

Initial Assessment of the Impact of COVID-19 on Sustainable Forest Management Western European and other States

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In order to have a broad overview of the impacts of COVID-19 on forests, forest sector, and forest dependent people, and to assess the potential of forests to diminish the adverse impacts of the pandemic, the United Nations Forum on Forests (UNFF), at its fifteenth session, requested the UNFF Secretariat, in consultation with other members of the Collaborative Partnership on Forests (CPF) and with input from members of the Forum, to compile an initial assessment of the impact of the COVID-19 pandemic on: (i) sustainable forest management (SFM), (ii) the forest sector, forest-dependent people, indigenous peoples and local communities, (iii) forest financing and international cooperation, and to present this assessment to the Forum at its sixteenth session in April 2021. To initiate this assessment and collect information, the UNFF Secretariat commissioned five assessments to be conducted on a regional basis.

The views and opinions expressed herein are those of the authors and do not necessarily reflect those of the United Nations Secretariat. The designations and terminology employed may not conform to United Nations practice and do not imply the expression of any opinion whatsoever on the part of the Organization.

An Important Limitation to this Study

This report is based on information from consultees describing the effects of the first wave of Covid-19 and the responses made to it. Western Europe is now facing a second wave that started in October 2020, which is the beginning of the Winter season. As clearly shown in Figure 1, the number of reported cases is generally higher now than during the first wave but against this, national health services are now experienced in treating Covid-19 and better prepared than they were in spring. There has also been excellent progress with developing vaccines. Nevertheless, the way in which the second wave will play out remains uncertain. There is also now the spectre of a more highly transmissible mutation of the Covid-19 virus, initially identified in UK - <https://www.bmj.com/content/371/bmj.m4857> - and a substantial probability of both a third wave of infection and a strong likelihood of further extensive lockdowns in at least some countries in Western Europe.

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Executive Summary

This report is one of a series of six commissioned by UNFF for each of the major UN regions. The terms of reference requested information on the impact of Covid-19 on SFM and on the people who work in and/or are dependent on them for their livelihoods. The topics to be addressed in respect of each of six regions are presented as seven questions. Each of these is given below together with a brief synopsis of the findings relevant for the Western Europe and Other States region.

The findings presented here are drawn from a wide range of responses from people across the region but it is important to note that they relate mainly to analysis derived from the effects of the first Covid-19 outbreak which became a serious public health issue in February 2020 with restrictions following in most countries from March 2020 onwards.

Q1 Sustainable forest management, and conservation activities production, forest protection, afforestation, etc.

By and large, despite the restrictions that were put in place in all countries in the group, most activities have been carried out largely as planned. There were some limitations in respect of new planting but small private owners in countries such as Finland increased the work time spent in their forests while others in Portugal were not able to do so. The timing of thinning and felling operations was the most commonly reported issue and was a result of changes in demand and trade patterns leading to unanticipated changes to demand for specific products.

Economic recession, travel restrictions and home working resulted in increased demand for packaging material and pallets but reduced demand for print quality paper, which had already started, and for construction material. While variation in demand is well-known for basic materials for which there is derived demand, the magnitude and speed of change was unexpected.

Australia was still recovering from its Black Summer of severe fires in planted and natural forests when Covid-19 hit, while Central Europe was still coping with severe bark beetle outbreaks in Norway spruce. In both areas, salvage felling was underway which had affected the market for raw material pre Covid-19, making it hard to separate what is a very complex and interwoven set of trends. The most worrying impact in terms of forest management and protection was that on early season fire prevention activities. This was of major concern in Portugal and Spain and would also be so in other areas in Europe with a Mediterranean climate where summer fires can be a major threat.

Q2 Livelihoods of forest-dependent people, indigenous peoples and local communities, smallholder forest owners, workers, women and youth.

Forest dependency in terms of direct consumption is very uncommon in the region but there is dependency in terms of income streams for forest owners and employees. All governments provided a system of fiscal support that lessened immediate problems for most people that were affected but those with limited diversity of income from their forest or reliant on narrowly defined work practices were more affected than others. Cross border travel restrictions initially affected employment in continental Europe but countries where this was an issue quickly responded with a solution.

Forest service values, especially recreation, support a substantial hospitality sector in all countries in the region and this sector has been severely affected due to travel restrictions. Because women tend to predominate in the hospitality sector, and also in domestic responsibilities, they have often borne more of the negative impact from loss of employment in the hospitality sector and from increased home working, especially when schools and childcare have been curtailed. In terms of youth, the main effect noted was for those in education and training, due to restrictions on field work and the close contact required for inculcation of practical skills.

Q3 Forest industries labour market and employment, as well as the domestic and international demands for forest products and services.

The rapid and unexpected change in the timber market, exacerbated in some countries by severe salvage felling of fire and insect damaged timber, forced changes in the harvesting and processing sectors in particular. This has been amplified by a severe drop in demand for construction timber in many but not all countries in the region. In most cases, government fiscal support measures cushioned the impact but companies with a niche focus and processors with hard to adapt conversion chains experienced the most difficulty. A number of countries noted a reduction in demand for construction timber that was partially balanced by much increased demand for DIY timber and other domestic uses; this may change with the second wave in winter in Europe.

Because of the second wave of Covid-19 now affecting most of the region, it is impossible to foresee how quickly economies will bounce back and most respondents indicated that at least some of the changes were likely to be permanent as there are strong indications that overall working patterns will change with more home-working and less commuting to centralised offices. The severe impact on the hospitality sector linked to forest recreation is noted above.

Q4 Access to forest financing and investment, and public spending on forests.

All governments in countries in the region set up financial support systems for employees and self-employed people together with a range of business support grants and similar instruments from which the forest sector benefitted as did the country as a whole. Many commented that lockdown stimulated increased use of the recreational opportunities offered by forests and that this had led to improved awareness of service values.

No country reported serious change to public investment in forests as a result of the initial response. However, several expressed concern that the currently unknown impact of the second wave and the resulting economic recession could lead to reduced availability of financing as part of a general reduction in the capacity of public finance. Urgent demands from more badly affected sectors and possibly from rising unemployment could worsen this. The specific country pictures vary but in none was it particularly clear at this point in time.

A number of countries suggested that economic stringencies could lead to pressure on development assistance financing for forests. While forests and forestry are often a relatively low priority for development assistance compared with sectors such as health and education, which are likely to have pressing needs, there is some positivity in that trees and forests have an important role to play in climate change responses. This is the other serious global issue, which has not disappeared although Covid-19 has tended to suppress its prominence in the immediate term.

Q5 Forest sector, international institutional capacity at the regional, sub-regional, and national and subnational levels.

All countries in the region have well-established, well-staffed and adequately resourced institutions that are, consequently, robust and reasonably resilient. None felt any need to make significant changes to policies or strategies beyond noting the lesson from the pandemic for risk assessments and all felt that existing systems were largely adequate with no major revision or updating required.

Although all countries had quickly adapted to increased use of virtual meetings, which were anyway already in use prior to Covid-19, they equally recognised the limitations of virtual meetings in the longer term. The lack of social contact in such meetings does make resolution of complex and difficult issues more challenging and larger meetings tend to restrict engagement of all attendees; these points were widely noted. Most expected that physical meetings would return reasonably soon while also valuing the reduced travel time and cost that virtual meetings offer. The future balance is likely to change from the past to include more virtual meetings where these are appropriate.

Q6 International and regional cooperation on forests and forestry issues.

This element, which was mentioned by nearly all countries, has been most severely impacted by Covid-19 and the resulting restrictions that the response to the pandemic incurred. The general view was that in the short term there were advantages in that the virtual meetings enabled more people to engage in meetings at much lower cost but that in the long term, the limitations of virtual meetings to deal with complex and difficult issues would more than counter the benefits.

Much will depend on how quickly regional and international travel becomes possible but most countries recognised that there is likely to be a step-change with more use of virtual meetings as a means of exchanging information at lower cost. This will not, however, obviate completely the need for some physical meetings to deal with more complex and difficult issues.

Q7 Emerging opportunities (if any) that Covid-19 has brought to the fore and potential responses and measures for the forest sector's recovery and enhanced contribution of forests to inclusive SFM.

Notwithstanding the sad loss of life and the continued ill-health of some survivors due to Covid-19, the pandemic has also given rise to some positives. Within the WEOG region it has proven that forest institutions and systems are generally robust and able to deal quickly and effectively with unexpected shocks. There will inevitably be some casualties in terms of job losses and the need to reframe businesses but these have been partially insulated by strong and very quick government responses although these were economy wide and not sector specific. In light of the severe, second wave of Covid-19 experienced in Western Europe and the imminence of national vaccination programmes, it would be useful to do a follow up study in 12 to 18 months' time.

There has been little impact on SFM of the resource base. The increased recreational use of the forest in many countries may have raised both its profile and appreciation of its value, even if the hospitality sector that serves those partaking of recreation opportunities has been badly hit. The forest industry sector has had to adapt to changing demand, which while it may have led to short term difficulties has also emphasised the need for flexibility and shown the potential weaknesses of complex global supply chains and just-in-time purchasing. In this sense, it is perhaps a wake-up call for improved risk assessment and the need for flexibility and diversification.

Although there are significant differences in terms of the forest cover and the way it is used between the countries that make up the WEOG group, all ascribe a high value to forest services, even if these are not priced, as well as to forest products. Covid-19 has probably raised the profile of service values and, depending on how the second wave of Covid-19 plays out and the efficacy of national vaccination programmes, the overall impact may not be very large. Although climate change is a much slower acting risk, it is also less amenable to rapid solution than a pandemic and there is an opportunity to learn from the pandemic to assist in raising awareness of and attention to climate change.

Although many countries noted that the economic recession caused by Covid-19 had raised the political profile of moving to a green economy as a response, this has not yet been translated into concrete commitments. Although it is the greatest opportunity to arise from the pandemic, it is possible that short term economic priorities may limit the scope and extent of a green transition; the emergence of the more transmissible mutation of Covid-19 has, at the very least, muddied the waters around such initiatives. There are clearly immediate possibilities for positive change arising from Covid-19, for example increased use of virtual meetings and technologies such as drones for forest inspection but the most important is to harness lessons that can be applied to a global response to climate change.

Acronyms and Abbreviations

CPD	Continuing Professional Development
ECDC	European Centre for Disease Prevention and Control
GDP	Gross Domestic Product
GNI	Gross National Income
ODA	Official Development Assistance
OECD	Organisation for Economic Co-operation and Development
PPP	Purchasing Power Parity
SFM	Sustainable Forest Management
UK ICF	UK Institute of Chartered Foresters
UNECE	United Nations Economic Commission for Europe
UNFF	United Nations Forum on Forests
UNFFS	United Nations Forum on Forests Secretariat
WEOG	Western Europe and other States Group

1 Introduction

1. Forests cover around a third of the world's terrestrial surface and are critically important for human well-being. Diverse systems of forest resource use have evolved over time and today directly and indirectly support the livelihoods of billions of people around the world (Winkel *et al.* 2019). Given the differences in forest types and socio-economic settings, many of these resource use systems may have little in common on a regular basis, but the Covid-19 pandemic, in a tragic way, has created a common ground.

2. At the time of writing (December 2020), there have been over 60 million confirmed cases of Covid-19 and the pandemic has claimed the lives of almost one and a half million people globally (WHO 2020). Apart from the direct health implications of the disease, the response measures taken to slow the spread of the virus have resulted in enormous disruptions to global economic systems, supply chains, and peoples' livelihoods.

3. With forests forming a major life-supporting global ecosystem, it is of great importance to understand how forest use and management changed as consequence of the Covid-19 pandemic and the measures taken to halt its spread. Looking forward, there is need to consider how efforts to reduce deforestation and forest degradation that disrupt natural equilibria in forest ecosystems can become part of short- and longer-term recovery packages. This is particularly relevant for future risk prevention strategies, given that biodiversity destruction is a main reason for zoonosis outbreaks and several zoonoses can be traced back to forests (Olivero *et al.* 2017; Karesh *et al.* 2012; Wertz-Kanounnikoff and Rodina 2020; OECD 2020).

4. In response to these needs, Members of the United Nations Forum on Forests (UNFF) mandated the UNFF Secretariat to compile an initial assessment of the impacts of Covid-19 on forests and the forest sector through the omnibus resolution during its fifteenth session on 30 June 2020. The aim is to compile an initial assessment of the impact of the Covid-19 pandemic on: (i) sustainable forest management; (ii) the forest sector, forest dependent people, indigenous peoples and local communities; and (iii) forest financing. In fulfilling this mandate, the UNFFS involved several consultants to collect the initial information for this assessment in various regions.

5. The geographical focus of this report is 'Western Europe and Others Group (WEOG), excluding the USA and Canada, for which a separate assessment is being conducted. The pandemic has followed a similar trend in the 27 WEOG countries (see Figure 1). After the initial outbreak in the European spring 2020, the number of daily new confirmed cases decreased over summer but there has been a second wave in many countries since the beginning of autumn. To set the stage for the assessment of Covid-19 impacts on forests in the WEOG, the sections below review pre-Covid-19 data on selected dimensions of SFM, the forest sector and forest financing.

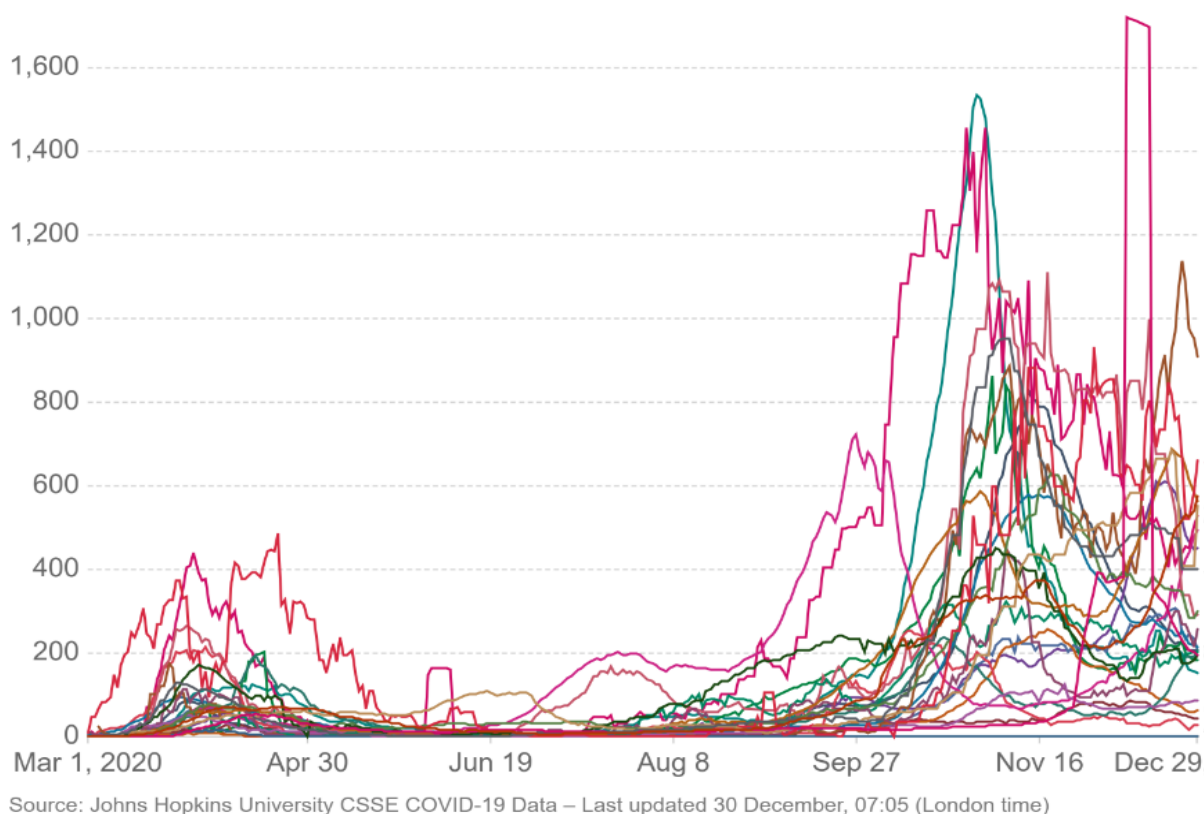
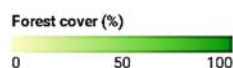


Figure 1 Daily new confirmed Covid-19 cases per million people in WEOG countries, excluding Canada & USA

Source: <https://ourworldindata.org> (7 day rolling average)

1.1 Forest cover and protected areas



Most recent data available
Source: FRA 2020 • Created with Datawrapper

Figure 2 Forest cover among the WEOG countries

The WEOG countries have a very diverse forest cover, with nearly 74% in Finland and only 2% in Iceland (see Figure 2).

The countries in the WEOG region (excluding Canada and USA) are: Andorra, Australia, Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Liechtenstein, Luxembourg, Malta, Monaco, Netherlands, New Zealand, Norway, Portugal, San Marino, Spain, Sweden, Switzerland, Turkey, United Kingdom of Great Britain and Northern Ireland.

(This list of WEOG members is based on the relevant UN regional grouping of countries)

6. Conservation is an integral part of sustainable forest management. Among the WEOG countries, the share of forest area located within legally established protected areas appears to increase with forest cover. However, there are outliers such as the Netherlands with a comparatively low forest cover but high share of protected forests and Nordic countries such as Sweden and Finland with high forest cover but comparatively low shares of protected forests.

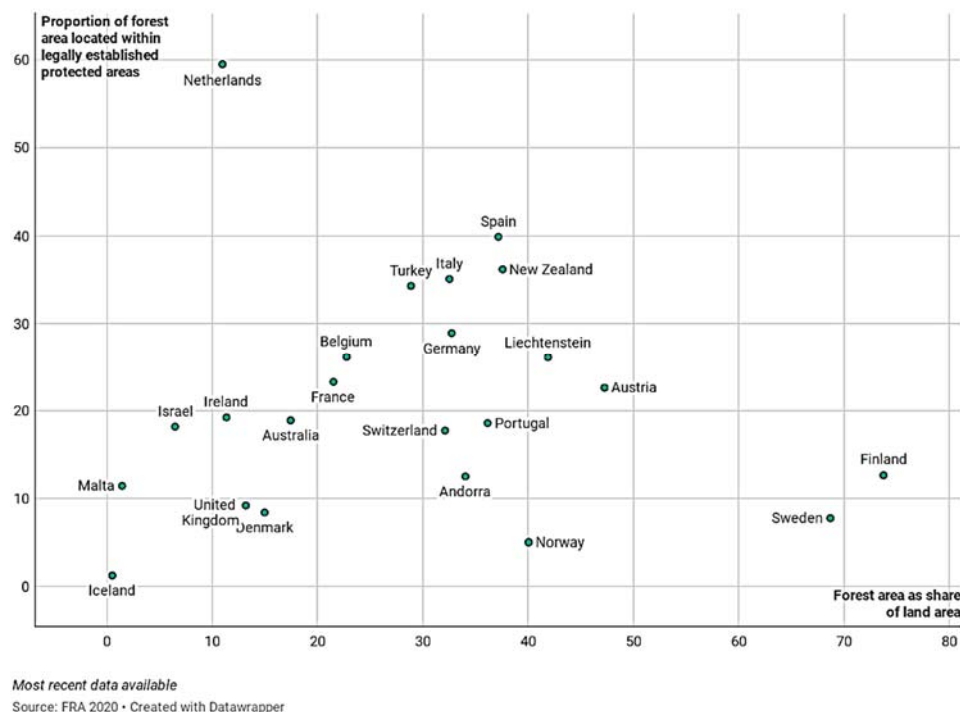


Figure 3 Share of protected forest areas and forest cover

1.2 Forest sector

7. The countries in the WEOG are among the world's wealthiest in terms of GNI per capita using both the Atlas and PPP methods. While forest cover varies widely within the group, from 2% in Iceland to 74% in Finland, the contribution of the forest sector to GDP has been declining since 1990 (FAO 2020a), (FAO, 2014). It is only in Austria, Finland, Liechtenstein and Sweden where employment in the forest sector is 1.5% or more of the national total employment and only in Austria, Finland, New Zealand and Sweden does it contribute more than 1.5% to GDP. Although the figures are higher when looking at the percentage contribution to agricultural and manufacturing GDP, the pattern is that these same four countries are outliers with higher percentages (FAO, 2014).

8. In absolute terms, the number of people finding employment in the forestry sector varies greatly between the countries, ranging from more than 40,000 in Portugal, Turkey, Italy and Germany, to less than 1,000 in Switzerland and Iceland (Forest Europe/UNECE/FAO 2016). It is important to note that in Western Europe, 69% of forest is privately owned (FAO, 2015), including by numerous small forest owners, who may also be farmers and undertake forest work in the winter months when the demand for agricultural work is less. Historically, as mobility was often restricted during this season, this was a valuable mechanism for capitalising the value of labour.

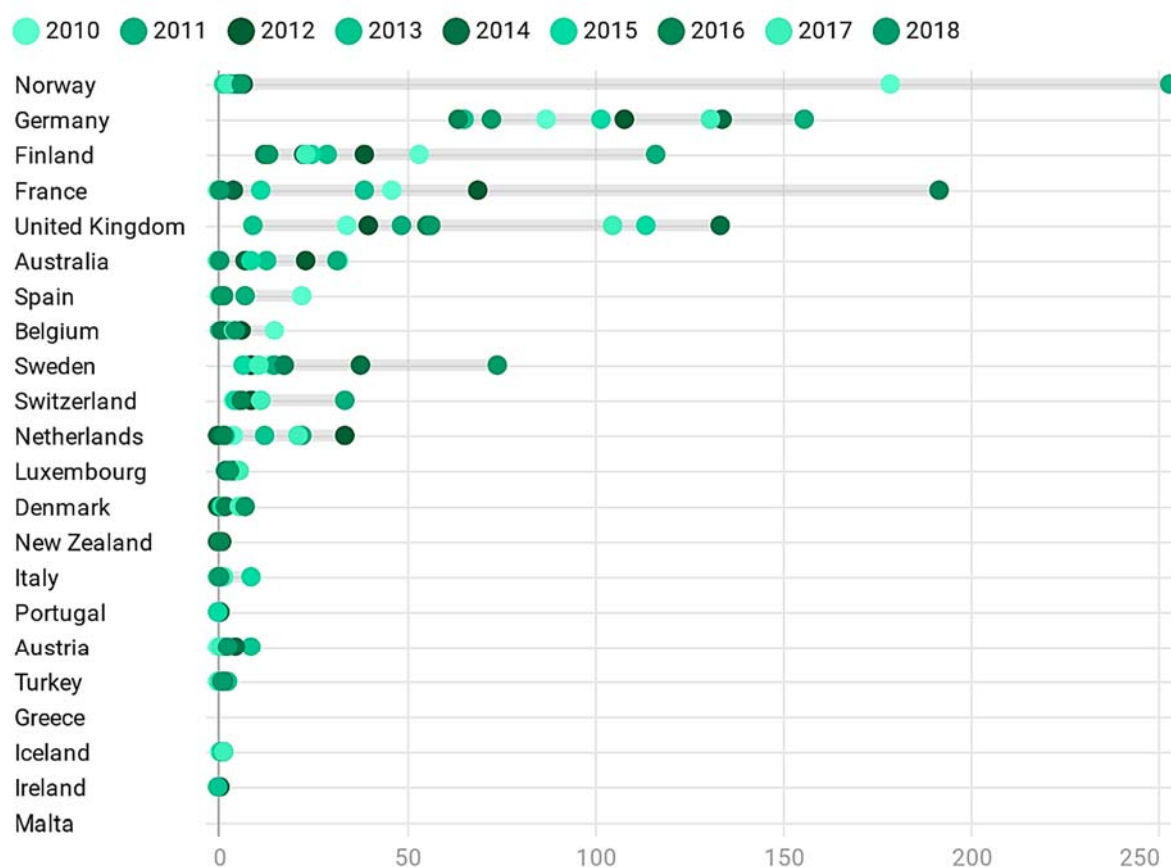
9. Direct consumption of forest products is very limited across all countries in the region. In recent decades, nearly all have moved to an increased focus on service values in parallel with production, even where the latter may be a primary goal. While the service values themselves, such as amenity and landscape, may be free at the point of delivery, they have supported active growth in the service sector, such as hotels, campsites, refreshment facilities and specialist guidance, that cater to users of these values.

10. The number of student graduations in forest-related education appear to reflect the employment opportunities in the forest sector. Italy, Spain, Turkey, Germany and Finland had more than 1,000 students annually (FAO 2020a). Between 100 and 400 graduations are reported for Australia, Netherlands, Austria, Denmark, United Kingdom, New Zealand, and Belgium. All other countries either reported fewer annual graduations or did not provide data.

11. Several of the WEOG countries are home to indigenous peoples. Given the lack of a unanimous understanding or definition of the term indigenous peoples, it is difficult to find data that explicitly describe indigenous people in view of the forest sector. Generally, it is however well-acknowledged that indigenous peoples are the custodians of some of the world's most biodiverse regions (UN DESA 2009). From a financial perspective, forest enterprises run by indigenous peoples and lacking access to capital markets are among the hardest hit by the pandemic in the forest sector (Lang *et al.* 2020).

1.3 Development assistance to forest financing

12. Data on ODA flows to the forestry sector are provided by OECD for most of the WEOG countries. Although there can be substantial variation in spending amounts across years, Norway, Germany, Finland, France and the United Kingdom have provided the largest volumes of forestry specific ODA (see Figure 4). Reducing temporarily the United Kingdom's legal requirement to contribute to development assistance from 0.7% of 0.5% of GDP is currently being debated (UK Parliament, 2020).



US Dollar, Millions, 2018

Source: OECD • Created with Datawrapper

Figure 4 Total ODA flows to the forestry sector by donor country

2 Assessment questions and methods

13. The assessment questions provided in the Terms of Reference for this report focus on understanding the impact and implications of Covid-19 on:

- a. Sustainable forest management, and conservation activities production, forest protection, afforestation etc.
- b. Livelihoods of forest-dependent people, indigenous peoples and local communities, smallholder forest owners, workers, women and youth.
- c. Forest industries labour market and employment, as well as the domestic and international demands for forest products and services.
- d. Access to forest financing and investment, and public spending on forests.
- e. Forest sector, international institutional capacity at the regional, sub-regional, and national and subnational levels.
- f. International and regional cooperation on forests and forestry issues.

14. Additionally, the assessment is requested to provide answers to the question: *What are the emerging opportunities (if any) that Covid-19 has brought to the fore and potential responses and measures for the forest sector's recovery and enhanced contribution of forests to inclusive SFM?*

15. We argue that the response measures taken to curb the spread of the Covid-19 pandemic are the primary drivers of change relevant to the forest sector, rather than the health implications caused by the pandemic itself. This calls for a two-step assessment framework. In a first step, we need to understand which key response measures were taken in the WEOG region. In a second step, we can then assess their impacts and implications on the forest sector.

16. We compiled the data for this two-step assessment from several sources. Information on response measures in many of the WEOG countries was obtained from the European Centre for Disease Prevention and Control. The information for the second step was collected through an explorative literature review, a survey sent to the UNFF focal points of the WEOG countries (see **Error! Reference source not found.** for the survey questions), and expert interviews with selected national forest sector stakeholders. The surveys were sent out to the focal points on 12 October 2020, followed by several rounds of reminders.

17. While the results of the survey and interviews focus on the WEOG countries, the geographical scope of the literature review is broader. Overall, 15 responses were received from the following countries: Andorra, Austria, Australia, Finland, Germany, Iceland, Ireland, Israel, Luxembourg, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom of Great Britain and Northern Ireland (separate responses for England, Scotland, Northern Ireland as forestry is a devolved matter); several more are still promised. The expert interviews started following the responses from focal points. In the event that further information is received before the Global Expert Meeting, this report can be updated.

18. Two Zoom meetings were held on 16 and 17 December at different times to allow people to join from both Australia and UN HQ but the numbers joining both were very small. This was perhaps inevitable due to the onset of severe measures taken in most countries to try and bring the second wave of Covid-19 under control. Overall, the findings are unlikely to change; even if further information is now received, it will only add detail.

3 Results

19. Following our two-step approach presented in the methods section, we first provide an overview of the Covid-19 response measures implemented in the WEOG and then present the findings on implications structured according to the six dimensions specifically relevant to the forest sector, as given in the Term of Reference.

3.1 Covid-19 response measures

20. All countries within the group have had wide-ranging packages of fiscal support for individuals and companies affected by Covid-19 restrictions. Summary information on these national support packages is continuously collected and updated on a website hosted by the International Monetary Fund ([Link](#)).¹ These are economy wide and, while not without some criticisms, they have generally helped to cushion the most serious economic impacts of Covid-19. All countries are facing economic downturns of varying severity and in most, especially those in Western Europe, there has been a resurgence of the virus since early October, resulting in re-imposition of lockdowns and other restrictions that vary between and sometimes within countries.

21. Consequently, this review can only be a snapshot of the initial impressions of the effect of Covid-19 on SFM. Much will depend on how severely the Covid-19 virus re-emerges across the countries in Western Europe during the winter season, the efficacy of vaccines and the speed and coverage of vaccination programmes. As with the global economy, all countries in the group have suffered some economic recession triggered by Covid-19 (World Bank 2020) and often increased borrowing. The combination of these two critical factors, re-emergence of the virus and economic recession, will have a major effect on the speed of economic recovery.

22. A closer look at the response measures reveals that a key factor has been the use of protective masks. Their use was either recommended on a voluntary basis or mandatorily prescribed and related to different indoor or outdoor settings, the number of people gathered, *etc.* Many additional measures were implemented that aim at decreasing physical encounters between people, either generally through a so-called lockdown or more selectively at workplaces, in educational institutions, or other places where people frequently meet, ranging from gyms and sports facilities to places of worship. How national restrictions apply to activities in forest and forest industry sectors were reported in questionnaire responses, which are detailed in sections 3.2 to 3.6 .

23. Table 1 presents data on the number of days that selected measures were implemented in most of the WEOG countries. The colouring of the cells as a heat map helps visual comparison of which measures were implemented for a particularly long or short period of time. However, the list of measures included in the ECDC database is far more detailed than the overview presented here and includes various additional categories, such as restrictions on gatherings of people in different group sizes and indoor/outdoor settings.

24. While general stay home orders or recommendations were often implemented for less than 100 days, or not at all, as in Finland, Iceland, Malta and Norway, other measures such as the full or partial closure of public spaces and entertainment venues were implemented in almost all of the listed countries, often for more than 200 days. Countries hit hard early by the pandemic, such as Italy and Spain, stand out in terms of implementation length, especially for measures related to educational institutions. Again, these also affected forest and forest industry sectors.

25. In the longer run, at least some of the changes to work and living patterns during lockdown periods may prove irrevocable as a result of hugely increased use of virtual communications and more home working. There are strong indications that the established pattern of commuting into

¹ <https://www.imf.org/en/topics/imf-and-covid19/>

offices in urban centres will be subject to major changes in where people choose to live and a reduction in urban space devoted to offices. At the same time, the trend towards online shopping which was heavily used during lockdown periods is likely to continue albeit not at the same high level. These changes will be of different magnitudes in various countries making it hard to do more than indicate the overall trends.

	General stay home		Work place		Education				Other major spaces of physical encounter							
	Full or partial stay home order (lockdown)	Full or partial stay at home general recommendation	Work place closures	Partial closure of public transportation	Full or partial closure of day care	Full or partial closure of primary schools	Full or partial closure of secondary schools	Full or partial closures of higher education institutions	Full or partial closure of public spaces of any kind	Full or partial closure of entertainment venues	Full or partial closure of Gyms and Sports Centers	Full or partial closure of hotels and accommodation places	Full or partial closure of non-essential shops	Full or partial closure of places of worship	Full or partial closure of cafes and restaurants	
Austria	45	5	0	0	49	63	78	198	210	73	73	59	45	210	60	
Belgium	53	112	0	0	32	86	167	214	213	213	109	0	80	205	87	
Denmark	0	0	58	0	30	30	63	137	208	82	82	0	208	61	113	
Finland	0	0	0	0	0	57	139	139	208	208	75	0	0	0	128	
France	76	0	55	0	97	98	97	98	97	97	98	0	77	0	90	
Germany	0	103	0	0	109	107	93	0	210	210	59	0	35	0	76	
Greece	42	24	0	0	82	82	67	215	212	184	92	107	78	82	212	
Iceland	0	0	0	0	0	0	49	49	133	112	90	0	0	0	70	
Ireland	51	52	0	70	109	165	172	215	114	116	104	0	97	7	104	
Italy	55	0	0	0	192	193	192	192	217	96	216	0	68	97	69	
Liechtenstein	0	58	0	0	56	84	84	84	86	81	86	0	41	0	59	
Luxembourg	53	0	0	84	69	69	70	69	211	210	74	0	55	0	210	
Malta	0	0	0	0	214	109	109	109	208	121	208	0	203	0	208	
Netherlands	0	76	48	80	83	83	105	172	215	214	105	0	0	105	120	
Norway	0	0	0	0	39	46	60	95	215	94	95	0	0	0	215	
Portugal	0	44	0	209	75	182	181	174	213	213	211	0	211	78	211	
Spain	57	4	0	0	168	168	168	168	212	212	212	212	12	12	212	
Sweden	0	217	0	0	0	0	89	89	104	0	0	0	0	0	104	
United Kingdom	101	7	0	0	161	161	161	0	210	210	110	100	80	55	127	

Table 1 Number of days of selected response measures

(if still ongoing 13.10.2020 was used as cut-off date)

Data source: European Centre for Disease Prevention and Control (downloaded October 13th)

3.2 Sustainable forest management, and conservation activities production, forest protection, afforestation

3.2.1 Literature review

26. The literature on SFM and Covid-19 can be divided into two parts. On the one hand, there are studies that investigate specific changes before and during the pandemic, *e.g.*, in terms of recreational forest use or forest fires. On the other hand, various reports stress the importance of SFM for post-Covid-19 recovery and future prevention plans.

27. Representing the first group, Derks *et al.* (2020) compare visitor numbers to a forest in Germany before and during the implementation of Covid-19 measures. They find that visitor numbers more than doubled. With new sets of visitors coming to the forest, including young people, families with children, and visitors from more distant municipalities, new needs and opportunities for communication on forest management have emerged (Derks *et al.* 2020). In Switzerland, visitor numbers increased especially in forests near urban centres during the spring lockdown. Motivations for visiting the forest also shifted from social reasons, such as meeting friends and family or picnicking, to reasons of maintaining physical and psychological health (Kittl and Lässig 2020).

28. At the same time, tourism came to a halt in other global geographies resulting in funding shortages for conservation (Lindsey *et al.* 2020). Although rangers' work was largely classified as essential service, allowing them to continue working during lock downs, budget restrictions have impaired employment security, operational ability and even dismissals of rangers and guides (ILO 2020; IRF 2020). This in turn may have given leeway to increased illegal logging, poaching, charcoal production and various forms of land use change (ILO 2020).

29. Pressure on forests is additionally expected to increase as employment opportunities in cities decrease and people migrate from urban to rural areas (FAO 2020b). In places where forests and their products serve as a livelihood security net, there is risk that natural resources will be overharvested to meet subsistence needs (FAO 2020b). Yet, at least in the short run, a significant association between confirmed Covid-19 cases and a reduction in forest fire incidents and fire intensity was empirically established in Nepal (Paudel 2020). By contrast, a large upsurge of fires was measured during the lockdown in Colombia (Amador-Jiménez *et al.* 2020).

30. As mentioned above, a second part of the literature develops the role of SFM in post-Covid-19 recovery. Many argue that forests need to be understood as an element of disaster risk reduction solutions and should play a key role in the post-pandemic recovery (Rametsteiner 2020; ILO 2020). In this view, strengthening sustainable forest ecosystems and resilient forest-dependent livelihoods should be a major pillar of green Covid-19 recovery strategies (UN DESA 2020). Supporting forests and forest-dependent people can help protect the environment and contribute to reducing the risk of future zoonotic pandemics (ILO 2020).

31. As part of Covid-19 economic recovery packages, afforestation could provide many jobs, that require comparatively little training and low up-front capital investments, while being largely compliant with social distancing norms (Hepburn *et al.* 2020). An example is Iceland, which includes the creation of new birch forests in its second Covid-19 economic stimulus package (UN DESA 2020). In Sweden, in course of the pandemic, workers who were laid-off, recent immigrants and young people were trained in tree planting, reforestation and logistics (ILO 2020).

3.2.2 Summary of survey and expert interview findings

32. In most countries, the forestry sector was classed as an essential service. Working practices had to be adapted quickly to take account of social distancing but the bulk of field forestry activities can accommodate this with little difficulty. Most operations were therefore able to continue although in some cases timings were affected and targets were not always reached. In the UK,

planting in Scotland was slightly affected while in Sweden, pre-commercial thinning was delayed to prioritise planting. Replanting in Portugal by small owners and SMEs was delayed significantly and it is unclear whether some areas will ever be replanted. Perhaps the most serious reported issue is the delay to fire prevention preparations reported by Portugal and Spain [France, Greece and Italy, which all have Mediterranean climate areas in which fire is a major influence are also likely to be similarly affected]. By contrast, in Finland private forest owners were very active in forest management and improvement work during the crisis.

33. Thinning operations were also delayed in a number of countries. In most cases, this would have little impact on the growing stock but much more impact on harvesting and wood using industries. In Australia, Covid-19 restrictions followed almost immediately on the Black Summer period of devastating fires affecting much of the forest area. In particular, in the south east this has severely exacerbated the problems of clearing up fire damaged planted and natural forest areas. In Iceland thinning was reduced as a consequence of the drop in tourism and the subsequent decreased demand for fuelwood in pizza restaurants.

34. Felling operations have proven more problematic as industry responds to a reduction in demand for construction timber across many of the countries in the group. While within reason delayed felling may not have much direct effect on the stand or its average yield since, at least in even aged forests, the age of maximum productivity is normally within a band rather than at a specific age, but it will have an effect on future plans and, of course an immediate effect on contractors and their personnel committed to such tasks.

35. The severe bark beetle infestation in Central Europe and the huge extent of fire damaged natural and planted forests in Australia have both been severely exacerbated by Covid-19 and the tight restrictions put in place in most countries as a result. These three factors together have resulted in major impact on the wood market, domestic and export, as summarised in Box 1 below.

36. As well as field operations themselves there is also the question of whether, and if so how, Covid-19 restrictions have affected field inspection, supervision and quality control. Although there were some relatively minor disruptions, such as the need for protective personal equipment in places like nurseries and to ensure social distancing was applied, most countries reported that there was little effect. Portugal raised the issue of restricted travel that had to be resolved and UK (Scotland) noted the danger of unreported pest and disease outbreaks due to reduced presence on the ground while Turkey reported that data for the national SFM Criteria and Indicators was slow in coming forward although it is unclear to what extent this is Covid-19 related. In Germany, cross-border travel restrictions prevented personnel from other countries coming to work. This appears to have been more significant in the processing sector than in the forests themselves. In Austria and Sweden and in Finland to some extent, travel restrictions were lifted for those from outside working in the forest sector.

3.3 Livelihoods of forest-dependent people, indigenous peoples and local communities, smallholder forest owners, workers, women and youth

3.3.1 Literature review

37. At a global scale, there is concern the Covid-19 pandemic is aggravating hardship among forest-dependent people along several dimensions. These include reduced income due to local restrictions but also decreased remittances sent home by migrant family members, impaired access to markets and to information, increased physical isolation, lack of health assistance, disruption of government assistance programs such as school feeding (Linhares-Juvenal 7/22/2020).

38. It is well established that prior to the Covid-19 crisis, incidences of child labour were closely related to changes in family income (ILO and UNICEF 2020). Moreover, in some countries there may

be incentives to sacrifice legal livelihoods for the benefit of quick illegal income, *e.g.* illegal charcoal production often done by women (FAO 2020b).

3.3.2 Summary of survey and expert interview findings

39. In respect of women and youth, there was generally little reported. Australia noted that as women predominate in the hospitality sector and are by and large take primary responsibility for home life, they have been more than proportionally affected by loss of job opportunities in hospitality and by home working (Workplace Gender Equality Agency, 2020). In UK, it was specifically noted (CONFOR interview) that young people starting their career were adversely affected by restrictions on practical training and garnering practical experience of the realities of working in the field (see Section 3.6 below).

3.4 Forest industries labour market and employment, as well as the domestic and international demands for forest products and services.

3.4.1 Literature review

40. During the Covid-19 pandemic, demand for forest-based products has changed in different directions. While demand for wood and wood products decreased at a global scale, demand for packaging material, pallets and tissue for toilet paper and masks remained stable or even increased (ILO 2020). In Europe, demand from construction decreased in many countries during the pandemic but demand for do-it-yourself construction material increased (Finland 2020). Round timber exports to China reportedly declined since the start of the pandemic, export markets in France, Italy and Spain were interrupted and demand in Austrian and German markets decreased (FAO 2020b).

41. Moreover, the competitiveness of forest resources as inputs for the bioeconomy may have diminished with the drop in oil and gas prices. There is concern that recovering markets for bioeconomy products may prove difficult (FAO 2020b).

42. In many countries, a substantial share of the forestry labour force depends on migrant workers. The measures taken to curb the Covid-19 pandemic have had major implications for migrant workers, especially in countries with no or deficient social safety nets (ILO 2020). Border closures foreclosed employment opportunities, which resulted in income loss and eventually inabilities to send remittances home. The Swedish government for example has invested SEK11million to support the green industries in the absence of foreign seasonal workers (Skogsstyrelsen 2020).

43. Specific information of Covid-19 restrictions on the forest sector is available for some WEOG countries within the country market statements submitted to the UNECE timber section.

Finland: The Covid-19 measures directly affected the service and transport sectors. Private consumption is limited as consequence of rising unemployment. Due to remote work and mobility restrictions, housing renovation especially of detached houses and summer cottages increased. Exports from Finland have decreased due to a combination of factors, importantly a strike by the forest industry at the beginning of the year and the declining demand for printing and writing paper during the pandemic. The pandemic changed the demand structure for forest industry products resulting in a 22% decrease of roundwood trade from private forests in the period from January to August (Finland 2020).

Germany: The Covid-19 pandemic has caused a major recession in Germany. However, explicit information of effects of the pandemic on the forest sector are not presented.

Portugal: Generally, the Portuguese economy was hit hard by the pandemic. Exports and imports declined, passenger and freight transportation fell sharply. Building permits decreased by 11%. Main concerns of the forest sector relate to the sustainability of the supply chain. Moreover, there is fear of a second wave of the pandemic coinciding with the period of higher rural fire risk.

Due to the pandemic, sawmills, wood panels and wood furniture supply chains experienced a decrease of 40%. In the pulp and paper sector, production decreased by 15% due to the decreased demand for printing and writing paper (ICNF 2020).

Sweden: The Swedish Krona lost in value at the beginning of the pandemic, which was advantageous for exporting industries. Prices for sawlogs decreased during the outbreak but are expected to recover during autumn. The price for pulpwood decreased due to both high supply (due to spruce bark beetle problems in Central Europe) and Covid-19 related decreasing demand for some types of paper, especially graphic paper. The sawmill industry fared comparatively well during the pandemic, possibly because Swedish export markets were less affected early on in the pandemic (Skogsstyrelsen 2020).

UK: Due to the Covid-19 pandemic, the UK economy experienced a major downturn. Related to the forest sector, the pandemic resulted in decreased demand from construction but the DIY sector's demand increased as did demand for pallet wood. Coniferous roundwood and sawnwood production are expected to decrease but are projected to increase again in 2021 (Forest Research 2020).

3.4.2 Summary of survey and expert interview findings

44. All countries in the region have implemented generous fiscal support schemes for employees and the self-employed together with grants and loans for businesses. The size of these support measures is a very significant item in their national budgets and the second wave that has struck in Western Europe with the onset of winter has required continuation of these measures. As with any safety net, there will be cases where a few individuals or businesses fall through the holes.

45. The worst affected individuals and businesses are those that operate to support forest use for recreation rather than on the production side of the sector, which is regarded as essential. Restrictions on movement and the size of groups that can assemble vary between, and sometimes within, countries making generalisations difficult. Personal recreation for health, such as walking in forests, has usually been allowed although there have also been some restrictions on distance travelled to walking and recreation areas and usually prohibition of overnight stays even camping.

46. Countries reported different experience with recreational use of their forests. Areas readily accessible to large urban areas were generally heavily used for personal recreation and in some countries (*e.g.*, Switzerland, UK) this led to problems with littering. Andorra mentioned that the public gave more importance to the role of the natural environment for wellbeing. Portugal and Spain specifically noted much increased use of rural and protected areas as holiday destinations and also relocation for homeworking. This generated some economic benefit to tourism businesses. Elsewhere, restrictions on intercountry holiday travel led to changed vacation patterns but no firm evidence of the economic impact has been offered.

47. In Switzerland, the building sector was allowed to continue planned work, which resulted in no significant impact being noted on the wood processing industry. Although Covid-19 restrictions had to be followed, work patterns quickly adapted. Their regular visitor monitoring survey recorded a major change in visitor patterns with much increased visits from people in urban areas. The higher visitor numbers resulted in increased employment of forest rangers to guide and oversee this.

48. In much of Western Europe, general restrictions on hospitality businesses have had major impact on their immediate and future viability, despite government support schemes. The fate of those hospitality businesses relying on forest recreation for their customer base has not been separated out from the wider sector. It is likely that most will have been quite severely affected and that some may not survive. In Australia, where the second wave has been less marked other than in Victoria, which went into severe lockdown, but with international travel restrictions still in place, at least some of those hospitality businesses that survived the first lockdown could experience a good holiday season over the southern summer period.

49. In Iceland, which is very isolated and had severely restricted international travel, it was noted that the resident population made heavy use of forest campsites but much less use of hotels and other facilities geared to foreign tourists. While something similar may also have occurred in other countries, with increased use by local residents but less by visitors, it was not reported. In Israel, forest use by herders and beekeepers was unaffected by the pandemic.
50. In Finland, which has a very strong export market, the demand for printing papers continued to decrease but this was balanced by increased demand for packaging and hygiene papers. Although reduced construction activity led to lower demand for sawn wood from the construction sector, there was higher demand for DIY material, which offset this to some extent.
51. In Germany, there was initially increased softwood production and sales, partly due to the flood of drought and bark-beetle damaged roundwood, which depressed prices by around 3%. hardwood timber sales and prices both depressed through until June 2020, ultimately by 9% and 12% respectively. Export sales and prices were even more depressed, both by some 21% by September 2020. The picture for wood-based panels proved complex. Particle board was especially badly affected with production and prices both dropping by over 70% by June 2020 despite export quantities and prices reducing by only around 15%. There was a slight increase in OSB although prices fell by around 11%. Export sales of OSB between March and September 2020 fell by 9% but the price dropped by twice this figure. Fibreboard, after a severe price drop in Q1 2020, stabilised in Q2 but production and value both decreased by 9%.
52. In Sweden, although exports were quite severely affected, production levels reduced only slightly with the industry building stocks to meet future demand. As in Finland and the UK, there was a surge in demand for home improvement and pallet material. There was also a continuation of the long-term trend in printing paper but an increase in packaging material, which appeared to be affected only slightly by Covid-19.
53. In Turkey, wood production continued and statistical data report an interesting increase in export value of forest products but a significant decrease in imports. Employment was generally not affected other than in the hospitality sector catering to recreational visitors, which was affected by the need for quarantine.
54. The employment structure across the whole region is that most field operations are undertaken by contractors, which range from individuals to large companies, while management, planning and oversight is usually conducted by permanent personnel. In most countries, forestry agencies already had in place effective and comprehensive IT systems that fairly readily adapted to home-working and indeed, at least some days in each week were often already worked from home. For these people, Covid-19 restrictions largely simply amplified a trend that had already started, although travel restrictions placed some limitations on field visits.
55. For contractors undertaking field operations and for employees in wood processing industries, home working is not an option. All countries indicated that changes such as provision of personal protective clothing / equipment and implementation of social distancing were generally quickly initiated, as these were mostly required also from the wider public. More important for this group is the changes to employment opportunities and the viability of businesses at a range of scale from individuals to large companies, noting that all countries offered a system of fiscal support although the specific details varied.
56. There are some general trends in changes to the wood industry sector, such as changes in the demand for paper of high quality compared with packaging material and many countries noted reduced demand for construction timber but increased demand for use as fencing and landscaping material (see Box 1 below). This has affected forest operations, with reduced need for felling larger trees, and in processing, where the balance of product lines has had to be adapted.

57. The situation in those countries facing salvage felling of bark beetle or fire damaged material (Central Europe, Sweden, Australia) is different because of the need for salvage felling and minimising degrade. Elsewhere, contractors and the processing industry have generally adapted, aided by the fiscal support measures. It is mainly those working in a very narrow niche of activities that have had difficulty adapting. Portugal is an exception and reported significant problems with corporate liquidity and loss of employment opportunities due to reduced product demand. In the UK, Northern Ireland experienced some issues with securing specialist machinery and support for this.

Box 1 Wood Trade in Western Europe and Australia

The Annual Market Review 2019 – 2020 (UNECE, 2020) includes useful preliminary information on the impact Covid-19 and also points out that countries in Central Europe were already coping with a very damaging bark beetle outbreak in Norway spruce (*Picea abies*), a species of major importance for industrial roundwood. This has been very serious in Austria, Germany, Sweden and Switzerland as well as in Luxembourg [Belgium, France and Norway reports awaited] and added to an accumulation of raw material from earlier storm damage as well.

Salvage felling of damaged stands has led to accumulation of stocks while Covid-19 has caused a reduction in demand as well as severe interruptions to intra-Europe and global trade. The latter has resulted in fewer container movements, especially from China, causing sharply increased shipping prices as return containers are now in short supply. Affected countries have provided support to forest owners dealing with bark beetle infestation and taken steps to store affected material under water or sprayers to reduce further damage to the wood.

Reduced demand for sawn timber and panels, associated with construction, is widely noted although in Germany and Switzerland the construction sector seems less depressed and to be recovering, together with reduced demand for high grade paper and board pulp (Portugal) and for wood fuel (Iceland, Israel). This has been countered by strongly increased demand for packaging material and pallets, as well as for landscape work such as fencing and decking (UK [and others]). The third quarter Timberland Market Update (GCA, 2020) confirms the continued strong demand for packaging paper and board with a severely declining trend for demand for high grade printing material leading to factory line reorganisation.

It also notes significant restructuring and concentration of the sawmilling industry in both Finland and Sweden. This review was published before the second wave of Covid-19 that resulted in varying degrees of lockdown across the countries in the group.

In Australia, the market for wood products was affected by the both the severe fires and Covid-19 following these almost immediately (ABARES, 2020). The fires affected 8.3m ha of native forests and 130K ha of plantations. The projected impact is dominated by a severe collapse in housebuilding reducing demand for structural materials and the need to harvest huge areas of fire damaged material. Damaged softwoods are very vulnerable to further loss from pests and decay.

While some fire damaged material may be sawn, for pulping most will only be suitable for packaging material not high-grade paper and board. While fire damaged material can be stored wet to minimise further damage, the sheer volume is challenging and, although export markets have remained strong, reduced demand from their subsequent export markets may result in lower demand and lower prices in due course, as has happened recently in Germany and Sweden.

Overall, although there is some optimism about the future wood markets, both in Western Europe and Australia, there is nervous uncertainty and much will depend on what happens in the next three to six months. Lower prices and handling large volumes of fire and insect damaged material will remain as a challenge across parts of the region for the coming months.

3.5 Access to forest financing and investment, and public spending on forests

3.5.1 Literature review

58. Forest financing can generally be grouped by its source type- domestic and international private financing, domestic and international public financing, as well as blended types of finance. The overall pressure on the global economy due to the Covid-19 restrictions is straining public and private forest enterprises. Those enterprises with limited access to domestic finance through capital markets are being affected most (Lang *et al.* 2020).

59. Budgets for international finance are likely to diminish with the overall challenging economic situation. While expenditures for health care and unemployment compensations are increasing, tax revenues are decreasing (Lang *et al.* 2020). However, in April 2020, the members of the OECD Development Assistance Committee issued a joint statement in which they acknowledge the pressure on public budgets but argue they will strive to protect ODA budgets (OECD-DAC 2020).

3.5.2 Summary of survey and expert interview findings

60. No country reported significant interruptions or reductions in finance or access to it as a direct effect of Covid-19 restrictions. Individual countries applied flexible criteria and all benefitted from fiscal support from their national governments. At the same time, the reporting largely relates to experience gained from the initial Covid-19 restriction, mainly between March and May. While the effects of the restrictions are expected to be similar during the second wave, much will depend on the success of continuing restrictions and, ultimately, mass vaccination to control the spread of the virus. This is not expected to be clearly evident until the northern summer 2021.

61. What is currently unknown, and therefore carries great uncertainty, is the length and severity of the already evident economic recession. As forestry is viewed as an essential part of the economy in most countries, although its contribution to GNI varies widely as already noted, forests in all countries deliver recreation and amenity values, which while not usually monetised, are widely used and highly valued by the population. The most severe negative economic impact in the region has been experienced by the service sector that includes that who cater to users of recreation opportunities, including within forests.

62. In Sweden, forestry has benefited from increased public spending on job creation schemes to offer new opportunities to those whose previous employment had been affected by Covid-19. This employment was mainly in basic tasks that support forest conservation and management as part of a national effort to create jobs in the green economy.

63. While there had been no immediate impact on forest financing levels in Switzerland, it was observed that there could be decline in this depending on the general economic climate and the possibility on future reduction in state income. Turkey held a similar view that there was likely to be reduced funding in future but it was too early to say precisely how this would play out.

64. The UK in particular drew attention to recent government promotion of investment in a greener economy as part of the strategy for economic renewal and this is closely entwined with climate change responses, fuelled by the delayed UNFCCC COP26 that is expected to be held in Glasgow in November 2021. There are other parallel and similar drivers, such as the EU Green Deal (EC, 2020), which includes expanded tree planting in urban and rural areas, as noted by Luxembourg and Spain. Iceland, which is outside the EU, suggested financial stringency may result in reduced forestry activity while Portugal noted that national economic situation could result in less finance being available. On balance, countries were optimistic that funding for forestry would fare reasonably well in the immediate future despite the economic recession and that the sector could find efficiency savings through adoption of new technology.

65. Investment that benefits the wider forestry sector, encompassing both the forest resource and users of its products and services, will be affected by both direct and indirect financing. Public support for the green economy and expansion of tree planting is a direct investment but, as noted by many respondents, the stagnation of the construction sector has a major impact on both the wood production and processing sub-sectors. The construction sector is a vital component of all the developed economies and, while not directly targeted on forests and forest products and services, will probably be one of, if not the, most important factor in economic recovery.

66. At the same time, general economic recovery and adequate employment opportunities are also vital for buyers of the products of the construction sector. At the moment, it is too early to say with much confidence how the changes wrought by responding to Covid-19 in respect of fundamental changes to working patterns and life-styles will ultimately play out. More home-working, increased online shopping, job losses in some sectors and expansion in others together with restricted travel opportunities and possibly wariness about a future similar pandemic will affect personal and large-scale investment decisions and ultimately the scope and scale of financing for the wider forest sector.

67. It is also important to note that, while it is a far wider issue than forests and forestry, the countries in the WEOG include many important development assistance donors (Figure 4 above). Although some, but not all, have enshrined in law their development assistance budget as a proportion of GDP or similar statistic, these commitments are not irrevocable and national economies will also shrink in the immediate term. Development assistance for forestry, and the products and services it provides, including those supporting climate change responses and wider environmental benefits such as biodiversity, requires reliable support over periods that often exceed substantially the standard project or programme funding cycle (*e.g.*, Blaser and Hardcastle, 2020).

68. There is, therefore, a definite risk that economic recession and the national priorities for finance to remedy the damage caused by Covid-19 and the essential restrictions necessitated in response could result in reduced funding development assistance funding levels and in the consistent flow of such assistance. Forests and forestry in their widest sense will be particularly vulnerable to this. A temporary reduction in ODA commitment is currently being debated in the UK parliament (UK Parliament 2020).

3.6 Forest sector, international institutional capacity at the regional, sub-regional, and national and subnational levels

3.6.1 Summary of survey and expert interview findings

69. Although forest administrations and national wood processing sectors appear in the main to have weathered the first lockdown period between March and May in Western Europe, largely through a combination of targeted fiscal support and ability to adapt, the second wave of Covid-19 and the resultant restrictions are still ongoing and the picture for the period after this remains unclear. It will certainly require close attention, creative thinking and a need for flexibility. The biggest challenge will be to separate short-term effects from long-term structural changes.

70. In all countries in the group, effective virtual communications were well-established and used extensively long before Covid-19. The restrictions required to tackle the Covid-19 outbreak have to a large degree merely hastened progress with a trend that had already started. Consequently, planning systems could be readily adapted and efficient internet networks have made virtual discussions and decision-making possible and the various software packages supporting group meetings have proved to be robust, despite much more extensive use at a range of scales.

71. The enforced move to much wider use of virtual communications in forestry has resulted in broadly the same issues arising as in other sectors. As noted by Ireland and others, short meetings

with relatively small numbers of participants often run very efficiently and usually take less time, larger numbers of attendees tend to leave many as marginalised observers rather than active participants. Furthermore, sitting for long periods in front of a computer screen is not something with which many working in forestry are necessarily familiar. In essence, while more people may be able to join, not all are actively engaged.

72. Institutions have seen cost advantages in reduced travel time and cost, especially for people in remote locations. Improved technology and internet connectivity have certainly also widened potential access. Against this, the main downside is that virtual communications largely preclude non-verbal communications and social interactions that are possible in physical meetings. As Spain observed, it is more difficult to reach compromises and collaborative solutions when the meeting is not physical. Finland similarly noted that while business-as-usual agenda points can easily be dealt with online, more strategic discussions benefit from traditional meeting formats. While few countries reported more than minor and temporary problems with the move to virtual communications, much will depend on the length of the period before a more familiar pattern is restored.

73. Restrictions on social gatherings have also affected both training and professional development events. There are good examples of learning opportunities through virtual means such as webinars and distance learning but these cannot replace entirely the need for field-based meetings and practical classes for those undergoing training and education. Assuming that Covid-19 is brought under control by mass vaccination in the coming months then it should be possible to return to field meetings and practical training events. At the same time, it seems very likely that the cost and time savings of virtual meetings together with the much-improved familiarity with them and the stability of the software will result in quite substantial changes to the relative proportion of meetings conducted by virtual means. This can capture the advantages of using virtual means while avoiding or eliminating the disadvantages.

Box 2 UK Institute of Chartered Foresters (ICF) – Continuing Professional Development

The UK ICF is a professional body for those involved in forestry and arboriculture. Members are required to undertake continuing professional development (CPD) and opportunities for part of this requirement has to date been available through annual UK wide conferences and one or two-day meetings conducted by regional groups. The latter have been a combination of lectures, conferences and field events.

Covid-19 restrictions made it impossible for normal events to continue and ICF responded quickly by offering web-based meetings on a variety of topics, some of these were open to the public as well as to members. Given the continued lockdown during the second wave of Covid-19, the webinars have continued to be offered on a weekly basis and plans are in hand to deliver virtually both the research conference on Trees, People and the Built Environment in February 2021 and the national conference on Climate Smart Forestry later in that year.

All webinars are available to members after they have taken place to aid self-study. The live webinars have proved very popular and although there is a downside in that face-to-face discussion is not possible, the reduced travel time means greater numbers can attend virtual events. Even when physical meetings can be resumed, it is planned to continue with virtual events, too, albeit less frequently than recently. Since March 2020, there have been 75 virtual events and there are now 80 hours of videos available to help members undertake CPD.

The benefits of the switch to virtual webinars has resulted in a major widening of the ways in which ICF members keep themselves updated and plans for the future have been reframed to include both virtual and physical meetings from now on. Providing the right balance can be achieved, the range of opportunities for learning will have been improved as a result of restrictions due to Covid-19. In September 2020, 15 online events were run providing 20 hours of CPD for which 966 registrations were made. Overall membership is 1900

74. In respect of institutional performance, while there were some initial problems caused by the move to home-working and virtual meetings, all respondents indicated that these had been largely overcome within quite a short time. So far, it seems that the second wave lockdown has not resulted in major stresses to these systems but, were the restrictions to continue beyond the next six to nine months, then the disadvantages in terms of practical skills building, informal learning through field meetings and even supervision may begin to emerge more strongly.

75. International meetings have been seriously affected due to limited travel possibilities. While some have continued virtually, and by so doing offered wider access in some cases, it is expected that there will be at least a partial return to earlier practices in due course but probably at a more restricted level than previously.

4 Threats, opportunities and conclusions

76. Although the pandemic has been a serious public health crisis and has sadly led to untimely deaths and, in some case, continued ill-health, it has necessitated responses from public and private sector individuals, groups, institutions, companies and from governments. These responses have resulted in both temporary and probably some permanent changes to the way in which tasks and responsibilities are discharged.

77. As well as responding to the effects of Covid-19, people and organisations have also gained experience in where changes are needed to mitigate negative impact, adapt current practices, and increase resilience against future pandemics and other shocks to the *status quo*. It is important to remember that, unlike climate change, Covid-19 does not affect trees and forests directly. It affects the human population and consequently the effects of Covid-19 are the result of its influence on the human population and hence the way in which forests and trees are used and managed.

78. Figure 5 graphically summarises our findings. The inner grey Venn diagram shows the four key areas of response measures that we identified in the first part of our analysis. Together the response measures triggered an economic slow-down. Our empirical findings from the survey and the literature review suggest that many impacts on SFM result directly from the response measures while others are rather a consequence of the economic slow-down; we expect the former to be reversible within a short period of time. Examples are delays in thinning due to the need to adapt to social distancing at work places or international meetings that are likely to take place again in person once the pandemic ends. In Figure 5, these are depicted with grey dashed curves.

79. However, implications for SFM resulting from the economic slow-down may take far more time for reversal, depending on the speed of economic recovery. These implications in particular for the forest sector, livelihoods of forest-dependent people, as well as public spending on forests are shown as black solid lines in the Figure. Overall, the SFM elements forest sector and livelihoods of forest-dependent people appeared to be affected by the covid-19 response measures and the economic slow-down in a more diverse way than the other elements of SFM. The following paragraphs elaborate on these different types of implications.

80. While there are some fairly obvious threats and also some fairly obvious opportunities, in many cases, effects and impact from Covid-19 and the measures taken to try and tackle it are two-sided and represent both a threat and a potential opportunity. These are discussed briefly in the following paragraphs.

81. All the countries in the region have robust and diverse economies, sound policies and effective legal frameworks. The contribution of the forest sector to GNI is a relatively low proportion of the overall economy although the, usually unpriced, service values delivered by trees and forests are an important and generally appreciated component of the quality of life of the population. The region's forest resources are owned by public bodies at various levels and, often predominantly, by private owners with individual holding size varying greatly.

82. There are clear standards for forest management in all countries, which are generally well met, and relevant institutions have both breadth and depth of expertise and experience in their personnel structures. The relatively slow growth of most forests in the region, with rotations of decades or even centuries means that significant changes to the objects of management and to management practices have occurred, often several times, within a single rotation of individual trees. In many respects, Covid-19 pandemic and the restrictions and responses that have resulted from tackling it, is just the latest in a series of events affecting, albeit indirectly, trees and forests.

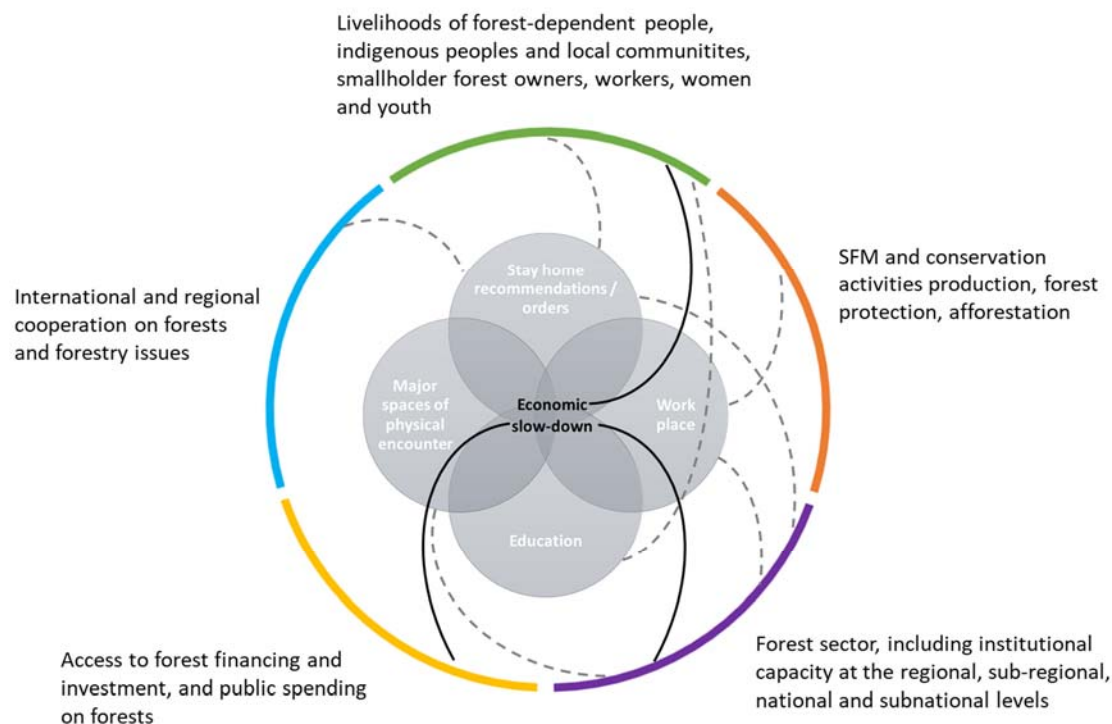


Figure 5 Covid-19 response measures and implications for SFM

Source: own drawing, inspired by (Bates *et al.* 2020)

83. The biggest threat to business-as-usual is the economic recession that many countries in the region are already experiencing as a result of Covid-19 restrictions compounded by interruptions to regional and global supply chains, many of which operate on just-in-time delivery to minimise stockholding costs. Although fiscal support packages have cushioned the effect of restrictions on businesses and their employees so far, some businesses will be forced to close leading to job losses.

84. The national fiscal responses reported were gender blind. Although there is the Sami indigenous group in northern Scandinavia, as Finland observed in respect of the Sami, there were no special fiscal measures for these people who are already treated as citizens of a specific country and therefore entitled to the same benefits as all other citizens.

85. In Australia, one of two major indigenous forestry operations, which were geographically isolated from the areas of high Covid-19 infection, suffered from reduced product demand that may lead to reduced employment but there is no specific information. It was observed, however, that because indigenous populations are often at higher risk from Covid-19, due to more widespread poverty and underlying health issues, travel restrictions were imposed to and from regions with high indigenous populations. It is likely that this would have affected negatively ecotourism businesses but no studies have yet been done to quantify either this or the effect of these restrictions on any other forest-based businesses in such locations.

86. Service businesses in hospitality have been badly affected by the very limited travel allowed and those manufacturing businesses with a narrow range of product lines and limited scope for rapid change may also find recovery difficult, as may newly established businesses. While changes of this nature are always present, the intensity of the recession and the speed with which it happened is unusual.

87. Public investment to stimulate national economies will undoubtedly happen in all countries in the region but the shape of this is not yet known. There are indications that at least some countries will try to use the opportunity to refocus towards a greener economy, from which trees and forests should benefit substantially but there are few firm commitments to date. It is certainly possible also that there will be reduced funding for forests and forestry at least in the short term as more immediate priorities are favoured. It is an unfortunate truth that the effects of underfunding forestry seldom become evident in the four- or five-year political cycle countries use.

88. The response to the restrictions has led to rapid change in the way those responsible for planning, management and overall supervision work. Virtual meetings predominate, saving travel time and costs, and are likely to continue to be much more common. Against these benefits, there are downsides and the social communication element of physical meetings to discuss complex issues and in inculcation of practical skills has been suppressed by the restrictions and will need to be re-instituted as a priority.

89. Most forestry agencies in the region already had sophisticated, computerised planning and control systems and have adapted and updated these to reflect changes resulting from the response to Covid-19. This trend is likely to continue with increased use of Artificial Intelligence and automation of repetitive tasks that can be handled objectively. Increased use of technology such as drones is also possible to reduce, but not replace altogether, the need for ground inspections thus saving time and travel costs.

90. Although there have been reductions in demand for some products, such as construction timber, this has been mirrored by increased demand for packaging and pallets and many companies have been able to respond quickly to this change. The likely change to work patterns resulting from the benefits of people who can do so working from home, which reduces the time and cost of commuting, will result in substantial changes to where and how a large number of people live. There has already been increased demand for material for home and garden improvements as a result of lockdown. However, as the more serious second wave of infection spreads across the region during the winter in Europe, this alternative demand is likely to be curtailed.

91. The emphasis on walking and outdoor recreation within people's home countries has been a prominent element in government guidance. This is likely to increase forest recreation and will ultimately benefit the service sector that supports this, although some may not survive the cashflow crisis that has resulted from recent restrictions in many countries. As a result, there will be more public scrutiny of how forests are protected and used, and possibly a potential increase in anti-social issues such as vandalism and littering.

92. Covid-19 has certainly been a surprisingly unexpected shock to all the countries in the region. Only in a few cases was it part of risk management planning and this has possibly been a timely wake-up call that has shown the fragilities of the way in which trade and economies have developed in recent decades. The well-established strategy for dealing with hard to characterise uncertainty, in all businesses and in forestry, is diversification. Diversified organisations, especially those able to respond quickly, have been less affected than those with a high degree of narrow concentration, some of which have been very badly affected.

93. Translating this into a general statement for the forestry sector as a result of the impact of Covid-19, it appears that the way forward should be to optimise diversity and flexibility. While this is superficially more costly in the short run, it is less risky in the long run and, ultimately, less costly. It will also resonate well as a response to climate change and a greener economy. Given progress with vaccines while noting that the second wave has often been much more serious than the first wave in Western Europe, it would be useful to do a repeat study in 12 to 18 months' time to obtain clearer insight into longer term effects of Covid-19 on SFM.

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Annex 1 Covid-19 Impact on SFM – Initial Survey Questions

Sustainable Forest Management

- 1 What effects, both positive and negative, have the Covid-19 restrictions had on the scope and timing of SFM activities in support of different forest functions; *inter alia* thinning and felling, natural and artificial regeneration, conservation, protection?
- 2 How have the Covid-19 restrictions changed the lifestyle and livelihood pattern of those people dependent, directly or indirectly, on forests (*e.g.*, in terms of income flows, financial compensation payments by governments, forest resource use not only by locals, use for recreational purposes)?
- 3 How have the Covid-19 restrictions changed the lifestyle and livelihood specifically for women and youth dependent, directly or indirectly, on forests?

Forest industry

- 4 What changes that were a consequence of the Covid-19 restrictions have affected the forest industry (*e.g.*, related to employment, skills, product supply chains, sales, exports / imports)? Please differentiate between larger industries and SMEs where possible and relevant.

Forest sector institutions

- 5 Are there observed changes in the forest sector's institutional capacity as a consequence of the Covid-19 restrictions (*e.g.*, related to the forest service / administration effectiveness)?
- 6 How have the Covid-19 restrictions affected the functioning of key forest sector institutions?
 - a. In respect of data and information gathering and application;
 - b. In terms of the physical presence of personnel on the ground to ensure operating standards are maintained and to minimise illegal activities;
 - c. The ability of personnel to develop and refine their expertise and experience;
 - d. Gaps made apparent in legislation and regulations; and
 - e. The need to revise strategic level plans and risk assessments.

Access to forest financing and investment, as well as public spending on forests

- 7 Have the Covid-19 response measures resulted in changes in accessibility of forest financing and investment in your country?
- 8 Do you expect that public spending for national and international forest programmes will change in the aftermath of the Covid-19 response measures?

International and regional cooperation on forests and forestry issues

- 9 How have the Covid-19 response measures affected international and regional cooperation? Please specify concrete issues (*e.g.*, in terms of communication modalities, meeting effectiveness, duration and timeliness of procedures and processes, changes to the number and range of participants).

Assessment of opportunities and threats

- 10 In your view, what are the major opportunities and threats for SFM in your country that will result from the Covid-19 situation?
- 11 Have policies and strategies been implemented (or are they being planned) in your country that are intended to help alleviate negative consequences of the Covid-19 measures for the forest sector?
- 12 Do you have any other comments or points you would like to raise?