Second Assessment of the Impact of COVID-19 on Forests and Forest Sector in the Asia Pacific region

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The sixteenth session of the UN Forum on Forests (UNFF16) in April 2021 requested the Forum secretariat, in collaboration with members of the Forum, CPF member organizations and stakeholders, to conduct an assessment of the challenges faced by countries, and the strategies, recovery measures and best practices for reducing the impact of COVID-19 on forests and forest sector, and to present it to the Forum at its seventeenth session in May 2022. To conduct this second assessment, the UNFF Secretariat commissioned a series of assessments in different regions and subregions.

COVID-19 and forests in Asia-Pacific Region

An assessment of challenges faced by countries, and the strategies, recovery measures and best practices in addressing the impact of COVID-19 on forests and the forest sector

A synthesis report prepared for the United Nations Forum on Forests Secretariat

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The information, conclusions and views expressed in the report are extracted from the assessment reports of the sub-regional authors/consultants, including my own report for South Asia. However, any misrepresentation of input, or errors and omissions in this consolidated report for the Asia-Pacific region are solely mine. The UNFF Secretariat is not responsible for any errors, omissions, and conclusions drawn by the author.

Abbreviations

ADB	Asian Development Bank
ASEAN	Association of Southeast Asian Nations
CPF	Collaborative Partnership on Forests
FAO	Food and Agriculture Organization of the United Nations
ICT	Information and communication technology
SFM	Sustainable Forest Management
UN	United Nations
UNFF	United Nations Forum on Forests
UNFFS	United Nations Forum on Forests Secretariat
UNPD	United Nations Population Division
WHO	World Health Organization
WB	World Bank

Executive Summary

The Secretariat commissioned six sub-regional studies, namely (i) East Asia, (ii) Central Asia, (iii) Southeast Asia, (iv) South Asia, (v) Western Asia and (vi) the Pacific Islands subregions. However, this synthesis report for Asia-Pacific region is based only on the four sub-regional reports received by the author as of 31 December 2021; the reports from Southeast Asia and Western Asia were not completed for various reasons.

The report (and sub-regional reports) is focused on assessing the following issues related with the impact of COVID-19 pandemic on forests and the forest sector in Asia-Pacific region:

a. the challenges faced by countries in addressing the impacts of COVID-19 pandemic on forests and the forest sector;
b. the strategies and recovery measures being adopted by countries in combatting the impacts of the COVID-19 pandemic on forests and the forest sector; and
c. best practices adopted by countries and other stakeholders for reducing the impact of COVID-19 on forests and forest sector.

The assessment of each sub-region was conducted with a multi-pronged approach combining literature review, a survey of national focal points and other relevant stakeholders (Pacific Islands sub-region adopted case study methodology, focused only on Fiji, Solomon Islands and Vanuatu), and a few consultations in some sub-regions (e.g., East Asia). However, the response rates of the surveys were generally low (about 3 percent in East Asia, 10 percent in Southeast Asia, 26 percent in Central Asia, 33 percent in South Asia) except in the Pacific Islands sub-region (67 percent). Many national focal points or government officials from several countries did not respond to the surveys. This is a serious impediment on the assessment studies of most subregions, as well as for this regional report.

Key findings

All sub-regional reports underscored that countries are in the midst of health and economic crises due to the pandemic. Therefore, the main focus and thrust of national governments and international organizations (including the Asian Development Bank, World Bank, bilateral donor agencies and UN agencies) are on addressing those crises, e.g., containment of COVID-19 cases and its spread through measures such as lockdowns, movement restrictions, social distancing, PPEs, hospital equipment, vaccines, training manuals, human capacity development, economic recovery measures and support for livelihoods.

The governments and organizations are committed to revive, recover and strengthen economies by balancing health/safety with opening up of markets and economic activities (industry, trade, export/import) as well as phased opening of other economic and social activities such as schools, entertainment, and places of worship. Governments are bringing economic recovery packages (loans, subsidies, tax deferrals, as well as cash and food support) to individuals and businesses.

Challenges in addressing the impacts of COVID-19 pandemic on forests and the forest sector

There is not much concrete information on challenges faced by countries in addressing the impact of COVID-19 on forests and the forest sector in the sub-regional reports. Most sub-regional reports discussed the "challenges" in a broader terms, e.g., challenges faced by forests and the forest sector due to COVID-19 rather than in addressing the impacts of COVID-19. The likely reason for this is that it is too early to develop, implement and assess strategies, measures, plans and programmes specific for forests and the forest sector.

Nevertheless, after a careful analysis of the sub-regional reports and available literature, the following emerged as the key challenges faced by countries of the region in addressing the impacts of COVID-19 on forests and the forest sector:

- Mobility restrictions-induced challenges in monitoring and managing forests;
- Low or lack of political commitment to forests;
- General absence of forest-specific policies and strategic plans to combat the impact of COVID-19;
- Financial constraints;
- Technological challenges; and
- Human resources constraints.

Strategies and recovery measures in combatting the impacts of the COVID-19 pandemic on forests and the forest sector

All sub-regional reports noted that countries have put in place general measures for safety and economic recovery from COVID-19. No specific strategies and recovery measures for and by the forest sector (government agencies responsible for forests) is found in most sub-regions. Most Ministries and departments responsible for forests, natural resources and environment websites have very little information on their strategies, measures and programmes to address the impact of the pandemic on forests and the forest sector.

Despite that, countries in the sub-region have adopted a range of measures to address the challenges posed by COVID-19 on forests and the forest sector. While many measures are general economic, financial, and public health-focused, there are also a few examples of unique measures specific to forests in a few countries. A growing trend of using modern ICT such as online platforms by public forestry agencies for providing services like permits to businesses (e.g., in Fiji), online bidding (e.g., in Japan) and for the seedling market and free rental of forestry equipment (e.g., in South Korea), as well as use of UAVs (e.g., in Bangladesh) and virtual meetings and communication has been observed.

Some of the measures to revive the economy amidst the COVID-19 pandemic contain specific provisions related to the forest sector, while in other cases, existing forestry development programmes have been realigned to address the impact of COVID-19, as well. For example, India's nearly 0.8-billion-dollar economic recovery package has a provision for assisting indigenous communities in forest protection and management. On the other hand, Pakistan has re-purposed its ambitious tree planting campaign

under the “Ten Billion Tree Tsunami Programme” to fight the pandemic. This programme was developed against the backdrop of COVID-19, and focused on two objectives: protecting nature and creating green jobs. It provided jobs and income to many workers, mostly rural and youths laid off from factory jobs in cities due to the lockdowns. Kazakhstan also has announced a massive tree planting program as a part of its recovery strategy.

The application of modern ICT and other technology is seen as a more common measure in many countries of the region in order to maintain the functions of government forestry agencies, facilitating forest-related market, as well as in creating and supporting forest-related businesses.

In China, immediately after the outbreak of COVID-19, a law banning the consumption of wildlife was enacted.

Best practices adopted for reducing the impact of COVID-19 on forests and forest sector

The general conclusion of the sub-regional reports is that there is no concrete example of best practices in addressing the impacts of COVID-19 on forests and the forest sector. It is too early to recognize a practice as a “best practice” because a best practice is the one that has emerged from a long experience, is time-tested and has a wider acknowledgement by the practitioners and experts as the approach that works well in most circumstances. Therefore, it is too early to label any practice as a best practice to address the challenges on forests and the forest sector at this stage.

Most examples of best practices mentioned by survey respondents in sub-regions are either related to general public safety measures or general forestry programmes such as the community forestry, livelihood-based forestry programmes and forest restoration, which are recognized as important SFM activities even before the outset of the COVID-19 pandemic.

The application of evolving modern technologies such as ICT, automation and digitization could turn out to be examples of best practices. But it will take some time and experience to know more about their efficacy, efficiency, and scope before labelling them as “best practices”.

In this regard, it should be emphasized that public awareness campaigns/initiatives on the significance of forest ecosystems and the role of sustainable forest management in managing and preventing future zoonotic eruptions, as well as in the recovery from the current COVID-19 crisis, are important. It is worthy to sensitize government leaders and non-state stakeholders of the ten recommendations of UNFF-16, which are still highly relevant and valid (see Annex 1).

Recommendations

a) *Develop, coordinate* and *integrate* post-COVID-19 recovery plans for forests with overall national recovery plans by emphasizing the value of goods and services from forest ecosystems in the recovery strategies
b) *Improve* communication strategies, modalities and messages on the significance of forests and SFM in addressing society’s economic, social, environmental, and zoonotic outbreaks;

c) *Support* new business opportunities that emerged during the pandemic, and encourage greater investment in skills, particularly of youth, women, and micro-, small-, and medium-enterprises for future sustainable forestry-based businesses;

d) *Collaborate* on forest-related policies and scientific research with other relevant sectors and stakeholders, including, in particular, with the health sector along the "One Health" framework. In this regard, the Collaborative Partnership on Forests (CPF) may be encouraged to initiate preliminary contact with the WHO and medical research institutes for feasibilities;

e) *Encourage* forest scientists and managers to consider ways to address the zoonoses aspect related to forests and wildlife in sustainable forest management modalities;

f) *Invite* development partners and international organizations to help build capacity of developing country forest-related agencies and forest education institutions in modern digital technologies for SFM, including on monitoring, law enforcement, and communication;

g) *Consider* initiating or partnering with relevant organization(s) for a systematic global monitoring system to track what changes/measures/results are emerging on the issues concerning forests, the forest sector, and other related sectors (e.g., agriculture, energy, transportation, trade, etc.) as a result of COVID-19. UNFF sessions should be updated from such monitoring, and space out in-depth assessments at 2-3 year intervals;

h) *Encourage* countries to launch new or to reorient currently operational forest rehabilitation and management programmes and projects to help employ a low-skilled workforce, including women, youth, migrant workers, and the unemployed as a result of the pandemic and economic slowdowns;

i) *Strengthen* regional and international cooperation in tackling the impact of the COVID pandemic on forests and the forest sector;

j) To overcome some of the challenges experienced by the current sub-regional assessments, for example, the minimal timeframes, language barriers and low rates of survey responses, the Secretariat may *consider* conducting future assessments by allocating sufficient time, involving in-country experts and national workshops; and

k) *Invite* Pakistan to organize a special side event at UNFF-17 to share its experiences, achievements, and lessons learned from its "Ten Billion Tree Tsunami Programme" in addressing the COVID-19 challenges, as well as other ecological, climate change, and social challenges of the country. Kazakhstan should also be encouraged to co-host this event to inform the session participants about its recently announced initiative to plant 2 billion trees in the countryside and 15 million trees in urban areas.

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Chapter 1. Introduction

This report highlights the key findings of the five sub-regional assessment reports for Asia-Pacific on issues related to COVID-19 and forests. In response to the request of the sixteenth session of the United Nations Forum on Forests (UNFF-16), held in April 2021, the Secretariat launched the second assessment of COVID-19 on forests and the forest sector. The assessments were carried out through independent consultants for each sub-region.

The main focus of sub-regional assessments was on the following areas:

- challenges faced by countries in addressing the impacts of COVID-19 pandemic on forests and the forest sector;
- strategies and recovery measures being adopted by countries in combatting the impacts of the COVID-19 pandemic on forests and the forest sector; and
- best practices adopted by countries and other stakeholders for reducing the impact of COVID-19 on forests and forest sector.

The sub-regional assessments (and their authors) from which this regional report is prepared are shown in Table 1 below.

Table 1. Countries covered in the regional report

Sub-regions	*Countries covered in the assessment*	*Consultants*
East Asia	China, Japan, Democratic People's Republic of Korea (DPRK), Republic of Korea (ROK), and Mongolia (5)	Ms. Ellyn Kathalina Damayanti
Central Asia	Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan (5)	Ms. Jelana Markovic
South Asia	Bangladesh, Bhutan, India, Nepal, Pakistan and Sri Lanka (6)	Mr. Mahendra Joshi
Southeast Asia	Thailand, Cambodia, Vietnam, Lao PDR, Myanmar, Malaysia, Indonesia, Philippines, Timor-Leste, Brunei, and Singapore (11)	Ms. Kalpana Giri
Pacific Islands	Fiji, Solomon Islands, and Vanuatu (3)	Ms. Hilda Sakiti-Waqa

Methodology

The assessment of each sub-region was conducted with a multi-pronged approach combining a literature review, a survey of national focal points and other relevant stakeholders, and a few consultations in some sub-regions (e.g., East Asia). As needed or time-permitting, some interviews by electronic medium were also conducted. The consultants for each sub-region consulted with respective national focal points and other stakeholders (including UNFF major groups representatives) in the sub-region before finalizing and submitting their draft reports to the Secretariat. The Central Asia even organized an online workshop with forest experts from the region to validate its sub-regional report. In the case of the Pacific Islands sub-region, the consultant adopted case study methodology focusing on three countries - Fiji, Solomon Islands, and Vanuatu (with interviews in addition to a survey).

Scope

The total number of countries covered in the four sub-regions assessments is 30.

This consolidated report picks key findings (or highlights) of the sub-regional reports from the countries in the Asia-Pacific region, on the following areas:

- Challenges faced by countries in addressing the impact of the COVID-19 pandemic on forests and the forest sector;
- Strategies and measures taken to combat the impact of COVID-19 on forests and the forest sector;
- Best practices; and
- Conclusions and recommendations.

Limitations

The Asia-Pacific region is a vast region geographically, politically, and demographically. The COVID-19 pandemic is still an ongoing health and economic crisis all over the world, overwhelming the capacities of public and private infrastructures. In such a crisis mode, where life is far from any sign of returning to normalcy, reaching key informants, and getting higher rates of responses on the impact on forests and the forest sector, were found to be unrealistic. As can be seen from Table 2 below, the response rates on questionnaire surveys in all sub-regions were very low.

Table 2. Response rates of surveys

Sub-region	*Survey sent to*	*Responses received*	*Response rate (%)*
East Asia	102	3	02.9
Central Asia	50	13	26.0
South Asia	43	14	32.6
Southeast Asia	30	3	10.0
Pacific Islands	27	18	67.0

Literature on policies, strategies, and recovery measures specific to forests and the forest sector is also almost non-existent, as reported by consultants for each of above sub-regions. An obvious possible reason could be because it is too early to observe, analyze, and document such phenomena and trends.

Hence, this consolidated assessment report should be perused with these important limitations and caveats. Despite those challenges and limitations, the sub-regional reports and this summary report for the region are expected to provide snapshots of the current situation on the ground.

This report has made an effort to highlight key findings of the above-mentioned substantive sub-regional reports. However, readers are advised to read individual reports for a full understanding of the situation in any particular sub-region.

Asia-Pacific region at a glance

FAO's APFC website[1] (https://www.fao.org/asiapacific/apfc/en/) states:

> "Asia and the Pacific is covered by 740 million hectares of forests, accounting for 26 percent of the region's land area, and 18 percent of global forest cover. On a per capita basis, Asia-Pacific is the least forested region in the world. However, an annual regional loss of over 0.7 million hectares of forests from 1990 to 2000 has reversed to an annual increase of 2.3 million hectares during 2000 to 2005. Between 2005 and 2010, the rate of increase declined to under 0.5 million hectares per year.
>
> Notwithstanding the positive trend in forest area at the aggregate level, forest degradation and declining health and vitality remain the hidden problems confronting Asia-Pacific forests. Despite a wide range of supporting initiatives and much discussion, implementation of sustainable forest management continues to be a challenge.
>
> Forests provide homes and sources of livelihoods to hundreds of millions of people in Asia and the Pacific. They are also generators of national wealth and economic advancement: the annual value of trade in primary forest products in the region exceeds US$90 billion."

According to FRA2020, Asia had the highest net gain in forest area since 1990. During 1990-2000, it saw an annual increase in forest area by 202,000 ha per year, but the rate of net forest gain went up to 2.35 million ha per year in 2000–2010, then to a slightly lower rate of 1.17 million ha per year in 2010–2020. Most of the increase in forest area occurred in China, followed by India and Vietnam. Oceania recorded the second-largest average annual net gain in forest area (after Asia) in 2010–2020, at 423,000 ha, reversing the region's negative trend of previous decades. Despite the declining rate of forest loss worldwide, many countries of the Asia-Pacific region are still facing serious challenges of deforestation and forest degradation.

Demography

The region has the largest population in the world. Out of the ten most populous countries in 2019, five are from Asia, amounting to almost 45 percent of the total world population of 7.7 billion (in 2019). The first two most populous countries, China (1.434 billion) and India (1.366 billion) account for 19 and 18 percent of the world population in 2019 (UNPD 2019). Indonesia, Pakistan and Bangladesh from Asia took the fourth, fifth, and eighth rank among the ten most populous nations.

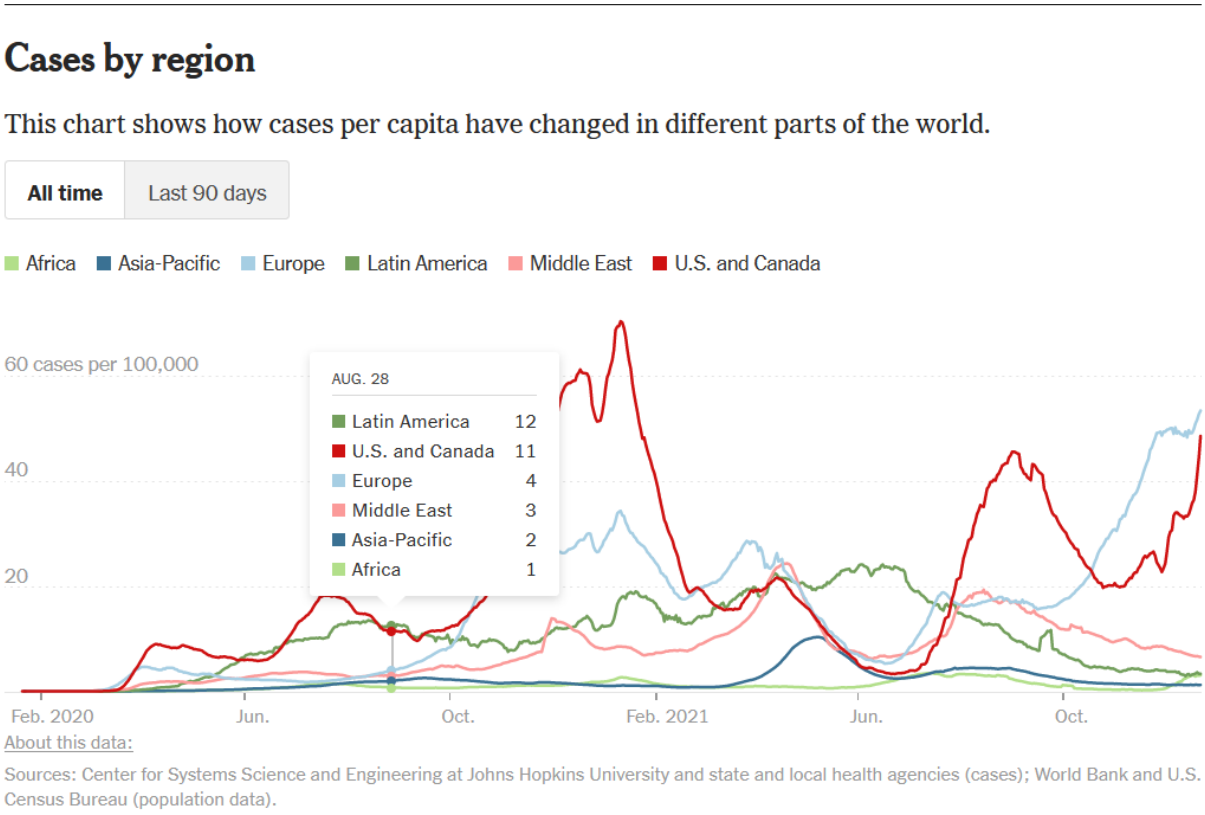
COVID-19 trend in Asia-Pacific region

COVID-19 was first detected in Wuhan, China in December 2019, and the World Health Organization (WHO) declared it as a global pandemic in January 2020. Globally, as of 23 December 2021, there have been 276,436,619 confirmed cases of COVID-19, including 5,374,744 deaths, reported to WHO[2]. As seen

[1] https://www.fao.org/asiapacific/apfc/en/
[2] https://covid19.who.int/

from the chart from the New York Times website[3] (23 December 2021), the trend in the region is relatively modest compared to other regions, in particular, Europe and North America (Figure 1). The Asia-Pacific region saw a dramatic increase in COVID-19 infections during the spring of 2021, mainly in India, with the Delta variant of the coronavirus. The total infection and death in India are the highest in the region. On the other hand, Turkmenistan reported zero infections, Vanuatu and Solomon Islands have 7 and 20 infections respectively; and Bhutan reported a total of just 3 deaths (see Table 3). Nevertheless, the impact on the region's population and economy is no less significant than in other regions. In India alone, from 3 January 2020 to 23 December 2021, there have been 34,765,976 confirmed cases of COVID-19 with 478,759 deaths reported to WHO[4].

Figure 1. Global trend of COVID-19 from New York Times (as of 23 December 2021)



This report is organized in the following way: Chapter 2 describes the challenges faced by countries in addressing the impacts of the COVID-19 pandemic on forests and the forest sector. Chapter 3 presents an analytical summary of the strategies and measures taken to reduce the impact of COVID-19 on forests and the forest sector; Chapter 4 presents the best practices from the region. Chapter 5 presents a few conclusions and recommendations. Since this report is prepared by drawing information from six sub-regional substantive reports, for the sources of information concerning the sub-regional reports, readers are requested to consult those specific reports.

[3] https://www.nytimes.com/interactive/2021/world/covid-cases.html (accessed on 23 December 2021)
[4] https://covid19.who.int/region/searo/country/in

Table 3. COVID-19 infection and death data (as of 23 December 2021)

Country	Cases		Deaths	
	cumulative total	newly reported in last 7 days	cumulative total	newly reported in last 7 days
Global	276,436,619	4,854,080	5,374,744	46,082
East Asia				
China	130,109	777	5,699	1
Japan	1,730,602	1,394	18,383	7
DPRK (North Korea)				
ROK (South Korea)	589,978	45,862	5,015	497
Mongolia	387,235	1,098	1,974	6
Central Asia				
Kazakhstan	1,068,363	3,371	18,160	72
Kyrgyzstan	184,359	262	2,788	11
Tajikistan	17,493		125	
Turkmenistan	0			
Uzbekistan	197,753	1,231	1,471	22
South Asia				
Bangladesh	1,582,368	1,809	28,054	13
Bhutan	2,659	7	3	
India	34,765,976	47,374	478,759	2,281
Nepal	826,664	1,488	11,581	14
Pakistan	1,292,047	2,134	28,892	49
Sri Lanka	581,595	3,871	14,811	113
Southeast Asia				
Brunei Darussalam	15,426	54	57	
Cambodia	120,430	40	3,006	11
Indonesia	4,261,208	1,351	144,042	63
Lao PDR	101,865	8,804	288	32
Malaysia	2,728,203	25,063	31,221	232
Myanmar	528,838	1,124	19,235	34
Philippines	2,837,784	1,057	50,916	467
Singapore	276,720	2,103	818	11
Thailand	2,202,001	20,041	21,501	215
Timor-Leste[5]	19,860	16	122	0
Viet Nam	1,588,335	129,160	30,251	1,635
Pacific Inlands				
Fiji	52,706	102	697	
Solomon Islands	20			
Vanuatu	7			

Source: WHO https://covid19.who.int/table (accessed on 27 December 2021)

[5] Data for Timor-Leste is as of 14 January 2022 from WHO https://covid19.who.int/table

Chapter 2. Challenges faced by countries in addressing the impacts of COVID-19 on forests and the forest sector

From a careful analysis of the sub-regional reports for South Asia, East Asia, Central Asia, the Pacific Islands, and available literature, the following emerged as the key challenges faced by countries of the region in addressing the impacts of COVID-19 on forests and the forest sector:

Mobility restrictions and other safety measures

While necessary, the mobility restrictions and other measures to contain the spread of COVID-19 itself are a major challenge for forestry agencies and the private sector in conducting their regular management and business operations. Such measures have hampered protection and management operations, resulting in many challenges, such as overstocking of forest biomass in forests; increased risk of forest fires; illegal harvesting and damaging activities; and problems in conducting field research and implementing projects, among others.

Forest stakeholders such as the community forest user groups and trade associations faced many practical challenges in their normal as well as Covid-19 pandemic-related activities. The respondent from the community forestry association of Nepal (FECOFUN) reported their challenges in conducting management and pandemic recovery planning meetings (Joshi 2021). Similarly, in Tajikistan**,** COVID-19 has severely impacted community-based forest management practices, as the community groups involved in forest management could not develop their forest management plans. This resulted in an increase of unsustainable forest use (e.g., illegal harvesting and tree-planting interruptions)[6] (Markovick et al. 2021).

Private sector engaged in forest-based tourism sector faced serious challenges in providing services due to such mobility and other safety measures. Japan needed to make adjustments of its tourism and hospitality practices to the post-COVID-19 era and South Korea found the restriction on international travels significantly limiting its business negotiations and sales (Damayanti 2021).

Political commitment to forests

Despite numerous goods and services from forests being enjoyed by society, the forest sector is generally not considered a priority in many countries, because of its relatively small contribution to conventional measures of the economy, as reflected by GDP. This seems to be the case in many countries of the region during the current pandemic, as well, even though forests provide a safety-net to poor, vulnerable, and returning unemployed workers from cities and industries, and have the potential for economic recovery from the pandemic and in preventing future zoonotic crises. As an expert from Kyrgyzstan stated, a socio-economic crisis always received a higher priority in society, even during an

[6] According to the same expert, the situation in Tajikistan has improved in 2021 and all forest planning and management activities have resumed.

unprecedented health crisis. Thus, the impact of Covid-19 on forests and the forest sector often does not receive much specific attention (Markovic et al. 2021).

When political leaders are made aware of the significant role that forests can play, they would be more supportive of integrating sustainable forest management in the strategies for pandemic recovery and reduction. The Ten Billion Tree Tsunami Programme of Pakistan and a recent announcement by the President of Kazakhstan to plant 2 billion trees in the countryside and 15 million trees in urban areas are examples of such a conviction and vision, in making forests an integral part of the recovery strategy from COVID-19, as well as for achieving overall sustainable development goals (Joshi 2021, Markovic et al. 2021).

Protecting and sustainably managing forests results in benefits not only in health, but also in climate change, biodiversity conservation, and indigenous rights. In this regard, the concept of the "One Health" approach has become more prominent among the scientific community during the pandemic, as well as in national policy frameworks.

Policies and strategic plans

Several survey respondents in South Asia, East Asia, Southeast Asia, Pacific Islands and Central Asia stated that many governments still have no policies or strategic plans to deal with the challenges posed by the pandemic to forests and the forest sector, or that they are just in the process of development. This lack of a roadmap is certainly a challenge. This phenomenon is also a reflection of the relative priority given to forests and the forest sector, both historically, and in light of the emergency situation created by COVID-19.

Moreover, there is a need to clarify and operationalize the concept of green recovery through SFM, creating jobs, safeguarding rights and benefit-sharing mechanisms of forest stakeholders (Giri and Karki 2021).

Financial resources

The surveys in the South Asia, East Asia, Central Asia, Southeast Asia and Pacific Islands sub-regions clearly indicated a diversion of allocated budgets from their forestry agencies to health and other emergency services to combat the pandemic. This reduction of or disruption in flow of budgeted resources presented additional challenges to public forestry agencies in conducting their responsibilities, as well as in launching emergency measures to protect and manage forest resources caused by the pandemic in almost all countries surveyed in the region. Kyrgyzstan survey respondents reported as much as a 60 percent reduction of national budget for its forestry sector. Similarly, the Solomon Islands' Ministry of Forestry and Research saw a reduction of its budget allocation by 25 percent (Joshi 2021; Markovic et al. 2021; Sakiti-Waqa 2021). While many countries in Southeast Asia faced the challenge of financing in the forest sector, only Cambodia saw an increase in investment from development partners for restoration of forest resources and livelihoods in the post-pandemic context (Giri and Karki 2021).

The challenge of recovering from the economic disruption posed by COVID-19 is not limited to developing countries, only. For example, South Korea is facing the challenge of recovering from the

economic disruption posed by COVID-19, and in Japan, the forest sector needed finance and capital investment to stabilize and strengthen its domestic timber market (Damayanti 2021).

Survey respondents from several developing countries of the region also mentioned instances of decreased external assistance to the forest sector as attention has concentrated on health and other emergency service deliveries.

In the case of the private sector, from corporate entities as well as to micro-, small-, and medium-enterprises (MSMEs) and households involved in the informal sector, the survey and literature have underscored that the lockdowns posed a serious challenge in their ability to take any corrective action.

Human resources

The health and economic crises have created a scarcity of both a skilled and unskilled workforce in the forest sector. The ILO Sectoral Brief (2020) noted that despite technological advances, forests remain dangerous workplaces. The COVID-19 pandemic has exacerbated existing challenges, with many enterprises and workers suffering as a consequence. It also highlighted some new challenges confronting people associated with forests and the forest sector; for example, the loss of forest-related employment, occupational safety and health, the fact that forest rangers and other staff are at the risk of infections, and informal economy-related challenges to workers, migrant workers, indigenous, and forest-dependent communities. These challenges also resonated from the survey responses from all sub-regions. For example, some forest officers in Sri Lanka were infected with COVID-19, causing a further reduction in human resources of its forestry agency.

Limited technological infrastructure and capacity to use available technology

Modern Information and Communication Technology (ICT) and other technological advances have proved to be very helpful in coping with the impacts of the pandemic in all walks of life, including in the forest sector. Collaboration platforms like Zoom and Microsoft Teams saw a surge in adoption and usage all across the globe and sectors. However, the lack of reliable Internet and communication networks, availability of computers and other equipment, upkeep of available equipment, and limited know-how of staff are practical challenges faced by forest agencies. This is a general situation in most developing countries and is not specific to the forest sector.

Market for forest products and services

Various factors related to the pandemic, including economic downturn, movement and trade restrictions, reduced demand for forest products and services, unsold timber products rotting in yards, restriction of non-timber forest products (NTFP) collection and sales, and the closed forest-based tourism industry remain serious challenges to the forest sector.

The pandemic has impacted forest-related supply chains in various ways. Uzbekistan and Tajikistan are significantly dependent on wood supply from Russia, and have experienced challenges in supply shortages and price fluctuations. Rural communities in Central Asia, being heavily dependent on forest resources for their energy needs, experienced high demands for fuelwood, which led to unsustainable /illegal forest resource harvesting, loss of biodiversity, and other ecosystem services. On the other

hand, the growth of e-commerce has contributed to increased demand for wood-based packaging materials (Markovick et al. 2021). Cases like these can present further environmental challenges in the future.

Chapter 3. Strategies and measures taken to combat he impacts

The findings from the sub-regional reports of South Asia, East Asia, Southeast Asia, Central Asia, and Pacific Islands are consistent – there are very few, if any, forest sector-specific strategies and measures to combat the impacts of COVID-19 on forests and the forest sector. Governments adopted different policies to recover from the negative impact of COVID-19. These were often not specific for the forest sector, but rather general epidemiological safety measures and in support of the economy as a whole (see Box 1).

Countries covered in the sub-regional assessments have launched economic stimulus packages to revive their economies and assist people impacted by the pandemic. Although each country's measures are designed to address its specific needs, circumstance, and capacity, there are some common key elements in all countries' strategies and measures. The common elements of such strategies and measures include concessional loans to small businesses (MSMEs), extension of loan repayment deadlines, refinance facilities, extension of tax payment deadlines, a grace period extension for infrastructure projects, and targeted lending in productive sectors at concessional rates and other supportive measures. Several countries, such as Thailand, Bhutan, Nepal, and Sri Lanka, also launched cash transfer programmes, price ceilings on essential food items, and food allowances to thousands of poor and vulnerable population groups affected by COVID-19. Thailand's fiscal response measure was recognized by the World Bank one of the largest COVID-19 responses in the world. Such nationwide strategies and measures would obviously provide relief to people, communities, and businesses linked to the forest sector.

Among the survey respondents, very few provided concrete examples of strategies and measures specifically for forests during the pandemic, nor for post-pandemic phases. The survey and other data on strategies and measures to cope with the COVID-19 impact on forests and the forest sector can be grouped into the following broad groups:

- None or not many forest-specific strategies and measures;
- More operational-level measures, such as application of technology and engaging unemployed youth on reforestation activities;
- Financial subsidies, including loan guarantees by governments through banks to the private sector, which also benefitted forest-related businesses and industries; and
- Helping to fight the pandemic through awareness-raising campaigns, and supporting health departments in fighting COVID-19.

A respondent from Bangladesh mentioned smart monitoring, the use of technology, the Unmanned Aerial Vehicle (UAV), and Internet-based communication tools, such as Zoom. Another respondent mentioned subsidy programmes to industries in Bhutan. Perhaps it is a general measure not specifically focused on the forest sector, alone.

Box 1. Excerpts from sub-regional reports on strategies and measures

Central Asia (Markovick et al. 2021)

There were no identified forest sector-specific strategies and measures to combat the impacts of the COVID-19 pandemic in Central Asia countries. The policy measures adopted by the countries to combat the impact of the COVID-19 pandemic concerned all sectors of the economy and included movement restrictions, school and workplace closures, cancellation of public events and gatherings, "stay at home" restrictions, face coverings, public information campaigns, international and domestic travel restriction, testing and contact tracing, vaccinations, income support and debt relief (e.g. for vulnerable groups and small business) creating "Green Corridors" for the import of food and essential goods (e.g. in Kyrgyzstan). Kazakhstan has also announced a plan to plant 2 billion trees in the countryside and 15 million trees in urban areas, making forests an integral part of the recovery strategy from COVID-19.

East Asia (Damayanti 2021)

Very few strategies and recovery measures adopted by countries in the East Asia sub-region in combatting the impacts of the COVID-19 pandemic on forests and the forest sector could be found in literature, as well as from the questionnaire responses and results from consultation with experts and stakeholders.

South Asia (Joshi 2021)

The survey respondents could provide very few concrete examples of strategies and measures specifically for forests during the pandemic or for post-pandemic phases. However, information from other sources shows that some economic recovery measures contain specific provisions related to the forest sector (e.g., India), and existing forestry development programmes have been realigned to address the impact of COVID-19 (e.g., Pakistan).

Southeast Asia (Giri and Karki 2021)

There are positive signals from the governments in the Southeast Asian region regarding prioritizing the forest sector, among others, as a strategy to COVID-19 recovery. For instance, the ASEAN heads of states have expressed their commitment to prioritizing and promoting responsible investment, in food, agriculture, and forestry, as a crucial part of its COVID-19 recovery strategy.

Pacific Islands (Sakiti-Waqa 2021)

For entrepreneurs in the agriculture, fisheries and forestry sectors, the Fiji government will guarantee up to 75 percent of the principal outstanding on defaulted loans up to a limit of Fiji Dollar (FJD) 75 000 (US$ 33 700) per business.

Through the Economic Stimulus Package, investment in value added or production of targeted products in the forestry, fisheries, and tourism sectors in the Solomon Islands, costing Solomon Islands Dollar (SBD) 44 million.

In Nepal, community forest user groups (CFUGs) ran awareness campaigns, and provided their CFU buildings for COVID-19-related purposes, such as for treatment and quarantine centers within the country. Another respondent from Nepal mentioned closer consultations and engagement with relevant stakeholders, maintaining regular forest surveillance and smart lockdowns (activities based on basic health precautions and COVID-19 protocols). Similar local level community activities were also reported in Southeast Asia. Community forestry groups in Lao PDR, Thailand and Vietnam are assisting local authorities in enforcing travel restrictions and health screening. A respondent from Pakistan also mentioned applying standard operating protocols (SOPs) and engaging the labour force in forestry development activities.

Some respondents in South Asia mentioned work being done by their governments on policies and programmes for forest rehabilitation that would support the recovery effort. A respondent from Bangladesh mentioned a few sustainable forest management and livelihood (SUFAL) projects with support from the World Bank and UNDP, and training programmes with the US Forest Service on the application of the Google Earth engine in forestry, for forestry students and alumni to develop their skills and to make them active during the closure of universities due to COVID-19. Likewise, Bhutan is working with the World Bank and UNDP in developing REDD+ strategy and an Action Plan that would also address pandemic-related challenges. Bhutan also reported that its Forest Department is working on programmes that would enable the forest sector to further contribute to the national economy by exploring alternatives such as charcoal production and improving technology of wood-based industries, improving efficiency and value addition of forest products as well as marketing. The private sector is taking advantage of the fiscal incentives of subsidized loans to invest in new technology to make the wood-based industries more efficient and environmentally friendly.

Some of the measures to revive the economy amidst the COVID-19 pandemic contain specific provisions related to the forest sector, while in other cases, existing forestry development programmes have been realigned to address the impact of COVID-19, as well.

For example, India's multi-billion rupees recovery package has a provision to channel Indian Rs 60 billion (USD 0.8 billion) through its Compensatory Afforestation Fund Management and Planning Authority (CAMPA) to provide jobs for indigenous communities in tree planting, protection, and the management of forests and wildlife, and other related activities. This is expected to benefit both the indigenous people as well as India's forests. Furthermore, its Ministry of Home Affairs has relaxed the lockdown rules for the collection, harvesting, and processing of NTFPs by scheduled tribes and forest dwellers, and the Ministry of Tribal Affairs has encouraged the governments of states with tribal populations to offer a guaranteed price for the procurement of forest products from those communities (ILO 2020).

Pakistan has re-purposed its ambitious tree planting campaign under the "Ten Billion Tree Tsunami Programme" to fight the pandemic. Perhaps this is the most visible measure targeted on forests in response to the impact of Covid-19. This programme was developed against the backdrop of COVID-19, and focused on two objectives: protecting nature and creating green jobs. It provided jobs and income to many workers, mostly rural and youths laid off from factory jobs in cities due to the lockdowns (see Box 2 for details). Kazakhstan has announced a similar plan to plant 2 billion trees in the countryside and

15 million trees in urban areas as an integral part of the recovery strategy from COVID-19 (Joshi 2021, Markovic et al. 2021).

There are also growing signs of countries integrating the wellbeing of all living things, including humans, with that of nature within the framework of "One Health" as a policy for recovery from the current pandemic, and in the continued pursuit of sustainable development. Literature indicates, at the least, China, India, and Nepal have committed to the "One-Health approach" approach, integrating animal, environmental, and human health at the core of its post-COVID-19 recovery policy.

Nepal's Ministry of Forests and Environment has adopted detailed guidelines on carrying out activities related to the management of forests, wildlife, and environment under different levels of COVID-19-related restrictions/lockdowns. The guidelines include key management issues such as the surveillance against illegal forest harvesting and wildlife poaching, forests and wildlife management, supply of forest products to industries and consumers, supply of fuelwood for cremation, eco-tourism, forest research, training, and environment, as well as the operation of offices under the Ministry for providing services to the general public (personal communications with an official of the Nepal's Ministry of Forests and Environment).

It is also noted that several countries in the region have developed or are in the process of developing new national action plans and revising their existing plans (e.g., Kazakhstan, Kyrgyzstan, and Uzbekistan), that include socio-economic responses to the COVID-19 pandemic, as well as biodiversity conservation and GHG emission reduction through afforestation (Markovic et al. 2021).

There are some examples of forest-specific strategies and recovery measures being developed or already in place in a few countries. For example, the Government of the Republic of Korea (South Korea) has launched the K-Forest Plan: Korean Forest New Deal Policy 2020-2030 to address current and post-pandemic situations innovatively. The K-Forest Plan promotes the application of ICT in sustainable forest management (SFM), including the forest-related market, as well as in creating and supporting forest-related businesses and jobs. The K-Plan also aims at generating career interest in the younger generation in the forest products sector, and at more active bi- and multilateral global forest partnerships to overcome the trend of protectionism in world trade after the pandemic. Furthermore, the K-Forest Plan includes a plan on establishing 'forest buffers' against infectious diseases around the neighborhood areas by planting hinoki cypress (*Chamaecyparis obtuse*) or needle fir (*Abies holophylla*) trees, which are known for being curative (Damayanti 2021).

The Forestry Agency of Japan reported various measures designed to help address the challenges of the COVID-19 pandemic, in coordination with various stakeholders. Some of the measures designed for forest products and the production sector include:

> organizing national and regional forums with the involvement of all stakeholders to share information about various support measures; promoting new business opportunities to help adapt to the COVID-19 pandemic; and greater use of remote meetings for sales promotion and online bidding systems. These modalities may be mainstreamed in the forestry and wood industry as a result of the pandemic (ibid.).

In fact, all subregional reports highlighted the widespread use of digitization and application of ICT in providing services by public as well as private sectors. The application of modern ICT and other technology is seen to be increasing in order to maintain the functions of government forestry agencies in countries. For example, an online approval platform was developed by the Ministry of Forestry, Fiji, to facilitate business and export during the pandemic, which allowed for ease in undertaking business, with minimum or no compromise to the standards and ensuring compliance (Sakiti-Waqa 2021).

In China, immediately after the outbreak of COVID-19, a law banning the consumption of wildlife was enacted. Subsequently, the government updated the National Catalogue of Livestock and Poultry Genetic Resources in 2020 and Lists of Wildlife Under Special State Protection in 2021, with the number of protected species increasing from around 500 to around 1500, covering over 20% more threatened species (Ibid.).

In Southeast Asia, Vietnam adopted policies supporting the recovery of its forest industry through tax reliefs, capital support and other measures while Cambodia prioritized financial support to green products and services, mainly forest-related businesses. On the other hand, Malaysia shut down forest reserves and recreational areas within forests to curb the spread of the coronavirus (Giri and Karki 2021).

Chapter 4. Best Practices

Joshi (2021) in his report on South Asia explored the concept of best practices in some detail. The Merriam-Webster Dictionary[7] defines best practices as “a procedure that has been shown by research and experience to produce optimal results and that is established or proposed as a standard suitable for widespread adoption”. The emphasis here is on research and experience to be recognized as a best practice.

Wikipedia[8] notes that determining best practices to address a particular policy problem is a commonly used but little understood tool of analysis, because the concept is vague and should therefore be examined with caution. Vagueness stems from the term "best" which is subjective. While some research and evidence must go into determining a practice as the "best”, it is more helpful to simply determine if a practice has worked exceptionally well, and why. Instead of it being "the best", a practice might simply be a smart practice, a good practice, or a promising practice. On the other hand, in certain situations (e.g., the current evolving situation of COVID-19), a **Best Current Practice** (**BCP**) sounds like a more flexible term.

Thus, it requires evidence, experience, and some kind of standardization and recognition by the concerned community, such as government, industry, or a professional association, to be regarded as a best practice. When the problem is new and approaches to resolve are evolving, one has to be prudent

[7] https://www.merriam-webster.com/dictionary/best%20practice
[8] https://en.wikipedia.org/wiki/Best_practice

to label an approach, measure, or practice as the best practice. In the case of strategies and measures to cope with the challenges faced by forests and the forest sector due to COVID-19, it may be too early to determine best practice or practices, but to collect information on what strategies, measures, and activities seem to be working (or not); and what the experiences and conditions are under which certain results seem to emerge. The report on East Asia (Damayanti 2021) reaffirms this notion on "best practices":

> "… no best practices for reducing impacts of the COVID-19 pandemic on forests and the forest sector could be found or suggested. … presumably this limitation was because the strategies, recovery measures, and best practices on forest and forest sector are too early to be published or because relevant research has not yet been conducted or publication on the impacts was available in the national language only."

The respondents in South Asia either mentioned some general programmes and practices as examples of best practices, such as the community-based forest management, livelihood-focused forestry programmes, or the application of digital technologies for providing services during the pandemic, or did not provide any answer to the question. Similarly, the report on Central Asia also observed that there were no explicit examples of best practices for the forest sector in the literature. More than half of its respondents could not recognize best practices. This lack of specific examples of COVID-19-related best practices in the forest sector further support the author's view that, in the midst of the ongoing health and economic crises, it is too early to ascertain if any of the practices within the forest sector were successful or promising enough to be labeled as a best practice.

One response from Sri Lanka perhaps captures the essence of this question on best practices –

> "In the non-forestry sector, the best practice is vaccination. In the forestry sector, the best practice is livelihood development through forestry."

This quotation also supports the example of engaging labour rendered jobless due to lockdowns in tree-planting activities under the Ten Billion Tree Tsunami (TBTT) Programme in Pakistan. However, no survey respondent mentioned this Programme of Pakistan[9] as a promising best practice. But it could be considered as a best current practice in addressing the impact of COVID-19 on the economy and livelihoods of people who lost their jobs, while greening the landscape with trees. This also demonstrates the potential of the forest sector in the post-pandemic recovery.

Experiences from the application of evolving modern technologies such as information and communication technologies (ICT) and automation could turn out to be examples of best practices, as in the way of smart patrolling by using UAVs (drones). A respondent reported use of such tools in Bangladesh. In several countries of the region, the government forestry agencies have also started providing services to its stakeholders through online platforms (e.g., in Fiji, Japan, and South Korea). But it will take some time and experience to know more about their efficacy, efficiency, and scope before labelling them as "best practices".

[9] There was only one response to the survey from Pakistan and that also from an international organization.

In a broader scale, the cooperation and commitment for collective action by political leaders in different sub-regions to address the challenges posed by the COVID-19 pandemic on public health and economy may be considered a good policy practice. The region has witnessed several such collective commitments and actions, for instance, the commitment by the member governments of The Association of Southeast Asian Nations (ASEAN)[10] in promoting investment in the essential sectors of food, agriculture and forestry as a part of the COVID-19 recovery package in their region; the establishment of a "COVID-19 Emergency Fund" in South Asia; and the collective and decisive actions by the leaders of the Pacific Island Countries (PICs) to contain the coronavirus.

Future prospects

As for their prediction or expectation on the situation of forests a year into the future (end of September 2022), ~~a~~ majority of respondents in South Asia, East Asia, and Central Asia demonstrated optimism. They felt that the situation on forests is generally and gradually improving. With proper attention and support from government and international donors with additional financial resources, technical assistance, and capacity-building programmes, the situation of forest management, related businesses, and employment opportunity should improve.

A few respondents expressed uncertainty about the future, and even were concerned that there could be a continuation of deforestation in certain areas such as the hilly regions of Bangladesh, and that the quality of forests may continue to degrade. A quote from one respondent from Kyrgyzstan - *"If there are no [positive trends] in economic development, the negative impact on forests will increase"* - captures the sentiment.

What kind of international cooperation is needed?

All respondents clearly saw the need for international cooperation and urgent assistance to deal with the challenges faced by forests and the forest sector in the region. Most of the areas where the respondents saw the need for international assistance can be roughly grouped into two categories: (i) the usual list of areas needing external support, such as finance, technical assistance, forest biodiversity conservation, and capacity-building; and (ii) those areas which are more geared toward the post-pandemic recovery, and conceptualization and preparations for resilient forest-management strategies against future shocks.

The areas identified for international cooperation for pandemic recovery include the following:

- Sharing information on best practices around the world among stakeholders in the forest sector for replicating and scaling up. Documentation of best practices and dissemination would help improve forest management;
- Conceptualization of forests for the future with increased attention to the safety-net aspect;
- Collaborative studies toward resilient forests and forest/people relationship dynamics;
- Urgent need of relief packages for forest workers, including increased job opportunities;

[10] ASEAN has 10 members: Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Viet Nam.

- New policies/strategies for a green economy, building back better after the pandemic, fiscal incentives, investment, and technical assistance for timber trade associations, community groups and CSOs, and farmer and other stakeholder groups;
- Coordination on international timber trade;
- Capacity building, cross-sectoral and inter-regional cooperation; and
- Funding for research, and development and improvement of forest education.

> "We need up-to-date, accurate, scientific research results, which could show clearly, in figures, dynamics, etc., the important role of the forests for the post-pandemic recovery. They could provide a clear basis for the local population and public authorities to take decisions concerning the forests. As well as good practices that could be clear examples of the possibility to preserve forests and benefits." (A respondent from Kyrgyzstan)

Chapter 5. Conclusions and Recommendations

5.1 Conclusions

All countries of the world, including those in the Asia-Pacific region, have been struggling with the ongoing COVID-19 pandemic in all aspects of life. The impact and challenges posed by the pandemic and actions to contain it have created several challenges to the forest sector, as well. Forests in the sub-regions are predominantly under public ownership, thus are virtually an open-access resource. This made the forests more prone to be over-utilized for food, shelter, and income by desperate poor people further impoverished by the lockdowns and job losses. It has also been observed that countries and their specific stakeholders have experienced different impacts on their forests and the forest sector.

Despite it being almost two years since the coronavirus was first detected, and the development and use of several kinds of vaccines, the pandemic's future direction is still difficult to predict in the world. Pathogenic and environmental crises such as the coronavirus pandemic and climate change do not respect national borders. Therefore, without a concerted and coordinated effort at the global level, these crises would be extremely difficult to resolve, or will incur unreasonably high costs and time if each country tries to fix them separately.

While governments and donors are attending to immediate health crises due to COVID-19, with the priorities on saving lives and containing the pandemic, they must not lose sight of long-term solutions and goals dealing with climate change, sustainable livelihoods, economic development, conservation of biodiversity, ecosystem services, and the sustainability of forest resources. Nor should governments and international organizations ignore the increased risks of spillover of pathogens from wildlife to humans due to increasing deforestation. The pandemic has made it clear that there is a strong link between the human and non-human components of the planet, and of the serious consequences of causing an imbalance in natural processes shaped over millennia. When sustainably managed, forests can and do provide hope and a solution to not only preventing future pandemics, but will also deliver a host of other benefits to society in the current and post-pandemic stages.

Most countries in the world virtually suspended or drastically restricted most activities in all sectors other than health and other essential service sectors during their fight to contain the pandemic. Most countries have resource and time constraints. In such a situation, it is no surprise that not many strategies and measures were specifically designed and implemented to safeguard forests and leverage the economic, environmental, and social potentials of the forest sector for post-pandemic recovery. Furthermore, it seems too early in the overall scheme to have much information on the measures being implemented to address the impacts of COVID-19 on forests and the forest sector, or lessons learned, as well as challenges faced. The literature review and survey seem to confirm this reality.

Damayanti (2021) noted that there has been very limited published information available during the assessment on the East Asia sub-region. She presumed that it could be because relevant research on impacts had not yet been conducted, the strategies, recovery measures, and best practices on forests and the forest sector were being developed and implemented, and were too early to be published, or if published, then such publications were available in the national language only. This may also be the reason for very low response rates to the questionnaire surveys carried out for this second assessment

in the sub-regions. This observation is echoed by other authors emphasizing that the future assessments should be more systematic, built on verified evidence beyond perception surveys, reasonable time frame and as collaborative effort at country levels for data collections, consultation and verification.

Despite that, countries in the sub-region have adopted a range of measures to address the challenges posed by COVID-19 on forests and the forest sector. While many measures are general economic, financial, and public health-focused, there are also a few examples of unique measures specific to forests in a few countries. A growing trend of using modern ICT such as online platforms by public forestry agencies for providing services like permits to businesses (e.g., in Fiji), online bidding (e.g., in Japan) and for the seedling market and free rental of forestry equipment (e.g., in South Korea), as well as use of UAVs (e.g., in Bangladesh) and virtual meetings and communication has been observed.

In this regard, it should be emphasized that public awareness campaigns/initiatives on the significance of forest ecosystems and the role of sustainable forest management in managing and preventing future zoonotic eruptions, as well as in the recovery from the current COVID-19 crisis, are important. It is worthy to sensitize government leaders and non-state stakeholders of the ten recommendations of UNFF-16, which are still highly relevant and valid (see annex 1).

5.2 Recommendations

While the sub-regional reports have several excellent recommendations specific to the situations in their sub-regions and countries within, an attempt is made to present a few over-arching recommendations below. It is highly recommended to peruse individual sub-regional reviews for detailed analyses and recommendations.

a) *Develop, coordinate* and *integrate* post-COVID-19 recovery plans for forests with overall national recovery plans by emphasizing the value of goods and services from forest ecosystems in the recovery strategies
b) *Improve* communication strategies, modalities and messages on the significance of forests and SFM in addressing society's economic, social, environmental, and zoonotic outbreaks;
c) *Support* new business opportunities that emerged during the pandemic, and encourage greater investment in skills, particularly of youth, women, and micro-, small-, and medium-enterprises for future sustainable forestry-based businesses;
d) *Collaborate* on forest-related policies and scientific research with other relevant sectors and stakeholders, including, in particular, with the health sector along the "One Health" framework. In this regard, the Collaborative Partnership on Forests (CPF) may be encouraged to initiate preliminary contact with the WHO and medical research institutes for feasibilities;
e) *Encourage* forest scientists and managers to consider ways to address the zoonoses aspect related to forests and wildlife in sustainable forest management modalities;
f) *Invite* development partners and international organizations to help build capacity of developing country forest-related agencies and forest education institutions in modern

digital technologies for SFM, including on monitoring, law enforcement, and communication;

g) *Consider* initiating or partnering with relevant organization(s) for a systematic global monitoring system to track what changes/measures/results are emerging on the issues concerning forests, the forest sector, and other related sectors (e.g., agriculture, energy, transportation, trade, etc.) as a result of COVID-19. UNFF sessions should be updated from such monitoring, and space out in-depth assessments at 2-3 year intervals;

h) *Encourage* countries to launch new or to reorient currently operational forest rehabilitation and management programmes and projects to help employ a low-skilled workforce, including women, youth, migrant workers, and the unemployed as a result of the pandemic and economic slowdowns;

i) *Strengthen* regional and international cooperation in tackling the impact of the COVID pandemic on forests and the forest sector;

j) To overcome some of the challenges experienced by the current sub-regional assessments, for example, the minimal timeframes, language barriers and low rates of survey responses, the Secretariat may *consider* conducting future assessments by allocating sufficient time, involving in-country experts and national workshops; and

k) *Invite* Pakistan to organize a special side event at UNFF-17 to share its experiences, achievements, and lessons learned from its "Ten Billion Tree Tsunami Programme" in addressing the COVID-19 challenges, as well as other ecological, climate change, and social challenges of the country. Kazakhstan should also be encouraged to co-host this event to inform the session participants about its recently announced initiative to plant 2 billion trees in the countryside and 15 million trees in urban areas.

References

Note - The complete list of references for sub-regional assessment reports can be found in each of the sub-regional reports. The sources of information listed below contain only those sub-regional reports and any additional sources referred to in preparing this regional report.

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Annex 1. UNFF-16 policy recommendations for a sustainable and resilient recovery from the COVID-19 pandemic (headings only)

The sixteenth session of the United Nations Forum on Forests (UNFF), identified the following responses and measures, and policy recommendations for a sustainable and resilient recovery from the COVID-19 pandemic and an enhanced contribution of forests to inclusive sustainable development:

a) Integrate sustainable forest management into COVID-19 pandemic recovery plans;
b) Renew the commitment to internationally agreed forest-related goals and targets and sustainable use;
c) Promote the "One Health" approach and include the value of ecosystem services in recovery plans;
d) Build momentum to halt illegal and unsustainable forest practices;
e) Integrate investment in forests into the recovery plans;
f) Strengthen institutions and policies;
g) Strengthen forest governance;
h) Strengthen science and technology;
i) Strengthen data collection, analysis and exchange; and
j) Mobilize resources from all sources for forests.

Source: UNFF (2021). Report on the sixteenth session. E/2021/42-E/CN.18/2021/8

https://www.un.org/esa/forests/documents/index.html