



# ASIA-PACIFIC FORESTRY COMMISSION

## THIRTIETH SESSION

**Sydney, Australia, 2 - 6 October 2023**

### **BUILDING RESILIENCE TO CLIMATE CHANGE: A FOCUS ON FOREST FIRES AND PESTS AND DISEASES**

#### **Executive Summary**

This document introduces mainstreaming forest resilience in Asia-Pacific. It provides an update on integrated fire management and management of pests and diseases and outlines emerging new trends and priorities potentially benefiting from regional coordination. It proposes measures needed to ensure healthy and resilient forests and to advance a more meaningful One Health approach.

#### **Suggested actions by the Commission**

The Commission is invited to recommend countries to:

- strengthen the One Health approach with focused efforts to minimize health-related threats and enhance the resilience of forests under a changing climate;
- strengthen Integrated Fire Management approaches through improving review and analysis of fires and collaborating to reduce wildfire risk; and
- promote and invest in innovations to monitor and mitigate threats to the health and vitality of forests.

The Commission is invited to recommend FAO to:

- continue capacity building, knowledge exchange and resource mobilization in disaster risk management and address relevant factors that affect the health and vitality of forests, including through the Global Fire Management Hub and related initiatives; and
- continue to promote the One Health approach through collaborative efforts to improve the health and resilience of forests and rangelands, including through the APFISN.

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## I. INTRODUCTION

1. The importance of strengthening efforts to build resilience to climate change in forestry and for forest dependent people is manifest both in observed trends of increasing frequency and severity of climate-related natural disasters and in urgent calls for increased action to increase capacities and preparedness to respond to, and mitigate the impacts of, disaster events. In relation to wildfires, for example, the Twenty-Sixth Session of the Asia-Pacific Forestry Commission (APFC) noted the value of sharing experiences in managing forests to mitigate the impacts of natural disasters including reducing forest fuel loads, establishing national fire monitoring systems and developing participatory approaches. The Commission also requested that FAO provide information and technical support relating to best practices in wildfire responses and transboundary fire management. Similarly, the Twenty-Sixth Session of FAO's Committee on Forestry (COFO) welcomed work on Integrated Fire Management guided by FAO's Fire Management Strategy. It recommended FAO promote equity, diversity, and inclusion of local, indigenous, and traditional knowledge on fire management, and noted with appreciation the FAO and United Nations Environment Programme (UNEP) initiative to co-develop and implement the Global Fire Management Hub. Furthermore, it encouraged FAO to continue work with a diverse set of stakeholders to foster international, regional, and local cooperation on Integrated Fire Management.

2. Forest invasive species (FIS) are non-native organisms, including plants, animals, insects, and pathogens that pose an increasing threat to the health and vitality of forest ecosystems. The importance of urgent actions to enhance capacities for early warnings, rapid action and effective management of forest invasive species incursions has been emphasized in several recent calls. For example, the Kunming-Montreal Global Biodiversity Framework Global Target 6 aims to eliminate, minimize, reduce and/or mitigate the impacts of invasive alien species on biodiversity and ecosystem services by identifying and managing pathways of the introduction of alien species, preventing the introduction and establishment of priority invasive alien species, reducing the rates of introduction and establishment of other known or potential invasive alien species by at least 50 per cent, by 2030, eradicating or controlling invasive alien species especially in priority sites, such as islands. Similarly, the Twenty-Fifth Session of COFO requested FAO to assist Members, upon request, to address the forest-related impacts of emergency, natural disasters and after-outbreak situations, and in establishing long-term prevention, risk mitigation and forest management strategies to address them, as appropriate to national or ecological circumstances, including fires, pests and diseases and drought; and strengthen the respective regional networks and availability of and access to information at national and global levels. The Twenty-Eighth Session of APFC requested that FAO implement a study on the spread of FIS in the context of climate change and propose adaptive measures.

3. Key trends in wildfires and incidence of forest pests and diseases in Asia and the Pacific continue to be of major concern with high frequency of ignitions, significant area burned, and increasing impacts from smoke that has affected many major cities including

through transboundary effects. Severe outbreaks of invasive species cause billions of dollars' worth of damage to forest productivity and detrimentally affect the provision of forest ecosystem services in the region. For example, a Coconut Rhinoceros Beetle outbreak in the Pacific has had devastating impacts on coconut production, while a disease that causes secondary leaf fall has similarly had severe impacts on rubber production in Malaysia, Indonesia, Sri Lanka, India, Thailand, Viet Nam and Philippines.

4. The influence of climate change will exaggerate the drivers of land use change, demographic change and changes in socio-economic factors. For example, increasing global trade, travel and impacts of climate change are all key drivers of recent forest pest and disease spread in the region. Intergovernmental Panel on Climate Change (IPCC) findings, which identified increases in aridity and fire weather (with average global surface temperatures reaching 1.1°C above 1850–1900 norms during the 2011–2020 period), also note that adaptation gaps exist, and will continue to grow at current rates of implementation of mitigation measures. Continued Greenhouse Gas (GHG) emissions at current levels will lead to average global temperature increases reaching 1.5°C in the near term, with every increment of global warming intensifying multiple and concurrent hazards. Stronger efforts in reduce risks and vulnerabilities to these forest hazards are required. Furthermore, operationalizing of the seven robust actions proposed in the third Asia-Pacific Forestry Sector Outlook Study (APFSOS III) will require a focus on fire and pests and diseases – in particular, to help reverse declines in biodiversity and resilience and to transform and strengthen the management of forests and landscapes, including conservation of primary forests.

5. This document provides an update on integrated fire management and management of pests and diseases in Asia and the Pacific and outlines emerging new trends and priorities that could potentially benefit from regional coordination.

## **II. MAIN ISSUES IN INTEGRATED MANAGEMENT OF FIRE, PESTS AND DISEASES IN ASIA AND THE PACIFIC**

### **(a) Recent fire outbreaks: reasons and consequences**

6. Fire is an essential component of many terrestrial ecosystems, influencing many important attributes including vegetation growth and regeneration patterns, species composition and abundance, and species adaptations. It also helps to shape the landscape, thereby affecting multiple ecosystem services. However, it is estimated that globally fires burn over 350 million hectares of land, including forests and woodlands, every year, causing enormous destruction. Most of these fires are caused by human actions and result in major environmental and economic damage. In the Asia-Pacific region, an average of 183 000 fires occur every year, burning 81.5 million hectares (48 million hectares in Pacific countries, and 33.5 million hectares in Asian countries). Fires in the Asia-Pacific region account for 20 percent of the total global area burned.

7. Global warming increases the frequency and severity of the weather conditions that create wildfires and, allied with increases in factors such as high fuel levels, wildfires increase in intensity, occur over longer fire seasons, and are spreading in range. Damages, losses and costs from wildfires have been increasing and include loss of human lives, damage to critical infrastructure including buildings, roads and electricity networks, impacts on business activity, and increased GHG emissions. Greater intensity in the drivers of wildfires, influenced by climate change, are projected by UNEP GRID-Arendal to lead to increases in the number of

extreme wildfires of up to 14 percent by 2030, 30 percent by the end of 2050 and 50 percent by the end of the century.

**(b) Recent outbreaks of FIS in Asia and the Pacific: reasons and consequences**

8. With exponential growth in trade, transport and human mobility, there is an increasing threat to forests by incursions of FIS. FIS are now considered one of the most significant causes of biodiversity loss, especially in island countries. FIS, particularly insect pests and disease pathogens, reduce tree growth and survival, degrade wood quality and detrimentally affect ecosystem services. Invasive plant species damage forests by competing with native species and preventing native species' regeneration, thereby altering the composition and structure of the flora. This threat has been exacerbated by climate change, which has expanded the range of some potentially invasive species, while also compromising the resistance to pests and diseases of some forest species.

9. In the Asia-Pacific region, several recent pest and disease outbreaks have caused significant socio-economic and environmental impacts, including loss of revenues by local communities who rely on productive forests. These include:

- (i) Secondary leaf fall disease caused by *Pestalotiopsis* is severely affecting rubber trees in Malaysia, Indonesia, Sri Lanka, India, Thailand and is spreading in the Philippines and several other rubber growing countries in the region.
- (ii) Outbreaks of Coconut Scale insect in the Philippines and Coconut Rhinoceros Beetle in the Pacific have had devastating impacts on coconut production in several island countries, most notably in Vanuatu.
- (iii) Pine wilt disease, caused by pine wood nematode, continues to induce dieback of pine species in Republic of Korea, China, Japan and Democratic People's Republic of Korea.
- (iv) Myrtle rust, first identified in Australia in 2010 and New Zealand in 2017, is now widespread in both countries and spreading in Pacific islands with potential to severely affect a broad range of native forest species.
- (v) *Mikania micrantha* is a climbing vine that smothers and outcompetes native vegetation. It can grow rapidly, covering large areas and suppressing the growth of trees, thereby affecting forest ecosystems. It is prevalent in India, Myanmar, Sri Lanka, Thailand, Vietnam, Fiji, Solomon Islands and Vanuatu and spreading in other Pacific island countries.

**III. EMERGING NEEDS AND PRIORITIES AND ACTIONS FOR  
MAINSTREAMING FOREST RESILIENCE IN ASIA AND THE PACIFIC**

**(a) Needs, priorities and actions for advancing integrated fire management**

10. The FAO Fire Management Strategy 2019 sets out an integrated fire management approach and underpins FAO's support and interaction with Members, UN agencies, international and regional organizations. This systematic approach to fire management seeks to understand the context, situation and actors involved, and includes "all activities associated with the management of fire prone land, including the use of fire to meet land management goals and objectives." This holistic approach to addressing fire issues takes into consideration biological, environmental, cultural, social, economic and political interactions. FAO champions integrated approaches to fire management by emphasis on underlying causes and seeking long-term, sustainable solutions using five elements (the 5Rs): (i) Review and analysis;

(ii) Risk reduction; (iii) Readiness; (iv) Response; and (v) Recovery. FAO leverages its UN technical mandate on fire management, including with key partners, through its Regional Offices, Regional Forestry Commissions and Country Offices.

11. Across the region, fire management initiatives are strengthening. As well as the direct impacts on lands that are burned, these are also driven, in part, by recurrent smoke pollution from fire use and wildfires with impacts on local people, towns and cities – including, for example, recent reports from cities like Chiang Mai, Kathmandu, and New Delhi. This has stimulated an increased focus on regional initiatives such as the ASEAN Transboundary Haze Agreement and its related Action Plans, interest in fires by national governments and agencies, and by international bodies including FAO, World Bank, RECOFTC, AFoCO and INGOs.

**(b) Needs, priorities and actions for ensuring effective management of pests, diseases and other invasive alien species**

12. Advancing the One Health approach: In the Asia-Pacific region, there is already substantial commitment to One Health, an integrated approach that calls for increased multidisciplinary and intersectoral cooperation, capacity development and communication to address various issues regarding animal, plant, forest and human health alongside relevant environmental issues. Governance and coordination mechanisms of the One Health approach ensure a coordinated and effective way for addressing cross-cutting challenges. Knowledge management and awareness raising within the One Health approach contribute to consistent and synergetic decision-making, avoidance of gaps and duplication of effort.

13. Asia-Pacific Forest Invasive Species Network (APFISN): APFISN is a regional network established to foster regional collaboration on Forest Invasive Species (FIS) issues. APFISN's key roles include: (i) raising awareness of FIS, (ii) facilitating information exchange; and (iii) providing access to technical expertise, research, training and education opportunities between member countries through regular webinars and training sessions. A regional assessment conducted by APFISN in 2022 analysed the current status of FIS in the Asia-Pacific region, strengthened information exchange among APFISN members, and identified areas for joint actions. Invasive plants were identified as the most impactful FIS agents, followed by pathogens, insect pests and invasive mammals. Consequently, APFISN's primary focus for its future efforts will be on invasive plants. Most member countries expect an increase in the spread of forest invasive species over the next 5-10 years, with APFISN's role in the region likely to take on increasing importance.

**(c) Needs and priorities and actions for improving resilience in general**

14. More broadly, key measures required to enhance the resilience of forests and forest dependent people in Asia and the Pacific will include: (i) mainstreaming forest resilience in forest-related field activities (notably when designing Forest Landscape Restoration (FLR) projects); (ii) regional coordination (and transboundary coordination) for enhanced investments in prevention, monitoring and control; (iii) mobilizing new and additional financing; (iv) capacity building and knowledge exchange to enhance resilience and readiness to respond effectively to shocks and uncertainties; and (v) promoting adaptive management and a learning culture among relevant institutions and stakeholders to ensure improved capability to respond to emerging forest health and quality challenges.

**III. KEY FAO ROLES, INITIATIVES AND SUPPORT TO INTEGRATED MANAGEMENT OF FIRE, PESTS AND DISEASES**

**(a) FAO supported initiatives on integrated fire management**

15. In recent times, FAO has implemented a number of significant activities relating to integrated fire management, at both global and regional levels. These include:

- FAO and the Korea Forest Service convened a Fire Management Forum – ‘Wildfires Beyond Forests’ at the World Forestry Congress in Korea in 2022. FAO and the Korea Forest Service also launched the ‘Assuring the Future of Forests through Integrated Risk Management (AFFIRM)’ mechanism. AFFIRM will be piloted in the Mekong region by FAO in collaboration with the Asian Forest Cooperation Organization (AFoCo) and feed directly into a Global Fire Management Hub.
- FAO and UNEP are co-developing a Global Fire Management Hub, announced at the XV World Forestry Congress, welcomed by FAO Members during the 26th Session of the Committee on Forestry, and launched by the FAO Director-General and Director of UNEP at the Eighth International Wildland Fire Conference in Porto in May 2023.
- FAO collaborated with UNEP and GRID-Arendal on a 2022 report that outlines the impacts of wildfires across Earth’s ecosystems.
- In individual Asia-Pacific countries, FAO has: (i) supported Timor Leste in reviewing fire management; (ii) assisted Myanmar to prepare a national fire management strategy; (iii) supported Indonesia in a review of Fire Danger Rating Systems and peatland fire emissions factors; and (iv) provided technical guidance to Pakistan for damaging wildfires experienced in Baluchistan in May 2022.
- The efforts of FAO were warmly received at the Twenty-Sixth Session of COFO, with the Committee noting that fire management, particularly fire risk reduction, is of crucial importance. The Committee urged member nations to consider strengthening the focus on Integrated Fire Management through country-level and regional strategies, normative studies and collaboration among countries.

**(i) FAO supported initiatives for managing pests and diseases and invasive alien species**

16. FAO has also recently implemented significant initiatives for managing pests and diseases and invasive alien species including:

- Under the One Health initiative, the FAO forestry division, with APFISN and other regional networks, is developing a written guide entitled ‘Guideline for development and implementation of national forest biosecurity strategies, systems and processes’ that will clarify how to effectively address biosecurity issues in forestry. The guide will provide practical examples of the application of biosecurity actions in forestry at the national level.
- Specifically in the Asia-Pacific region, key APFISN activities have included capacity building and a study on climate change and spread of pests:
  - In March 2023, APFISN held a webinar on invasive forest insect pests, pathogens and weeds and in October 2023, will hold a workshop entitled ‘Pinewood nematode collaborative: how to identify, detect, and manage pinewood nematode’.
  - APFISN has continued work to strengthen capacities of member countries to: (i) conduct research, manage FIS and prevent new incursions; (ii) report on country status of FIS, supporting needs and gaps analysis to combat and prevent incursions; and (iii)

develop strategies for regional cooperation and collaboration in combating threats posed by FIS. To enhance this support, a regional database to collate information from national databases is being developed.

- Recently, APFISN undertook a survey as part of a project on ‘Regional assessment on the status of forest invasive species in the Asia-Pacific region.’

17. FAO has also provided field support to several individual countries. For example, in Myanmar, where plantation forests are highly susceptible to damage by pests and diseases, a project on ‘Strengthening the Institutional Capacity on Forest Health in Myanmar’ aims to strengthen forest protection activities including species selection and silvicultural interventions, early detection, and protective measures that can prevent or reduce the effects of pest and disease problems. Similarly, in Indonesia, FAO is implementing a GEF-funded project ‘Strengthening Capacities for Management of Invasive Alien Species (SMIAS).’ The project will enhance capacity to manage invasive alien species (IAS) by strengthening existing national measures through a multisectoral approach. Project activities will: (i) strengthen national and subnational policy, legal, regulatory, institutional and financing frameworks for IAS management; (ii) create awareness of the threats posed by IAS; (iii) build capacities to enhance the management of IAS; and (iv) develop and implement best practices for the management of IAS at landscape-levels, including through highly participatory engagement of local stakeholders.