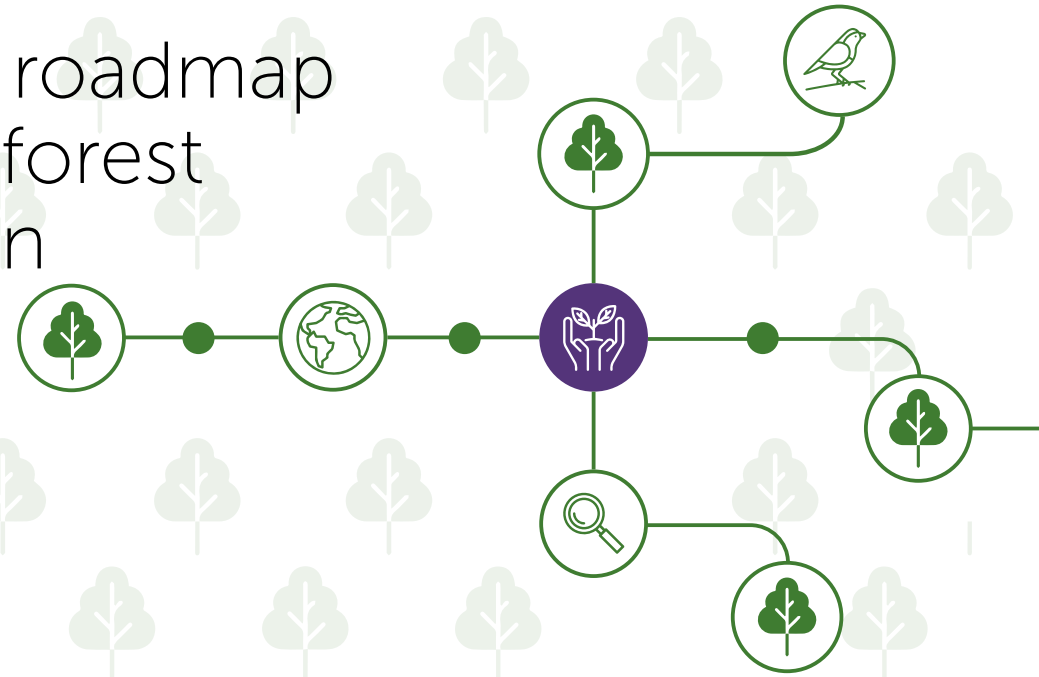
Food and Agriculture Organization of the United Nations

FTA BRIEF

July 2022 • Issue 9

DOI: 10.17528/cifor/008539

Asia-Pacific roadmap for primary forest conservation



Key messages

- Remaining intact forests still covered 519 million ha in the Asia-Pacific region in 2020. Of these, 378 million ha are intact contiguous forests. This area is wider than the 140 million ha reported by countries to the FAO Global Forest Resources Assessment (2015) as "primary forests."
- Large-scale remote-sensing assessments of some formations, notably seasonal forest and woodland types, need to be complemented by field surveys to properly identify and map the different primary forest types corresponding to FAO's definition.
- While the vast diversity of forest formations in the Asia-Pacific region is known, there is a considerable lack of knowledge about the eco-floristic variation observed within each forest type, the possible causes of this variability, and the distribution and population dynamics of many tree species important for primary forest conservation. Large-scale ecological vegetation mapping and related socio-ecological surveys integrating altitudinal zonation, edaphic conditions and vegetation, including floristic information, need to be developed and become standard.
- Primary forests and natural landscapes in Asia and the Pacific are under increasing pressures and threats driven by population growth, migrations and conflicts, globalization and economic growth, urbanization, mining and infrastructure development, agriculture and planted forest expansion, forest fires, invasive species and disease outbreaks. Many of these threats are increasingly exacerbated by climate change. Policy coherence across sectors and scales and context-specific action plans, at fine scale of

Continued on next page

CGIAR

RESEARCH PROGRAM ON Forests, Trees and Agroforestry

Key messages. *Continued*

management, are needed to address these threats. A large part of the remaining intact forests falls outside protected areas and is used for multiple objectives. Hence, different mechanisms and tools, including other area-based conservation measures, integrated landscape approaches and community-based management, need to be mobilized at different scales. These mechanisms and tools come in addition to and in support of legal protection, to allow effective protection and conservation of primary forests to cope with a broad range of threats in a variety of situations and to ensure socio-ecological sustainability.

Overarching recommendations

1. Explore innovative ways to improve monitoring and reporting on primary forests.
2. Improve the knowledge and understanding of the functioning and dynamics of primary forest ecosystems within broader landscapes to orient land-use planning, management and conservation efforts.
3. Build a compelling narrative for primary forest conservation and consolidate new coalitions of actors.
4. Ensure policy coherence across sectors and scales and promote integrated landscape approaches for primary forest conservation.
5. Align sustainable land use, climate action and biodiversity objectives for the conservation of primary forests.
6. Strengthen regional and international cooperation for the conservation and management of primary forests.

Following up on the Third Asia-Pacific Forest Sector Outlook Study (APFSOS III: FAO, 2019), FAO and CIFOR, lead center of the CGIAR research program on Forests, Trees and Agroforestry (FTA), developed a roadmap for primary forest conservation in Asia and the Pacific. The geographical scope of the roadmap, referred to in this brief as the "Asia-Pacific region", comprises 49 countries and territories. To account for its huge diversity, the Asia-Pacific region is further divided into four sub-regions, as defined in APFSOS III (FAO 2019): East Asia, South Asia, Southeast Asia and Oceania. This roadmap has been developed through an inclusive and participative process involving 425 key regional stakeholders and technical experts from governments, intergovernmental organizations, the private sector, civil society organizations, academia, and research institutions, as well as selected students and young people involved in the forest sector in the Asia-Pacific region.

This policy brief informs the process and key steps by which decision-makers and actors can evaluate the state of primary forests in the region, identify priority areas and priority actions for primary forest conservation, assess the threats they face, and explore possible ways to address them. The following sections are organized along these steps. Key recommendations for decision-makers, emerging from this work, are presented in the last section.

1. Remote sensing assessment of primary forest cover in Asia-Pacific

FAO, in its Global Forest Resources Assessment (FRA), defines *primary forests* as "naturally regenerated forests of native tree species, where there are no clearly visible indications of human activities and the ecological processes are not significantly disturbed" (FAO 2018).

Laumonier et al. (2022) applied this FAO definition using a consistent remote sensing methodology leading to identify areas referred to as "intact forests" and describe deforestation, degradation and fragmentation affecting primary forests in the Asia-Pacific region.

Figure 1. Gwan Peak, Mt Palong in Gyeongsan, South Korea. © Vincent Gitz

By construction, *intact forest* areas identified by remote sensing do not necessarily correspond exactly to the *primary forest* areas as reported to the FRA by each national government (as countries chose their own method and underlying data). This study used Landsat satellite data to assess historical changes, deforestation, degradation and fragmentation in natural forest cover in 2000, 2010 and 2020, with the view to subsequently identify the remaining intact forests. The pertinence of several remote sensing methods was tested to cover very diverse environments, from the Islamic Republic of Iran and Afghanistan to New-Zealand and the Pacific, with tropical and equatorial regions in between.

Having first identified natural forest cover, degradation within these natural forests was assessed, leading to an estimation of so-called *intact forests*. By assessing the fragmentation of these intact forests, isolating large core areas and excluding forest edge zones, contiguous intact forest cover was identified, which is the best possible estimation through remote sensing techniques of what can be considered primary forests per the FAO definition. The results show that Asia-Pacific natural forest cover decreased from 667 million ha in 2000 to 609 million ha in 2020, with a 3% difference compared to the FRA 2020 assessment on average at the regional level. This work also allows to visualize the dynamics of deforestation and to identify hotspots of deforestation. In 2020, intact forests still covered 519 million ha in the Asia-Pacific region, of which an important 378 million ha of remaining contiguous intact forest cover, broader than the 140 million ha reported by countries to the FRA as primary forests according to FAO (2019) based on data from the FRA 2015.

Remnant forest fragments, forest margins and edge effects are of importance. Degraded forest margins can still play a key role in primary forest conservation by acting as buffer zones to protect the core intact forest area against further degradation, while remaining forest fragments can act as stepping stones for ecological corridors contributing to ensuring or strengthening

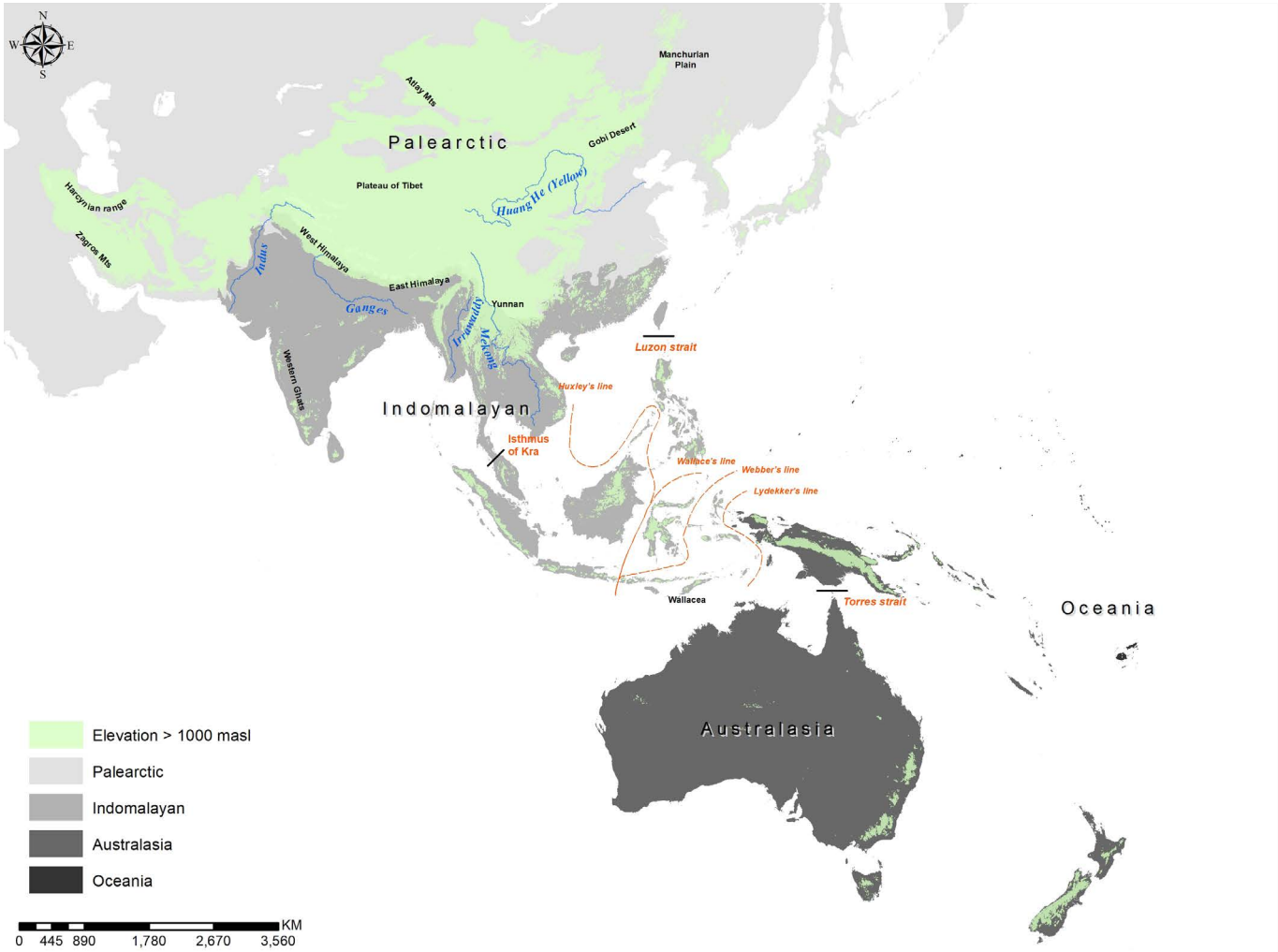


Figure 2. Biogeography of the Asia Pacific region.

Source: coastline from the FAO Global Administrative Unit Layers (GAUL) database. Biogeographic realms and demarcation lines adapted from van Welzen et al. 2011. The 1000 m elevation contour line is taken from the Shuttle Radar Topography Mission (SRTM) digital elevation data with a resolution of 1 arc-second (~ 30 meters).

connectivity among remaining forest fragments and intact contiguous forests.

2. A remarkable diversity of forest types in Asia and the Pacific

There is a considerable diversity of primary forests in Asia and the Pacific, depending on bioclimatic conditions, altitudinal zonation and soils characteristics. In line with existing classifications, 30 main forest formations have been identified across the region, from tropical mixed dipterocarp rainforests to tropical and sub-tropical seasonal forests, and temperate or boreal forest formations, including more specific forest types such as peat swamp forests or mangroves, and their variations observed along altitudinal gradients. All lowland forest types are situated in areas particularly threatened by deforestation and forest degradation, as are the high elevation formations of the Himalayas. Conservation strategies need to integrate this huge diversity as all and each specific forest type deserve to be preserved.

There are considerable knowledge gaps regarding the eco-floristic variations observed within each forest type, and about the causes of this variability beyond elevation, soil and climate. For instance, very distinct tree species compositions can coexist under very similar climatic and edaphic conditions. A lot also remains to be discovered about species distribution,

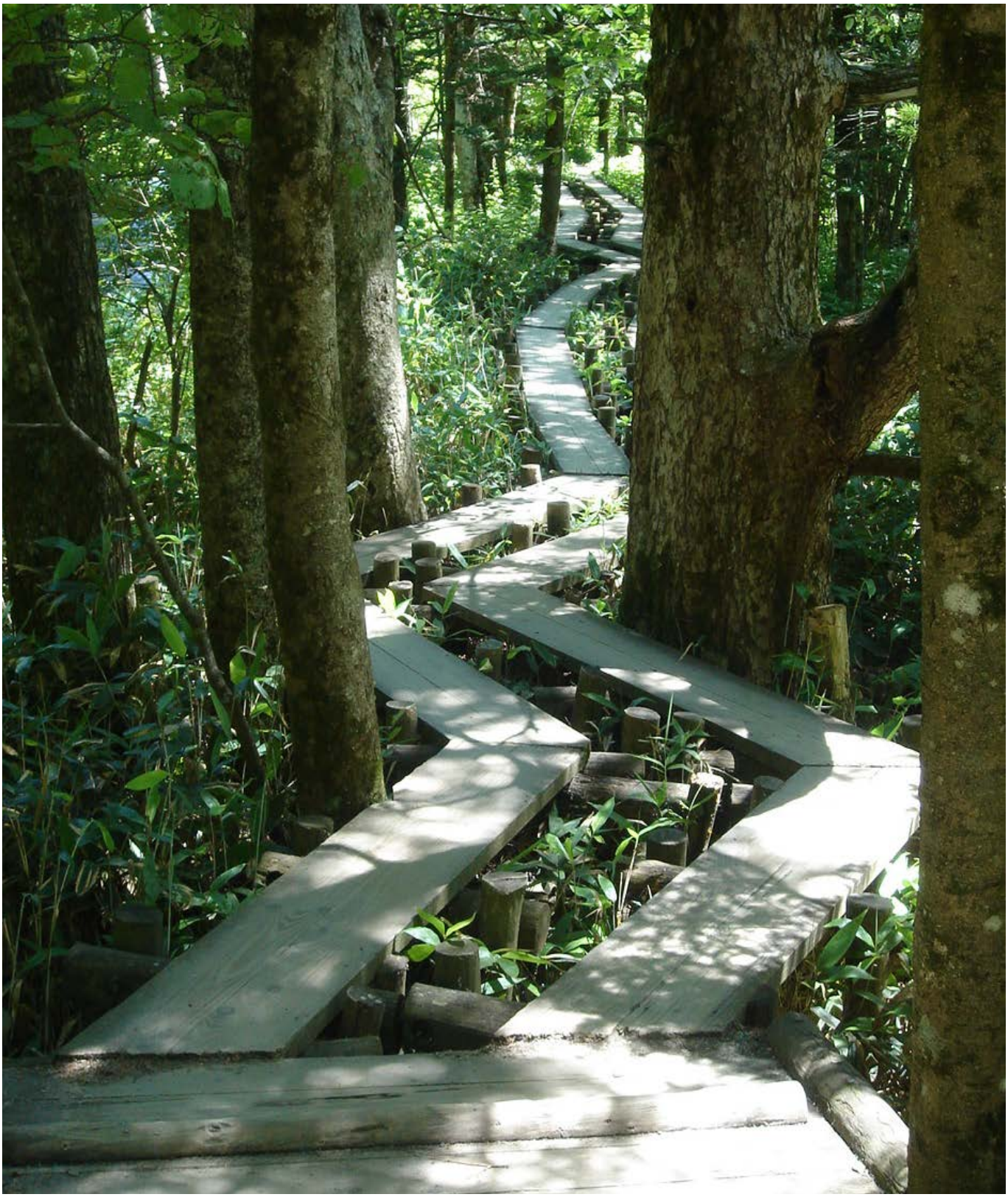


Figure 3. Protected montane forest in the Chūbu-Sangaku National Park in the Hida Mountains range in Kamikōchi, Japan.
© Vincent Gitz

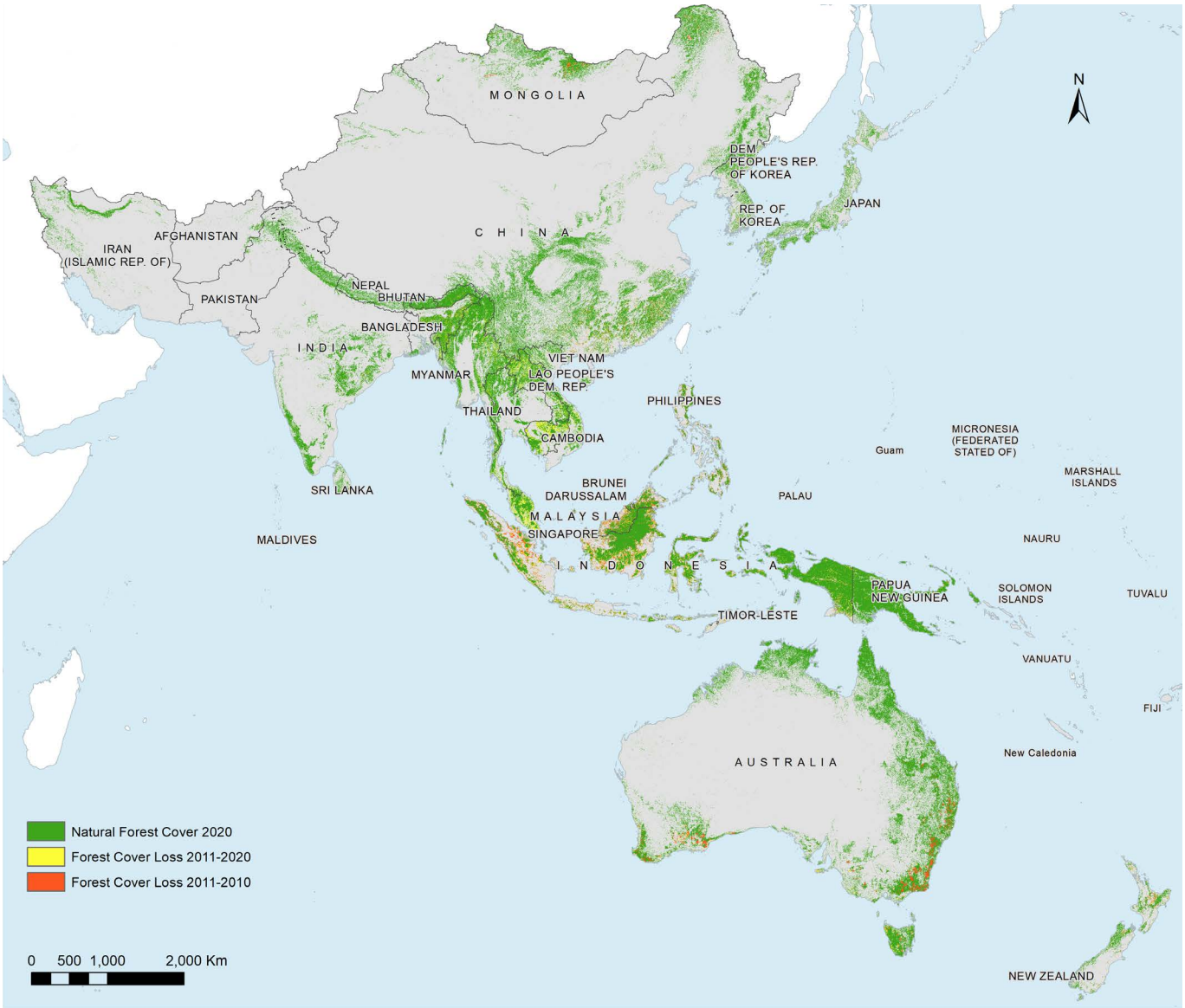


Figure 4. Natural forest cover change, deforestation map for the 2001–2010 and 2011–2020 periods for the Asia–Pacific region. The Asia-Pacific natural forest cover 667 million ha in 2000, declining to 643 million ha in 2010 and 609 million ha in 2020. Explanation of the methodology in the main report.

Source: FAO Global Administrative Unit Layers (GAUL) database. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. Free-cloud composite of Landsat 5 TM (2000 & 2010), and Landsat 8 OLI (2020), rescaled to 100 m spatial resolution.

population dynamics, and the conservation status of many important tree species, especially in the tropics.

At the landscape level, vegetation types are the best surrogates to characterize ecosystems and the ecosystem services they provide. Large-scale ecological vegetation mapping and related socio-ecological surveys integrating altitudinal zonation, edaphic conditions, and including floristic information, also need to be developed and become a standard in the Asia-Pacific region. Open-access datasets of high-resolution satellite data, eventually complemented by drone surveys, offer huge opportunities for accurate and near-real-time monitoring and allow the production of large-scale detailed vegetation mapping over large areas, long periods of time, using consistent methodologies and at reasonable

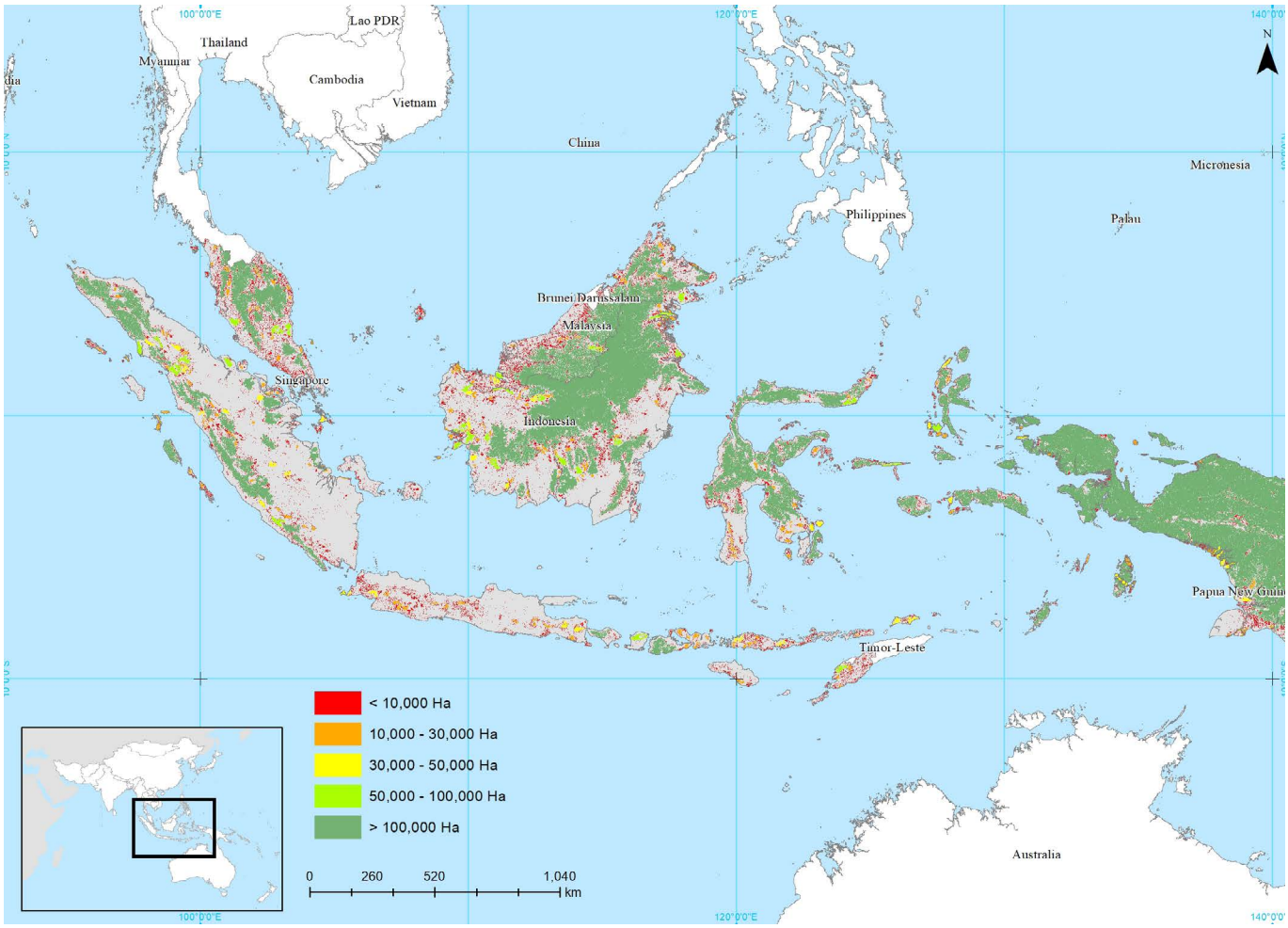


Figure 5. The fragmentation analysis of this study considered 100,000 ha, 50,000 ha, 30,000 ha and 10,000 ha as size thresholds for forest patches. In many countries, forest fragmentation has intensified, and not only intact forest cover has decreased over the past two decades, but the number of small patches, as well as their isolation, has increased. In some countries, forest patches larger than 100,000 ha are the exception. Source: Landsat 8 OLI (2020), rescaled to 100 m spatial resolution.

costs. Wall-to-wall on-screen visual interpretation of the vegetation made by experts will remain crucial to establishing such large to very large-scale ecological mapping. At the same time, it will be necessary to build capacity and enhance knowledge management at the country level to ensure wide ownership of outputs.

3. Increasing pressures and threats on primary forests: assessing risks

Primary forests and natural landscapes in Asia and the Pacific are under increasing pressures and threats driven by population growth, migration, conflict, globalization and economic growth, urbanization, mining and infrastructure development, agriculture and planted forest expansion, forest fires, invasive species and disease outbreaks. Many of these threats are increasingly exacerbated by climate change.

According to the UN's medium-variant projection, the world's population is expected to grow from 7.7 billion in 2019 to 8.5 billion in 2030 (a 10% increase) and 9.7 billion in 2050 (a 26% increase). In the meantime, the population of the Asia-Pacific region is expected to grow, albeit at a slower pace, from 4.3 billion in 2019 to 4.6 billion in 2030 (a 7.5 % increase) and 4.9 in 2050 (a 13 % increase). Demand for food, feed and wood will grow significantly due to both population and economic growth, which will exert additional pressure on primary forests.

Agriculture expansion, urbanization and infrastructure development exacerbate forest fragmentation and

Figure 6. Limestone outcrops are spread throughout Southeast Asia. They harbor unique very fragile ecosystems. Their high rate of endemism, plus the natural beauty of the scenery, make them a priority for conservation, but most karst mountain ranges are located outside legally protected areas. The main threat affecting limestone formations is their use as quarries for the cement industry and fire. © Yves Laumonier

generate soil, water and air pollution, which can further increase forest degradation. Over-logging and illegal logging are identified as major threats to biodiversity.

Climate change induces a vicious circle, by accelerating forest degradation, which may in turn reduce the resilience, mitigation potential and adaptive capacities of forest ecosystems. Due to global warming, climatic zones are shifting poleward and upward in mountainous regions. This climatic shift might occur faster than the migration speed of many plant or animal species and particularly threatens mountain forests. Furthermore, climate change is likely to alter rainfall regimes and the availability of water resources, leading to increases in rainfall throughout much of the region, including greater

Figure 7. Mangroves in the Indo-Pacific region are among the most carbon-rich tropical forests, but are also under high risk of extinction. They are highly threatened by the effects of climate change, sea level rise and increasing pressure from human population growth in coastal regions. © Yves Laumonier

rainfall during the summer monsoon period in South and Southeast Asia. Climate change will likely increase the intensity and frequency of forest fires, typhoons, floods, droughts, species invasion, pests and disease outbreaks. The local impacts of climate change on biodiversity and ecosystem services are likely to vary across forest types and geographical regions and are very hard to predict due to the low resolution of most climate change models.

Invasive species affect many natural ecosystems in the region and their impacts are exacerbated by climate change. Most of these species, especially tree species, have been introduced for economic reasons or through ill-conceived programmes of reforestation. Invasive insect pests are often associated with introduced tree species. Islands (including forest fragment "islands") are particularly sensitive to invasive species. Degradation and fragmentation increase the vulnerability of ecosystems to invasive species, while highly diverse ecosystems, such as tropical rainforests, seem to be more resilient than their temperate counterparts to such invasive species.

Traditional knowledge and wisdom of Indigenous Peoples and local communities (IPLCs), including cultural and religious aspects, play a central role for the conservation of primary forests and for sustainable landscape management in Asia and the Pacific. Many biodiversity hotspots are located in Indigenous Peoples' territories and deforestation rates are significantly lower in forest areas under the stewardship of Indigenous

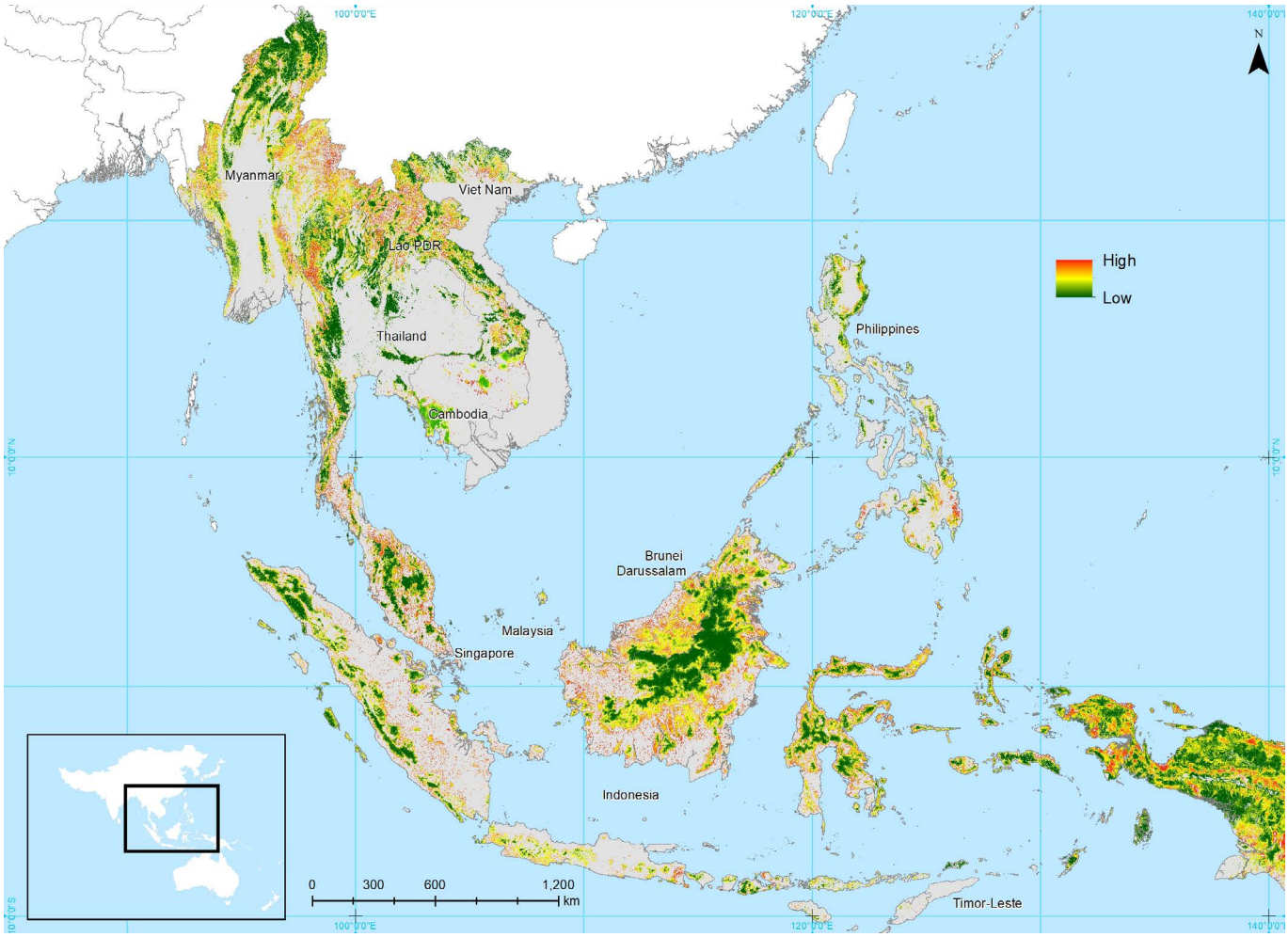


Figure 8. Deforestation risk model

The *"forestatrisk"* Python package was used to model the spatial probability of deforestation risk and predict probable forest cover in the region in 2050. The model uses the deforestation maps and drivers of threat such as distance to roads, distance to settlements, distance to deforestation and distance to forest edge, weighted by altitude and slope. Source: Landsat 5 TM and 8 OLI (distance to deforestation and distance to forest edge), OpenStreetMaps (distance to roads), Global Human Settlements Layer (Pesaresi and Freire 2016, distance to settlements), SRTM Digital Elevation Model 30 meter (altitude and slope).

Peoples. Safeguarding and strengthening the rights of Indigenous Peoples is thus vital to preserving forests and biodiversity and fighting climate change. Youth out-migration from rural areas affects the transmission of traditional knowledge, threatening the traditional way of life of Indigenous Peoples as well as the natural ecosystems upon which they depend.

Tensions and conflicts over natural resources (land, forests and water) can lead to armed conflicts and even war, further affecting biodiversity and forest ecosystems. The transfer of land is a major threat, especially land grabbing by large corporations in industries such as mining, oil palm and rubber.

Many Asia-Pacific countries still lack the technological, financial and human capacities to monitor and sustainably manage their forest landscapes. Conflicting land uses and mandates, misaligned policies across sectors and scales, corruption, weak governance and weak law enforcement, particularly regarding land access and tenure rights, are also detrimental to primary forest conservation. In some countries, policies have a narrow focus on timber production only, overlooking the multiple non-timber forest products (NTFPs) and ecosystem services that forests can provide.

Figure 9. Most wetlands and periodically inundated freshwater swamp forests have been converted to agriculture. In low lying basins, organic accumulations due to vegetation debris have caused dome-shaped peat deposits to form. The huge ombrophilous peatlands of Southeast Asia have gained much traction in the last 20 years because of their advocated crucial hydrological function and high carbon storage, which is released in the atmosphere when they are converted to agriculture. © Yves Laumonier

4. Governance instruments for primary forest conservation in the Asia-Pacific region

Forest governance is shaped and influenced by a range of actors and institutions operating at different scales (from the local to the international levels), the actions of each group of actors influencing the actions of others.

International agreements and instruments do not usually focus on primary forests as such. Instead, primary forest conservation is embedded in or aligned with more global objectives including: the Sustainable Development Goals; the climate targets set in the Paris Agreement; the Aichi biodiversity targets; and the forest landscape restoration global targets. Regional and sub-regional institutions and instruments provide a bridge between international policies and national actions. Regional cooperation is critical as some remarkable intact forest massifs cross national boundaries and as many issues related to primary forest conservation and sustainable forest management (SFM) are transboundary in nature. The Asia-Pacific Forestry Commission can play an important role in stimulating regional cooperation.

National rules and instruments for forest governance and primary forest conservation can include: national commitments that contribute to global objectives; legal protection frameworks; regulation of land tenure and access rights; regulation of logging concessions or even logging bans; prevention of illegal logging and illegal trade of forest products; land-use planning

Figure 10. The most emblematic forests of humid SE Asia, the lowland Mixed Dipterocarp forests are the tallest of all broadleaved tropical rain forests, harbor the highest aboveground biomass and have the highest mean net primary production of any terrestrial ecosystem. They are also the most species-rich, biologically diverse of all ecosystems. They are on the verge of extinction.
© Yves Laumonier

to regulate agriculture expansion, urbanization and infrastructure development; legal incentives such as taxes, subsidies and fiscal transfers; and market-based instruments such as certification schemes or payments for ecosystem services.

The dynamics at play between actors, including power asymmetries, are determinant for the decisions over land and forest use and tenure rights, and therefore for the preservation and sustainable management of a given forest, or for its designation as a Protected Area (PA).

There is a need to build synergies across sectors, including agriculture, water management and land-use planning, and to adopt a more integrated landscape approach (ILA). National policies, rules and instruments frame and orient governance mechanisms at the local level. The active involvement of local actors, Indigenous Peoples and local communities in decision-making around primary forest conservation and SFM is critical because these actors not only heavily depend on forest resources for their subsistence and livelihoods, but also often hold the best knowledge of their specific ecosystem. Community-based forestry is a successful example of a participatory approach used in the region, for primary forest conservation and SFM. The recognition of customary tenure and traditional systems of governance is fundamental to encourage traditional practices that support forest conservation and the sustainable use of forest resources.

5. Mechanisms and tools for primary forest conservation

Protected areas (PAs) are often seen as the main tool to ensure the protection of primary forests. However, PAs cannot be the only mechanism to ensure protection of primary forests against deforestation, degradation and fragmentation. Many intact forests and forest types are not covered by national parks and other legally protected conservation areas and PAs are often established in remote or inaccessible areas (e.g. mountains) with lower levels of threats and of competing demands on land. Moreover, PAs alone are often insufficient to protect the areas where they are established. Hence, while it may be possible in some places to increase the extent of PAs, a range of mechanisms and tools needs to be mobilized at different scales in addition to and in support of PAs.

Various mechanisms and tools can be combined to address a diversity of threats and situations. Legal protection remains the main governance tool for primary forest conservation in the region, but existing protections are sometimes weakly enforced. Enhancing ecological connectivity between PAs and other effective area-based conservation measures (OECMs), as opposed to increasing the size of a few isolated PAs, is of paramount importance for effective forest and biodiversity conservation, as this facilitates species flow, adaptation to climate change and the provision of ecosystem services. Certification and voluntary agreements can help address commercial agriculture expansion as well as wood over-harvesting, either legal or illegal, both of which have been identified as major threats to primary forest conservation in the region. Innovative technologies and the involvement of civil society and IPLCs can improve forest monitoring by providing accurate, real-time, transparent and accessible information about forest status and trends, threats and their drivers. In turn, such an improved monitoring allows more transparent, flexible and reactive governance, thus supporting primary forest conservation and SFM. Finally, adequate financial resources and innovative financial tools that connect large funds to small projects have been identified as an important condition for the effective conservation of primary forests.

6. Recommendations and roadmap for primary forest conservation in Asia and the Pacific

Primary forest conservation and protection require: (i) an improved knowledge of the different types of forests at finer scales, of their status, trends and functioning, including through large-scale ecological mapping and studies on species distribution and species population trends, and the various threats they face, driven by land-use, land cover and climate changes; (ii) a compelling narrative, i.e. a shared vision and clear picture of the various values of primary forests and challenges ahead, developing large-scale, multistakeholder, socio-ecological programmes in each country of the Asia-Pacific region; (iii) a clear understanding of land tenure and responsibilities; and, (iv) efficient mechanisms to connect large funds to small projects.

This will allow: (i) the alignment of various sustainable development objectives; (ii) the adoption of cross-sectoral, integrated approaches, particularly at the landscape level, where all of these objectives need to be balanced; (iii) the consolidation and involvement of large coalitions of actors, not only those living close to forests, but also distant actors that are somehow connected to forests; and (iv) the harnessing of the potential of innovative technologies to support improved monitoring and reporting, as well as inclusive and participatory governance and decision-making processes.

Six areas for recommendations to enhance primary forest conservation in Asia and the Pacific have emerged from the collective process of elaboration of this roadmap: (i) explore innovative ways to improve monitoring and reporting on primary forests; (ii) improve the knowledge and understanding of the functioning and dynamics of primary forest ecosystems within broader landscapes to orient land-use planning, management and conservation efforts; (iii) build a compelling narrative for primary forest conservation and consolidate new coalitions of actors; (iv) ensure policy coherence across sectors and scales and promote integrated landscape approaches for primary forest conservation; (v) align sustainable land-use, climate action and biodiversity objectives for the conservation of primary forests; and (vi) strengthen regional and international cooperation for the conservation and management of primary forests.

These six overarching recommendations provide an overall framework for defining the main areas of work for primary forest conservation in the region. Under these, 41 actionable options are suggested, to be applied, as appropriate, at different levels (regional, national, local) and in different contexts to support the implementation of the roadmap (Section 6.1). These 41 options can be prioritized by governments and other relevant actors depending on their own specific context, circumstances, needs and political priorities. Each option can then be further refined and adapted to this specific context. A four-step guideline is presented on how to facilitate the design, declination and implementation of an actionable roadmap at different scales and in different contexts (Figure 11, Section 6.2).

6.1 Recommendations

I. Explore innovative ways to improve monitoring and reporting on primary forests

1. Support the uptake and upscale of innovative technologies to enable accurate and real-time monitoring and data collection, using consistent methods over large areas, long periods of time, at lower costs (e.g. remote-sensing satellite or drone observations in inaccessible areas; acoustic monitoring, etc.).
2. Support the uptake and upscale of innovative technologies to improve reporting, information sharing and data analysis, and develop near-real-time alert systems on forest degradation and associated risks such as fires (e.g open cloud-data platforms integrating various information and datasets collected by different actors).
3. Support local actors and communities' engagement and participation in monitoring and data collection (e.g. through citizen-science initiatives and crowdsourcing of field data; using digital technologies, such as mobile apps or open-data platforms) and uptake their observations in decision-making at higher levels.
4. Clarify and harmonize national definitions, criteria, and indicators used to monitor forest status and trends (e.g. on definitions: primary vs. intact, old-growth or natural forests. On criteria: minimal forest fragment size, level of importance, including biological diversity, level of threats, etc.).
5. Improve transparency and replicability of reporting, in line with international processes and guidelines (e.g. ITTO guidelines, IPCC or IUCN guidelines, FAO Global Forest Resources Assessments guidelines).
6. Improve monitoring and reporting on tenure status and rights, including on customary and traditional rights.
7. Link such monitoring (including of social impacts) to commodity value chains, and to incentives; both to gather data and give value to it.
8. Link the data gathered through reporting to other relevant contextual environmental, socio-economic, institutional information, especially at the country level.

II. Improve the knowledge and understanding of the functioning and dynamics of primary forest ecosystems within broader landscapes to orient land-use planning, management and conservation efforts

1. Dedicate increased resources, in each country of the Asia-Pacific region, to improving the knowledge and understanding of forest ecosystems, their ecological diversity, intactness, fragmentation level, species composition, population dynamics and functioning.
2. Integrate the knowledge of local and Indigenous actors; co-produce knowledge with local actors (e.g. citizen-science initiatives at local or national level).
3. Acknowledge and assess the different values (environmental, economic, social, cultural, religious and existence values) of forest ecosystems and of the ecosystem services they provide, taking into account all available knowledge, including local and Indigenous knowledge.
4. Use these assessments to reflect the value of primary forests and of the ecosystem services they provide, in integrated systems of environmental and economic accounting, and to better ground conservation policies and landscape management actions.
5. Use this knowledge to define and identify priority areas for conservation or protection, based on clear criteria, agreed nationally and grounded on sound evidence, and to orient land-use planning. (Criteria such as: minimal forest fragment size; level of importance – including ecological value, cultural value, ecosystems services –; and level of threats).
6. Translate this knowledge into a compelling narrative and make it available, through training and capacity-building, to all actors involved in Integrated Landscape Approaches, SFM and primary forest conservation or protection, or in

activities that impact forest ecosystems, as well as to the broad public.

7. Identify the key knowledge and information gaps that need to be addressed to support land-use planning and conservation efforts, including:
   - Large-scale (minimum of 1:50,000 for all countries; 1:25,000 for small islands) ecological vegetation mapping including forest types and surrounding agricultural matrix to adapt conservation efforts to the specific circumstances of different landscape and ecosystems;
   - Coordinated studies on fragmentation, composition and configuration of landscapes (natural forests, remnant forests and other land uses, connectivity issues);
   - Better understanding of: tenure regimes; PA status of different areas; primary forest status outside PAs.

III. Build a compelling narrative for primary forests conservation and consolidate new coalitions of actors

1. Build a compelling narrative, highlighting the amazing contributions of forests, and in particular of primary forests, to sustainable development objectives (including climate change mitigation and adaptation, protection of biodiversity and poverty reduction).
2. Adopt a cross-cutting perspective and articulate this narrative consistently: over time (integrating short- and long-term); across sectors and actors (identifying synergies and mutual benefits and addressing trade-offs); and, across scales (from local to global).
3. Pay a specific attention to primary forest margins and forest borders, as the frontier of conservation, and as the thin line where most conflicts are concentrated.
4. Use this compelling narrative, as well as the related knowledge and information (maps, data, plans), to: improve transparency, raise awareness and encourage buy-in; build large coalitions of actors and strengthen ownership across actors and sectors; gain traction on the political agenda and enable policy coherence; attract funding and deliver true impact.
5. Encourage and incentivize landowners and private actors (including remote ones) to contribute to primary forest conservation, through regulation, standards and incentives.
6. Strengthen ownership and encourage participation of less powerful actors, including women, youth, IPLCs, in forest governance and decision making processes, and make the forestry sector more attractive to them.
7. Secure the tenure, access and use rights of IPLCs dependent on primary forests for their subsistence and livelihoods.

IV. Ensure policy coherence across sectors and scales and promote integrated landscape approaches for primary forest conservation

1. Enhance policy coherence over time, as well as between land-use policies (forest, agriculture, infrastructures) and other sectoral policies that impact forests (energy, water, mining), at all levels (local, national, regional), and especially at the landscape level, where all these policies interact.
2. Organize, as appropriate, dialogues at different scales, between foresters, conservationists, policy-makers and other relevant actors involved in the economic sectors that impact primary forest conservation, and encourage these actors to contribute to primary forest conservation by demonstrating their interest to do it.
3. Elaborate sustainable and integrated landscape management plans and strategies, at local and national levels, that strengthen synergies and address trade-offs across land uses, sectors and actors, and that articulate coherently short- and long-term objectives, challenges and opportunities.
4. Ensure that forests are recognized by themselves, not only as a land reserve for agriculture and other sectors, and that sustainable forest management and primary forest conservation objectives are incorporated in broader integrated land-use planning and landscape management plans and strategies, at local and national levels.
5. Consider, in integrated land-use planning and landscape management plans, not only conservation areas but also the surrounding landscapes, as well as the need to create buffer zones along forest margins and ecological corridors between forest fragments to reduce forest degradation, limit forest fragmentation and restore connectivity.
6. Mobilize sustainable and innovative finance mechanisms (e.g. green bonds, climate bonds, blended finance, impact finance) for integrated

landscape management, that contribute to primary forest conservation.
7. Design appropriate mechanisms to facilitate the flow of financial resources towards local actors on the ground, connecting large funds, including internationally sourced funds, to small projects.

V. Align sustainable land use, climate action and biodiversity objectives for the conservation of primary forests

1. Promote sustainable land use and integrated landscape approaches, integrating the objective of primary forest conservation in the policies and mechanisms related to climate action and biodiversity conservation and sustainable use.
2. Recognize and advocate for the contribution of primary forests to overall adaptation to climate change, and integrate primary forest conservation and management in National Adaptation Plans (NAPs).
3. Take into account, in Nationally Determined Contributions (NDCs), the vulnerability of primary forests, as well as their potential for climate action, both adaptation and mitigation.
4. Recognize, in the design and implementation of the NDCs, the specific biodiversity and conservation values of primary forests, in addition to their carbon sequestration potential.
5. Ensure consistency and maximize the synergies between NDCs and National Biodiversity Strategies and Action Plans (NBSAPs).
6. Consider primary forest conservation objectives in international climate finance mechanisms to orient and prioritize funding.

VI. Strengthen regional and international cooperation for the conservation and management of primary forests

1. Exchange knowledge and lessons learned across countries and categories of actors about defining, identifying and managing primary forests.
2. Transfer technologies, including for mapping and monitoring primary forests and supporting conservation efforts.
3. Track and prevent illegal logging and illegal collection of wood and non-wood forest products in primary forests (innovative technologies can help for wood species identification and tagging).
4. Facilitate capacity-development through appropriate means at regional level (e.g. communities of practice, regional platforms).
5. Facilitate transboundary cooperation for conservation and management of primary forests, in particular for those forests whose importance crosses national borders (e.g. peace parks).
6. Promote international cooperation on deforestation-free commodities.

6.2 Rolling out the roadmap for primary forest conservation

Rolling out the roadmap has four steps, as illustrated in Figure 11: (i) carrying out an initial assessment, building upon a large-scale ecological mapping programme, of the current situation of primary forests; (ii) developing a strategy: defining priorities and means of implementation for primary forest conservation and protection; (iii) creating an enabling environment for primary forest conservation and protection; and (iv) acting collectively and individually.

This four-step process could be implemented and articulated at different scales in a coordinated way: at the regional and national levels on the one hand, and at the local level on the other hand, in each specific forest landscape identified as a priority area for conservation.

At the regional level, relevant process such as the Asia-Pacific Forestry Commission (APFC) could consider setting regional priority areas and priority actions for primary forest conservation. At national level, given the diversity of forest formations in the region, and of the threats they face, regional priorities could be adjusted to account for national circumstances. There is now a wealth of detailed information, relevant at national or even sub-national levels, that can help governments and other actors in the elaboration of national and subnational primary forest conservation strategies.

Starting from the priorities identified at national level, the same exercise could be conducted by local authorities, in each primary forest massif identified as a priority area for conservation at the national level, in collaboration with all actors concerned at the local level. Local actors should be invited to discuss and build a shared and integrated landscape approach, embracing not only the primary forest area to be conserved but also the surrounding landscape and its dynamics (see recommendation IV.5). Such an approach should seek to properly articulate legal protection with the other instruments mentioned above, considering local circumstances.

1. Initial assessment of the current situation of primary forests

- Describe the diversity, status and trends of the different primary forest types, building upon available scientific evidence.
- Identify and assess the threats faced by primary forests, as well as their drivers. Identify the actors involved or to be involved in primary forest conservation (e.g. public authorities, scientists, private forest companies, CSOs, IPLCs).
- Assess the performance of existing instruments (regulations, standards, economic incentives) in supporting primary forest conservation and identify the gaps and needs.

2. Develop a strategy: define priorities and means of implementation for primary forests conservation

- Based on the initial assessment, identify priority areas for primary forest conservation, based on criteria including: size, level of importance, or level of threats.
- Define a strategy and priority actions for primary forest conservation, including measures for primary forests outside PAs
- Define the means of implementation to be deployed (legal protection, other regulations, voluntary standards, economic incentives and governance mechanisms) and adapt their articulation to the given context.

3. Create an enabling environment for primary forest conservation

- Invest in research and development, extension and capacity-development to improve the knowledge and understanding of forest dynamics and ecosystem functioning within broader landscapes to orient land-use planning management and conservation efforts [II].
- Raise awareness and enhance citizen participation in forest monitoring and primary forest conservation [I.3].
- Elaborate conducive policies and regulations to address/overcome the threats identified above and enhance primary forest conservation.
- Mobilize the resources and develop the infrastructure needed for integrated landscape management that contribute to support primary forest conservation [IV.6] and connect large funds to small projects [IV.7]

4. Act collectively and individually for primary forest conservation

- Define the roles and responsibilities of the different actors involved, build a compelling narrative and consolidate new coalitions of actors [III].
- Ensure policy coordination across sectors and scales and align sustainable land use, climate action and biodiversity objectives with primary forest conservation [V].
- Promote integrated landscape approaches [IV], embracing not only the primary forest area to be conserved but also forest margins, as well as the surrounding landscape and its dynamics [III.3, IV.5].
- Exchange knowledge and lessons learned across countries, sectors and actors [VI.1] and adapt strategies and action plans accordingly.

Figure 11. Four-step practical way forward, to roll out a roadmap for primary forests conservation (Numbers between brackets in this figure refer to the above recommendations)

References

FAO. 2020. *Global Forest Resources Assessment 2020: Main report*. Rome. https://doi.org/10.4060/ca9825en

FAO. 2019. *Forest futures – Sustainable pathways for forests, landscapes and people in the Asia-Pacific region*. Asia-Pacific Forest Sector Outlook Study III. Bangkok. 352 pp. http://www.fao.org/3/ca4627en/ca4627en.pdf

FAO. 2018. Terms and definitions. FRA 2020. *Global forest resources assessment 2020.* Forest Resources Assessment Working Paper 188. Rome: FAO. http://www.fao.org/3/I8661EN/i8661en.pdf

Laumonier Y, Azzu N, Adzan G, Narulita S, Khikmah F, Meybeck A, Pingault N and Gitz V. 2022. *Asia-Pacific roadmap for primary forest conservation*. Working paper. Food and Agriculture Organization of the United Nations (FAO), Rome. Center for International Forestry Research (CIFOR), Bogor, Indonesia. CGIAR Research Program on Forests, Trees and Agroforestry (FTA). https://doi.org/10.17528/cifor/008540

Pesaresi M and Freire S. 2016. GHS Settlement grid following the REGIO model 2014 in application to GHSL Landsat and CIESIN GPW v4-multitemporal (1975–1990–2000–2015). European Commission, Joint Research Centre (JRC). https://data.europa.eu/89h/jrc-ghsl-ghs_smod_pop_globe_r2016a

UNDESA (United Nations Department of Economic and Social Affairs). Population Division. 2019. *World Population Prospects 2019: Highlights (ST/ESA/SER.A/423)*. https://population.un.org/wpp/Publications/Files/WPP2019_Highlights.pdf

The designations employed and the presentation of material in this information product do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations (FAO) or the Center for International Forestry Research (CIFOR) concerning the legal or development status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. The mention of specific companies or products of manufacturers, whether or not these have been patented, does not imply that these have been endorsed or recommended by FAO, FTA, CGIAR or CIFOR in preference to others of a similar nature that are not mentioned. The views expressed in this information product are those of the author(s) and do not necessarily reflect the views or policies of FAO, FTA, CGIAR or CIFOR.

The boundaries and names shown and the designations used on these map(s) do not imply the expression of any opinion whatsoever on the part of FAO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers and boundaries. Dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

Citation: Laumonier Y, Azzu N, Adzan G, Narulita S, Khikmah F, Meybeck A, Pingault N and Gitz V. 2022. *Asia-Pacific roadmap for primary forest conservation*. Policy brief. Food and Agriculture Organization of the United Nations (FAO), Rome. Center for International Forestry Research (CIFOR), Bogor, Indonesia. CGIAR Research Program on Forests, Trees and Agroforestry (FTA). https://doi.org/10.17528/cifor/008539

The contents of this Brief are extracted from Laumonier et al. 2022.

RESEARCH PROGRAM ON Forests, Trees and Agroforestry

The CGIAR Research Program on Forests, Trees and Agroforestry (FTA) is the world's largest research for development program to enhance the role of forests, trees and agroforestry in sustainable development and food security and to address climate change. CIFOR leads FTA in partnership with ICRAF, the Alliance of Bioversity International and CIAT, CATIE, CIRAD, INBAR and TBI.

FTA's work is supported by CGIAR Trust Fund: cgiar.org/funders

Some rights reserved. This work is available under a CC BY-NC-SA 3.0 IGO licence

© CIFOR/CGIAR and FAO, 2022
CC0358EN/1/07.22