergia spp.* is collected in each country within their distribution range to support their conservation *in situ* and *ex situ*, tree breeding and sustainable use in the region
* Regional species and provenance trials are established for *Dalbergia* spp. and *Shorea* spp. for gene conservation and tree breeding purposes
* Regional networking and partnerships related to conservation, management and sustainable use of common priority species are enhanced (including but not restricted to *Dalbergia* and *Shorea* spp. and Teak)

The work under this objective contributes, in particular, to the following Strategic Priorities of the Global Plan of Action:

* Establish and strengthen national FGR assessment, characterization and monitoring systems (Strategic Priority 1)
* Promote the establishment and development of efficient and sustainable ex situ conservation systems, including in vivo collections and genebanks (Strategic Priority 6)
* Develop and implement regional in situ conservation strategies and promote ecoregional networking and collaboration) (Strategic Priority 11)

**4. Strengthen tree seed supply systems to facilitate ecosystem restoration,**

**support local livelihoods and climate change adaptation and mitigation**

Well-functioning supply systems for tree seed are crucial for forestry, agroforestry and forest and landscape restoration. Close to 5 million hectares were planted annually to trees between 2000 and 2010, according to the Global Forest Resources Assessment of FAO. Many countries in the Asia-Pacific region have established large-scale national tree planting and restoration programmes with the aim of restoring and reforesting millions of hectares of land, such as the Great Green Wall of China, the Green Mission of India and the National Greening Programme of the Philippines. Such programmes require enormous amounts of quality tree seed and seedlings, especially of native tree species which are usually preferred for ecosystem restoration. Using planting material of appropriate origin is also crucial for adaptation to climate change and for enabling subsequent mitigation through sustained biomass growth.

However, there is widespread lack of awareness about the importance of genetically diverse, quality seed, and lack of documented seed sources. Lack of, or poorly enforced, regulations on forest reproductive material have in many cases resulted in mass production of seedlings of unknown origin and quality, often with narrow genetic base, and in their uncontrolled transfer within and across national borders. The potential of natural regeneration as a restoration method is not fully recognised, however, it, too, depends on the availability of adequately diverse seed sources.

Discontinued government and donor support for national tree seed supply systems and the prevalence of tree farms by small-holders in the region justify the development of market- or demand-driven decentralized seed supply systems. Decentralized seed supply systems can both help meet the demand for seed and provide income for local communities, and there are already promising models in the region that could be tested and adapted in other countries.

This objective has the following targets:

* Tools for selecting genetically diverse seed for forest and landscape restoration in changing environments
* Tools to identify priority areas and limitations of natural regeneration as a restoration approach
* Guidelines for identifying and developing effective seed supply systems
* Policy recommendations for scaling up successful restoration models

The work under this objective contributes, in particular, to the following Strategic Priorities of the Global Plan of Action:

* Develop and reinforce national seed programmes to ensure the availability of genetically appropriate tree seeds in the quantities and of the (certified) quality needed for national plantation programmes (Strategic Priority 12)
* Promote restoration and rehabilitation of ecosystems using genetically appropriate material (Strategic Priority 13)
* Promote the participation of indigenous and local communities in FGR management in the context of decentralization (Strategic Priority 22)

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| **How APFORGEN operates**Each member country of APFORGEN appoints a National Coordinator to serve as a link between the country and the network. The National Coordinators elect among themselves a Chair, up to two Vice-Chairs and a Secretary to coordinate the network’s activities, for a three-year term at a time. APFORGEN’s day-to-day activities are managed by a Secretariat, typically hosted by the Chair’s organisation. Bioversity International, a CGIAR research centre, provides technical support to APFORGEN. APFORGEN also collaborates with Asia Pacific Association of Forestry Research Institutions (APAFRI) and Food and Agriculture Organization of the United Nations (FAO).At the time of the development of this strategy, APFORGEN is chaired by Professor Zheng Yongqi from the Chinese Academy of Forestry (2017-2019). Forestry authorities, national and regional research organisations in Asia and the Pacific may apply to join APFORGEN to benefit from the network’s activities.  |

**IMPLEMENTATION**

APFORGEN’s four strategic objectives are in line with the Strategy for the Implementation of the Global Plan of Action on FGR[[4]](#footnote-4),which foresees action in, among other issues, advocacy and international awareness, development and support of relevant global and regional networks, and supporting countries in the development of national and regional strategies and in securing adequate and sustainable funding for the implementation of the Global Plan of Action on FGR.

APFORGEN has established four Working Groups to implement the objectives of the Strategy. Membership of the Working Groups is open to interested parties. More information about the Working Groups is available from [www.apforgen.org](http://www.apforgen.org)

To support the effective implementation of the Global Plan of Action on FGR, and to harness the full potential of FGR for the Sustainable Development Goals, APFORGEN seeks to:

* Enhance the integration of conservation and sustainable use of FGR into relevant processes and programmes, from local to national and regional levels. This will not only help to conserve FGR, but also to implement the wider land use programmes more effectively by enhancing productivity and adaptive capacity. Relevant programmes include, but are not restricted to, national forest and land use policies and legislation, National Forest Programmes, National Biodiversity Strategies and Action Plans (NBSAP), National Adaptation Plans for Climate Change, REDD+, and national and regional strategies for forest and landscape restoration.
* Establish partnerships with research, extension and education institutions, civil society organizations and the international community to pool expertise, share good practices, build on synergies and raise the visibility of FGR
* Strengthen human capacities through the Asia Pacific Regional Training Centre on Forest Genetic Resources, development of training materials, and mentoring and scientific exchange programmes, to cultivate the next generation of experts in FGR conservation and management in Asia and the Pacific
* Mobilize resources for implementing this programme of work, including through regional research and development projects. At the same time, sustained commitments that help transform FGR research and management from project-based towards programme-based approaches will be particularly helpful. Contributions of core funding to support strategic planning, communication, and policy dialogue will also be valuable to sustain the regional network.

APFORGEN cordially invites countries and institutions in the region, the private sector, and the international community to collaborate with the network and invest human and financial resources for the implementation of the Global Plan of Action on FGR in the region. Forestry authorities, national and regional research organisations in the Asia-Pacific region are welcome to join as network members.

**Contributing organizations**

* Institute of Forest and Wildlife Research and Development, Forestry Administration, Cambodia
* Research Institute of Forestry, Chinese Academy of Forestry, China
* Center for Forest Biotechnology and Tree Improvement, Ministry of Environment and Forestry, Indonesia
* Forest Research Center, National Agriculture and Forestry Research Institute, Ministry of Agriculture and forestry, Lao PDR
* Forest Research Institute Malaysia
* Forest Research Institute, Myanmar
* College of Forestry and Natural Resources, University of the Philippines Los Baños
* Sri Lanka Forestry Institute
* Royal Forest Department and Department of National Parks, Wildlife and Plant Conservation, Thailand
* Viet Nam Academy of Forest Science
* Forest Resources Division, National Institute of Forest Science, Republic of Korea
* Bioversity International
* Asia Pacific Association of Forestry Research Institutions

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**Contact:**

APFORGEN Secretariat

c/o Research Institute of Forestry, Chinese Academy of Forestry

XiangShan Road, Dongxiaofu No.1, Haidian district,
Beijing, People's Republic of China

ZHENG Yongqi (Chair)

Tel: +86 10 6288 8565

Email: zhengyq@caf.ac.cn

HUANG Ping (Coordinator)

Tel: +86 10 6288 9592

Email: huangping\_caf@126.com

[**www.apforgen.org**](http://www.apforgen.org)

1. Based on the country reports of 20 countries in the region: Azerbaijan, China, India, Indonesia, Japan, Kazakhstan, Kyrgyzstan, Myanmar, Nepal, Philippines, Republic of Korea, Sri Lanka, Thailand, Uzbekistan; Australia, Cook Islands, Fiji, Papua New Guinea, Solomon Islands, and Vanuatu. Source: FAO 2014. State of the World’s Forest Genetic Resources. Commission on Genetic Resources for Food and Agriculture. FAO, Rome, Italy. Available from: <http://www.fao.org/3/a-i3825e.pdf> [↑](#footnote-ref-1)
2. Source: as above [↑](#footnote-ref-2)
3. FAO 2014. The Global Plan of Action for the Conservation, Sustainable Use and Development of Forest Genetic Resources. Commission on Genetic Resources for Food and Agriculture. FAO, Rome, Italy. Available from: <http://www.fao.org/3/a-i3849e.pdf> [↑](#footnote-ref-3)
4. Adopted by the Commission on Genetic Resources for Food and Agriculture at its 15th session in January 2015. Available from <http://www.fao.org/3/a-mm660e.pdf> (Annex E). [↑](#footnote-ref-4)