Policies and initiatives for sustainable wood use promotion by public and private sectors in the USA and Europe

Prepared by Sustainable Wood Ltd

Input to ITTO Project PDD/21 Rev. 1.2

"Promotion of Sustainable Domestic Wood Consumption in Vietnam"

ITTO

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Sustainable Wood

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Sustainable Wood Ltd is a private independent company established in the UK to research, analyse, assess and communicate on all aspects of sustainable wood. Sustainable Wood Ltd comprises Rupert Oliver, Sarah Storck, Mike Jeffree and George White.

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The International Tropical Timber Organization (ITTO) is an intergovernmental organization promoting the conservation and sustainable management, use and trade of tropical forest resources. Its members represent the bulk of the world's tropical forests and of the global tropical timber trade. ITTO develops internationally agreed policy documents to promote sustainable forest management and forest conservation and assists tropical member countries to adapt such policies to local circumstances and to implement them in the field through projects. In addition, ITTO collects, analyzes and disseminates data on the production and trade of tropical timber and funds projects and other actions aimed at developing sustainable forest industries at both the community and industrial scales. Since it became operational in 1987, ITTO has funded more than 1000 projects, pre-projects and activities valued at more than USD 400 million. All projects are funded by voluntary contributions, the major donors to date being the governments of Japan and the United States of America.

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Acronyms

AHEC	American Hardwood Export Council
B2B	business to business
B2C	business to consumer
BBI JU	Bio-Based Industries Joint Undertaking (EU)
BMP	Best Management Practice
CITES	Convention on Illegal Trade in Endangered Species
CWA	Clean Water Act (US)
DIY	do it yourself
ESA	Endangered Species Act (US)
ESG	Environmental, Social and Governance (standards)
EU	European Union
EU-FLEGT	European Union - Forest Law Enforcement Governance and Trade
EU-RED	European Union - Renewable Energy Directive
EUTR	European Union - Timber Regulation
FOEN	Federal Office for the Environment (Switzerland)
FSC	Forest Stewardship Council
GDP	gross domestic product
GiB	Grown in Britain
Ha	hectare
IMM	Independent Market Monitor
LCB	*Le Commerce du Bois*
LEED	Leadership in Energy and Environmental Design
LULUCF	land use, land-use change and forestry
m^2	square metre
m^3	cubic metre
NASF	National Association of State Foresters (US)
NEB	New European *Bauhaus* (EU)
PEFC	Programme for the Endorsement of Forest Certification
PSG	*Plan Simple de Gestion* (France)
RWE	round wood equivalent
SLB	Softwood Lumber Board (US)
TDUK	Timber Development UK
UK	United Kingdom of Great Britain and Northern Ireland
UNFCCC	United Nations Framework Convention on Climate Change

1. Introduction

1.1 Project Brief

ITTO project PD 922/21 Rev.1 (I) 'Promotion of sustainable domestic wood consumption in Vietnam' arose from a concept note submitted under the call for proposals mandated by Decision 4(LVI)[1]. Following its approval in September 2021, the Japan Forestry Agency pledged funding to this project. The project has been under operational status since November 2021.

The development objective of the project is to contribute to sustainable and efficient development of Vietnam's wood industry. The specific objective of the project is to enhance and diversify domestic consumption and promote local markets of wood and wood products in Vietnam. It is expected that by implementing a large range of activities to produce outputs relating to policy improvement and capacity building, at the completion of the project, the policy framework and institutional set-up needed to succeed with the promotion of domestic consumption of wood and wood products will be developed and strengthened.

Output 1 of the project deals with improved policy framework to drive domestic consumption of wood and wood products, in which its' Activity 1.1 will analyse wood use promotion strategies applicable in selected countries. This review is prepared in fulfilment of Activity 1.1 with respect to the USA and Europe.

The purposes of the review are to:

- Investigate the policies and initiatives for sustainable wood use promotions by public/private sectors in the USA and selected countries in Europe, focusing on the consumer side (e.g. construction and buildings (residential/non-residential), civil engineering, daily necessities, energy use).
- Thereby to propose possible policies and initiatives to promote sustainable wood use in wood producing countries.

The scope of this review includes:

- Survey on the wood demand/supply in the USA and selected European countries
    - Country profile (e.g. population, urban population, GDP growth, land area)
    - Situation of forests (forest area (by ownership/forest type), annual harvested/ planted area)
    - Trend of wood supply and demand (production, consumption, imports, and exports of wood products by category (e.g. industrial RW, sawnwood, plywood, wood chips)

- Study of policies/initiatives for the promotion of sustainable wood use
    - Policies by public sector (e.g. polices, rules and laws, regulations)
    - Initiatives by private sector (e.g. promotional activities by industrial organizations, "check-off" system)

[1] Decision 4(LVI) agreed at the Fifty-Sixth Session of the International Tropical Timber Council in November 2020 ITTO mandates the piloting of the programmatic and streamlined approach to project financing offering the opportunity to submit project concept notes rather than a fully developed project proposal. Concept notes will be developed into full project proposals if a donor expresses interest.

- Best practices of sustainable wood use promotions (wherever possible, each item should include the amount of expenditure)

- Analyse the effectiveness of each policy/initiative (including discussion on possibility to assess the incremental volume of wood use by the policy/initiative versus the amount of the expenditure).

1.2 Scope and Definitions

1.2.1 Country variations

While this report provides information in support of developing a wood promotion strategy in Vietnam, it is important to emphasise that structure and content of successful sustainable wood promotion campaigns are heavily dependent on national context. Different countries exhibit a wide range of attitudes to their forests and the use of forest products which in turn are heavily influenced by the historical development of forest and other land-based resources, and wider cultural and socio-political factors.

Within Europe there is huge variation of supply and market situations with some countries having large domestic forest resources, some of which are under-utilised (France) and some over-utilised (Germany). Other countries have limited forest resources and have to rely heavily on imports (UK, Netherlands). Forest ownership structures vary widely, some countries being dominated by large publicly owned estates (UK), others having numerous small forest owners (Austria and Switzerland), and others with a wide mix of private, state and community ownerships (Germany, France).

Cultural variations across the United States may be less pronounced than in Europe, and there is some harmonisation of certain aspects of forest policy at Federal level, but even here there is considerable variation in forest resources between states, and regulation of forest use is primarily the responsibility of individual states.

These variations mean that wood promotion campaigns that have been successful in Europe and the United States are not necessarily transferable to Vietnam. Equally some campaigns that have not been particularly successful in some parts of the United States and Europe may work well in Vietnam[2].

To take account of this, this report seeks as far as possible to set the various wood promotion campaigns within the wider national context of forest resources and public attitudes to wood products. In Europe, it also covers a range of countries (France, Germany, Switzerland, and the UK) selected partly to ensure coverage of a broad range of national conditions while also capturing countries where there are parallels with the Vietnamese wood products sector (particularly Switzerland which has

[2] A vivid illustration comes from "The Wood Age: How One Material Shaped the Whole of Human History", a 2022 book in which the author Roland Ennos comments "Back in 2001 I was invited to give a couple of talks on trees to accompany a traveling Finnish Exhibition, The Forest and Me, being hosted at Manchester's Science and Industry Museum. The exhibition outlined everything one might care to know about the forest industry. There were amazing tree harvesting machines; information about wood pulping; an opportunity to run your own virtual-reality sawmill. Clearly the Finns see the forest as central to their lifestyle and identity; for young Finns the exhibition would make an excellent introduction to the adult world, to the industries that make their wooden house and provide their fuel, and to the jobs to which they might aspire. Unfortunately to an average Mancunian, more interested in the songs of Take That, and to the exploits of Manchester United, it would have seemed irrelevant. Manchester is a big city, situated within rich farmland where the broad-leaved woodland was cleared thousands of year ago, and where the people had been burning coal rather than wood for centuries. The exhibition was not a success and attendance was low".

evolved and highly efficient and high value wood products sector built largely on communal management of relatively limited domestic forest resources).

1.2.2 Public sector policies for promotion of sustainable wood use

In one sense the report takes a broad view of "sustainable wood promotion" policies by the public sector. In practice there are often relatively few policy measures in place that explicitly favour wood over other materials in the United States and Europe. However there are policy initiatives which, depending on how they are interpreted and implemented - and crucially how effectively the wood industry responds - have significant potential to improve framework market conditions for wood products. This is particularly true of policies designed to promote low carbon and other environmentally preferable products, and to encourage moves towards a "circular economy". As far as possible, the report attempts to identify the most important of these policy initiatives in each country under review (and at EU level in Europe).

On the other hand, the report takes a narrow view in relation to public procurement policies sometimes described as "sustainable wood promotion" policies but which in practice aim to restrict wood procurement to certain certified products. Such policies may only be said to actively "promote" sustainable wood use if requirements for certification are equitable with respect to all suppliers of "sustainable" wood and that the environmental credentials of non-wood materials are subject to equivalent scrutiny. In practice, many of these policies – which have been widely implemented by national governments in Europe – fail to meet either criterion. They are targeted uniquely towards wood, are not matched by environmental demands placed on non-wood products, and typically recognise only FSC and PEFC certified wood.

While the forest area certified by FSC and PEFC had expanded to 455 million hectares by the end of 2021, this still amounted to only around 11% of world forest area. In practice these two systems have proven well adapted to certification of industrial and state forest lands, particularly in industrialised countries, but much less well adapted to certification of smallholder forestry operations. Nor do they take account of wider sustainability issues, such as efficiency of wood processing, use of waste, the benefits of using a wider range of lesser known species, enhanced utilisation of lower grades, product durability and cascaded use. As a result these procurement policies may do more to constrain, rather than to promote, more widespread use of the full range of sustainable wood products.

The scope and content of public procurement policies designed to restrict wood procurement to particular brands of certification have also been the subject of other detailed recent reviews[3] and further coverage would only replicate that work and is therefore not covered in this report.

1.2.3 Private sector initiatives

With respect to initiatives by the private sector, the report concentrates on wood promotion campaigns undertaken by trade associations and other technical organisations to raise the overall profile of wood as a material. It does not cover corporate marketing campaigns of individual large companies designed to promote specific branded products. While corporate campaigns can be very effective in reaching specific users, in isolation they are not able to drive widespread behavioural change or raise public awareness in the same way as generic campaigns.

[3] For example, in September 2021 the FLEGT Independent Market Monitor, a project hosted by ITTO, published "A study of EU public timber procurement policies, private sector policies, and related guidance"

Even when focusing on trade association initiatives, the sheer level of fragmentation of the wood industry in the USA and Europe makes assessment of wood promotion campaigns challenging. There are multiple trade associations covering different sections of the market, all set up to represent the interests of their own particular group of forest owners and companies. In practice, most of these organisations rely on membership fees or voluntary contributions to fund their existence. There is often competition between associations and there may be only limited co-ordination of wood promotion activities. The result is many organisations each doing a small amount of promotional activity targeting their own narrow market interests. Quite often these organisations are reactive rather than proactive (particularly on environmental issues) and may not have clearly defined long term market development strategies.

Given this diversity, and the focus on identifying best practice in wood promotion, this report focuses on the larger campaigns active at national or regional level where there is a coherent strategy and sustainable source of funding. With regard to the range of activities involved in "sustainable wood promotion" in the private sector, a useful taxonomy is provided by Svenskt Trä (Swedish Wood)[4]:

- **Generic wood promotion** aims to increase use of all wood relative to other materials, irrespective of the wood's country of origin, forest or species type, or product group. These campaigns are often built around large websites linked to a wide variety of media. Messaging tends to be broad and often strongly focused on wood's intrinsic environmental benefits. An example is the bois.com campaign in France.
- **Promotion of a specific product(s)** where the focus is more often on setting and certifying technical standards for the relevant products to ensure they deliver performance better than, or at least comparable to, competing products made using non-wood materials. An example is The Wood Window Alliance, cooperatively funded and managed through an agreement between UK wood window manufacturers which has set standards and established certification procedures to guarantee a 30 year product life. This may be combined with wide ranging advertising and social media campaigns to ensure the higher technical standards deliver growth in market share.
- **Promotion by training** in which the focus is on provision of training of engineers, architects and designers in the use of wood materials. This may involve preparation of technical guides or targeting of vocational training institutions to ensure that wood products are given sufficient coverage in the syllabus or providing lecturers and technical material for continuing professional development courses. Examples include Sweden Wood's *Quick Reference Guides* and App for construction professionals and the *Wood Campus* developed by the UK TTF designed to deliver continuous professional development for architects and interior designers.
- **Promotion by inspiration** draws on case studies to show how wood is used and may actively encourage innovative design through wood awards and design competitions. These campaigns tend to be targeted towards architects and designers, delivered by forging strong relationships with design magazines and websites and make copious use of social media. An example is the work of the American Hardwood Export Council in Europe, and the Swedish Wood Prize sponsored by the Swedish Wood campaign.
- **Promotion by creating networks** - a deliberate attempt to foster co-operation between individuals and organisations with the goal of promoting wood products. These networks may tap into pre-existing cultural preferences for wood, by aesthetics or technical performance, and particularly important, by rising environmental consciousness. A good example is the "*Le*

[4] "Wood promotion campaigns: England, France, and Sweden", presentation by Charlotte Dedye Apelgren, Swedish Wood Director.

Club Oui au Bois" ("Club Yes to Wood") which targets French architects, designers and structural engineers interested in using more wood. Members of the network benefit from information exchange, technical seminars, and regular visits to wooden buildings.

Table 1.2.3 briefly summarises the main private sector wood promotion campaigns covered in the report according to the taxonomy described above. In practice, campaigns involve a mix of activities best adapted to reaching their specific target audience. Also the distinction between "generic" and "product-specific" campaigns is not always clear cut, with quite a few campaigns, while in some contexts claiming to promote all sustainable wood products irrespective of source, leaning much more towards home-grown than to imported products.

Table 1.2.3: Private Sector Wood Promotion Campaigns

Host country	***Campaign***	***Website***	***Product focus***	***Category****
France	Adivbois	https://www.adivbois.org/	All sustainable timber, focus on French timber	PNTI
France	CODIFAB	https://www.codifab.fr/	All sustainable timber, focus on French timber	NG
France	France Bois Forêt	https://franceboisforet.fr/	French timber	PIT
France	French Timber	https://www.frenchtimber.com/en/	French timber	PTN
France	Pour moi, c'est le bois (For me it's wood)	https://franceboisforet.fr	All sustainable timber, focus on French timber	PI
Germany	Initiative Furnier & Natur (IFN) (Natural Veneer)	https://www.furnier.de/en/	Wood veneer	IFN
Germany	Pro Holz Baden-Württemberg	https://proholzbw.de	All sustainable timber	GNTI
Germany	Pro Holz Bayern (Bavaria)	https://proholz-bayern.de	All sustainable timber	GNTI
Sweden	Swedish Wood	https://www.swedishwood.com/	Swedish timber	PTI
Switzerland	Lignum	https://www.lignum.ch	Sustainable wood in construction	GNTI
UK	Grown in Britain	https://www.growninbritain.org	All UK wood types.	PTN
UK	Timber Development UK	https://ttf.co.uk	All sustainable wood	NGTI
UK	Wood for Good	https://woodforgood.com/	All sustainable wood	GTI
USA	Real American Hardwood Coalition	https://realamericanhardwood.org/	American hardwoods	PTI
USA	Softwood Lumber Board	https://softwoodlumberboard.org/	American softwoods	PTI

**G=Generic, P=Product-specific, T=Training, I=Inspiration, N=Networks*

2. United States of America

2.1 Overview

Few industries have contributed more to the development of the United States as a nation than the forest products industry, and it is no exaggeration to say that wood was the foundation of American society. Wood has played a central role in all aspects of the U.S. economy, from transportation to construction and from energy to communications. During the colonial period and the early formative years of the U.S. Federal Republic, settlers were able to exploit seemingly endless and readily accessible forest resources to satisfy all their needs for energy and construction materials. Wood was so ubiquitous, and so versatile, that until the end of the 19th century U.S. towns were built almost entirely of wood, essentially timber versions of European towns. According to Roland Ennos, "America, more than any other industrial nation, stayed rooted within the Wood Age right up to the start of the twentieth century"[5].

The situation changed in the early years of the 20th century with rising concern that the country had reached 'peak timber' following years of excessive and largely unregulated forest exploitation. This led to concerted efforts to conserve and re-establish the nation's forests. A new policy framework for forests was introduced at this time which included: protecting, in newly established National Forests, those areas of forest lands not yet in private hands (most of which were in the western part of the country); promoting and encouraging the protection of forests and grasslands across all ownership categories from wildfire, insects and disease; improving natural resource management by acquiring scientific knowledge on the management of forests and wildlife and on the more efficient utilization of raw materials; improving the management and productivity of both agricultural lands and forests through technical and financial assistance to farmers and landowners; and adopting and enforcing federal and state wildlife conservation laws.

This policy change coincided with wider socio-economic changes that together contributed to a large scale reafforestation of Eastern forests, starting around the middle of the twentieth century and which has continued until the present day. This reafforestation process emerged as urbanisation and improving agricultural productivity led to large scale depopulation of more marginal agricultural areas in the Eastern States. Huge numbers of small farms fell out of production and many were subsequently bought up as second homes by the increasingly wealthy urban population. Others for which the existing private owners could no longer afford to pay property taxes were taken into state ownership. Eastern state governments also intervened to buy up some large areas of regenerating forests in the vicinity of large cities for watershed protection purposes, while large corporations also consolidated forest land in some parts of the country to supply large commercial processing mills, particularly in the paper sector.

This historical legacy has contributed to the development of a diverse forestry sector combining: over 10 million families, mainly in the Eastern states, owning forest properties, many for several generations and primarily for non-timber forest values; large industry forest lands managed more intensively for long term sustainable fibre production; large State-owned forests, managed for multi-functional use; and Federally owned National Forests, primarily in the West, managed principally for preservation.

[5] Roland Ennos, 2022, "The Wood Age: How One Material Shaped the Whole of Human History"

Table 2.1: United States Statistical Indicators

World Bank Indicator	2020 value	Notes
Land area (1000 sq. km)	9,147	Land area is a country's total area, excluding area under inland water bodies, national claims to continental shelf, and exclusive economic zones. In most cases the definition of inland water bodies includes major rivers and lakes.
Agricultural land (% of land area) (2018)	44.36	Agricultural land refers to the share of land area that is arable, under permanent crops, and under permanent pastures.
Forest area (% of land area)	33.87	Forest area is land under natural or planted stands of trees of at least 5 meters in situ, whether productive or not, and excludes tree stands in agricultural production systems (for example, in fruit plantations and agroforestry systems) and trees in urban parks and gardens.
Forest area (1000 sq. km)	3,098	Forest area is land under natural or planted stands of trees of at least 5 meters in situ, whether productive or not, and excludes tree stands in agricultural production systems and trees in urban parks and gardens.
Rural land area (1000 sq. km) (2010)	8,550	Rural land area in square kilometres, derived from urban extent grids which distinguish urban and rural areas based on a combination of population counts (persons), settlement points, and the presence of Night-time Lights.
Urban land area (sq. km)	802,053	Urban land area in square kilometres, based on a combination of population counts (persons), settlement points, and the presence of Night-time Lights.
Trade (% of GDP)	23.38	Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product.
Forest rents (% of GDP) (2019)	0.04	Forest rents are roundwood harvest times the product of regional prices and a regional rental rate.
GDP (current US$ trillion)	20.95	GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products.
GDP per capita (constant 2015 US$)	58,559	GDP per capita is gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products.
GDP per capita growth (annual %)	-3.74	Annual percentage growth rate of GDP per capita based on constant local currency. GDP per capita is gross domestic product divided by midyear population. GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products.
Income share held by highest 10% of population	30.8	Percentage share of income or consumption is the share that accrues to subgroups of population indicated by deciles or quintiles.
Population, total (million)	329.5	Total population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship. The values shown are midyear estimates.
Rural population (million)	57.1	Rural population refers to people living in rural areas as defined by national statistical offices. It is calculated as the difference between total population and urban population. Aggregation of urban and rural population may not add up to total population because of different country coverages.
Urban population growth (annual %)	0.60	Urban population refers to people living in urban areas as defined by national statistical offices. It is calculated using World Bank population estimates and urban ratios from the United Nations World Urbanization Prospects.
Urban population (share of total population)	82.66	Urban population refers to people living in urban areas as defined by national statistical offices. It is calculated using World Bank population estimates and urban ratios from the United Nations World Urbanization Prospects.

Source: World Bank – World Development Indicators https://data.worldbank.org/country/united-states?view=chart

The diversity in the forest resource is reflected in the wide range of views surrounding their use and in attitudes towards forest products in the United States. The forest products industry still employs around one million people throughout the country. This together with the fact that so many families own forests has helped to maintain the strong cultural link between the people and their trees. While high rise buildings of steel and glass dominate the skylines of American cities, the houses of the

suburbs are still predominantly framed in wood in many parts of the country. Each U.S. citizen consumes well over 1 cubic meter of wood a year (excluding firewood), more than double the world average. And having been a pioneer in the development of engineered wood products throughout the last century and a half (plywood was first patented in New York City in 1865), the U.S. has continually worked to develop new products and new applications to make better use of the wood species and grades available from the nation's forests.

But while there is still a strong wood culture in the United States, there is not universal acceptance of the inherent benefits of wood use. The colossal policy debate that erupted at the start of the 20th century between Gifford Pinchot, the first head of the United States Forest Service, and John Muir, the influential naturalist who co-founded the Sierra Club, is still very much alive. Pinchot championed rational forest conservation built around scientific sustainability principles while Muir championed forest preservation through establishment of national parks. The views of the U.S. public continue to be strongly polarised between a large and influential environmental movement keen to limit forest disturbance, many favouring total forest protection, and an equally large and influential forest products sector advocating for sustainable forest use in support of a vibrant forest products industry.

In the marketplace wood is also coming under intense pressure from a whole host of non-wood substitutes, often offered at a lower price point and supported by claims of superior technical performance, while also exploiting consumer uncertainty over wood's sustainability credentials. The need for active sustainable wood promotion campaigns is as strong as ever in the United States.

2.2 Situation for forests

2.2.1 Forest area and condition

The U.S. Census Bureau reports the total land area of the continental United States and Hawaii (excluding the Caribbean Islands and U.S. territories) as 2.3 billion acres (914 million hectares). The Rocky Mountain Region comprises 33% of U.S. land area, followed by the Pacific Coast (including Alaska and Hawaii) at 25%, the South at 24%, and the North at 18%.

Forests and woodlands combined occupy 300 million hectares of the U.S. land base. Of those, 93% meet the international definition of forest, with the remaining 7% recognized as woodlands. Forest area trended upward from 1987 to 2012, but more recently appears to have reached a plateau. Since 1997, forest land has increased in all but one region. The largest increase has been in the South, at 6%. The Rocky Mountain and North both saw gains of 3% of forest land. The Pacific Coast lost forest land (less than 1%).

`Timberland' (production forest) comprises 67% of forest land in the United States. The vast majority (87%) of timberland is of natural origin. The remainder is planted forest, which may include plantations, augmented planting of natural stands, or planting for the purposes of restoration.

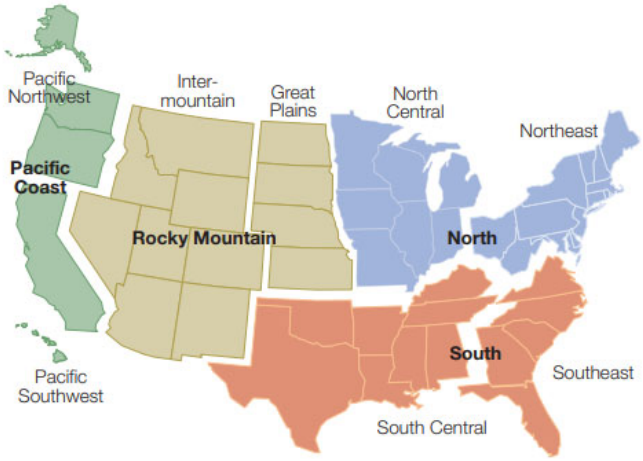

Figure 2.2.1.1 US forest regions and sub-regions
Reproduced from: Oswalt, S; Smith, WB; Miles, PD; Pugh, SA. (2019) *Forest Resources of the United States, 2017: a technical document supporting the Forest Service 2020 RPA Assessment*. Gen. Tech. Rep. WO-97. Washington, DC: U.S. Department of Agriculture, Forest Service, Washington Office. 223 p. https://doi.org/10.2737/WO-GTR-97

The United States encompasses a wide variety of ecological, physiological, and climatic zones. The most abundant of the 900+ known species in the conterminous United States is maple (25 billion trees). Loblolly pine, frequently planted throughout its range, was the second most abundant at 22 billion trees. Balsam fir (16 billion trees), sweetgum (15 billion trees), and Douglas-fir (11 billion trees) are the top five most frequently observed species in the country.

While forest land is becoming more accessible to people and 67% of forest land is legally available for harvest activities, tree cutting and removal occurs on less than 2% of forest land per year. This contrasts with the nearly 3% disturbed annually by natural events like insects, disease, and fire. Wildfire, insects, and disease are among the biggest threats to forests and woodlands. Low harvest rates, aging forests, mortality from insect and disease infestations, and extreme weather events have combined to create conditions that facilitate wildfire. Non-native invasive plants continue to impact native forests and woodlands.

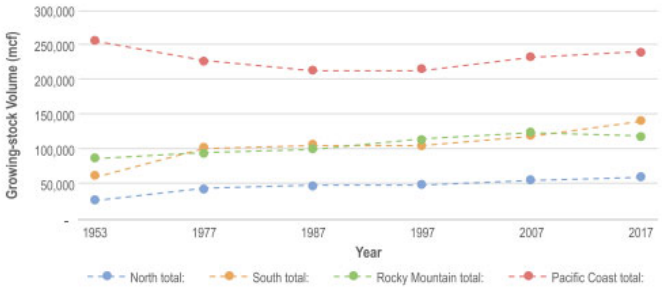

Figure 2.2.1.2 Hardwood – Growing stock volume in the US
Reproduced from: Oswalt et al (2017)

National Forests, administered by the U.S. Forest Service, account for 35% of reserved forest land area, nationwide. Tree removals for products, fire management, and land-use changes on national forests are very low and consume only 0.2% of standing volume on average, annually. Despite the low volume of wood extracted from national forests, average annual net growth declined while average annual mortality nearly doubled from 2006-2016. These patterns reflect aging forests and combinations of wildfire, drought, and insect infestations.

The total live-tree volume on US timberland exceeds 1 trillion cubic feet (28.3 billion cubic metres). Of live-tree volume in the country, 88% is considered growing stock. Softwoods account for 54% of live-tree volume and hardwoods for 46%.

Softwood growing stock volume increased in all regions except the Rocky Mountain between 2007 and 2017. Softwood growing stock in the South and North has risen consistently since the mid-1950s. Hardwood growing stock in both the North and South has risen steadily since the mid-1950s in part due to older, larger trees remaining in the woods, particularly since eastern hardwood lumber production has fallen off since the late 1990s. Hardwood growing stock volume in the North reached a high of 209 billion cubic feet (5.9 billion m^3) in 2017, compared to 192 billion cubic feet (5.4 billion m^3) in 2007 and 77 billion cubic feet (2 billion m^3) in 1953—a 173-percent increase over six decades. Hardwood growing stock volume in the South more than doubled from 1953 to a high of 178 billion cubic feet (5 billion m^3) in 2017, a 5-percent increase from 2007. On a State-by-State basis, the abundance of forest land, as a percentage of total land area, ranges from a low of 2% in North Dakota to a high of 89% percent in Maine (Figure 2.2.1.4).

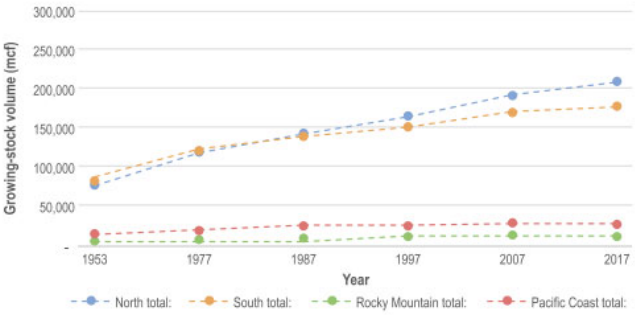

Figure 2.2.1.3 Softwood - Growing stock volume in the US
Reproduced from: Oswalt et al (2017)

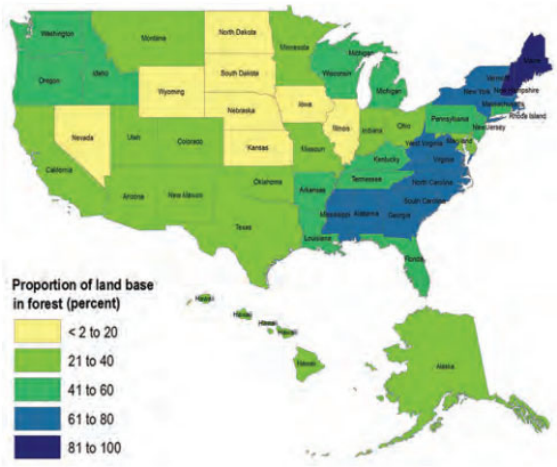

Figure 2.2.1.4 Proportion of land base in forest use
Reproduced from*:* Oswalt *et al* (2017)

2.2.2 Plantations

Plantation forest area in the conterminous United States ranked second among the world's nations in the land area apportioned to forest plantation. Plantation forest area increased from near zero in the 1930s to 26.83 million hectares in 2012, accounting for 8.65% of the total forestland area (or 12.72% of timberland) in the United States. Although the increase in plantation forest area was continuous between 1928 to 2012, the rate of growth varies, being high during the 1950s and 1960s, slowing in the 1970s, rising again in the 1980s, 1990s, and early 2000s, before slowing again after 2007. Regionally, early plantation establishment was concentrated in the North before 1950, but the extension of plantation area shifted rapidly to the South, and to a lesser extent, the West after that date.

Plantation forests in the United States are generally intensively managed, including practices such as the use of genetically improved seedlings, site preparation, nitrogen and phosphorus fertilization, and pre-commercial thinning. In the U.S., dependence on forest plantations to supply wood and non-wood products is increasing. Plantation forests play a major role in current and anticipated future supplies of timber because of their high growth rates, easy operability, and intensive management.

In 2012, the plantation forest area in the South, North, and West was 19.2 million hectares, 2.59 million hectares, and 5.06 million hectares, respectively. The plantation forest area accounted for 19.34% of the total forest area in the South, while only 3.62% in both the North and West. On an individual state basis, Alabama, with 33% of its timberland planted, Georgia (32%), Mississippi (32%), Florida (31%), and Louisiana (31%) have the highest proportions of planted to total timberland, nationally.

The South is expected to remain the main region for plantation expansion in the Unites States. In the West, expansion of plantation forest is constrained by mountainous terrains and relatively dry climate (the southern and central portions). In addition, most of the forest area in the West belongs to public land which is managed for multiple uses and generally not intensively for forest product yields. The North region has a far smaller fraction of public forest than the West; however, the cooler climate results in reduced productivity. In contrast, although the South already has a very high fraction of plantation forest and provides most of the forest products for the United States, it still has a large potential for increasing plantation forest area.

The primary planted forest-type group on southern timberland is loblolly-shortleaf pine which is widely used in the pulp and paper industries, and increasingly for pellets, as well as for dimensional lumber and plywood. The Douglas fir forest-type group represents the majority (63%) of planted trees in the Pacific Coast States. Douglas-fir is used for dimensional lumber and plywood as well as marine structures (e.g., docks), railroad ties, logs, fencing, pulp, and furniture. Ponderosa pine is the leading plantation species in the Rocky Mountain region, and white-red-jack pine in the Northern Region[6].

2.2.3 Forest Ownership

Forest and woodland ownership patterns vary substantially across the United States with private ownerships dominating in the East and public ownerships dominating in the West. Across the United States, 58% of forest and woodland is privately owned. An estimated 10.6 million families, individuals, trusts, and estates are collectively referred to as family forest and woodland ownerships. This group controls more forest and woodland (38%) than any other group.

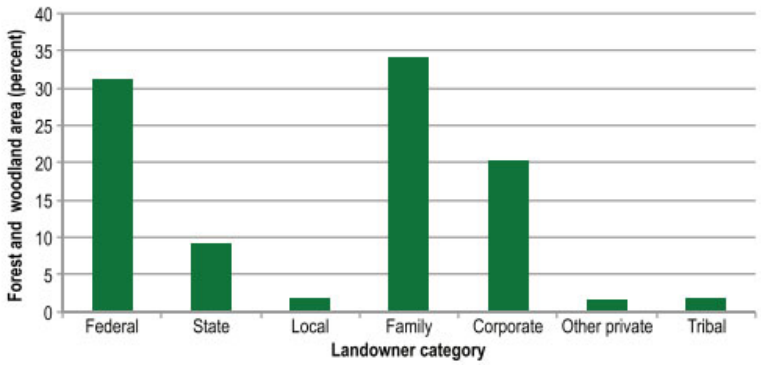

Figure 2.2.3.1 Landowner categories by percentage in the US
Reproduced from: Oswalt et al (2017)

[6] Chen et al, 2017, Spatial and temporal patterns of plantation forests in the United States since the 1930s: an annual and gridded data set for regional Earth system modelling, Earth Syst. Sci. Data, 9, 545–556, 2017 https://doi.org/10.5194/essd-9-545-2017

Corporate ownerships control an additional 20% of the forest and woodland. The corporate category is dominated by timber investment management organizations, real estate investment trusts, and forest product manufacturing companies, but also includes companies whose forest and woodland ownership is ancillary to their core businesses, such as a manufacturing company with forest land surrounding a production facility. Other private ownerships, owning 2% of the forest and woodland, include non-governmental conservation organizations and unincorporated partnerships, associations, and clubs.

Of the forest and woodland across the United States, 42% is publicly owned. The Federal Government controls 31% of the U.S. forest land. The Forest Service is the dominant agency in this category, but many other agencies are also involved. State agencies, in particular forest, wildlife, and recreation agencies, control 9% of the US forest and woodland and local governments control an additional 2%. The remaining 2% of the forest and woodland in the United States is within Native American Tribal reservation boundaries.

Forest and woodland resources vary substantially between private and public ownership groups. These differences are related to the geographic distribution of and the management practices of these groups. One example of these differences is distribution of forest-type groups. Across the Northern United States, oak-hickory, maple-beech-birch, and elm-ash-cottonwood forest-type groups are more common on private lands whereas spruce-fir and aspen-birch forest-type groups are more common on public lands. Across the Southern United States, loblolly-shortleaf forest-type groups (with opportunities for larger financial returns) are much more common on private land and oak-gum-cypress is more common on public land. Throughout the Rocky Mountain Region, Douglas-fir and ponderosa pine forest-type groups are more common on private lands and fir-spruce and lodgepole pine forest-type groups are much more common on public lands. Across the Pacific Coast Region, the fir-spruce forest-type group is much more common on private lands and the hemlock-Sitka spruce forest-type group is much more common on public lands.

Reasons for owning forest or woodland vary substantially across, and often within, ownership groups, and this is reflected in forest management practices. Multiple policies influence the management of Federal lands (for example, the National Forest Management Act and the National Environmental Policy Act) and similar legislation exists in most, if not all, States that govern State-owned lands. These policies and other regulations are the basis for managing public lands for recreation, water, wildlife, and timber—sometimes for one specific goal, but more often for multiple goals.

The objectives of private landowners range from primarily financial to primarily amenities, with many owners desiring a combination of both. For traditional forestry companies and now timber investment management organizations and real estate investment trusts, maximization of profits is important. Portions of their lands are managed intensively, and most manage with an eye toward future forest conditions and align their practices with scientifically based sustainability practices, considering wildlife, water quality, and other factors.

Due to differences in owner characteristics, management practices, and policy implications, family forest and woodland owners are often separated between the 6.6 million who own 1 to 9 acres and the 4.0 million who own 10 or more acres. The ownerships with 1 to 9 acres account for 7.4% of the family forest and woodland, whereas the ownerships with 10 or more acres account the other 92.6%. The dominant reasons for owning are related to amenity values for both groups; wildlife, beauty, and legacy are the top three for the 10-or-more acre group and beauty, primary residence, and privacy are the top for the 1- to 9-acre group. The objectives partially account for the fact that relatively few ownerships have a written forest management plan (12.9% for 10 or more acres and 4.4% for 1 to 9

acres) or have received forest management advice (19.5% for 10 or more acres and 9.7% for 1 to 9 acres).

Private lands in the South account for 58% of the national timber removals. Private lands in the North account for 15% and private lands in the Pacific Coast account for another 14%. Apart from a growth to removal ratio of less than 1.0 for softwoods in the Rocky Mountain Region, due largely to insect infestations, all other ratios exceed 1.0 at the species/ownership group level. A growth to removal ratio over 1.0 is a coarse indicator of sustainable management, but many other indicators also need to be considered, and the values may be very different when individual species in specific areas are examined.

2.3 Forest governance and legislation

2.3.1 Guiding principles

Four features of the United States forest sector underpin the nation's regulatory regime:

- First, the regulatory regime reflects the nation's federalist structure. Much of the responsibility for forest regulation lies at State level. Each state has its own government agency responsible for forestry administration whose role and powers will vary considerably depending upon state forest policy. The regulatory role of Federal Agencies focuses more on cross-border environmental issues, notably endangered species protection, the management of inland lakes and rivers, plant health, trade in illegally harvested timber, and emissions of greenhouse gases and other pollutants.
- Second, the large proportion of commercial forest land is owned and managed privately, including a large share in the hands of millions of private individuals and their families.
- Third, the degree to which government should exert control over the management of private lands is a major political issue in many states. The Fifth Amendment of the U.S. Constitution, known as the takings clause, states that private property shall not be taken for public use "without just compensation". The U.S. courts have determined that regulations that go too far in denying a landowner economic use of his or her property are essentially takings that require just compensation. As a result many states have chosen to introduce non-mandatory regulatory regimes encouraging good management through positive incentives and education rather than direct intervention and control.
- Fourth, the U.S. regulatory regime places great emphasis on individual responsibility. In many other countries, for example throughout most of Europe, forestry laws tend to establish detailed rules and regulations with which forest owners must comply to avoid prosecution. The national or regional Forest Authority is given direct legal responsibility for ensuring rules are applied. By contrast, in the U.S., it is common practice for regulatory authorities to issue guidelines that forest owners may follow voluntarily to reduce the risk of being prosecuted. A forest owner's compliance with the guidelines may be considered in the event of a lawsuit, but there is no legal obligation for owners to follow the guidelines. Furthermore regulatory authorities tend not to shoulder sole responsibility for monitoring compliance with US laws. Any individual may file a citizen suit against another individual for an infringement.
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2.3.2 National forests

The first major move to introduce measures to encourage sound forest management throughout the United States came in 1891 with an Act of Congress authorising the establishment of a system of National Forests. This was followed by the Forest Service Organic Act of 1897 which established Federal authority to manage these lands according to forestry principles. According to this law, National Forests were established "to furnish a continuous supply of timber for the use and necessities of citizens of the United States" and to improve and protect the forest.

The U.S. Federal Government, through the U.S. Forest Service, retains direct jurisdiction over National Forests to this day. Over 32 laws are considered in the planning of forest operations on Federal timberlands, most notably the Multiple Use and Sustained Yield Act (1960). By law the Forest Service can only harvest as much as has grown and all forests must be replanted or renewed naturally. Further laws establish requirements for a comprehensive forest planning process during the management of National forests, including systems to evaluate forest resources and monitor operations, and to seek out and act on the views of the U.S. public.

2.3.3 Federal environmental legislation

In addition to the Federal Government's direct jurisdiction over National Forests, certain Federal agencies have powers to enforce general environmental legislation on all forest lands. Four federal laws are particularly relevant:

- The 1973 Endangered Species Act (ESA) is designed to conserve threatened or endangered species until they are out of danger. The Federal Fish and Wildlife Service (FWS) has the primary authority to decide if a species is endangered, although anyone can petition for a species to be listed. Listings are considered solely on the basis of best scientific evidence available. The economic consequences of a listing, such as loss of jobs, cannot be considered. A federal agency such as the Forest Service, must consult the FWS before undertaking any activity in a listed species habitat. The Act also places restrictions on the management of endangered species habitats located on private lands .
- The 1972 Clean Water Act (CWA) has had a major impact on the regulation of US forest practices at state level. The Act required states to develop programs aimed at reducing water pollution, including "non point source" pollution derived from agriculture, forestry, and other land uses. Excessive timber harvesting and associated road construction may result in the discharge of "pollutants" into watercourses in the form of excess soil material. In states where forestry is a major land use, the state authorities were effectively required under the Act to develop and implement "Best Management Practices" (BMPs) for forestry operations. The content of forestry BMPs and the method of implementation were left entirely in the hands of the state authorities. Some states - such as Washington, Oregon, and California - introduced comprehensive forest practices acts making the implementation of state-approved BMPs compulsory for all landowners. However most states chose to rely on non-regulatory schemes encouraging voluntary adoption of state-approved BMP, for example by offering lower property taxes, or through free provision of advisory services and education and awareness schemes.
- The 2000 Plant Protection Act consolidated ten existing U.S. plant health laws into one comprehensive law. The Act gives the U.S. Department of Agriculture the authority to regulate and prohibit or restrict the importation, exportation, and the interstate movement of plants, plant products, certain biological control organisms, noxious weeds, and plant pests. The U.S. Animal and Plant Health Inspection Service (APHIS) is the lead agency with responsibility for

monitoring and mitigating the threats posed by pests to the nation's forests. Where a pest of concern is detected, APHIS will implement emergency protocols and longer term programs in partnership with affected States to manage or eradicate the outbreak. APHIS is also empowered to control imports of forest products that are potential vehicles for pests threatening U.S. forests.

- The 1900 Lacey Act is a U.S. law that bans trafficking in illegal wildlife. In 2008, the Act was amended to include plant-based products such as timber and paper. The Act makes it unlawful to import, export, transport, sell, receive, acquire, or purchase in interstate or foreign commerce any plant in violation of the laws of the United States, a state, an Indian tribe, or any foreign law that protects plants. The Lacey Act is a fact-based statute with strict liability, which means that only actual legality counts (no third-party certification or verification schemes can be used to "prove" legality under the Act) and that violators of the law can face criminal and civil sanctions even if they did not know that they were dealing with an illegally harvested product. Penalties for violating the Lacey Act vary in severity based on the violator's level of knowledge about the product: penalties are higher for those who knew they were trading in illegally harvested materials. For those who did not know, penalties vary based on whether the individual or company in question did everything possible to determine that the product was legal. In the U.S. system, this is called "due care," and is a legal concept designed to encourage flexibility and innovation in the implementation of the law.

2.3.4 Private sector forest certification initiatives

The high proportion of private ownership, coupled with the importance of private property rights and strong civil society, means that voluntary private sector initiatives form a major component of the United States regulatory framework. The U.S. plays host to the American Tree Farm System (ATFS) which, having been established as long ago as 1941, is by far the oldest voluntary forest certification scheme in the world. ATFS has also forged close links with the Sustainable Forestry Initiative (SFI), originally established in 1996 by the American Forest and Paper Association (AF&PA) as a self-regulatory programme for large industrial forest owners. Both the ATFS and SFI have been adapted over the last decade to ensure full conformance to internationally recognised guidelines for development of sustainable forestry standards and independent auditing in line with the requirements of the Programme for Endorsement of Forest Certification (PEFC). The United States has also proved fertile ground for development and implementation of independent certification to the Forest Stewardship Council (FSC) standards.

After rapid growth in the first decade of this century, when the large majority of industrial and state forest land was certified, certified forest area has plateaued in the last decade with very little uptake by non-industrial family forest owners. The incentives to achieve certification have been limited for this group since most do not own or manage forests principally for commercial gain. The combined area of SFI and ATFS forest land in the U.S. is 34.2 million hectares, around 10% of the PEFC certified global total. Currently at 14.6 million hectares, the U.S. FSC certified area represents around 6% of the global FSC total. Certified areas are widespread geographically in the eastern states but are less common in the western states because few National Forests are certified, mainly for political reasons.

These certification processes go beyond just compliance with specific forestry standards on lands owned by participating organisations. Their evolution has gone hand-in-hand with the development of a network of alliances involving both state and private sector institutions actively involved in promoting sustainable practices through education, training and research programmes throughout the United States. For example, SFI has forged alliances with the US Department of Agriculture, the

American Tree Farm System, the National Association of State Foresters, the National Woodland Owners Association, and various conservation organisations. It has also established 34 SFI Implementation Committees at the state, provincial or regional level. This grassroots network involves private landowners, independent loggers, forestry professionals, local government agencies, academics, scientists, and conservationists.

2.3.5 Linking private & public sector regulatory initiatives

Recognising the key role of private land-owners and private sector initiatives in U.S. forest regulation and management, the federal government and state agencies have evolved far-reaching programs to enhance public-private sector co-operation.

The Forest Stewardship Program, authorized by the 1990 Farm Bill and managed by the U.S. Forest Service, is the most extensive private forest owner assistance program in the U.S., both in reach and scope. The Program provides landowners with professional planning and technical assistance to keep their land in a productive and healthy condition. The program focuses on forest owners new to, or in the early stages of managing their land in a way that embodies multi-resource stewardship principles. To date it has provided more than 350,000 comprehensive management plans covering more than 16 million hectares nationwide. In addition to the direct support provided to forest owners, the Program has successfully created and now sustains a vast, effective network of forestry technical assistance providers throughout the U.S. Assistance offered through the Program also provides landowners with enhanced access to other U.S. government conservation programs, forest certification programs, and forest product and ecosystem service markets.

More recently, U.S. government authorities have been working to refine and more effectively target their engagement with the private sector to improve forest management and to adapt to new challenges and opportunities. While the total volume of trees standing in U.S. forests has continued to rise, urbanization and development are leading to forest loss and fragmentation in some areas. Forest quality has declined and pest outbreaks have become more widespread and damaging in many areas due to a combination of factors including years of strategic fire suppression and environmental restrictions on logging in forests owned and managed by the Federal and state governments, a decline in active forest management by non-industrial private owners, climate change, and invasive pests imported in wood packaging and other forest products.

In addition, forest ownership is in flux due to divestiture of forest industry lands and intergenerational transfer of family forests. Economic incentives for landowners are affected by declines in traditional markets for timber products and uncertainty about emerging markets for bio-energy, carbon, and certified wood products.

At the same time, new information and communication technologies are improving the quality and level of access to accurate data on the extent and condition of forests and other ecosystems in the United States. There is a rising expectation that forest management should be participatory, adapted to the needs of all stakeholders, not just forest owners and managers but including all communities and interests impacted by forest operations within a region. These various technologies and concepts are now being integrated through the “landscape approach” to forest regulation and management which sets out to balance multiple types of ecosystems with the needs of multiple sets of actors who use them. In this approach, forests are not defined as isolated entities, but as integral components of dynamic, multi-functional landscapes.

In response to these new challenges and opportunities, the Food, Conservation, and Energy Act of 2008, also known as the 2008 Farm Bill, required that every state must complete a State-wide Assessment and Strategy for Forest Resources. The Assessments provide an analysis of forest conditions and trends in the state and delineate priority rural and urban forest landscape areas. The Resource Strategies provide long-term plans for investing state, federal, and other resources to where it can most effectively stimulate or leverage desired action and engage multiple partners.

The approach for developing these strategies varied widely among the states, reflecting differences in the management styles, the number of existing resources, the priorities of states, and the differences in the challenges that face them. Some engaged in a wide-ranging stakeholder involvement process that, in some cases, included meetings, polls, surveys, and other outreach efforts to ascertain the priorities facing both the forests and the stakeholders of the forest—including state agencies, private landowners, tribes and indigenous peoples, and other user groups. Some largely consulted existing resources and included many existing plans and assessments in their plans as appendices.

Federal funds are made available every year to support implementation of the state strategies, with a rising proportion invested in projects selected through a competitive process. Only those projects are selected which are judged best able to deliver on the strategic objectives identified in the state-wide strategies

2.4 Forest Products Industry and Trade

2.4.1 Wood balance

Annex A.1 provides an overview of the United States primary wood products balance drawing on FAO statistics for the year 2019[7]. Overall the wood balance highlights the extent to which homegrown wood dominates supply of forest products to the United States and the broad mix of products supplied into the market, indicative of a well-established and highly evolved industry. In 2019, U.S. production of wood fibre (including all industrial roundwood and firewood) totalled 275 million tonnes (all figures dry weight). Total imports of wood fibre, inclusive of raw logs and all primary processed and simply worked products, amounted to just below 30 million tonnes, while exports were 25 million tonnes. Assumed consumption was close to 200 million tonnes, including 60 million tonnes used for energy production, 61 million tonnes of sawnwood, 10 million tonnes of plywood and veneer, 18 million tonnes of other panels, and 50 million tonnes of wood pulp[8].

2.4.2 Industry size and structure

According to the American Forest and Paper Association, the U.S. forest products industry employs about 950,000 people with a payroll of approximately $50 billion annually, and is among the top 10 manufacturing sector employers in 45 states. The industry accounts for approximately 4 percent of the total U.S. manufacturing GDP, producing nearly $300 billion in products. Forest products facilities are important to local communities with more than 75% of all U.S. pulp and paper mills located in counties that are more than 80% rural.

[7] The year 2019 is considered rather than the most recent data currently available for 2020 which was distorted due to the COVID pandemic.

[8] The balance does not extend to paper products and secondary and tertiary wood products.

According to IBISWorld market research, there were 2,831 sawmills and wood production businesses in the US as of 2022, the number remaining steady over the five years between 2017. This includes hardwood and softwood lumber, as well as wood chips and wood product preservation. The sawmilling industry is now heavily concentrated in the Eastern States, the largest numbers being in Pennsylvania (271 businesses), Missouri (175 businesses) and North Carolina (171 businesses).

There are around 1000 softwood sawmills in the USA and Canada with total capacity of roughly 74 BBFT per year – the same level in aggregate as twelve years ago in 2008. One key difference in softwood lumber capacity today versus twelve years ago is location: mills moved from the west to the south. Now, the U.S. South is the largest softwood lumber-producing region in North America, with one-third of the sawmill production capacity[9].

Hardwood Market Report estimates that there might be as many as or more than 3,000 sawmill units processing hardwoods with annual turnover of over $5 million in the United States[10]. Annual capacity of hardwood sawmills is at least 9 billion board feet (21 million cubic meters) while production utilization in 2021 was around 8 billion board feet (19 million cubic meters). Hardwood lumber production peaked in 1999 at 12.6 billion board feet (30 million cubic meters) in 1999. In recent years, more "hardwood sawmills" have been processing pine. About 93% of hardwood lumber supply is from the Eastern United States.

There are around 30 OSB mills operating in the United States, with 82% of capacity in the southern states and the remaining 18% in the Lake States and Northeast.[11] OSB capacity in North America was around 27 billion square feet (2.5 billion square meters) in 2021. Between 2011 and 2021, total North American OSB capacity grew by a compound annual rate of 2.5%, gaining over 0.5 billion square meters over ten years[12].

In 2018, two U.S. firms were manufacturing Cross Laminated Timber (CLT) panels approved for structural use, two were producing non-certified panels, and the construction of four plants had been announced[13]

The number of pulp and paper establishments in the U.S. decreased from just under 7,000 in 2001 to 5,500 in 2016[14]. Capacity declined from 62.0 million metric tons to 53.5 million metric tons between 1997 and 2016[15].

Bioenergy from forest products is also an important component of the nation's energy mix. According to the U.S. Energy Information Administration, wood energy accounted for 20% of all renewable energy and 41% of all bioenergy generated in the country in 2016. A rising proportion of wood energy derives from processed products such as pellets rather than firewood . The United States accounts for 26% of total wood pellet production worldwide.

As of July 2018, there were 83 facilities producing densified biomass in the United States, with a production capacity of 12 million metric tons (13 million tons) per year. Although pellet production started in the Northeast and Northwest, most of the growth in pellet production capacity has been in

[9] https://forisk.com/blog/2021/09/15/sawmill-expansions-in-the-u-s-south/
[10] Some of the sawmills included in this count are small, industrial product sawmills that operate in tandem with larger mills
[11] https://forisk.com/blog/2018/07/23/osb-capacity-and-investment-in-the-u-s-south/
[12] https://forisk.com/blog/2022/02/15/structural-panel-mill-investments-continue-in-north-america/
[13] American Plywood Association 2018
[14] Bureau of Labor Statistics 2017
[15] FAO, 2017

the Southeast. The major raw material sources for wood pellet manufacturing in the United States are mill residues and pulpwood (both softwood and hardwood)[16].

The U.S. forest products sector makes efficient use of waste products. U.S. wood-processing facilities generated 4 million tons of mill residue in 2016, 99 percent of which was used for either fuel or fibre products like pulp and paper.

2.4.3 Industry trends

While the forest products industry remains an integral part of the Nation's economy and vital to many local economies, the industry has been vulnerable to economic pressures. U.S. wood production and consumption wood declined sharply from a peak in 2005 to its lowest point in over four decades in 2009, following the "Great Recession" of 2007 to 2009. The industry employed well over 1.4 million people prior to the recession but shed 350,000 jobs as a 75% drop in housing starts from 2005 to 2009 led to a dramatic downturn in demand for construction products including timber.

Nevertheless, per capita annual wood consumption in the United States was 1.24 m3 (530 board feet) in 2013, the last year of available data. Per capita consumption is still more than double the world average of around 0.5 m3 (200 board feet). In 2020, according to FAO data, the U.S. was still the world's leading consumer of industrial roundwood (18% of global consumption), sawnwood (21%), wood-based panels (12%), recovered paper (13%), and paper and paperboard (17%).

In addition to cyclical changes in consumption related to wider economy, the U.S. forest products industry has been undergoing significant structural changes in recent years driven by globalisation (for example shifting of manufacturing to lower cost locations notably China and more recently Vietnam), technological developments (for example leading to a decline of printed media and a rise in production of CLT), and policy developments (for example rising demand for wood pellets driven by zero carbon commitments).

Overall, domestic U.S. wood product manufacturers have lost market share to low-cost imports. A considerable decrease in paper consumption combined with rising competition with global producers in the last two decades has reduced the overall demand for fiber and caused many pulp and paper mills to close. In the early 2010s, China overtook the United States' long-held position as the world's largest paper manufacturer. China has consistently taken advantage of cost-saving techniques and investment into the latest paper-manufacturing infrastructure while domestic paper mills continue to face increased costs from environmental regulations as well as restructuring and consolidation.

Similarly there was a mass exodus of furniture manufacturers from the U.S. sector in the first decade of this century. In just 10 years, between 1999 and 2009, the furniture manufacturing industry in North Carolina, formerly the centre of the industry, lost more than half of its jobs. In this instance, the influx of Chinese imports had been initiated not by Chinese industrialists but rather by the North Carolina industry's own leaders, who had sought cost advantages by relocating to China. [17] More than 70% of the non-upholstered furniture sold in the United States is now imported. More recently, and particularly since the imposition of swingeing import taxes on Chinese goods during the Trump

[16] U.S. Energy Information Administration, 2018

[17] Econ Focus, 2020, The Rise and Sudden Decline of North Carolina Furniture Making: The industry was hit hard by offshore competition, John Mullin, https://www.richmondfed.org/publications/research/econ_focus/2020/q4/economic_history

administration, Vietnam has played an increasingly important role in supply of wood furniture to the U.S. market.

Products traditionally made with wood, such as windows, siding, framing, and decking, have also lost market share to substitute materials. Siding, which was once overwhelmingly made of wood (usually naturally durable species), now has a market share of 5 percent in the single-family residential market, with vinyl and fiber cement overtaking this segment. In decking products, wood had a comfortable 97 percent share of the market in 1995 which dropped to 62 percent in 2016, largely due to losses to wood-plastic composites and plastic decking (32 percent and 6 percent of the market in 2016, respectively). Wood windows, once dominant, are now limited to the traditional and luxury segments, and vinyl is the market leader. On the other hand, wood has held its own against substitute materials in markets such as pallets, residential construction, and kitchen cabinets. Wood framing is still used in more than 90 percent of single-family construction, and it has been estimated that more than 90 percent of pallet units are made of wood[18].

The large scale shift in manufacturing of tertiary wood products to locations outside the United States, combined with rising substitution in the U.S. domestic market, has had particularly dramatic effects on U.S. hardwood lumber markets. Industrial and export markets have grown in importance, while demand from high value-added manufacturers in the U.S. decreased sharply in the last decade, particularly in the furniture sector. One indicator of this shift has been some decoupling of housing construction activity and hardwood lumber prices. Historically lumber prices traced the trends in housing starts closely; however, starting shortly after the Great Recession, hardwood lumber prices have been increasing at a higher rate than housing starts, and exports have become a major driver of price.

In contrast, the primary driver for softwood lumber consumption has remained in residential and non-residential construction, which has been trending upward in recent year. Softwood lumber has remained competitive with substitute materials, such as steel and plastic, in markets like dimension lumber, doors, and windows. Moreover, improvements in process efficiency, such as the use of small diameter logs as raw material, will contribute to maintaining the competitive position of softwood lumber over substitute materials. New applications, such as engineered wood products, mass timber, and increased share in some markets (e.g., commercial construction, mid- and high-rise construction, pallets, and containers) are widely expected to boost demand for softwood lumber. The market for CLT panels in the US is expected to reach over 2 million m3. The current manufacturing capacity in the U.S. is less than 200,000 m3.

Industrial wood products support transportation and logistics operations as well as communications and energy infrastructure. Major industrial wood products are pallets and containers, railroad ties, wood utility poles, mining supplies, crane mats, and road construction products (e.g., sound barriers, guardrail posts, retaining walls, signposts, and trail and road bridges). These products are gaining importance as logistics operations become more global, U.S. oil and gas industries prosper, and outlets for lower-grade hardwoods shrink.

2.5 Public sector wood promotion

[18] Espinoza, Omar. 2020. Trends in the U.S. forest products sector, markets, and technologies. In: Dockry, Michael J.; Bengston, David N.; Westphal, Lynne M., comps. Drivers of change in U.S. forests and forestry over the next 20 years. Gen. Tech. Rep. NRS-P-197. Madison, WI: U.S. Department of Agriculture, Forest Service, Northern Research Station: 26–49. https://doi.org/10.2737/NRS-GTR-P-197-paper4.

2.5.1 Overview

Several government agencies at Federal and State level engage in sustainable wood promotion activities. A key feature of most of these programs is collaboration with the private sector through provision of grants and cost sharing arrangements.

Domestic wood market development activities are coordinated by the USDA Forest Service and is mainly focused on provision of grants and other collaborative work with the private sector to encourage innovation and technology transfer, particularly to expand utilization and markets for products and residues from a wide array of forest operations. Key priorities in recent years have been to develop markets for products from urban forests and from salvage felling to improve forest health and recover from natural disasters.

Export market development is supported by the Market Access Program (MAP) in which the U.S. Foreign Agricultural Service (FAS) partners with trade associations, cooperatives, state regional trade groups and small businesses to share the costs of overseas marketing and promotional activities for U.S. agricultural commodities and products, including wood products.

State forest services in some of the larger timber producing states also engage in wood marketing activities, again with the aim of increasing utilisation and value of the products and residues from both public and private forests in the state. Forest services at state level often work in partnership both with Federal government agencies and the private sector. Some states actively support and promote a state brand for forest products, tapping into consumer preferences for sourcing of local products.

The National Association of State Foresters, established in 1920, has become an influential advocate for more effective policy at national, state and local level to promote the health, resilience, and productivity of both rural and urban forests. It is also playing an increasingly important role to communicate actions undertaken in support of sustainable forestry to the wider public in the United States.

2.5.2 USDA Forest Service Wood Innovations Program

The key wood market development program run directly by the Federal Government through the USDA Forest Service is the Wood Innovations Program (WIP). The stated aim of the WIP is to “expand and create markets for wood products and wood energy that support long-term, sustainable management of National Forest System lands and other forest lands”. The WIP has two national competitive grants programs, as well as project activities funded under discretionary agreements and annual work plans.

The WIP is coordinated by the USDA Forest Service State and Private Forestry national office in Washington DC working with Forest Service units and cooperating with States, Tribes, private landowners, and other partners throughout the country. Each of the nine regional Forest Service units provide technical and market development leadership to the WIP and serve as the key point of contact for Program grant recipients in their region.

USDA is empowered to offer grants through the WIP to the private sector and other agencies for a variety of activities, some involving promotion of greater market access for sustainable wood products. Relevant Federal legislation mandating issue of the grants includes the Agriculture Improvement Act of 2018 (Public Law 115- 334) and Rural Revitalization Technologies Code (7 U.S. Code [USC] 6601).

The majority of grants and agreements awarded under the WIP address the nationwide challenge of reducing the risk of catastrophic wildfires, disease, and infestations by retaining or expanding markets for excess biomass and low-value logs removed during forest management activities. The material removed supports traditional markets, new markets, and local economic development, and also reduces emissions from the open-air burning of excess forest biomass. National focus areas are the use of mass timber in construction, expansion of renewable wood energy infrastructure, and assisting sawmills in economically challenged areas to retool or add advanced technology. There were around 50 grant awards in fiscal year 2021 totalling $11 million.

Also under the WIP, the USDA Forest Service Eastern Region manages the Wood Education and Resource Center (WERC), which facilitates interaction and information exchange with the forest products industry to enhance opportunities for sustained forest product production. WERC staff manage the National Wood Energy Technical Assistance Team, which evaluates and develops community-scale projects using woody biomass for heat or combined heat and power.

A Forest Products Marketing Unit (FPMU) is also hosted by the USDA Forest Service Forest Products Laboratory (FPL) under the WIP. FPMU's stated aim is to work with FPL researchers, regional Wood Innovations Program managers, and external partners to advance high-value, high-volume wood products and energy markets to support healthy forests and economies. A major focus in recent years has been to support research, through provision of grants, in support of new markets for low value wood specifically to increase utilization of hazardous fuel wood and thereby accelerate forest restoration and help reduce the rate and size of catastrophic fires. FPL researchers are also directly supporting - through provision of expertise - building engineers, architects and developers involved in mass timber construction projects using CLT.

2.5.3 Green Building Rating systems in U.S. Public Procurement

Unlike in many European countries, public authorities in the United States have not adopted single issue "timber procurement policies" designed to exclude illegally harvested wood products or favouring particular forest certification brands. Instead, public bodies, most notably the federal government's purchasing agent GSA, have typically promoted environmental objectives in procurement using more wide ranging mechanisms not ostensibly designed to target specific materials or environmental issues. Instead they have attempted to deal with these issues using a comprehensive life cycle based approach. In theory, by focusing on the intrinsic environmental credentials of different materials in a balanced a way, rather than limiting buying to specific certified products within individual material sectors, this approach should more effectively promote sustainable wood products.

In practice, the complexities of building and product life cycle assessment, combined with lack of access to good quality and comparable life cycle data on different materials, has resulted in this approach often being more aspirational than real. Lobbying efforts by individual material sectors, advocates of specific certification systems, and influential environmental interests have also, to some extent, subverted the stated commitment to an unbiased scientific life-cycle based approach. However, these issues are gradually being resolved as life cycle data quality and accessibility is improving, while more rigorous and inclusive standards are being applied.

The first concerted move towards introduction of environmental standards in Federal government procurement came in 2006, when 19 federal agencies signed a Memorandum of Understanding committing to "federal leadership in the design, construction, and operation of High-Performance

Sustainable Buildings." This interagency memo yielded what is now called the Guiding Principles for Sustainable Federal Buildings and charged agencies to optimize buildings' performance while maximizing assets' life-cycle value. Since then Executive Orders, including 2007's E.O. 13423 Strengthening Federal Environmental, Energy, and Transportation Management, have required Federal agencies to make annual progress toward 100% portfolio compliance with the Guiding Principles.

To achieve this goal, Federal Government agencies have relied heavily on conformance to green building rating systems for development and renovation of Federal Government property. Starting in 2006, the GSA is empowered through the Energy Independence and Security Act of 2007 (EISA) to assess these systems every five years to ascertain those best able to deliver against Federal government objectives. The first assessment approved only the U.S. Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) system. In 2013, GSA recommended the Green Building Initiative's Green Globes alongside LEED. In 2019, both LEED and Green Globes were again recommended both for new and existing buildings, alongside three other systems for existing buildings only (BREEAM[19], BEST[20], and LBC[21]).

Of these various systems, LEED as the earliest endorsed and most widely promoted standard has been by far the most widely used in the U.S. For the forest products industry in the U.S. the heavy reliance on LEED for Federal governments, was the source of some controversy in the U.S. wood industry. LEED has only recently introduced holistic LCA based credits to assess the relative environmental impact of different materials, formerly relying entirely on conformance to a list of single-issue, tick-box, criteria. For wood the essential requirement was that it must be FSC certified, highly controversial in a country where two other certification systems – the Sustainable Forestry Initiative (SFI) and American Tree Farm System (ATFS), both under the PEFC umbrella - have certified a much a larger area of forest, and where only a tiny proportion of non-industrial forest owners are recognised under any system.

The controversy has eased in recent years, partly because LEED has developed so-called "Alternative Pathway Credits" expanding recognition to a wider range of certification systems (including PEFC, SFI, and ATFS). Even more positively for wood, given its intrinsic life cycle benefits, is the development of credits (e.g. under LEED v4.1 MR Path 4) for completion of a whole building LCA. The precise number of credits offered varies depending on the level of reduction of Global Warming Potential and other environmental impacts that can be demonstrated in relation to a "baseline building" defined by LEED.

The controversy has also been eased by GSA's recognition of Green Globes alongside LEED. Green Globes generates a building score based on a 1000-point-based rating system which is much more focused on full life cycle attributes. In fact one rating option under the "Materials and Resources" section – the "Performance Path" - is based entirely on use of LCA data to demonstrate a reduction in impact across a range of environmental categories, most notably Global Warming Potential. The other rating option - the "Prescriptive Path" – is more like the old LEED single-issue tick-box approach, but it does recognise "third party certifications that are based upon a multiple attribute standard developed by a consensus based process from an approved standard development organisation" as equivalent to "3rd party sustainable forestry certifications". There is also recognition of SFI, ATFS and PEFC alongside FSC.

[19] UK Building Research Establishment's Environmental Assessment Method, specifically the BREEAM In-Use USA standard

[20] Building Owners and Managers Association (BOMA) BEST Sustainable Buildings, specifically the version 3.0 standard

[21] Living Building Challenge (LBC

Under Global Globes, wood buildings can readily achieve very high scores, generating points for low environmental impact, particularly carbon, alongside credits for renewability, certification, energy efficiency, superior acoustic properties, reduced construction waste, and economic value, both to the project itself and to the communities who manufacture the wood products. Use of traditional lumber framing, mass timber and engineered wood products all score well. Construction methodologies, like prefabricated components, also qualify for Green Globes credits.

2.5.4 USDA *Biopreferred* Program

Managed by the U.S. Department of Agriculture (USDA), the goal of the *BioPreferred Program* is to increase the purchase and use of bio-based products. The *BioPreferred Program* was first created by the 2002 Farm Bill and was most recently reauthorized and expanded as part of the Agriculture Improvement Act of 2018 (2018 Farm Bill). It is a single-attribute program focused exclusively on bio-based content. Bio-based content is renewable and may be derived from plant or animal sources, both terrestrial and marine. It is distinct from non-renewable fossil-based content derived from oil and coal resources. The policy objective is to reduce U.S. reliance on petroleum, increase the use of renewable agricultural resources, and contribute to reducing adverse environmental and health impacts. The Federal Acquisition Regulation, and Presidential Executive Orders direct that all federal agencies purchase bio-based products in categories identified by the USDA.

Like the Federal Government's original exclusive commitment to the LEED system for green building, the *Biopreferred Program* was initially a source of contention for the forest products sector. Although designed to favour products from renewable plant material, it was initially targeted on agricultural commodities and effectively excluded forest products. Products considered to be "mature market" products, defined as having a significant market share prior to 1972, were ineligible. There was also no system for recognition of more complex products containing one or more components made from bio-based products, which effectively excluded engineered wood and other more processed products.

However, the inequities of this approach were recognised in an amendment to the Farm Bill in 2014 requiring that USDA eliminate restrictions on mature market wood products in the program. The 2014 Farm Bill required the *BioPreferred Program* to "*promote biobased products, including forest products, that apply an innovative approach to growing, harvesting, sourcing, procuring, processing, manufacturing, or application of biobased products regardless of the date of entry into the marketplace*." Forest products could now be included in the program if manufacturers demonstrate that they apply an "innovative approach" in any part of the life cycle of their product. The new rules also established a procedure allowing "complex assemblies" containing one or more "intermediate ingredients" derived from bio-based products to be included in the program.

To date, USDA has identified 139 categories of products for which federal agencies and their contractors are obliged to purchase bio-based products. Product categories relevant to forest products include: "Lumber, Millwork, and Underlayments"; "Flooring coverings"; "Engineered products designed for use in structural construction applications" (which includes cabinetry, casework, panelling, and decorative panels); and "Paper Products - Non-writing paper".

In addition to mandatory purchasing requirements for federal agencies, a certification system has been developed for companies wishing to display the *USDA Certified Biobased Product* label on-product. The label assures a consumer that the product contains a verified amount of renewable biological ingredients. Consumers can trust the label to mean what it says because manufacturer's claims concerning the bio-based content are third-party certified and strictly monitored by USDA. At

this time there is no fee for manufacturers or distributors participating in the Program. Companies are responsible for the cost of bio-based content testing required during the label application process and periodic re-testing during audits. Product testing is completed using a national standard - ASTM D6866 - which costs approximately $400 USD per sample, plus shipping costs. The standard is cited in Federal law (7 CFR part 3201.7) and is internationally recognized. The labelling program is open to any supplier in any country allowed to trade with the U.S. and companies from more than 40 countries currently participate.

An interesting feature of this labelling program is that while it is designed to promote renewable over non-renewable products, the standard is assessment is based purely on the chemical signature of the product itself and there is no requirement to demonstrate that there was actual regeneration following harvesting in the area where the product was sourced. The simple assumption is that forest and farm-based products are better for the environment than fossil-based products, irrespective of how forest or farm is managed[22].

2.5.5 National Association of State Foresters

Since its formation in 1920, the National Association of State Foresters (NASF) has served as a leading authority on forest management in the United States. NASF's membership is composed of the directors of forestry agencies in the 50 states, five U.S. territories, three nations in compacts of free association with the U.S., and the District of Columbia. Through its members, referred to as "state foresters," the association advocates for federal legislation and national policies that promote the health, resilience, and productivity of both rural and urban forests.

While NASF represents and serves the interests of state foresters at the national level, three regional state forester organizations—the Northeast-Midwest State Foresters Alliance, the Southern Group of State Foresters, and the Council of Western State Foresters—serve their respective state forester members on a regional level. NASF collaborates closely with these organizations on national issues of importance to state foresters.

NASF is governed by an Executive Committee made up of four officers and three regional state forester organization representatives who provide strategic direction, management oversight, and leadership to the national association. NASF has five standing committees where state foresters serve as subject-matter experts to influence national policies. One of these committees covers forest markets, the others cover wildland fire, forest resource management, forest science and health, and urban and community forestry. NASF employs a permanent secretariat undertaking work on national-level legislation and policies, communications, and evolving partnerships to help state forestry agencies and guided by a member-defined strategic plan.

NASF has a high-quality and high-profile website providing a centralised and standardised source of information on State Forest Action Plans and State Wildlife Action plans which are mandated under US Federal to be prepared and updated on 10-year period[23].

Other NASF communication activity includes: preparation of short films, for example illustrating the links between US forests and citizens; regular press releases and blog posts; written testimony and official commentary on US international forest policy and on federal forest policy, regulations,

[22] This is in particularly stark contrast to on-going policy debate and moves towards specific regulations that aim to ensure that all "forest-risk" commodities in trade are "deforestation-free".
[23] See https://www.stateforesters.org/forest-action-plans/

guidance and research; and publication of statistical and other reports to demonstrate the roles state foresters and their agencies play in protecting and enhancing America's forested landscapes.

2.5.6 Virginia Tech Center for Forest Products Business

Many U.S. universities play an important role to promote the wood products sector at State level (see State wood promotion campaigns below), but Virginia Tech is notable for playing a wider role through provision of specialist training in forest products marketing at a national level. The Center for Forest Products Business brings together firms in the forest products industry, public agencies, and the Department of Sustainable Biomaterials at Virginia Tech. Cooperators also include other faculty members within the College of Natural Resources and the Pamplin College of Business and the USDA Forest Service scientists from the Northeastern and Southeastern Research Stations.

According to Virginia Tech, "the study of forest products marketing has grown rapidly as forest products firms increase their emphasis on marketing as a source of competitiveness. The Center for Forest Products Business was established to help these firms improve the management of their operations and the marketing of their products". The Center accomplishes this through educating market-oriented professionals for employment in the forest products industry, providing useful market research results, and offering continuing education for forest products industry professionals.

The Center is the largest program of its type in North America, both in number of students studying forest products marketing and management and in faculty members actively working in this discipline. Center faculty members are often asked to provide marketing and management expertise for domestic and foreign projects.

Examples of recent projects at the Center include:

- Research to determine the best marketing strategies to increase the market share of Thermally Modified Wood (TMW). The goal was to increase the market awareness of TMW produced from low-value hardwood species, by increasing the primary customer's knowledge and acceptance of the material, while increasing the efficiency of producers. Part of the work involved testing the effects of different kilning schedules on technical performance of the product.

- Research into the use of yellow poplar (tulipwood) lumber for manufacture of structural cross-laminated timber (CLT) panels. The project is backed by $249,000 of US Forest Service funding and involves co-operation with Smartlam , a company in Montana, to manufacture the trial panels, and hardwood organizations such as the Appalachian Hardwood Manufacturers, the National Hardwood Lumber Association, and the Hardwood Manufacturers Association to promote the project among their members.

- Provision of training to hardwood sawmills on structural grading of hardwood lumber. Currently, sawmills grade hardwood lumber only on appearance and not on structural performance. Although rules for structural grading of hardwood lumber have been developed in the U.S., these are not being used, mostly because there is no market for structural hardwood lumber. Virginia Tech is working with NELMA, a grading agency, to deliver training to hardwood sawmills.

2.5.7 State wood promotion campaigns

A wide range of wood promotion activities are carried out by state agencies responsible for the management of the forest resources. The structure and roles of these agencies vary between states where they may be constituted as a Department or Division of Forestry, Department of Natural Resources, Forestry Commission, Department of Lands, or a Forest Resource Council[24]. In those states with large forest resources and forest products industries, or where there is a high dependence of rural communities on these industries, promotion of wood products is seen as critical both to help maintain the health of forests and to strengthen the state economy. As with Federal government programs, a key feature of state wood promotion is often to work in close cooperation with the private sector. Some examples of promotion activities undertaken at state level include:

- **Business development program implemented by a state forestry agency**, for example the goal of South Carolina's Forestry Commission's Business Development Program is to enhance the contribution of the state's forest resources and forest product-related businesses to the state's economy. This is achieved by: producing current forest resource information; describing the health of the existing forest industry; promoting South Carolina's forest products to global markets; and assisting as needed in the expansion of forest product manufacturing. This is implemented by the Economic Development Group in the Forestry Commission which has a team comprising a forest resource analyst, a forest products marketing specialist, and an economic development specialist. Customized assistance is available in market analysis, resource analysis, and industry expansion.

- **Provision of free marketing assistance to companies by Extension Specialists at State Universities**[25] [26]. Extension Departments at State Universities are often quite explicit that wood products promotion is a core objective. For example North Carolina State University states that "the mission of Wood Products Extension within the Department of Forest Biomaterials is to increase the competitiveness and profitability of North Carolina's wood products industry, improve markets, and increase consumer understanding of wood products and their proper use". Examples of State Universities very active in wood promotion include Mississippi[27], Kentucky[28], North Carolina[29] and Pennsylvania[30].

- **Facilitating the development of networks linking private and public sector bodies**. A good example is the New York State Wood Products Development Council[31], established by statute within the New York State Department of Agriculture and Markets, which is tasked with supporting and encouraging the practice of sustainable forestry and the manufacture of wood products. Council members are appointed by the State Governor and include

[24] A brief description and links to all State forestry agencies can be found at: https://www.forestryusa.com/state-governments.html

[25] This is particularly true of the "land-grant" universities which are institutions of higher education designated by a state to receive the benefits of the Morrill Acts of 1862 and 1890. The Morrill Act funded educational institutions by granting federally controlled land to the states for them to sell, to raise funds, to establish and endow "land-grant" colleges. Teaching of practical forestry and agriculture has frequently been prioritised by these universities.

[26] Links to all U.S. University forestry and wood products departments are available at: https://www.forestryusa.com/universities-colleges.html

[27] http://extension.msstate.edu/natural-resources/wood-products

[28] https://forestry.ca.uky.edu/extension-home

[29] https://research.cnr.ncsu.edu/ncwood/

[30] https://extension.psu.edu/forests-and-wildlife

[31] https://woodproducts.ny.gov/about-wood-products-development-council-0

recommendations from the Senate President, Speaker of the Assembly, Senate Minority Leader, and Assembly Minority Leader. The Council serves as a forum for open discussion of the challenges and opportunities facing New York's forestry sector. The coalition provides the NYS Department of Agriculture and Markets with a mechanism to collaborate with a variety of forest industry stakeholders, including loggers, forest landowners, wood product manufacturers, state environmental conservation and economic development agencies, associations representing forest landowners and industries, and members of the public. Other examples are the Pennsylvania Hardwoods Development Council[32] which works closely with three regional Hardwood Utilization Groups, or HUGs, that cover more than half of the state; and the Georgia Forestry Foundation[33] that "seeks to connect every Georgian to the state's forests by sharing facts and experiences and fostering connections to the stewards of our forestland" and which is focused on "maximizing working forests as a solution to our nation's greatest challenges while reconnecting youth and adults to the land".

- **Cost share programs** using funds derived both from federal and state grants are available in many states. These tend to be directed towards private forest owners that are reimbursed for engagement in forestry-related conservation work, although some funds may be directed towards wood-using industries to promote use of certain lower grades of timber to add value and improve forest hygiene or to improve processing efficiency and reduce environmental impacts.

- **State branding of forest products** – at least one state, Tennessee, has introduced a state wood products brand to differentiate based on a sense of place and to tap into consumer interest in local products. According to the Tennessee Department of Agriculture (TDA) that manages the brand, the primary benefit is "to connect consumers of wood products to Tennessee producers and manufacturers through the use of a brand logo that signifies common values and attributes of Tennessee's abundant, sustainable and quality forest resources, the talented and skilled human resources that service the industry, and the wide diversity of products produced and used in our everyday lives". Use of the brand logo is open to any business that produces and/or manufactures wood products in Tennessee and that is registered with the TDA Division of Forestry. Each item or product being used in conjunction with the logo must be approved by the TDA but there is no fee for approval or brand use. Use and promotion of the brand logo is encouraged on all wood products, packaging, print materials, websites, and other applications. Products bearing the brand logo must meet or exceed U.S. Government and/or State of Tennessee standards and regulations where applicable.

2.6 Private sector wood promotion

2.6.1 Institutional framework

Tough antitrust laws in the United States have tended to discourage individual forest operators and wood processors to sell and market products through formal cooperatives. In the U.S. it is illegal for businesses to act together in ways that can limit competition, lead to higher prices, or hinder other businesses from entering the market. Such agreements may be considered unreasonable when

[32] https://www.agriculture.pa.gov/Business_Industry/HardwoodDevelopmentCouncil/Pages/Industry-Partners.aspx

[33] https://gffgrow.org/

competitors interact to such a degree that they are no longer acting independently, or when collaborating gives competitors the ability to wield market power together.

It should be noted that U.S. law explicitly exempts cooperatives formed of small agricultural producers, including forest operators, from many of these constraints. U.S. Federal government guidance on the anti-trust legislation clearly acknowledges that certain collaborations between companies to achieve goals such as expanding into foreign markets, funding expensive innovation efforts, and lowering production and other costs "often are not only benign but procompetitive". The U.S. Department of Agriculture also actively promotes the understanding and use of the cooperatives to market and distribute agricultural products through the Rural Development Cooperative Services Program[34].

Nevertheless a widespread perception in the U.S. that antitrust laws are sceptical about agreements among actual or potential competitors has deterred more widespread development of "procompetitive collaborations" in some sectors, including forestry. While there are some large and very successful cooperatives operating in the U.S. farm sector, they have been much less successful in the forestry sector. The high costs of implementing cooperatives in line with anti-trust requirements governing their operation, relative to the level of returns in the smallholder forestry sector, has proved prohibitive. Also in the US, particularly in rural areas, there is a strong cultural bias in favour of "individualism" and "personal freedom" which has worked against widespread formation of formal cooperatives of forest owners of the type that have been actively encouraged in many European countries.

Between 1919 and 1961, 68 wood-based and forestry cooperatives were formed in the United States, but by 1965, 47 of these cooperatives had failed due to “insufficient interest and support by members, inadequate capital, lack of a sufficient volume of business, or inadequate management”[35]. The dip in cooperatives lasted another 40 years, and by 1998 only two forestry co-ops remained in the United States. After 2000, forestry and wood products cooperatives began a second wave of development with nine cooperatives formed and another 15 to 20 in various stages of development by 2004. In 2015, a report by Dovetail suggested that at that time were “a couple of dozen forest-related cooperatives” in the U.S. However these are relatively small, typically covering no more than 8000 hectares, and mainly focused on assistance to deliver forest values other than commercial wood production[36].

While formal marketing cooperatives for forest owners play very little role in wood promotion in the United States, there are a very large number of industry, trade and professional associations, each focused on a specific product sector, region or state, which collectively play a critical, but largely uncoordinated, role in communication both amongst their own members and to the wider public[37].

The presence of large co-ordinated nationwide marketing campaigns in the U.S. forest products sector is heavily dependent on the willingness of industry to participate in Commodity Checkoff programs which are mandated in Federal and State legislation. A checkoff program will collect funds, sometimes

[34] https://www.usda.gov/topics/rural/cooperative-research-and-extension-services

[35] Rickenbach, M. Sturgess, E., & Zeuli, K. (2004, March). A Brief Reflection on Forestry Cooperatives in the US. The Wisconsin Center for Cooperatives Bulletin, 7, 1-4. https://resources.uwcc.wisc.edu/Forestry/Forestry_reflection.pdf.

[36] The Role of Cooperatives in Forestry, Groot et al, 2015, Dovetail Partners Inc.

[37] A comprehensive and categorised list, with links and a brief description of these organisations are provided at https://www.forestryusa.com/industry-associations.html, https://www.forestryusa.com/professional-associations.html, and https://www.forestryusa.com/forestry-community.html

called checkoff dollars, from producers of a particular agricultural commodity and use these funds to promote and do research on that particular commodity. The program must promote the covered commodity in a generic way, without reference to a particular producer, and will aim to expand markets, increase demand, and develop new uses and markets.

At the federal level, these checkoffs are called "Research and Promotion Programs." They are overseen by the Agricultural Marketing Service (AMS) at the USDA, under the authority of the Commodity, Promotion, Research and Information Act of 1996, but are run by boards comprised of industry representatives. Every product that has a checkoff program with the AMS has its own rules and policies. Assessments are generally collected on a per-unit basis. In some cases, the funds collected for checkoffs at the federal level are split with organizations that use the funds for promotion at the state level. Some states also have programs where checkoff funds are collected and used solely at the state level.

Establishment of a Checkoff program can be challenging, particularly in fragmented industry sectors, since they require that producers collectively agree a proposal for submission to the AMS. Since these programs require that funds be collected per unit of production, and may be mandatory in particular sectors, they can be challenged for essentially imposing an additional tax on production. In fact the whole concept of agricultural checkoff programs was challenged in litigation during the late 1990s and early 2000s. The plaintiffs, all producers of products subject to AMS or state programs, argued that checkoffs violated the First Amendment because they compelled producers to fund speech with which they disagreed. The issue was only resolved when the Supreme Court issued a decision in 2005 in favour of checkoffs. The Court held that promotion of generic agricultural products under AMS programs is government speech and thus not subject to challenge under the First Amendment.

Two checkoff programs have been established in the forest products sector, the Softwood Lumber Board (see below), and the Paper and Packaging Board (P+PB)[38]. There have been several attempts to establish a checkoff program in the U.S. hardwood sector, most recently a concerted effort between 2013 and 2015, but on each occasion the proposal faced fierce opposition from large sections of the industry.[39] In the absence of a nationwide checkoff program for hardwoods, in 2019 several hardwood associations came together to form the Real American Hardwood Coalition (see below), a voluntary initiative designed to fill the gap in nationwide hardwood promotion in the United States.

2.6.2 Softwood Lumber Board

Independent analyst Prime Consulting estimates that in its first decade to 2021 the American Softwood Lumber Board (SLB) market development organisation generated incremental US softwood demand growth of over 9.2 billion board feet.

The core aims of the SLB at its creation in 2011 were to direct strategic investment to support softwood products in meeting building codes and develop business to business communication in the building sector of the benefits of using softwood. The objective was also to provide technical support to facilitate conversion of new building projects from construction in rival materials, such as steel and concrete, to a wood-based approach. Today, says SLB, maintaining and expanding markets for

[38] P+PB is self-funded through quarterly assessments paid by eligible manufacturers and importers of paper and paper-based packaging. P+PB oversees the work of the Paper & Packaging – How Life Unfolds campaign designed to increase demand for paper and paper-based packaging.

[39] https://www.woodworkingnetwork.com/news/woodworking-industry-news/hardwood-checkoff-opponents-dispute-dollars-raised-program

softwood lumber in the US via these areas of activity remain its core goals, but with its operations now also underpinned by an extensive training and education programme.

Step one in the launch of the SLB was to establish its funding. This is raised through its American/Canadian unified Checkoff scheme, whereby softwood lumber manufacturers producing over 15 million board feet a year and importers into the US of over 15 million board feet pay a set sum per 1000 board feet produced and traded. In 2020 companies agreed to raise this to $0.41.

The Checkoff gives the SLB an annual budget averaging between $15-18 million and is subject to an industry referendum every five years. In the last vote in 2018, 78% of participants, representing 94% of all participants' sales volume, approved its continuation.

The SLB keeps in close contact with businesses paying the Checkoff, or 'investor companies', by monthly newsletter, emails and in-person and virtual meetings. The aim is to keep them apprised of key campaign accomplishments and project outcomes, enabling them to capitalise through their own marketing. Communication with specifiers, influencers and end-users is via 'channels best-suited to the target audience', primarily the SLB website, email, social media, trade press and conferences.

SLB's has two principal market development programmes. Think Wood is focused on developing demand for softwood lumber in the single family, multi-family and commercial construction sectors. It targets principal decision makers, architects, engineers, developers and contractors and advances softwood lumber's benefits in four main areas; value and return on investment, design potential, build performance and sustainability.

"*We are finding that wood's carbon benefits are of increasing importance as architectural, engineering and construction (AEG) professionals commit to decarbonizing the built environment, and as larger firms and clients invest in and report on environmental, social and governance (ESG) performance*," said SLB Chief Marketing Officer Ryan Flom. "*They also want to better understand assurances regarding sustainable forestry practices and the health of the US forest inventory overall."*

Alongside, SLB runs the *WoodWorks* programme. This targets audiences involved in design and build of wood or mass timber-based projects, so besides AEG professionals, reaches out to general contractors and installers. It promotes the business case for using wood, its sustainability, the multiple values of the US forest economy and provides information on building codes. The latter are evolving with the input of SLB's other arm, the American Wood Council, which focuses on code development to facilitate use of wood in a wider range of construction types, notably bigger buildings, while ensuring they are 'resilient, safe and sustainable'.

WoodWorks features inspirational projects, complete with technical details, on its website and also provides businesses with free one-on-one project assistance, continuing education, design tools, and other technical support.

The other activity which SLB clearly sees as critical to developing the US market for softwood is increasing the technical know-how of timber specifiers and end users through education and training; the aim, to boost their confidence in choosing wood and expertise in employing it.

Its main educational vehicle is the Wood Institute with its catch-line 'learn how to design and build in wood'. It offers over 160-on-demand courses for architects, engineers, code officials and other AEC professionals, which are approved for credit by bodies including the American Institute of Architects and International Code Council. Last year it delivered 6,500 learning hours.

SLB is also supporting projects to address knowledge and technical support gaps in the market, including carbon accounting and fire and seismic performance research.

This year, in association with the US Department of Agriculture, it is additionally running the second Mass Timber Competition, tag-lined '*Building to net-zero carbon'*. With a prize pot of $2 million to support winning construction projects, which must be `repeatable and scalable', the goal of the contest is to showcase mass-/engineered-timber's use in innovative buildings, while 'highlighting its role in reducing the carbon footprint of the built environment'.

"*Wood is one of the best tools in the toolkit to reach net zero carbon buildings, today – not in some far distant future*," said Mr Flom. "*We need the built environment to be lower carbon, healthier, and more affordable. Wood delivers on all three*."

2.6.3 Real American Hardwood Coalition

The Real American Hardwood Coalition is a campaigning organisation comprising industry associations, with the goal of growing and developing the domestic American market for US hardwoods.

It was launched in 2019 in response to a number of market trends and challenges. These included the US-China trade dispute, which had 'chilling impact' on US hardwood exports and exporters, and a decline in US domestic grade lumber markets, which in turn adversely affected the industrial timber market. Other factors behind the creation of the RAHC were the rise of competing wood-look non-wood products and spread of 'disinformation' about the impacts of managed forestry and the wood products industries relying on its output.

Initially a small number of trade bodies, including the American Hardwood Federation, brainstormed setting up a domestic US hardwood campaign programme. This ultimately led to the formation of the RAHC, which has since grown to an alliance of 30 associations.

The Coalition seeks advice from company leaders but believes that it's important for its role and activities that it's a grouping of industry bodies, led by association executives, giving it a broad, market-wide, non-partisan perspective.

Funding to date comprises purely voluntary contributions, with money raised for specific projects. So far expenditure has been around US$500000 but the goal is a budget of US$750,000 to $1.2million per annum. Going forward the RAHC sees the possibility of exploring 'federal or state research dollars', plus funds from private foundations.

The Coalition views market research as key to achieving its goals and one of its first steps was to undertake an in-depth survey to understand behaviours and attitudes related to hardwood product purchasing. Targets included home owners, renovators, and buyers, architects, designers and builders and over 1,000 people participated.

To move domestic consumption of US hardwoods, says the RAHC, its crucial to know what consumers think and what shapes their choices. The goal of its marketing is 'to reach them early in the purchasing process, make an emotional connection between consumer and wood product and make sure that connection is retained through the purchasing process, resulting in a final decision to buy real American hardwood'.

To date, the RAHC has developed a logo and core messaging and launched an industry-focused website to keep companies and industry leaders informed on its activities. It's developed basic

marketing materials, such as brochures, banners and giveaways, presented at industry events and started research on how to improve US hardwoods' presence in home product 'big box' retail stores.

It has also hired Canvas International to create a consumer-facing website, set to go live in Spring 2022, following which the plan is to identify strategies and tactics to drive consumers to the site and expand US hardwoods' presence in social and print media. The aim is also to connect with social media influencers who can broadcast RAHC messaging and, particularly, raise hardwood's profile in the home improvement retail market.

The consumer website will focus on topics identified as most significant to respondents in RAHC's market research. These include timber's 'appearance, durability, style and the emotional attachment consumers have to wood'.

Hardwood Federation Chief Executive Dana Cole said that the campaign will touch on environmental benefits of using hardwoods 'but in ways consumers can easily understand and retain'. "The home health benefits of hardwood – that it's natural, with low chemical levels and allergen resistant – were actually more important to consumers than the concept of 'sustainability', which was seen as a confusing and overused term" she said.

In the years ahead, the RAHC hopes to see hardwood industry-wide use of its logo, so it becomes as 'recognisable as the 'Got Milk' and 'Cotton' brands. It wants to attract more association and to support continued monitoring of consumer attitudes and needs.

It sees growing climate and environmental awareness helping drive interest in US hardwoods, but also consumer trends to American-made and natural products. It also aims to capitalize on the flexibility of wood in fitting different design aesthetics and trends and on 'hardwood products' very strong desirability factor and appreciation for their appearance and warmth'.

2.7 Key observations

Wood industry development and promotion in the United States, a country with a large private sector both in terms of forest and industry ownership, has required concerted efforts to ensure close co-operation between public agencies and the private sector. The partnership between the public and private sector has been highly successful in delivering sustainable forest management throughout the United States. Forests are expanding in most states, both in those which have established far-reaching forest practices acts, and in those more dependent on non-regulatory forestry programs for deep-seated political and cultural reasons.

The development of State-wide Forest Action Plans, mandated by Federal law, through participatory democratic processes, not only serve to promote more effective and efficient forest regulation, but also provide an invaluable tool on which to build wider communication of sustainable forestry practices in the United States.

In many states private sector forest certification programs, particularly the Sustainable Forestry Initiative (SFI), now form an important component of the regulatory framework. Because of high dependence on small non-industrial private forest owners for wood supply in many states, the U.S. is also now acting as an incubator for new forms of risk-based landscape and jurisdictional certification.

U.S. forest owners have generally been disinclined to establish the formal co-operatives that have provided a foundation for long-term wood market promotion in some other countries, notably in Europe. However, other alliances forged between state forest authorities, certification programs like SFI, state trade and industry associations, independent loggers and forestry professionals, and academic institutions, have provided a solid institutional setting for wider wood promotion in many states. Efforts to establish and maintain dynamic networks of the full range of forest sector interests in pursuit of common goals, including promotion, are now a key role of forest authorities in many states. Although not yet widely practiced in the United States, the concept of State branding of forest products has potential to tap into consumer preferences for locally sourced products.

Another notable feature of the U.S. wood promotion landscape at state level is the prominent role of universities and other scientific agencies, not only to undertake fundamental and applied research, but also in the direct provision of training and guidance to forest owners and industry on market development.

At Federal level, government bodies play a particularly important role to encourage innovation in support of stronger markets for wood products, particularly those which are currently under-utilised and for which strong demand will make a direct contribution to improved forest management and rural livelihoods. A key guiding principle once again is to build partnerships with the private sector through provision of direct grants and cost share agreements for industry-led projects.

While there are a lot of positives to be drawn from the U.S. experience of sustainable wood promotion, there are also areas of weakness. In practice, and despite the strong underlying cultural attachment of many U.S. consumers to wood products, wood has suffered a long term loss of share in some sectors. The fact that these losses have been particularly significant for the hardwood sector, which in terms of the sheer size of the resource is hugely significant in the United States, is revealing. In part it reflects the lack, until recently, of any co-ordinated American hardwood promotion campaign targeting the domestic market. The establishment of the Real American Hardwood Coalition may go some way to filling this gap, but it is likely to be hampered by the failure of the sector to agree to form a Checkoff program. While this Coalition aims for an annual budget of around US$1.2 million per year, this pales in comparison to the budget of US$15 to $18 generated each year by the American softwood Check Off program. The latter highlights the huge benefits of generating funding for wood promotion through imposition of formal levies on industry per unit of production or sales.

Another feature of the U.S. political landscape not always been conducive to wood market development has been overreliance in Federal government procurement on the LEED green building initiative. For a period between 2006 and 2013, LEED held a monopoly position in Federal government procurement at a time when that standard was restrictive with respect to the types of forest certification required to achieve credits for wood products while also unresponsive to the wider environmental life cycle benefits of wood products. However, this barrier has been progressively removed, both by way of recognition of a wider range of green building initiatives and with introduction of a more equitable set of requirements into the LEED standard itself. Competition between green building initiatives has encouraged innovation, largely in direction of more objective and reliable life cycle based frameworks for assessment of environmental impact, a process which has generally benefitted wood products.

Similarly the *Biopreferred Program*, by focusing just on agricultural products and excluding forest products, initially acted against the interests of sustainable wood promotion. However amendment of this program in 2014 to include forest products has transformed it into a framework that actively encourages their use. The simplicity of this program is both a strength and weakness, allowing

products to be readily compared on a single metric of biogenic carbon content, but also open to criticism on grounds that high biogenic carbon content does not necessarily imply low life cycle carbon emissions.

3 Europe

3.1 Situation for forests

3.1.1 Forest area and condition

According to the State of Europe's Forests 2020 report[40], European forests are expanding, storing carbon, and supplying wood on a sustainable basis. The area of forests in Europe has increased by 9% over the last 30 years. At 227 million ha of forests, more than one-third of Europe's land surface is forested (SoEF 2020) .

Considering just the EU, the EU27 had approximately 180 million hectares of forest and other wooded land in 2020. Six member states (Sweden, Finland, Spain, France, Germany and Poland) accounted for two thirds of the EU's forested areas in 2020. Approximately 84% of the EU's forest area is currently available for wood supply. Forest coverage in the EU28 increased on average by 413,000 hectares per year between 2000 and 2015. Forest area in the EU28 continued to increase between 2015 and 2020, but at a slower pace of around 200,000 hectares per year. During the 2015 to 2020 period there was also an increase in the amount of clear-cut harvested forest area, partly attributed to salvage felling following natural disturbance and partly to increase in wood demand (EC, 2020)[41].

The volume of wood and the weight of carbon stored in the biomass of European forests have grown by 50% over the last 30 years as forest area expanded and only a part of the increment has been harvested. About three-quarters of the net annual wood increment are felled. Every year in Europe, forests sequester in their biomass about a tenth of the carbon dioxide emissions produced in other sectors. Carbon stored in harvested wood products also contributes to the reduction of CO2 emissions (SoEF, 2020).

European forests are predominantly semi-natural and the tree species diversity of forest stands has been increasing since 2005. The amount of deadwood in European forests is also growing. About 2% of the forests are considered undisturbed by man. Nearly 24% (almost 50 million ha) of forests are in areas protected for the conservation of biodiversity and landscape, considerably more than several decades ago (SoEF, 2020).

The area of forests designated for biodiversity conservation has increased by 65% in 20 years, and the area designated for landscape conservation by 8%. Forests designated for the protection of soil, water, and other ecosystem services represent about 32% of the forest area. Populations of common forest bird species have been stable for almost 40 years. The vast majority of European forests are open to the public, while 6% are primarily designated or managed for public recreation (SoEF, 2020).

However, there are significant threats and challenges, mainly to forest health and economic sustainability. While forest diversity has increased, it is still limited. Less than one third of Europe's forests contain trees of different ages, 30% have only one tree species, 51% have only two to three

[40] SoEF, 2020, *State of Europe's Forests 2020 report*, prepared and published by Ministerial Conference on the Protection of Forests in Europe - FOREST EUROPE –through cooperation with numerous experts, specialists from different countries, governments, and international organisations and with technical support by FAO and UNECE in data collection and review of national reports. https://foresteurope.org/wp-content/uploads/2016/08/SoEF_2020.pdf

[41] EC, 2021, European Forests for biodiversity, climate change mitigation and adaptation, European Commission Science for Environment Policy Brief Issue 25, November 2021

tree species, and only 5% have six or more tree species. These low-diversity forests are a result of management practices, involving tree species selection and planting (EC, 2020). Biotic and abiotic forest damage can have a devastating effect on forest ecosystems locally, partly a reflection of this lack of tree species diversity. On average, the condition of European forests is deteriorating. At the European level, 3% of the forest area was affected by damage in 2015. However, a growing frequency of large-scale forest disturbances has been observed recently, including extreme droughts, heat waves, extensive bark beetle outbreaks, and more extensive forest fires. Deposition of air pollution has continuously decreased over the last 25 years; however, some pollutants still locally exceed critical loads. Mean foliage loss of trees increased at 19% of monitoring plots, more than double the number of plots where foliage improved in the period 2010-2018 (SoEF, 2020). .

The relatively low net revenue of forest enterprises poses a risk for forest management, especially in the environment of volatile markets, adverse effects of changing climate, and requirements for more demanding silvicultural systems (SoEF, 2020).

3.1.2 Planted forest

Of the EU27, Switzerland and UK's 159 million hectares of forest, around 39 million are reported by FAO as being planted forest. Across the EU27 around 25% of forests are considered to be planted.

The EU countries with the highest planted forest area as a proportion of the total forest area include the Netherlands (90%), Ireland (86%), Portugal (68%) and Denmark (66). The UK has one of Europe's highest planted forest rations at 90%. Sweden's forests are 50% planted and Sweden has the largest area of planted forest in the EU27, with 13.9 million ha., followed by Finland (7.3 million ha.) and Germany (5.7 million ha.).

Table 3.1.2 EU27, Switzerland and UK area of planted forest[42]

Country	Forest area (FAO) Ha	Planted forest (FAO) Ha	Planted areas as % of total forest area
Austria	3,899,000	1,672,000	43
Belgium	689,000	438,000	64
Bulgaria	3,893,000	777	0
Croatia	1,939,000	69,000	4
Cyprus	173,000	33,000	19
Czechia	2,677,000	2,539	0
Denmark	628,000	412,000	66
Estonia	2,438,000	216	0
Finland	22,409,000	7,368,000	33
France	17,253,000	2,434	0
Germany	11,419,000	5,710,000	50
Greece	3,902,000	139,000	4
Hungary	2,053,000	789,000	38
Ireland	782,000	674,000	86
Italy	9,566,000	645,000	7
Latvia	3,411,000	465,000	14
Lithuania	2,201,000	611,000	28
Luxembourg	89,000	30,000	34
Malta	-	-	-
Netherlands	370,000	332,000	90
Poland	9,483,000	0	0
Portugal	3,312,000	2,256,000	68
Romania	6,929,000	895,000	13

[42] FAO data: FAO. 2020. *Global Forest Resources Assessment 2020*: Main report. Rome.

Country	Forest area (FAO) Ha	Planted forest (FAO) Ha	Planted areas as % of total forest area
Slovakia	1,926,000	749,000	39
Slovenia	1,238,000	46,000	4
Spain	18,572,000	2,590,000	14
Sweden	27,980,000	13,912,000	50
EU27 total	**159,231,000**	**39,195,966**	**25**
Switzerland	1,269,000	149,000	12
United Kingdom	3,190,000	2,846,000	89

3.1.3 Forest Ownership

European forests belong to around 16 million private and public forest owners[43]. In the EU, about 60% of the forest area is privately owned and 40% public. Public forests are owned by municipalities, regional or national governments, the latter are often regarded as "state forests".

Owners of private forests may be traditional, non-industrial types of private ownership including families, farms, rural commons, churches and aristocratic estates. Industrial private owners include forest industry companies, e.g. those producing pulp and paper. There are also specific types that are not fully private or public, such as commonly owned forests by local citizens or farm holdings that go back to historical ownership forms when parts of the forest resources where commonly used and managed by local communities. There are also newer examples triggered by social movements where forests are acquired jointly by local groups to be managed for community benefits.

Overall, property sizes range from below one hectare to up to several millions of hectares[44]. However, almost 90% of private forest holdings are smaller than 10 hectares, many are even much smaller. Especially in some Eastern and South Eastern European countries, the private forest holdings are only around 1 ha in average across the whole country (Bulgaria, Serbia, Croatia, Poland). Large forest estates may belong to public governments, churches, aristocrat families or foundations, or industrial companies or investors.

Due to the different historical, legal and social circumstances, patterns of public and private ownership vary greatly across Europe. For example, in Northern Europe, around 70% of the forests are privately owned, while in South East Europe around 90% are public. While private ownership clearly dominates in western European regions, it is the opposite in Eastern Europe. Furthermore, the extent of property rights granted to owners by the specific national legal frameworks differs strongly, with a gradient of a greater freedom of owners in forest management in Western European countries and more legal restrictions in Eastern Europe. In all countries, forest laws aim for the preservation of forest land as forests and for their sustainable management. Differences mostly relate to the freedom of the owners in management planning and deciding on tending and harvesting measures, and vice versa, the extent of supervision by the authorities.

The goals and motivation of forest owners to manage their forests vary substantially, depending on the forest size, their connection to their property, their preferences regarding economic, environmental and social values, and their flexibility to respond to market trends. The regional setting and infrastructure (e.g. is there forest-based or energy industry using wood) is also likely to have a major impact. Therefore, the type and size of forest holdings and the regional setting impact on the

[43] European Forestry Institute (EFI) https://efi.int/forestquestions/

[44] UNECE and FAO (2020). Who owns our forests? Forest ownership in the ECE region; ECE/TIM/SP/43, United Nations Publication, Geneva; ISBN 978-92-1-004828-6

way forests are managed and on the products and services provided to society. While state forest owners generally actively manage their forests according to political, societal and business objectives, there is a wide variation in private forests, especially in small-scale forest ownership. This may range from active market participation to self-subsistence from forest products, a reserve for family investments, altruistic motives to no management at all. Especially owners of very small properties often lack the knowledge, skills, capacities and interest in forest management. An important aspect is the urbanisation of owners, i.e. the little or non-existing connection of those owners to their forests, some living far from their forest, some not even knowing that they are forest owners. This is true both for Western European countries (e.g. inherited forests owned by urban people) and for Eastern European countries where owners of `restituted' forests often lack bonds to their re-owned properties.[45]

3.1.4 Forest Certification

Whilst early efforts to develop third party forest certification standards were focused within the US the driving force for the development of global systems such as FSC and PEFC was within the European market. The first markets to develop strong market signals and policy statements regarding certification were the UK, Germany, Netherlands and Sweden.

Early adopters of FSC forest management certification at scale were Sweden and Poland and early adopters of PEFC at scale were Finland and Germany. Today forest management certification has become a dominant feature in Europe's forests with 85% of Austria's forest PEFC certified, with similar levels in Finland (84%), Poland (77%) and Germany (75%). FSC has also had a significant impact with certification applying to all of Croatia's forests and 70% of Poland and Sweden. It should be noted that significant areas of double-certification are included in these figures. The EU27 plus Switzerland and the UK combined account for around 19% of the global area certified under FSC and over 22% of the global area certified as PEFC.

[45] Weiss, G., Lawrence, A., Hujala, T., Lidestav, G., Nichiforel, L., Nybakk, E., Quiroga, S., Sarvašová, Z., Suarez, C., Živojinović, I. (2019). *Forest ownership changes in Europe: State of knowledge and conceptual foundations*. Forest Policy and Economics; 99: 9-20.

Table 1.1.4 FSC and PEFC certification in the forests of the EU27, Switzerland and the UK (Hectares)[46]

Country	FSC area	PEFC area	Forest area	% certified FSC	% certified PEFC
Austria	587	3,319,093	3,899,000	0	85
Belgium	28,973	305,165	689,000	4	44
Bulgaria	2,357,182		3,893,000	61	0
Croatia	2,036,009		1,939,000	100	0
Cyprus			173,000	0	0
Czechia	135,423	1,776,882	2,677,000	5	66
Denmark	226,792	304,508	628,000	36	48
Estonia	1,238,953	1,312,182	2,438,000	51	54
Finland	2,206,232	18,854,961	22,409,000	10	84
France	58,427	5,663,274	17,253,000	0	33
Germany	1,438,366	8,703,399	11,419,000	13	76
Greece			3,902,000	0	0
Hungary	442,906		2,053,000	22	0
Ireland	445,712	443,083	782,000	57	57
Italy	75,504	892,610	9,566,000	1	9
Latvia	1,227,270	1,748,599	3,411,000	36	51
Lithuania	1,276,608		2,201,000	58	0
Luxembourg	23,902	37,355	89,000	27	42
Malta	-	-	-	-	-
Netherlands	163,680	11,924	370,000	44	3
Poland	6,628,497	7,285,203	9,483,000	70	77
Portugal	541,830	316,953	3,312,000	16	10
Romania	2,886,629	11,924	6,929,000	42	0
Slovakia	328,318	1,225,795	1,926,000	17	64
Slovenia	260,747	293,945	1,238,000	21	24
Spain	418,455	2,480,042	18,572,000	2	13
Sweden	19,583,363	16,832,436	27,980,000	70	60
EU27 total	**44,030,365**	**71,819,333**	**159,231,000**	**28**	**45**
Switzerland	584,742	223,670	1,269,000	46	18
United Kingdom	1,633,415	1,566,537	3,190,000	51	49

3.2 Forest governance and legislation

3.2.1 National Forest Programmes

National Forest Programmes or equivalents are now a well-established policy instrument across the European region, with the aim of facilitating cross-sectoral dialogue on forest related policies in support of sustainable forest management (SFM). The detailed organisational and administrative set-up to deliver SFM varies widely at national level and recent challenges have included reorganisations and budget restrictions in some countries. However forest laws aim to guarantee legal certainty at national level. Forest inventories have a central role in forest monitoring. Governments devote public resources to support sustainable forest management, including through publicly owned forest services and companies, central budget allocations, and systems of grants, subsidies and fiscal measures. Systems of payments for ecosystem services have also been introduced in several countries (SoEF, 2020).

Most European countries have policy objectives focussing on ecosystem services, free access to forests, forest related value chain contribution to GDP, favourable employment opportunities, forest

[46] FSC data: https://fsc.org/en/facts-figures (Accessed March 6th 2022)
PEFC data: https://www.pefc.org/discover-pefc/facts-and-figures (Accessed March 6th 2022)
FAO data: FAO. 2020. *Global Forest Resources Assessment 2020*: Main report. Rome.

biomass for energy generation, investments for innovation, and sustainable consumption. Reported measures include support of research, education and training, improved access to forests and increased recreation areas, safety and health protection campaigns and training. The major challenges and obstacles relate to continuing depopulation of rural areas, difficulties in ensuring occupational safety and health, pressures from increasing recreation use, but also to limited access infrastructure, volatile wood markets, and inefficient use of woody biomass (SoEF, 2020).

The Ministerial Conference on the Protection of Forests in Europe – referred to as FOREST EUROPE - is a Pan-European voluntary high-level forest policy process. Since 1990, the aim has been to develop common strategies for the 46 signatories (45 European countries and the EU) on how to protect and sustainably manage forests. The FOREST EUROPE Sustainable Forest Management (SFM) definition and set of criteria and indicators are internationally regarded as guidelines for SFM in the region. Every four to five years, Ministers responsible for forests meet to endorse new declarations, decisions and resolutions. These commitments serve as a framework for implementing SFM, adapted to the national circumstances, but with a regional approach to strengthen international cooperation. Since 2020, the International Secretariat and Liaison Unit for FOREST EUROPE has been based in Bonn, Germany[47].

3.2.2 EU Forest Policy Framework

Within the EU, the Treaties do not specifically list 'forest policy' among EU competences and formulation of such policy is the competence of the Member States. However there is a long history of EU measures supporting certain forest-related activities, coordinated with Member States mainly through the Standing Forestry Committee.

The EU also has a range of competences on related matters which have been exercised in several legal texts. Forests and forestry consequently do not fall within the exclusive competency of Member States (a viewpoint also upheld by Court of Justice jurisprudence). Although there have been political debates on this matter, the EU has in fact exercised shared competencies over forests for several decades. Environmental forest functions have particularly attracted attention in EU policy development, mainly in relation to the protection of biodiversity, illegal timber trade, and in the context of climate change impacts and policies.

Policies and legislation that relate to forests include the Habitats and Birds Directives, the Invasive Alien Species (IAS) Regulation, the Regulation on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry (LULUCF), the Forest Law Enforcement and Governance (FLEGT) Action Plan and EU Timber Regulation (EUTR), the Renewable Energy Directive (RED), the Directive on the marketing of forest reproductive material and the EU Biodiversity Strategy for 2030.

Most recently, the EU has sought to improve coordination with publication of a new "Forest Strategy for 2030" as a flagship initiative of the European Green Deal. The strategy is specifically designed to contribute to achieving the EU's biodiversity objectives as well as greenhouse gas emission reduction target of at least 55% by 2030 and climate neutrality by 2050. At the June 2020 meeting of the Standing Forestry Commission, the European Commission set out a proposal for a change in the terms of reference for the Committee with the aim of ensuring "a more inclusive and better coordinated EU forest governance structure, reflecting all the objectives of the new EU Forest Strategy and their

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interlinkages with other EU policies and strategies (European Green Deal, bio-economy, climate change, biodiversity, etc)".

Overall the policy framework now being developed at EU level reflects a strong commitment to continuing support for sustainable forest management, including firm recognition of the vital contribution of sustainable forest products markets both to support improved forestry practices and to increase product carbon sequestration. This is balanced by an increased focus on legally harvested and deforestation-free products, biodiversity conservation, and management for enhanced carbon stocks in forests.

On the other hand, previous efforts to coordinate policy at an EU level have not always been successful and there has been resistance to current efforts through the new 2030 Forest Strategy. Shortly after publication of the Strategy in July 2021, 11 Member States voiced reluctance on the EU's new approach, with particularly strong reservations being voiced by Sweden and Austria's. Sweden fully disagreed with "*the need for such strategic plans on the EU level*", which it saw as an attempt at "*increased centralisation*" by EU institutions, according to an internal EU paper dated 27 September 2021. Austria, said that the proposed EU strategic plans "ign*ore well-established national systems and tools … which leads to an increase in cumbersome and ineffective regulation*," according to the internal EU documents. A report by the European Court of Auditors published in October 2021 said that the EU's previous (2014-2020) forestry strategy and related policies had "*limited impact*" on protecting biodiversity and addressing climate change[48].

Key policy and regulatory measures at EU level of relevance to promotion of sustainable forest products are reviewed in section XX. Policy measures at national level are described in the country profiles for a range of EU and non-EU countries.

3.3 EU measures related to wood promotion

3.3.1 European Green Deal

The European Green Deal approved in 2020 is a major policy priority of the European Commission over the coming years and outlines a set of strategies to make the EU economy sustainable and to achieve carbon neutrality by 2050 while preserving natural resources and biodiversity. The Green Deal recognises that forest ecosystems are under increasing pressure and sets out specific plans to improve the quality and quantity of the EU's forested area and to address the contributions of the sector to climate change. One of the key actions under the Green Deal has been the creation of a new EU Biodiversity Strategy for 2030 and, under this, the preparation of a new EU Forest Strategy, which was adopted in 2021[49].

3.3.2 EU Biodiversity Strategy for 2030

EU Biodiversity Strategy for 2030, published by the European Commission in 2020, sets out a number of commitments and actions to protect Europe's nature, including establishing protected areas for at least 30% of land, with 10% to be strictly protected. Forests are important in achieving these targets, and the strategy aims to strictly protect all primary and old-growth forests in the EU, which store

[48] https://euobserver.com/green-economy/153119

[49] EC, 2021, European Forests for biodiversity, climate change mitigation and adaptation, European Commission Science for Environment Policy Brief Issue 25, November 2021

carbon over centuries and therefore regarded as a high priority for preservation. At present, only 2–4% of forests in the EU are classified as primary forest. The strategy also aims to increase the overall area of forest and number or trees in the EU by planting three billion additional trees by 2030 according to ecological principles. Guidelines are being developed on biodiversity-friendly afforestation and reforestation and an overarching set of practices for 'closer-to-nature' forestry, which aims to minimise human intervention and align productivity goals with conservation objectives. As well as increasing forest area, the new Biodiversity Strategy aims to increase the health and resilience of EU forests against threats which are increasing with climate change, such as fire, droughts, pests and disease. A further goal of the strategy, which overlaps with the bio-economy strategy, is to provide better data on the status and management of forests in the EU, via the Forest Information System for Europe. As part of the EU's efforts to source more sustainable bioenergy, the strategy explains that the shift to advanced biofuels based on residues and non-reusable and non-recyclable waste established in the recast Renewable Energy Directive should continue for all forms of bioenergy. The use of whole trees and food and feed crops for energy production – whether produced in the EU or imported – should be minimised [50].

3.3.3 EU Forest Strategy for 2030

The EU Forest Strategy for 2030, adopted in July 2021, includes specific objectives on afforestation, forest preservation and restoration. It is particularly relevant for wood promotion in the EU because it forges a direct link between markets for sustainable forest products and other overarching environmental and socioeconomic development goals. The strategy explicitly aims to contribute to achieving the EU's biodiversity objectives as well as greenhouse gas emission reduction target of at least 55% by 2030 and climate neutrality by 2050, by increasing the quantity and quality of forests in the EU, increasing carbon sequestration, protecting old growth forests, and encouraging the bio-economy within sustainability boundaries. The strategy recognises the central and multifunctional role of forests, and the contribution of foresters and the entire forest-based value chain for achieving a sustainable and climate neutral economy and preserving lively and prosperous rural areas. The strategy includes policy commitments to:

- promoting the sustainable forest bio-economy for long-lived wood products;
- ensuring sustainable use of wood-based resources for bioenergy;
- promoting non-wood forest-based bio-economy, including ecotourism;
- developing skills and empowering people for sustainable forest-based bi-oeconomy;
- protecting EU's last remaining primary and old-growth forests;
- ensuring forest restoration and reinforced sustainable forest management for climate adaptation and forest resilience;
- re-afforestation and afforestation of biodiverse forests, including by planting 3 billion additional trees by 2030;
- providing financial incentives for forest owners and managers for improving the quantity and quality of EU forests;
- strategic forest monitoring, reporting and data collection;
- developing a strong research and innovation agenda to improve our knowledge on forests;
- implementing an inclusive and coherent EU forest governance framework;
- stepping up implementation and enforcement of existing EU law; and

[50] EC, 2021

- measures to promote imported products and value chains that do not involve deforestation and forest degradation[51].

3.3.4 EU Bio-economy Strategy

The European Commission first published a Bio-economy Strategy in 2012 through its communication and associated action plan on *'Innovating for sustainable growth: a bio-economy for Europe*'. The plan encompassed the production of renewable biological resources and the conversion of these resources and waste streams into value-added products, such as food, feed, bio-based products and bio-energy. Forests and forest products have featured prominently in the strategy being recognised as a key component of the circular economy.

The aim of the 2012 strategy was to "*pave the way to a more innovative, resource efficient and competitive society that reconciles food security with the sustainable use of renewable resources for industrial purposes, while ensuring environmental protection*". The Strategy set out five main objectives:

- ensuring food security;
- managing natural resources sustainably;
- reducing dependence on non-renewable resources;
- mitigating and adapting to climate change; and
- creating jobs and maintaining EU competitiveness.

The Strategy identified three main areas of action:

- investment in research, innovation and skills;
- reinforced policy interaction and stakeholder engagement; and
- Enhancement of markets and competitiveness in bio-economy[52].

In a 2018 review by the EC, the strategy was credited with more than doubling the level of dedicated EU funding for the bio-economy under the EU R&D Framework Programme, from EUR 1.9 billion to EUR 4.52 billion, It also mobilised substantial private funding through the Bio-Based Industries Joint Undertaking (BBI JU), a public private partnership leveraging EUR 2.7 billion of private investment through EUR 1 billion EU investment. The BBI-JU aims to establish a European bio-based industry sector that creates new markets and value chains, and that develops advanced and sustainable bio-based products, technologies, materials and biofuels from renewable natural resources and from waste and industrial side-streams. The Strategy also raised Member States' awareness of the opportunities that the bio-economy offers for rural development and encouraged some, mainly western, European countries to implement national Bio-economy Strategies[53].

Following the 2018 review, the bio-economy strategy was refocused on actions to better support the 2030 Sustainable Development Goals, Paris Agreement climate objectives and new EU policy priorities. The new strategy introduced various measures to strengthen and scale-up the bio-based sector

[51] EC, 2021 European Forests for biodiversity, climate change mitigation and adaptation, European Commission Science for Environment Policy Brief Issue 25, November 2021

[52] EC 2012, Bioeconomy Strategy, Innovating for sustainable growth: A bioeconomy for Europe, https://op.europa.eu/en/publication-detail/-/publication/1f0d8515-8dc0-4435-ba53-9570e47dbd51

[53] EC, 2018, Bioeconomy Strategy review A Commission Staff Working Document, https://op.europa.eu/en/publication-detail/-/publication/c2f36c72-2e59-11e8-b5fe-01aa75ed71a1/language-en/format-PDF/source-126166234

including launching a €100 million Circular Bio-economy Thematic Investment Platform to bring bio-based innovations closer to the market, facilitating the development of new sustainable bio-refineries across Europe, and bringing forward work to promote and develop standards, labels and market uptake of bio-based products, such as the EU Ecolabel or green public procurement. It also introduced an EU policy support facility to help Member States and regions develop and implement their own bio-economy strategies[54].

To support the uptake of carbon removals and encourage the forestry and agriculture sectors to deliver on climate action, the EC announced in 2021 in the Farm to Fork Strategy that it would launch a Carbon Farming initiative to promote a new green business model that rewards climate–friendly practices by land managers, based on the climate benefits they provide. In addition, EC announced that it will develop a regulatory framework for certifying carbon removals based on robust and transparent carbon accounting to monitor and verify the authenticity of carbon removals. Carbon farming will provide financial incentives to the actors of the bio-economy for climate-friendly activities resulting in carbon removals and storage, thus creating a new source of income and helping them adapt their businesses to withstand the effects of climate change. A further goal, overlapping with the Biodiversity Strategy, is to provide better data on the status and management of forests in the EU, via the Forest Information System for Europe[55].

3.3.5 New European *Bauhaus*

The New European *Bauhaus* is perhaps an unusual initiative for a political organisation like the European Commission as it is explicitly focused on fostering "*creativity*" in thinking and design. Its underlying objective is to better mitigate climate and other environmental impacts in the building sector. It is promoted by the European Commission as "a creative and interdisciplinary initiative that connects the European Green Deal to our living spaces and experiences". It is inspired by the '*Staatliches Bauhaus'* founded in Weimar, Germany, as a response to the continental cataclysm of the First World War and its corresponding physical destruction and social upheaval. The *'Staatliches Bauhaus*' sought to dissolve orthodox boundaries between art, artisanry, and industry and thereby encourage greater experimentation and creative solutions to profound social and economic challenges.

According to the European Commission the New European *Bauhaus* "*offers a similar opportunity – though larger in scale and broader and deeper in its consequence – to respond to the slow-rolling threat of our contemporary global cataclysm: climate change, mass extinction, resource depletion, social conflict, human degradation*". This is to be achieved by "*transgressing the hard boundaries of conventional disciplinarity and departmentalisation and by merging scientific inquiry, technological innovation, and participatory creative process. New solutions to an array of contemporary challenges can be synthesised through the productive alliance of traditional skillsets and deep cultural knowledge with rigorous scientific analysis and the power and reach of advanced digitisation and artificial intelligence*". In short it aims to "*develop connections on a wide range of topics*". In this way, "*the New European Bauhaus can serve as an instrument and a source of comprehensive architectural, technological, rural, urban, and social transformation*".

[54] EC, 2018, A new strategy for a sustainable Europe, https://ec.europa.eu/info/sites/default/files/research_and_innovation/research_by_area/documents/new_bioeconomy_strategy_for_a_sustainable_europe.pdf

[55] EC, 2021 European Forests for biodiversity, climate change mitigation and adaptation, European Commission Science for Environment Policy Brief Issue 25, November 2021

In practice, the initiative is being delivered by way of:

- Annual Festival – the first "Festival of the New European Bauhaus" was hosted in Brussels in June 2022 to "showcase, celebrate, and develop the movement". In addition to the main event, more than 200 co-created side events were independently organised by partners elsewhere in Europe.
- Prizes - New European *Bauhaus* Prizes awarded for innovative projects in the European building sector in four categories: "Reconnecting with nature"; "Regaining a sense of belonging"; "Prioritising the places and people that need it the most", and "Shaping a circular industrial ecosystem and supporting life-cycle thinking".#
- Incubation - The Commission will establish a New European *Bauhaus* Lab to work with its growing community to co-create, prototype and test the tools, solutions and policy actions that will facilitate the transformation on the ground.
- Direct financial support – development of a support framework at EU level drawing on finances from several EU instruments with complementary scopes reflecting the trans-disciplinarity of the initiative. These include Horizon Europe, the EU's key funding programme for research and innovation, and the European Regional Development Fund.
- Member State strategies - calling on EU Member States to mainstream the New European *Bauhaus* core values in their strategies for territorial and socio-economic development, and mobilise the relevant parts of their recovery and resilience plans.
- Dialogue with stakeholders and private sector alliances – for example, the W*ood4Bauhaus* alliance bringing together European forest products associations is now actively working to promote the New European *Bauhaus* concept and to encourage wider industry engagement (see below).

The potential importance of the New European Bauhaus to wood promotion in the EU is highlighted by the 'Horizon Europe-New European Bauhaus Nexus Report' (2022), an independent expert report which sets out recommendations for future Horizon Europe research and innovation funding in support of the initiative. The report recommends that NEB-related research funding from Horizon Europe, which has a total budget of EUR 95.5 billion for the period from 2021-2027, should be directed towards "demonstrative" and "educational" work alongside "fundamental" and "applied" research. A large proportion of the action points requiring of specific Horizon Europe research funding relate to more efficient and widespread utilisation of sustainable wood products, including:

- Promote low-emissions manufacturing. Exploit forest photosynthesis as a material manufacturing energy system, thereby offsetting fossil hydrocarbon-intensive manufacturing of mineral-based structural materials.
- Study the adaptability of varying tree species and fibre properties resulting from natural and managed forest mortality for mass timber and other building material applications.
- Facilitate a broad-based transition to biogenic building materials and the adoption of life-cycle carbon assessment and biodiversity impacts of sustainably managed forests and wood utilisation through various forms of engagement of stakeholders all along the building material supply chain. Advance public understanding through stake-holder dialogues, publications, capacity building trainings, remote and classroom coursework, etc.
- Focus specifically on infrequently used species, especially some hardwood species that are critical to certain forests and their sustainable silvicultural management.
- Limit the burning of fresh wood: energetic exploitation should be last resort following cascade utilisation in first/second life cycles as sustainable, long-life products (buildings, furniture, etc.).

- Develop clear and quantifiable methodologies to assess sustainably managed forest carbon pools, streamline the transfer of forest carbon into durable building products and urban building assemblies, and ensure the long-term maintenance of those urban storage banks through circular economy policies.
- Design indoor spaces to promote human well-being. Understanding the role of nature-based materials in eliminating unwanted effects (e.g. noise) and maximising desired effects (e.g. clean air, visual comfort, etc.) is critical.
- Engage with the creative sector, arts, and citizens in exploring design paradigms, like biomimetic, biophilic, eco-design, and circular design in creating inclusive, and affordable living, working, and learning spaces that people want to be in.
- Develop a system for rewarding nature-based building materials through sustainability credits.
- Promote continuing education in the construction sector and encourage qualification in nature-based building products and their installation, renovation/repair and recycling.
- Facilitate a broad-based transition to biogenic building materials and the adoption of life cycle carbon assessment and biodiversity impacts of working forests and wood utilisation through various forms of engagement of stakeholders all along the building material supply chain.
- Embed the science and technology of biogenic building material into curricula including Schools of Architecture, Engineering, Material Science, Forestry, Environmental Management, life-long learning, and early education.
- Promote the combined use of nature-based materials, like sustainably harvested and processed wood and other bio-based materials with reused and recycled materials in both residential and non-residential buildings, highlighting a variety of building systems (light timber frame, heavy and engineered timber frame, or monolithic components such as cross-laminated timber, etc.).
- Develop strategies and methodologies for renovation of existing buildings using renewable materials.

3.3.6 FLEGT Action Plan

The EU published the Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan in 2003. The Action Plan set out a range of measures available to the EU and its member states to tackle illegal logging in the world's forests that together prevent the importation of illegal timber into the EU, improve the supply of legal timber and increase demand for timber from responsibly managed forests[56]. Since publication of the Action Plan, FLEGT has been by far the most significant policy initiative by the EU in relation to the international trade in forest products. A 2016 assessment found that the total investments under the FLEGT Action Plan for the period 2003 to 2014 across activities made by the EU, its' member States and other sources (including producer country governments, civil society and the private sector) amounted to an estimated total of €935 million[57]. Activities in accordance with the plan have included:

- **Supporting timber-producing countries**. The EU has provided financial and technical support to countries that want to address illegal logging. Voluntary Partnership Agreements (VPAs) between the EU and timber-producing countries promote trade in legal timber products and help to close the EU market to illegal products. A VPA improves forest governance and,

[56] https://www.euflegt.efi.int/flegt-action-plan

[57] European Commission Staff Working Document, Fitness Check on the EU Timber Regulation and the FLEGT Regulation, October 2021

ultimately, guarantees that timber and timber products exported to the EU are legal. Each VPA defines 'legal timber' according to the laws and regulations of the timber-producing country. Negotiating the Agreement provides an opportunity for private sector and civil society to get involved in developing national legality standards. Each VPA sets out a strong timber legality assurance system that can verify that a consignment of timber is legal and merits the award of a 'FLEGT licence'. FLEGT-licensed timber will be free to enter the EU market as it will automatically meet the requirements of the EU Timber Regulation (EUTR).

- **Prohibiting imports of illegal timber**. EUTR was introduced in 2013 to prohibit placing of illegally harvested timber on to the EU market. It covers both imported and domestically produced timber and timber products. EUTR requires that operators first placing timber on the EU market apply a due diligence system comprising three elements: information; risk assessment and risk mitigation. Operators selling or buying timber already on the market have to keep records that adequately trace the origin of the wood they buy or sell. Timber or timber products that carry a valid FLEGT licence or *Convention on Illegal Trade in Endangered Species* (CITES) permit are automatically considered to comply with the requirements of the Regulation. Aside from EUTR, the EU has also engaged with major timber consuming countries to explore ways of working together towards a comprehensive multilateral framework to restrict illegally harvested timber from entering their markets.
- **Promoting environmentally and socially beneficial public procurement policies**. Public infrastructure projects funded by EU Member States are among the largest European consumers of timber. Ensuring that these projects only use legal timber is a key element of FLEGT. Public procurement legislation takes environmental considerations into account in purchasing decisions. The European Commission *`Handbook on Green Procurement'* explains how public authorities can ensure that procurement helps achieve local, regional, national and international sustainability goals.
- **Financing and investment safeguards**. Large-scale investments in land, agriculture and infrastructure in timber-producing countries can encourage illegal logging if they drive deforestation. FLEGT encourages investors, including export credit agencies, banks and financial institutions, to use strong due-diligence procedures to limit the social and environmental effects of investments in the forest sector.

In November 2021, the European Commission signalled a major change in policy with respect to international trade in forest products and other so-called "*forest-risk*" commodities with publication of a new draft regulation on deforestation-free supply chains. The new draft regulation was published alongside the findings of an FLEGT and EUTR Fitness Check established to examine whether the two instruments "*are fit for purpose to halt illegal logging and related trade*". The Fitness Check highlighted some successes but also significant shortcomings in the implementation and functioning of both Regulations. The EC concluded that the VPAs had "*not delivered*" on grounds that only one country, Indonesia, had reached the FLEGT Licensing stage. More positively, the reported noted that implementation of FLEGT licensing was working well in Indonesia and, more widely, that a "*great amount of learning can be drawn from the Indonesian experience*" and "*VPAs have led to enhanced stakeholder participation and positive results in terms of forest governance in some countries*". The Fitness Check verdict on the effectiveness of the EUTR was equally mixed, suggesting it has had only a limited impact on illegal flows globally, although this partly reflects the inherent difficulties of measuring such flows, but that it has focused efforts by European traders on removing illegal wood

from trade and has equipped the EU to work closely together with other consumer countries implementing similar legal frameworks[58].

Through the draft "*deforestation-free*" regulation presented by the EC in November 2021, the EC is proposing that: the list of regulated products be extended to include beef, coffee, palm and soy, alongside timber; that the prohibition be extended to any regulated product derived from deforested land (whether carried out legally or illegally) after a cut-off date of 31 December 2020; that the due diligence system be tightened in various ways, notably requiring collection of "geolocation" coordinates to identify the plot of land from which all regulated products are derived; and that the EC implement a system of country risk benchmarking to reduce the onus on individual operators. The VPAs are planned to be replaced by "Forest Partnerships" to assist countries to implement legality and deforestation free control systems for the full range of regulated products so that they may be benchmarked as "low risk". Existing FLEGT licensed forest products would be recognised as in line with the legality requirements of the new law, but not the deforestation-free requirements.

3.4 Forest products industry and trade

3.4.1 Wood balance

Annex A.2 provides an overview of the EU27 primary wood products balance drawing on FAO statistics for the year 2019[59]. The wood balance highlights the extent to which wood grown inside the EU27 dominates supply of forest products to the region. At this level, there is also a fairly even balance in fibre supply to the solid wood, panels, paper and energy sectors, indicative of a diverse and highly evolved industry. In 2019, EU27 production of wood fibre (including all industrial roundwood and firewood) totalled 293 million tonnes (all figures dry weight). Total imports of wood fibre, inclusive of raw logs and all primary processed and simply worked products, amounted to nearly 32 million tonnes, while exports were 38 million tonnes. Assumed consumption was 228 million tonnes, including 95 million tonnes used for energy production, 54 million tonnes of sawnwood, 5 million tonnes of plywood and veneer, 34 million tonnes of other panels, and 40 million tonnes of wood pulp[60].

Production and consumption is not evenly distributed across the region, with large producers such as Sweden, Finland, Germany, Poland and Romania exporting a high proportion of raw wood and finished forest products, while some countries like Netherlands, Italy and Spain with more limited national forest resources are heavily dependent on imports. However, due to higher barriers to wood products trade with countries outside the EU, most EU countries rely most heavily on supplies from other EU countries.

3.4.2 Industry size and structure

Around 500,000 people were employed in forestry in the EU27 in 2018. Many more people are employed in downstream industries. Together, nearly 400,000 enterprises were active in wood-based industries across the EU27 in 2018 representing one in five manufacturing enterprises across the EU (Table 3.4.2). The high numbers highlight that a large proportion of wood-based enterprises are small

[58] https://flegtimm.eu/news/flegt-eutr-fitness-check-mixed-verdict-on-effectiveness/

[59] The year 2019 is considered rather than the most recent data currently available for 2020 which was distorted due to the COVID pandemic.

[60] The balance does not extend to paper products and secondary and tertiary wood products.

or medium-sized. In total, nearly 3.1 million people were employed by these enterprises, implying that on average each enterprise had less than 8 employees.

Table 3.4.2 Economic contribution of EU wood based industries in 2018
Source: Eurostat[61]

Activity	Number of enterprises 1000s	Gross value added € billion	Number of employees 1000s
All EU manufacturing	2025	1945	29893
Wood based industries	397	139	3093
Of which			
Wood products manufacturers	160	35	922
Pulp and paper products	18	48	628
Printing and related services	99	25	593
Furniture	120	31	950

While the average size of wood-based enterprises is very small in the EU, they make a significant contribution to the regional economy. In 2018, the gross value added (GVA) of wood-based industries in the EU27 was €139 billion or 7.1 % of the total manufacturing industry. Over one third (35%) of wood-based industry GVA was in the pulp and paper sector with printing and related service accounting for an additional 18%. Manufacture of wood products accounted for 25% of wood-based industry GVA and furniture the remaining 22%.

Industry fragmentation is particularly pronounced in the solid wood and furniture sectors. Through its member federations and associated members, the European Sawmillers Organisation (EOS) represents some 35,000 sawmills in 12 countries across Europe (Austria, Belgium, Croatia, Denmark, Finland, France, Germany, Latvia, Norway, Romania, Sweden, Switzerland) manufacturing sawn boards, timber frames, glulam, decking, flooring, joinery, fencing and several other wood products. Together they represent around 77% of the total European sawn wood output in a sector that has an annual turnover of around €35 billion and employs about 250,000 people in the EU.

According to Eurostat, the EU furniture sector generates an annual turnover of close to €100 billion and employs 950,000 workers in 120,000 companies. Despite the small size of individual enterprises, these figures suggest a highly lucrative industry in which each employee generates annual turnover of €100,000 and - through good design, craftmanship and marketing skills - adds considerable value to wood fibre.

The wood panels and pulp and paper sectors are much more consolidated compared to the solid wood and wood furniture, being more capital intensive with higher barriers to entry. The European Panel Federation has only 300 corporate members in an industry which collectively produced 59 million m3 of product in 2019 including particleboard (31Mm3), MDF (12Mm3), OSB (7Mm3), hardboard (0.5Mm3), softboard (5Mm3) and plywood (3Mm3).

According to the Confederation of European Paper Industries (CEPI), there were 894 paper and pulp mills across Europe in 2020 represented by the organisation. Of this total, 743 were paper and board

[61] https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Wood_products_-_production_and_trade&oldid=550077#:~:text=Together%2C%20some%20397%20000%20enterprises,scale%20%2D%20many%20wood%2Dbased%20industries

mills. The number of CEPI mills have decreased significantly since 1991, when there were more than 1,500.

Wood based bioenergy is currently the main source of renewable energy in the EU, accounting for 60% of supply. To meet the 55% emission reduction target by 2030, EU Member States are expected to significantly increase the share of renewable sources in their energy mix, with wood remaining an important component.

While wood fibre is the dominant material for paper and packaging, furniture, and as an energy source in the EU, it is much less dominant in the European construction sector. With less than 3% of market share, wood products are still only a tiny fraction of building materials in Europe. Construction throughout the EU is still dominated by energy intensive and fossil-based materials. Wood-based construction products have an average market share of 2.4% in the EU (representing a total EU consumption of 26.2Mm3, or 15.7M tonnes of material), whereas non-metallic minerals constitute the bulk of materials used in the construction sector (market share of 93%). This market share varies widely between Member States: front-runners such as Finland or Sweden reach a market share above 10%, while most Member States have a market share of less than 2%[62].

To some extent, the low share of wood in European construction is due to cultural preferences. Buildings in those large areas of Europe with relatively limited forest resources still tend to be made with stone and brick, and more recently concrete, which have traditionally been more readily available. However, other factors have also been important including public misconceptions about fire risk, lack of durability and environmental impacts of wood products, lack of focused training in timber construction at architectural schools and engineering colleges, and associated lack of knowledge and experience of timber construction amongst building contractors. According to one analysis, the large-scale diffusion of wood construction in Europe has been restricted by cultural and structural hindrances, low uptake in fragmented and risk-averse construction industries, and the complex traditions and norms related to the use of wood in construction[63]. All these issues are now being addressed through technical innovation to develop new wood products and through various wood promotion programmes.

3.4.3 Industry trends

The European harvest of industrial logs increased overall in the twenty years between 2000 and 2019, from 350,000 m3 to 396,000 m3. However closer analysis of the data reveals a high level of volatility in softwood sawlog harvests, which closely follow wider economic trends. Softwood sawlog harvests rose to a peak of over 200 million m3 in 2007, before falling to 150,000 m3 in 2009 in the wake of the financial crises, and then recovered gradually to 200 million m3 in 2019. Hardwood sawlog harvests have been generally less volatile, hovering close to 30 million m3 throughout the whole period between 2000 and 2019. Pulpwood harvests have also been more consistent, but in this case following a slow upward trajectory from around 125 million m3 in 2000 to 160,000 million m3 in 2019 (Figure 3.4.3.1).

[62] Trinomics, 2021, Evaluation of the climate benefits of the use of harvested wood products in the construction sector, Report for European Commission, https://op.europa.eu/en/publication-detail/-/publication/eb9de1f4-2c93-11ec-bd8e-01aa75ed71a1

[63] Hurmekoski, E.; Jonsson, R.; Nord, T. Context, drivers, and future potential for wood-frame multi-storey construction in Europe. Technol. Forecast. Soc. Change 2015, 99, 181–196.

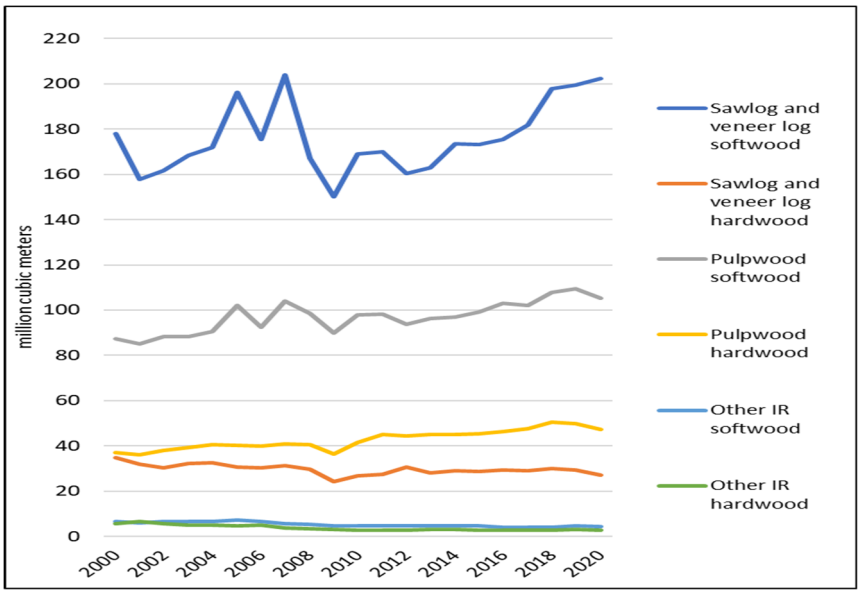


Figure 3.4.3.1 EU27, UK and Switzerland industrial roundwood production 2000 to 2020
Data source: FAO

Following some challenging years across Europe in the aftermath of the global economic crisis, sawn softwood production in the region increased consistently from around 75 million m3 in 2014 to 86 million m3 in 2019. In part this was driven by a slow but consistent rise in activity and demand in the EU construction sector. Another factor towards the end of this period was rising storm and insect damage, particularly in Central Europe leading to increased availability of salvaged logs. Although still limited overall, the share of imports in total sawn softwood supply increased slowly from 8% in 2015 to closer to 10% in 2019, mainly due to rising softwood imports from Russia, Belarus and Ukraine in response to currency weakness and tighter controls on log exports in those countries. EU sawn softwood imports of 9.3 million m3 in 2018 were 19% more than the previous year and the highest level since 2004.

Production in the European sawn hardwood sector was broadly flat in the decade to 2019, hovering around 6 million m3 per year. Many European countries were experiencing log supply problems. This was partly due to an unhealthy reliance on just a single fashionable species – oak – in higher value markets for furniture, joinery and flooring, making production of other species less profitable. It also reflected particularly high levels of fragmentation of forest ownership in hardwood producing areas making mobilisation of wood supply more challenging. There were also significant hardwood log exports to China and Vietnam, notably of oak from France and Belgium and beech from Germany. The share of imports in total EU28 sawn hardwood supply was consistently below 20% between 2013 and 2019. While typically regarded as a consuming market for sawn hardwood, it is notable that, between 2015 and 2019, the EU28 was running a surplus in this commodity as exports from the bloc exceeded imports.

Europe, particularly Germany, has a large and highly sophisticated composite panels industry. With huge capacity, production has often overtaken demand, leading to relatively low prices, and encouraging very active efforts to innovate, add value, and expand applications. Sometimes this has been at the expense of more expensive and less adaptable solid wood products, and sometimes it has improved competitiveness relative to non-wood products, notably plastics and vinyls. After a dip in 2012 when total production of composite panels in the EU28 fell to 51.5 million m3, production increased consistently in the following five years to 58.4 million m3 in 2017. During this period, particle

board production increased from 35.8 million m3 to 39.8 million m3 while fibreboard production increased from 15.8 million m3 to 18.6 million m3. In 2018 production of both particle board and fibreboard was stable at this higher level. EU imports of composite panels also increased rapidly between 2013 and 2017 before stabilising at the higher level in 2018 of just over 3 million m3. The share of imports in total supply increased from less than 2% in 2013 to 5.4% in 2018. The increase in volume and share of imports is due to rising trade with Belarus, Russia and Ukraine.

Largescale production of panels in Europe has in turn allowed the development of a large laminate flooring industry with sales dwarfing those of the real-wood sector. Through scale and innovation, this industry has become increasingly capable to supply products which mimic the look and feel of real wood, while offering superior technical performance and lower maintenance at a fraction of the cost. According to the Association European Producers of Laminate Flooring total European sales of laminate flooring were 334 million m2 in Europe in 2018. This compares to real-wood flooring consumption of only 80 million m2 in the same year. In spite of its scale and sophistication, even the laminates flooring industry has been losing share in the EU market in recent years to a range of non-wood flooring products such as luxury vinyl tiles, porcelain tiles, and products made of recycled materials and other renewables like bamboo and cork.

Considering the wider joinery sector, the value of EU28 production of wood joinery (excluding flooring) fell from an all-time high of €45 billion in 2007 to a low of €32 billion in 2013 due to the global financial crises of 2007 and 2008 and subsequent eurozone currency crises. After that production recovered only slowly to around €35 billion in 2019[64]. The growth in the value of wood joinery production between 2013 and 2019 was slower than growth in the wider construction sector, indicative of wood's continuing loss of share to other materials. Wood was losing share particularly to metal (notably aluminium) products in the windows and doors sector during this period, a trend partially offset by the development of new engineered wood and wood-aluminium composite products. Increased use of engineered wood for joinery applications allows manufacturers to meet rising technical and energy-efficiency standards and to provide customers with long lifetime performance guarantees and thereby begin to recover market share from other materials.

"Modern" engineered wood products (EWP) such as glue-laminated lumber (glulam), laminated veneer lumber (LVL), and 'massive' or cross-laminated timber (CLT) are becoming more widely available in the EU[65]. Modern EWPs have numerous advantages compared to other traditional building materials. The defects due to knots and other internal variations are removed and randomized within layers so that EWPs are stronger, straighter, more uniform and less prone to shrinkage and splitting than traditional sawn timber. EWPs can also carry loads over longer spans. When integrated with other wood and non-wood components into prefabricated building systems, EWPs offer numerous commercial advantages. Rising interest in using engineered wood for high density urban construction is driven mainly by cost-savings and reduced time of construction. EWPs also deliver higher yields and allow transformation of smaller dimension and lower grade wood in high quality structural products. Yields are further enhanced by manufacturers through a focus on accurate moisture content and visual defect and ultrasound wood grading to ensure each individual timber board or veneer is utilised for the most appropriate component or product application.

[64] Based on Eurostat data. Includes windows, doors, "other (not elsewhere stated)" joinery products (such as fitted cabinets and kitchens, staircases, conservatories, skirtings and panelling), and kitchen furniture.
[65] The term "modern" is used here to distinguish between older EWPs such as plywood and OSB developed many decades ago which are now well established in the global timber market.

Modern EWPs offer significant potential to expand the market for wood, add value to wood fibre, contribute to sustainable forest management and efficient use of wood, and minimise environmental impacts, particularly those associated with material and energy consumption in construction.

European EWP manufacturers tend to prefer utilising local timbers that are readily available in consistent volumes and qualities. CLT manufacturers in the EU will purchase only square-edged fixed-width timber which is often not supplied as standard in the hardwood industry, unlike the softwood sector which is more accustomed to supply large volumes in fixed dimensions. Bringing EWP products to market requires a heavy capital investment, not only in plant, machinery and new skills, but also in technical testing and a commitment to working with standards bodies to ensure that individual species are accepted for use in specific products and applications.

Glulam is at present the largest volume modern EWP supplied into the EU market. Recent production is not available but estimates by the ECE Committee on Forests and the Forest Industry indicate EU annual production in the region of 2.5 million m3 and that the EU accounts for 50% to 60% of global consumption of glulam. The EU had at least 690,000 m^3 of operational LVL capacity in 2018, with another 65,000 m^3 under development[66]. The majority of production is softwood, but there is a large 180,000 m^3 plant in Germany utilising beech. Nearly all global CLT production is in the EU where capacity is estimated at around 1 million m^3 in 2018. All commercial volume production is softwood. To date only a very small volume of hardwood CLT has been manufactured in the EU to supply high-end bespoke projects, notably a health centre completed in the UK in 2017 claiming to be the world's first hardwood CLT building.

The value of wood furniture manufacturing activity in the EU28 fell around 25% between 2008 and 2013 before recording a slow but fairly consistent increase between 2018 and 2019. However in 2019 the value of production was still down around 15% compared to before the global financial crises in 2008. During the period of recovery between 2013 and 2019, growth in European wood furniture production was much stronger in Eastern European countries such as Poland and Lithuania, which attracted much new investment, compared to traditional manufacturing sectors in Italy, Germany, France and Spain. Despite only slow production growth, at a rate of only around 1% per year between 2013 and 2019, EU wood furniture manufacturers maintained their hugely dominant position in the market. In 2018, 87.0% of all wood furniture sales in the EU market comprised products manufactured within the EU.

There are many reasons for the continuing dominance of domestic manufacturers in the European wood furniture sector. Although labour costs are quite high in Europe relative to China and South East Asia, furniture manufacturers in the EU are making a virtue of their shorter supply chains which not only reduce transport costs but also allow products to be customised and delivered more rapidly. Increasingly advanced computer-controlled and automated manufacturing has also benefited European producers, boosting their productivity, cutting overheads and reducing the relative labour cost advantages of competitors, such as those in the Far East.

At a macro-level, the overall EU28 paper and board market in the EU might appear quite stable, with total production hovering around 90 million tonnes, and consumption around 80 million tonnes in the five years prior to and including 2019. However this hides significant changes in the composition of products manufactured in the EU (Figure 3.4.3.2). The development of the digital economy has led to

[66] In 2018, known LVL capacity in the EU included 230,000 m^3 operated by Metsa in Finland, 100,000 m^3 capacity operated by Stora Enso in Finland, 80,000 m^3 operated by Steico in Poland, 180,000 m^3 operated by Pollmeier in Germany. In June 2019, Metsä inaugurated a new line with additional 65,000 m^3. In addition, MLT in western Russia had 150,000 m^3 of installed capacity in 2018.

a consistent long-term decline in production and consumption of graphics paper grades and newsprint. However this has been mirrored by growth in the output of packaging grades.

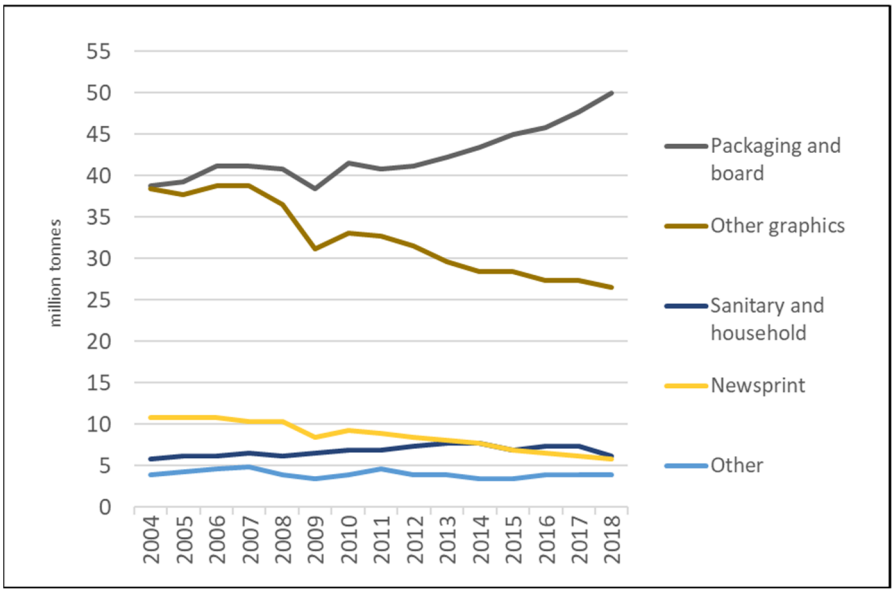


Figure 3.4.3.2. : Production of paper and board in CEPI member countries, 2004 to 2018
Data source: Confederation of European paper Industries

3.5 Europe-wide sustainable wood promotion

3.5.1 Background

Region-wide wood promotion campaigns in Europe have a chequered history. There are several relatively resilient and successful trade associations representing individual segments of the forest products sector at European level including the European Panel Federation (EPF), the European Parquet Flooring Association (FEP), European Organisation of the Sawmill Industry (EOS), European Confederation of the Woodworking Industries (CEI-Bois), the Confederation of European paper Industries (CEPI), the European Timber Trade Federation (ETTF), the European Furniture Industries Confederation (EFIC), and the Confederation of European Forest Owners (CEPF). These are active to varying degrees in promotion of the specific products and services delivered by their members to consumers across the region. However, their ability to develop sustained long-term promotion campaigns has often been constrained by the competing interests of national level associations and members.

Equally these associations have often struggled to find sufficient common ground to join together to implement generic wood promotion campaigns for the whole region. CEI-Bois has perhaps been most active in encouraging such Europe-wide initiatives, partly because of the sheer scope of its membership, which includes 21 European and National organisations from 15 countries together encompassing more than 180,000 companies generating an annual turnover of 152 billion euros and employing 1 million workers in the EU. However, even CEI-Bois has been only occasionally successful. The evaluation report of “Road Map 2010” European wood promotion initiative led and coordinated by CEI-Bois between 2004 and 2010 suggested it had been successful in uniting wood industries at the European level in a common goal for the first time. However, it failed to achieve its’ stated objectives of ensuring wood became the “lead material” and 4% annual demand growth.

While the Road Map 2010 initiative was disappointing in the sense that it did not lead on immediately to a single large co-ordinated region-wide wood promotion initiative, it did encourage the various European trade bodies to come together more regularly and, when necessary, to prepare and disseminate joint statements on key issues impacting on the wood industry at EU level, and to co-ordinate industry input in relation to EU policy measures, such as the European Green Deal and Forest Strategy. This process has gained momentum in the last decade, so much so that there are clear signs now of a more coherent, broad-based and potentially sustainable Europe-wide approach to wood market development emerging.

This process has been facilitated by the "*Club du Bois*" established in 2006 - an early output of the Road Map 2010 initiative - as a periodical and informal gathering of MEPs and industry representatives on EU legislative issues touching upon the woodworking industries of Europe. The "*Club du Bois*" is chaired by an MEP with an interest in the industry, and sponsored by the industry associations. MEPs from all political parties and nationalities are invited by the MEP chairing the Club a few weeks ahead. Industry sponsors are expected to promote participation of their own constituency's MEPs, repeating the invitation and accompanying them that day whenever possible. To structure industry input into these meetings, in 2014 participating European industry associations prepared a "Manifesto Woodworking Industries 2014-2019" setting out policy priorities[67].

In 2018, in response to the growing political focus on climate change and the high-level of ambition to achieve net zero carbon emissions by 2050 Europe-wide, a wide range of trade associations – including CEI-Bois, CEPI, EFIC, FEP, and CEPF – together with the European State Forest Association (EUSTAFOR) and with scientific input from the European Forest Institute formulated a joint policy statement on "Forest-based Industries 2050: a vision for sustainable choices in a climate-friendly future". This set out a series of actions designed to ensure that the forest products sector becomes "*the most competitive, innovative and sustainable provider of net zero carbon solutions for a climate neutral Europe*". A major outcome of this process was establishment of the "Wood4*Bauhaus*" initiative, with cross industry support, explicitly created to ensure the wood sector maximises the opportunities created by the European New Bauhaus Initiative.

Outside the scope of these joint campaigns by European trade associations, there are also a number of supplier promotion campaigns that operate at a European level. Two of the most active campaigns, French Timber and Swedish Wood are described below, together with the "Wood4*Bauhaus*" initiative.

3.5.2 French Timber

French Timber's aim is to grow the global market for French wood and timber products, with a core focus on developing contacts between supplier, importer and end user.

It was founded in 2001 after storms in 1999 felled large areas of French forest. French Timber was set up to develop overseas markets for the excess timber. Initially the promotional focus was on the scale of the French forest resource, the ready availability of timber and its range of species. This has developed over the years as global awareness of the French industry has grown and today messaging is also on how using French timber can support customers' business development, specification and other technical information.

"*We work with the whole of the French timber sector, hardwood, softwood and veneer producers and adapt communications to suit the particular market*," said French Timber managing director Jean-

[67] http://www.clubdubois.eu/manifesto-woodworking-industries/

François Guilbert. "*Our communications will be different in terms of product and species focus depending on if we are targeting Mexico or Japan, as will be the range of companies we bring to those markets*."

The organisation's promotional work involves continuous dialogue with producers. It started out working with sawmillers and solid wood remains a core product in communications, but they now encompass the range of further processed wood products, including panels. As companies develop new lines, French Timber also proposes overseas markets for them.

It has an annual budget of €500,000 raised partly from membership, but with most of its funding from the French forestry and timber sectors' main body France *Bois Forêt*.

While French Timber's fundamental aim is to increase French timber exports, it's also about increasing the resilience of individual producers. "*By giving them access to various markets, they find increased sales opportunities and sometimes higher prices and better margins, but most importantly they're less vulnerable to events and developments in just one*."

The main targets for French Timber promotion and communication are importers and end users. Its task to '*open the door for our members so they can do what they do best; supply the right material'*.

Pre-Covid, most budget would go to putting 'boots on the ground' in target markets, with the French Timber team and members attending trade shows and taking part in trade missions and conferences. With the pandemic it increased its digital spend, with an online campaign focused on the French forest and its management as well as products, aimed particularly at markets where French timber is under-represented. It now sees online communication playing an increasing role in its communications going forward.

The sustainability of French timber and the carbon and other environmental benefits of using it more widely are central topics of its promotion on the French market by France *Bois Forêt* and the specifier and consumer facing platform Bois.com. But French Timber believes its timber business audience are aware of these matters and so its communication is centred on how the French timber sector can provide specific solutions for customers' production and construction requirements – '*the right product for the particular use from reliable suppliers*'.

French Timber sees its greatest success as the creation of a still growing international '*business to business network for importers and end-users of timber and wood products from France'*. It points out that French timber exports have doubled in the last decade.

It sees its messaging continuing to develop and the importance of its role continuing to grow with the emergence of new markets and new products. In particular it sees its own and the focus of the French industry turning increasingly to further manufactured products.

"*Exporting French logs around the world is not sustainable. Exporting lumber is better and exporting cross laminated timber better still*," said Mr Guilbert.

3.5.3 Swedish Wood

Swedish Wood (SW), the marketing and communications arm of the Swedish Forest Industries Federation (SFIF), promotes use of Swedish timber in the range of applications. These include interior wood products and joinery, exterior-use products made in treated timber, DIY products and materials, plus wood packaging. However, in recent years it has focused increasingly on construction. This is where it sees strongest prospects for growth in consumption of Swedish timber, both in traditional

solid form and in added value engineered wood products. It sees the market being driven increasingly by the technical capabilities of latest generation engineered products, such as glulam and cross laminated timber, but also by timber's carbon story and increasingly construction's focus on circularity and requirement for materials and products that can be recovered, reused and recycled. Carbon and circularity, consequently, are core to SW messaging.

Its role is to develop Swedish and export markets both in volume and value per cubic metre sold. The UK is the biggest export market for Swedish timber and naturally a prime target for SW. It promotes the full spread of timber and wood products there for the range of end uses. It also co-owns and co-funds the UK's generic timber marketing campaign - *Wood for Good*, which it co-founded with the UK Confederation of Forest Industries and which is dedicated to promoting use of both imported and UK-grown timber.

SW very much tailors communications and promotion to the market. SW's other main export targets are France, where it promotes glulam and other construction materials, China, where it focuses on the construction market and sawn timber sales and India, where growing sawn timber demand is currently the principal objective.

The audiences it targets vary accordingly. In the UK, Sweden and France it's architects, engineers, developers, policy makers, plus carpenters and DIYers. In China it's construction more broadly and importers and in India importers and wood product manufacturers.

SW does not disclose its budget, but says its funding is made up from fees paid by Swedish sawmills based on production volume and from SFIF membership payments. It has a team of 15 and shares some personnel with the Federation.

Its communications include press releases and public relations material and literature. It attends trade fairs and hosts webinars, seminars and other events. But assuming ever more significance is social media. "We are growing our social media network all the time," said a Swedish Wood spokesperson.

In Sweden itself, it also runs training courses and provides technical guides.

In new and developing markets, Swedish Wood also highlights the Swedish timber industries' record for reliability and product quality.

But, as stated, the environmental and technical attractions of wood for construction are increasingly its main theme. "*More and more of our resources are being dedicated to wood construction*," said the spokesperson. "*In particular we are highlighting the potential for timber-based building in multi-dwelling and multi-storey residential construction – relatively new market segments which we feel could really drive consumption of Swedish wood. We are also highlighting that Sweden is increasing its output of glulam and CLT for the construction market*."

Future communications plans are also to develop messaging around wood's increasingly validated health and well-being enhancing properties.

"*It will also be interesting to put a global perspective on the need for more construction in wood, especially in developing countries*," said the spokesperson, adding that Swedish Wood additionally intends to get involved in the 'debate about forests'.

"Some tend to see them only as a carbon sink, which we think is wrong," they said. "A well-managed forest can be both a carbon sink and a great, renewable source of raw materials for creating carbon sinks in our cities by building more wooden houses.".

3.5.4 Wood4Bauhaus

The European wood-based sector launched the Wood Sector Alliance for the New European *Bauhaus* (Wood4*Bauhaus*) at a virtual Conference in April 2021. The aim is to foster an open long-term dialogue bringing together and inspiring stakeholders interested in contributing to the New European Bauhaus through enhanced use of wood. The new alliance will raise awareness of the transformative power of the Circular Economy, put a spotlight on the versatility of innovative wood products and building systems, and facilitate dedicated co-creation partnerships with the wood sector for the New European Bauhaus.

The alliance was initiated by several umbrella organisations including CEI-Bois, EPF, and EOS alongside the I*nnovaWood* EU network for wood research, innovation and education, and the European Federation of Building and Woodworkers (EFBWW). It is also supported by the Horizon Europe project consortia BASAJAUN and WoodCircus. The ambition is to grow the network of supporters and contribute to forming a major hub of the sector for the New European Bauhaus.

More specifically, Wood4*Bauhaus* will:

- Encourage research and innovation for novel and innovative use of wood in the built environment.
- Foster new collaborations and co-creation of different stakeholders across disciplines, sectors, and society.
- Facilitate knowledge sharing and skills development especially also towards future generations.

This will be achieved by:

- Consolidating the alliance as the main platform and interlocutor for the whole wood-based innovation ecosystem in Europe, including member companies, national member associations, unions, research institutes, universities, vocational education partners, cluster organisations, press channels, among others.
- Inspiring the wood sector to organise more conferences, workshops and meetings to raise awareness and stimulate New European Bauhaus projects in co-operation with members and networks, particularly reaching out to involve architects, scientists, engineers, designers, planners, specifiers, regulators, citizens, academics, educators, students, artists and the wider cultural sector.
- Establishment of an online platform for discussions, exchange of good practices, and dissemination of wood products research results.
- Contributing to prize competitions and pilot projects foreseen in the New European Bauhaus as well as to related EU initiatives like the Renovation Wave Strategy, the Circular Economy Action Plan, the Recovery Plan and the 100 lighthouse renovation districts planned in the Affordable Housing Initiative.
- Supporting the New European Bauhaus by offering direct communication channels and dissemination support for spreading news, calls for action and results widely inside the wood sector.

From a networking and financial perspective, the initiative benefits from close links to various European-funded research actions, notably:

- BASAJAUN, a major European innovation project funded by Horizon Europe (€12.25 million between 2019 and 2023) to demonstrate how wood construction chains can be optimized to foster both rural development and urban transformation whilst being connected with sustainable forest management in Europe. Two full-scale medium-sized demo buildings will be constructed in Finland and France using innovative architecture and a complete digitalization of the 'forest to building' chain. Coordinated by Tecnalia in Spain, the project comprises 29 partners from 12 countries including 8 leading research and technology organizations, 3 universities, 14 companies and 4 other public and sectoral organizations.
- WoodCircus, a Horizon Europe funded project (€3 million between 2018 and 2021) on achieving a circular bio-economy in the wood sector. The project identifies, evaluates and disseminates good practices in process efficiency, wood waste collection, management and recycling in the woodworking value chains in Europe with a focus on wood construction. The project is coordinated by VTT Technical Research Centre of Finland Ltd in Finland, and includes as partners 7 Research and Technology Organizations (RTOs), 7 Industries in woodworking and waste management and 3 European networks and associations.
- EcoRefibre, a project funded by Horizon Europe (€12 million between 2022 and 2027) to explore smart technologies to recycle post-consumer waste wood back into fibreboards and into novel building products. The project involves 20 partners in 7 countries and is coordinated by the Swedish University of Agricultural Sciences (SLU).

3.6 France

Table 3.6: France Statistical Indicators

Population, total (millions)	67.39
Population growth (annual %)	0.2
Surface area (sq. km) (thousands)	549.1
Population density (people per sq. km of land area)	123.1
GNI per capita, Atlas method (current US$)	39,480
Income share held by lowest 20%	8
Life expectancy at birth, total (years)	83
Forest area (sq. km) (thousands)	172.5
Terrestrial and marine protected areas (% of total territorial area)	33.2
Urban population growth (annual %)	0.5
GDP (current US$) (billions)	2,630.32
GDP growth (annual % 2020)	-7.9
Inflation, GDP deflator (annual %)	2.5
Agriculture, forestry, and fishing, value added (% of GDP)	2
Industry (including construction), value added (% of GDP)	16

Source: World Bank – World Development Indicators https://data.worldbank.org/country/france?view=chart

3.6.1 Relevant background

3.6.1.1 Forest resources

France is one of the most important wood using markets in Europe. It has significant wood processing industries that are fed both by its own forest resources but also from significant hardwood and softwood imports. Forests now cover 31% of France. In terms of area, it is the fourth most forested country in the EU, after Sweden, Finland, and Spain. Since 1990, thanks to better protection as well as to a decline in farming, France's overall wooded or forested areas have increased by nearly 7%. Forests are diverse and mainly composed of broadleaf trees (two-thirds of forest area) while conifers predominate in mountain areas and on poor soils.

Three quarters of French forests are in the hands of 3.5 million private owners. In terms of numbers, around two thirds of private forest holdings are less than one hectare. However in terms of area, approximately 52% of private forests are in 50,000 holdings of more than 25 hectares which account for three quarters of wood sales from private land. Public forests (state, municipal) represent 25% of forest and play an important multifunctional role and for visitor access. They provide almost 40% of the wood harvest. Forests are a major source of economic wealth, employing nearly 440,000 people in the forestry and wood sector.

3.6.1.2 Forest governance and legislation

The French government is centralised and the main forest policy directions are given at the national level. Policy is steered by several public processes and actors, such as the ministries in charge of forests and of the economy, the National Industry Council, the Forest-based Higher Council, the Strategic Committee for the Forest-based Sector, and other specialized committees. They issue the main national policy documents related to the forest-based sector, most notably:

- The French Forest Code, first promulgated in 1827, and continuously revised ever since. The Code establishes two different juridical procedures, one for public and the other for private forests, with more far-reaching controls imposed on the former. It provides the legal basis for forest management plans and equivalent instruments which are mandatory for certain types of forest and currently covers 45% of French forest area.

- The 2016 Law for the future of food, agriculture and forests *(Loi d'avenir pour l'alimentation, l'agriculture et la forêt - LAAAF)* designed to promote "*economic, social and environmental competitiveness*" in the agri-food and forestry sectors. In the forestry sector this is mainly to be achieved through the creation of the "forest economic and environmental interest group to facilitate the management of private forests and act against their fragmentation", and the creation of a "Strategic Forest and Timber Fund" to renew the forest and enhance the timber sector.
- The French National Forest and Wood Program (PNFB) most recently prepared for the period 2016-2026. PNFB defines directions for forestry policy during the ten year period, comprising four objectives and an action plan, along with detailed arrangements for its roll-out at the national and regional levels. Key objectives include: optimising the effectiveness of sustainable management documents; support for innovative and more productive forest management systems which also improve forest carbon sinks; and maximising the substitution effects and storage of carbon in wood products, through increased harvesting and utilisation in long life products, particularly in construction, and development of recycling and energy recovery of end-of-life products.

The ONF (the French forestry commission), founded in 1964, is a public industrial and commercial concern which oversees the management and equipment of the National Forests belonging to the State. For other forests, while policy is set at national level, implementation is primarily delivered at regional level. The Regional Department for Agriculture and Forest (DRAF) and the Regional Centre for Forest Owners (CRPF) are responsible for implementing the sustainable management documents. These documents include the *Plan Simple de Gestion* (forest management plan or PSG), the code of good forestry practice (CBPS) and the standard management regulations (RTG), and draw on a framework document, the Regional Plan for Forestry Management (SRGS). The goal is to implement practices that contribute towards sustainable development of the forest stand.

A key policy objective in recent years has been to mobilise sustainable wood production by private forest owners in France. This is primarily achieved through implementation of the *Plan Simple de Gestion* (PSG) which is mandatory for private forests with a surface area of more than 25 hectares in the same municipality, and for forests of more than 10 hectares on a single site where the owner wishes to benefit from public aid (e.g. subsidies for forestry operations). All private forest owners also benefit from exemptions of up to 75% of the value of forest and woodland property on wealth tax and real estate tax if they demonstrate conformance to the PSG. The PSG requires a detailed inventory of the stands and sets out a schedule for felling and other forestry work and infrastructure for a minimum 10 years and a maximum 20 years.

French forest policy is now focused on sustainable development of woodland assets and multi-functionality is regarded as a constitutional principle. National policy recognizes that the forest contributes to providing a set of goods and services of individual and collective interest. Nevertheless even today there is still tension between interests emphasising the economic role of forest and those more focused on environmental values. France is a net importer of wood, something the French government wants to change. Yet even employees of France's National Forestry Office have, in recent years, joined protests against the increasing commercial exploitation of forests.

3.6.1.3 Public policy support for wood promotion

Overall though, France is characterised by strong public and policy support for increased use of wood, a sentiment bolstered by several consistently funded and well organised wood promotion campaigns, given added impetus by the French government's far-reaching commitment to zero carbon. Under the

previous government plan to develop French forest products sector, published in 2009, three regulatory measures were introduced to boost demand for wood in construction. A Decree dated 16 October 2009 made external wood cladding exempt from building permit requirements. Decrees of 15 March 2010 and 13 September 2010 defined a threshold for minimum wood use in all new houses, the only exclusion being where this wood would be incompatible with safety or health requirements. A Decree dated 12 July 2011, designed to promote environmental performance in construction and housing, stated that planning permission could not oppose use of certain renewable materials including timber. For example, installation of French windows and shutters, if made in timber, could no longer be forbidden. More recently, in 2020, the French government announced Regulation Environmental 2020 (RE2020) including the requirement for a percentage of materials in construction projects (50% in public buildings) must be bio-based, including timber. This measure was due to be fully implemented by 2022.

In addition to offering regulatory support for increased use of wood, the French government has offered direct financial support. In 2009, the French Ministries of Agriculture and Industry jointly announced creation of the Wood Industry Strategic Fund (Le Fonds Bois), initially making available €20 million euros for investment in the French wood processing sector, including sawmills, panel production and wood energy. Now extended to include other "Eco-materials" alongside wood, the fund is still operational in 2022. The Fund is an investment fund which can intervene by contributing equity or quasi-equity to support the development of companies in the wood and bio-sourced materials sector. The fund is aimed at companies in the sector with an annual turnover of more than €5 million wishing to develop and strengthen their competitiveness in the face of international players. The amount of intervention is generally between 500,000 and €10M.

While there is a strong commitment to increased use of wood by the French government, it does come with conditions attached, specifically measures to avoid illegal harvested wood and giving preference to certified products. The French policy on timber public procurement originates from the 2004 Action Plan on Tropical Forests. It underwent successive developments, including the 2008 circular on the exemplary nature of the state and Law No. 2009–967. Both mention the government's target of 100 per cent certified legal and sustainable timber in public purchases (from 2012 and 2010 respectively). The procurement policy is mandatory for central government departments, although there are no sanctions for non-implementation. All wood-based products, including paper, are covered.

The *National Strategy Against Imported Deforestation* (SNDI), established in 2018, promotes new EU-level legislation, a new 'zero deforestation' public procurement policy and greater enforcement capacity to tackle imported deforestation. The strategy identifies illegal timber as one of the commodities to be considered as part of France's efforts. The strategy builds on the FLEGT Action Plan and incorporates the EUTR into France's legal framework (notably with Art. 76 of the 2014 Law on the future of Agriculture, Food and Forest) to provide enhanced monitoring and enforcement of the country's timber trade. Under the SNDI, a new national guide for sustainable public procurement is being developed, as well as a sectoral guide on zero imported deforestation in public procurement by 2022.

3.6.2 Promotion campaigns in France

3.6.2.1 CODIFAB

The French wood processing sector, with French government support, has overcome the key challenge to wood market promotion due to fragmentation by forming CODIFAB, the Professional Committee for the Development of the French Furniture and Wood Industries. The stated mission of CODIFAB is to "*conduct and finance collective actions that the contributing companies would not have the capacity to carry out individually*". It brings together representatives of all the major furniture and wood industry associations in France[68] which collectively includes 4,200 SMEs and micro-enterprises and more than 15,000 craftsmen.

CODIFAB is empowered by the French Finance Act to raise funds through a levy on industry deliver of activities in accordance with a Strategic Sector Contract signed with the French State and subject to renewal every four years. Payment of the levy is mandatory for all persons and companies that manufacture products or carry out other taxable operations, including importers of furniture and wood goods and related services. CODIFAB collects the tax on sales made in France and in the European Economic Area, and Customs is responsible for collecting the tax on imports from third countries outside the EEA. The tax is calculated as a percentage of turnover (excluding tax), the current rate (since the start of 2019) being 0.18% for furniture products and 0.09% for wood products.

The budget was €13.72 million in 2020 rising to €16.57 million in 2021. In 2021, 20% of the budget was allocated to "promotion and communication to attract new customers"; 4% to "promote collective action"; 11% to "innovation and design to promote French creativity"; 6% to "statistical, economic and strategic studies"; 4% to "collection of levy"; 40% to "technical and research"; 4% to "training"; and 11% to "international development to conquer new markets".

The main decision-making body of CODIFAB is the Board of Directors made up of business leaders, qualified technical experts, chosen for their expertise and knowledge of the furniture and wood sectors, and State representatives. The latter include a government commissioner representing the Ministry of Industry and a general economic and financial controller representing the Ministry of the Budget. The Board is supported by three permanent committees covering respectively furniture, timber, and finance.

According to CODIFAB's "Action plan for wood construction 2030" (*Plan Ambition Bois Construction 2030*), the following specific measurable objectives were established: (1) doubling the market share of wood in new collective housing; (2) increasing the share of wooden single-family houses from 10 to 15 percent; (3) increasing the share of wood used in renovation up to 15% and 20% in collective buildings and individual housing, respectively.

A very wide range of activities are supported, primarily delivered by the trade associations, and their respective promotion campaigns, represented on the Committee. Drawing on interviews conducted for this study, the leading French wood promotion campaigns are described below.

3.6.2.2 France Bois Forêt

France Bois Forêt (FBF), the principal industry body for French forestry and timber sectors is continuing to build on the impacts of its three-year (2017-20), €10 million campaign "*Pour moi, c'est le bois*".

[68] French Furniture, National Union of Furniture Crafts (UNAMA), Union of Joinery Manufacturers (UFME), Union of Wood Manufacturers and Builders (UICB), Union of Plywood Panel Industries (UIPC), Union of Process Panel Industries (UIPP), Union of Woodworking Trades of the French Building Federation (UMB - FFB), National Union of Artisanal Carpentry and Joinery and the Confederation of Crafts and Small Building Companies (UNA - CMA - CAPEB).

The campaign's core aim was to increase French timber consumption and boost French-grown wood's share of the domestic market. Information on the extent to which it achieved these targets was not available at the time of writing this report. However, FBF maintains "*Pour moi, c'est le bois*" did raise business and public awareness of the French timber sector and its economic and environmental importance and potential. The industry's communication efforts, it maintains, have also helped it secure significant funding for a program to develop French forests and adapt them to climate change. This will come from the €100 billion *Plan France Relance* national investment program aimed at re-energizing the economy after the pandemic and long-term making France Europe's first major decarbonized economy, with a 2050 carbon neutrality target.

FBF has continued partnerships initiated during "*Pour moi, c'est le bois*" with leading TV programs including: "*La Maison France 5 home-style*" series; environmental, garden and home show "Laisse entrer la nature"; and gardening and nature program "*Silence ça pousse*". These have focused on use of wood in the home and garden, its versatility, practicality, and aesthetics, plus the environmental value of timber and forests.

FBF also has its own tv 'channel', FBFtv, featuring videos on forestry and timber products, hosted on the home improvement website TV Maison.

FBF is now running a series of podcasts, with 12 produced so far on a range of topics on forestry and timber; from use of French oak in the restoration of Notre Dame to the vital role of forests and timber in meeting France's carbon and wider environmental targets.

One of the podcasts is on the use of the 2024 Paris Olympics complex as a showcase for timber construction. FBF with other industry partners has set up a communication and lobbying initiative France Bois 2024 to secure this aim. It has liaised closely with the Olympics and Paralympics delivery authority Solideo, advising the latter an achieving its low environmental impact targets and the timber industry's capacity to provide materials and construction know-how. Solideo has subsequently stipulated that 50% of the athletes' village buildings will be timber-based and that it will be the principal construction material used in the 10,000m2 judo and wrestling arena and the aquatics centre. FB2024 believes total Games timber use could be around 100,000m3. Solideo has a target that 30% of this should be French. FB2024 is pressing for that to be increased to 50%.

All timber used for the Games must be certified sustainable under the FSC, PEFC or French Wood (Bois de France) schemes. To simplify the traceability audit process of working with these three labels over such a big project, FB2024 has also developed its new "*France Bois Traceability*" tool in association with French certification body FCBA.

"*All three certification schemes have accepted tracking of traceability with the tool, which is based on block chain*," says FB2024. "*If we had three systems to work with, the process would be complicated, expensive, and could penalize wood products compared to other materials. The idea was therefore to bring these three partners around the table and set up a tool with a single traceability audit process to reduce costs and shorten deadlines. For companies tendering to supply timber lots to Games construction sites, it will result in a three-fold reduction in their audit bill*."

The ultimate aim is for the Olympics to trigger a long-term increase in timber-based building in France, which currently accounts for just 10% of construction. At the time of writing, Solideo was barring use of tropical and boreal timber in Games projects. However, the International Tropical Timber Technical Association (ATIBT) has held talks with them and the Paris mayor to make the case for changing this policy and is 'optimistic for a positive outcome'.

The FBF Communication Development Committee (Codev COM) is now working on its 2022-24 marketing and communication program. Its objectives are to:

- Bring citizens closer to forest and timber industries
- Increase the attractiveness of sector professions and develop the skills needed for current and future jobs
- Position forestry and wood industries as opinion leaders and influencers in discussion and decision-making on climate change and ecological transition
- Develop all uses of French wood and industry capacity to meet increasing demand.

It is planning to 'renew a national multi-media communications campaign', to win the support of other market influencers, target messaging at schools and young people and use social media 'on a daily basis'.

3.6.2.3 Pour moi, c'est le bois

"*Pour moi, c'est le bois*" (For me, it's wood) was described as one of the most extensive, wide-reaching timber promotional campaigns ever seen in Europe during its three-year run from 2017-2020. The French promotion was also among the most generously budgeted, with a total spend of €10 million. It was principally funded by the timber and forestry industries via their main trade body *France Bois Forêt*, with additional support from timber industry and wood-building development organisations CNDB and CODIFAB.

"*Pour moi, c'est le bois*" set itself an ambitious task; to raise the profile of the French timber industry and underline its social, economic, and environmental value, to increase French timber consumption and boost the market share of domestically grown wood. It communicated timber's technical performance, versatility used in construction and manufacturing, its sustainability and wider environmental positives, its aesthetics and benefits in terms of enhancing well-being. It also reached out to a broad audience, including architects, builders and other construction professionals, timber product manufacturers and other end users and the general public.

To do this it used the range of media. It placed thousands of TV and radio adverts, it ran infomercials online and relayed its messaging through advertising and editorial in multi-million copies of trade magazines, home-style and other consumer print publications. In its first phase from 2017 through 2018 it took 1,440 tv ads, achieving 119 million views, 230 radio spots, achieving 58.2 million 'listens', 45-second cinema adverts with an Asterix animated film, reaching 3 million people, 100 print media insertions and online videos, recording a total of 4.6 million hits. In the next phase in 2019 it took 319 commercial spots during the French homestyle and makeover show *La Maison France 5*. These were on air for a total of 30 weeks, reaching 3 million viewers per show.

The campaign also targeted the top French gardening and natural history tv show '*Silence, ça pousse*' (Quiet, it's growing). Profiles of people working in the forestry and timber sectors featured on the programme, which has two million viewers a week. These highlighted not just the variety of jobs available in the industry and its importance as an employer and to the economy, but also the sector's sustainability and broad environmental value.

"*Pour moi, c'est le bois definitely brought the timber industry into the conversation as the sustainable, low carbon material, both among the public and decision makers*," said a French hardwood supplier. So far, no analysis of the impact of the campaign on consumption of French timber and its share of the market has been released.

3.6.2.4 Le Commerce du Bois

Le Commerce du Bois (LCB) is the French timber importing and distribution trade body. Its primary function is representing their interests to policy and business decision makers, but it also has a market communications role, focusing on the technical, environmental, and commercial attractions of members' products and services.

LCB's principal targets are construction and manufacturing professionals, who it aims to persuade to 'put timber in the mix from the start'. They include specifiers and designers, construction project managers and developers. It also directs communications at fitters, carpenters, local authorities, building companies, influencers and journalists, NGOs and others focused on sustainable development.

LCB's promotional material, which includes online and print product guides and manuals, highlight the technical, economic, environmental, and aesthetic qualities of timber and wood products, both as stand-alone solutions and for inclusion in the general construction product mix. It promotes the range of timber, softwood, tropical and temperate hardwoods. Recent focuses have been cladding, wood-based panels, constructional timber and decking. Communications have focused on specification and timber use-class – with the slogan 'the right wood for the right use' – wood's fire resistance, and product installation and maintenance.

LCB also commissions market research on behalf of members, to help steer their product, service and marketing development. One of its latest reports is on the French decking market, which has been a major target of LCB promotions in recent years. This shows French decking sales surging 34% through the pandemic home-improvement boom to reach 16 million m2 in 2021. With growing affinity of consumers with wood products due to their environmental benefits, plus effective marketing, the report predicts this consumption could continue to grow at 10% annually, reaching 25 million m2 in 2025.

3.6.2.5 Adivbois

Adivbois, the French timber building market development and promotional organisation, grew out of the *Nouvelle France Industrielle* programme (NFI), launched in 2015.

The aim of NFI was to shape France's industrial landscape. It identified 34 industrial sectors vital for the country's future economic security and growth and announced a package of support measures to back their fast-track development. The timber industry, and within it the timber construction sector, was one of the 34. It was selected because of its environmental credentials and potential to help France hit emission targets and develop a lower carbon economy. It was also felt to be underperforming relative to its massive raw material resource.

With wider use of French timber and particularly added-value wood products, it was estimated the French forestry and wood industries could generate 40-60,000 new jobs and ultimately eliminate the then national €6 billion timber trade deficit.

Adivbois (the development association for residential timber building) was formed as a public-private enterprise to steer and support expansion and development of the timber construction sector under the auspices of the NFI. Its budget to date has been €8 million, €5.8 million of which came from national development bank BPI (*Banque Publique d'Investissement*). Specifically, it has focused on promoting development of multi-residential, and multi-storey residential building projects using French engineered wood products, such as glulam, cross laminated timber and laminated veneer lumber. Its members include builders, timber suppliers, engineered wood producers, architects, designers, engineers and other construction professionals, furniture and joinery producers, plus representatives of local and central government, academic and research bodies.

The goal was to support construction of 'exemplar' wood buildings across France, which would push the boundaries of modern timber-based construction, act as demonstration projects for the wider building sector and promote the potential and benefits of wood building to regional government, specifiers, developers and ultimately the general public. The projects themselves would effectively become giant advertising billboards for building in wood.

"*Adivbois aims to promote innovation in wooden residential buildings and to offer a resource centre for construction and real estate professionals*," said an Adivbois spokesperson. "*The association's activity is based on coaching companies, prime contractors, industrialists and project management players, in order to develop and master sustainable low-carbon solutions. We also communicate through collective actions and in expert working groups. We produce specialized studies and documents targeted at all players, to help them in carrying out their projects, including those combining wood and other materials*."

Initial expressions of interest to develop buildings under the programme came from every French region and 13 were given the go ahead. The first to complete was in Toulouse, with others in Strasbourg, Nice, Bordeaux, Marne la Vallée and Dijon following.

Adivbois believes its activities have helped local authorities become more timber-building friendly. "*They are expressing a strong desire to integrate more bio-sourced solutions into construction in the next few years*," said the spokesperson, adding that France's RE2020, environmental regulation, which is aimed at increasing the building sector's development and uptake of 'carbon-efficient construction systems' will add to timber buildings' momentum and encourage the industry to build on the work to date of Adivbois.

The organisation is now focused on promoting all the building work, research and development done by members since it started. "We are promoting solutions which have been mastered on projects to encourage use of common techniques to support the industrialisation and democratisation of residential wood building," said the spokesperson.

Adivbois is also pressing for further reform in building regulations to make wood building more practical, including in the field of fire-safety. "*Expected regulatory changes should, we hope, provide necessary clarifications so all designers have a common reference system at a national level*," said the spokesperson.

While the focus of Adivbois has been on multi-dwelling and multi-storey wood building, it maintains its development and communications programme has had 'repercussions in all construction markets'. "*In particular the studies and technical tests undertaken have underlined the advantages of wood building across construction, while the Adivbois programme has also demonstrated what timber can bring to innovative building and to creating a better, healthier living environment*," said the spokesperson.

They added that wood building, at least in part due to Adivbois' activities to inform and inspire the market, is also winning over French consumers. "*The subject has gained real traction with the general public, who welcome these new solution*s," they said. "*Timber-based construction is becoming more popular, for sure*."

3.6.3 Key observations

France has established perhaps one of the strongest institutional frameworks for wood promotion anywhere in the world. French government policy has played an important role in creating this

situation, particularly through the legislative support for the formation and continuous funding of CODIFAB, a structure capable of generating over €15 million per annum in the interests of wood sector development, and the preparation and regular review and rollout of a National Forest and Wood Program. While a large forest resource and industry has meant there has always been strong public interest in this sector in France, wood's strong environmental credentials and potential to help France hit ambitious emission targets has raised this interest to a much higher level.

This support has led to a situation, almost unique anywhere in the world, where the national government has been sufficiently confident of wood's environmental credentials to impose minimum requirements for percentage use in French construction. The government also makes funds available for direct state investment in companies supplying "eco-materials", including timber.

The large financial resources generated for wood promotion in France have allowed campaigns to extend well beyond the business-to-business activities typical in most other countries. In fact it has allowed a media blitz in support of wood use that is almost unprecedented anywhere, including through the establishment of TV channels, adverts on national TV and radio, and in a huge range of trade and design magazines, and very wide-ranging social media output.

Given the high level of ambition for wood use in France, and the public profile, it is perhaps unsurprising that wood promotion goes hand in hand with some equally far-reaching requirements that wood originates from forests meeting specific sustainability requirements. In some instances, these requirements may seem overly restrictive – particularly for high profile and politically sensitive projects like the Olympics. Promotion also tends to be heavily weighted towards domestically produced timber, sometimes almost to the exclusion of imported products. It is no accident that France has been one of the most active EU Member States in support of the EU's draft new law on deforestation-free products.

3.7 Germany

Table 3.7: Germany Statistical Indicators

Population, total (millions)	83.24
Population growth (annual %)	0.2
Surface area (sq. km) (thousands)	357.6
Population density (people per sq. km of land area)	238.3
GNI per capita, Atlas method (current US$)	47,470
Income share held by lowest 20%	..
Life expectancy at birth, total (years)	81
Forest area (sq. km) (thousands)	114.2
Terrestrial and marine protected areas (% of total territorial area)	38.8
Urban population growth (annual %)	0.3
GDP (current US$) (billions)	3,846.41
GDP growth (annual % 2020)	-4.6
Inflation, GDP deflator (annual %)	1.6
Agriculture, forestry, and fishing, value added (% of GDP)	1
Industry (including construction), value added (% of GDP)	27

Source: World Bank – World Development Indicators https://data.worldbank.org/country/germany?view=chart

3.7.1 Relevant background

3.7.1.1 Forest resources

With forest accounting for around 32 percent of land area, Germany is one of the most densely forested countries in Europe. Since 1990, forest area has expanded by more than 200,000 hectares, a 1.7 percent increase. Of the 11.4 million hectares of forest in Germany, 48 percent are private forests. The *Länder* (States) own 29 percent of the forests, 19 percent are communally owned and 4 percent are owned by the Federal government. The regional differences can be considerable. The percentage of private forest ranges from 24% in Hessen to 67 % in Nordrhein-Westfalen.

Deciduous trees grow on 45 percent of the forest area; beech (16 percent) and oak (11 percent) are the most important hardwood species. The proportion of deciduous forest has steadily increased, partly due to public funds being directed more towards deciduous than coniferous forests since the early 1990s. Mixed forests characterize the German forest with a surface area of 76 percent. 85 percent of the younger forests (up to around 20 years old) are the result of natural regeneration.

3.7.1.2 Forest legislation

According to German laws , the competences and procedures for drawing up land use programs and landscape framework plans for land use planning are based on the individual State laws (*Länderkompetenz*). Every ten years a large-scale forest inventory covering the entire federal territory of the Federal Republic of Germany is carried out on a sample basis (Federal Forest Inventory). According to German law, forests are allocated into the following categories, each subject to differing regulatory procedures: the federal forest area (*Staatswald*); the corporate forest area (*Körperschaftswald*); the community forest area (*Gemeinschaftsforsten*); and private forests (*Privatwald*).

According to German law, the forest should be managed properly and sustainably within its intended purpose. The Federal Law provides only for general principles in the harvesting sector, while a specific requirement is mostly to be found in the *Länder* legislation. The Federal Forest Act explicitly stipulates that forest areas may be declared protected (*Schutzwald*), where certain activities may be prohibited, or recreational. For recreational forest, the *Länder* may regulate on the obligation for forest owners to tolerate the construction and maintenance of certain facilities. Private forest owners, in compliance

with the relevant laws and stipulations on sustainability, are allowed to log on their forest property. Forests may only be cleared and converted for another type of land use with the approval of the authority responsible under state law.

The sustainable use and management of the forest is based on its economic benefits and its importance for the environment, in particular for a number of functions, including climate and infrastructure protection. An overarching policy goal is to strike a balance between the general interest of the community and the particular interests of forest owners.

3.7.1.3 Wood industry

Germany has a very large forest products sector. In 2018, Germany's forest and wood products sector generated sales of 187 billion euros and gross value added of around 58 billion euros and employed around 1 million people in 121,000 enterprises. The vast majority of these enterprises are small and medium-sized, but Germany is also host to some of the biggest forest products companies in Europe. Although rising costs of production has meant that Germany has slid down the rankings in recent years, the country is still Europe's largest producer of laminate flooring, second largest producer of both OSB and MDF. Germany is also host to four of the top twenty largest softwood sawmilling companies in Europe, each producing more than 1.5 million m^3 of lumber per year.

3.7.1.4 Wood production and utilisation

While Germany has a large area of well-regulated forest, the country is also characterized by high levels of domestic forest utilization with only limited potential to expand commercial timber harvesting. Wood utilization in Germany rose from about 60 million m3 to 80 million m^3 per year in the 1990s, that then escalated rapidly in the next decade. On average between 2010 and 2019, wood utilisation was around 127 million m^3 per year. This compares to a log harvest volume of around 73 million m3 per year. The difference is made up principally by efficient use of residues such as landscape maintenance material and sawmill by-products and other waste wood. About 90 percent of German demand for industrial wood products is still met by the domestic timber industry and is based on softwood. However, due to constraints on softwood supply, Germany has switched from a being a net exporter to a net importer of softwood. Imports of raw coniferous wood (net) increased from an average of 0.2 million cubic meters between 2003 and 2012 to 5.5 million cubic meters between 2013 and 2017.

Between 2012 and 2017, the combined volume of wood harvest and natural mortality in Germany was only 76% of natural growth, so well below overall increment. While this implies some space for mobilising additional domestic forest resources, there are significant challenges. Much of the increased production would have to come from small private forest holders, few of which depend on forests as a source of income and have little incentive to boost supply. Utilisation of spruce, traditionally the most important commercial species, has exceeded growth and stock has been falling in recent years. Much of the new growth is of hardwood species which, while potentially high value, are more challenging to utilise due to higher levels of diversity and lack of uniformity. Increasing wood production in Germany, while technically possible, would also require a shortening in rotation periods. But this would conflict with government policy favouring close-to-nature forestry.

Extreme weather between 2017 and 2020 has re-emphasised the benefits of a close-to-nature approach to forestry in Germany, as it both promotes forest resilience and enhances carbon storage. During this period, storms and droughts combined with extreme heat encouraged large-scale mass proliferation of bark beetles and other pests in Germany's forests. By the end of the second quarter of 2021, this had resulted in around 187 million cubic meters of damaged wood, and 277,000 hectares

need to be reforested. This damage means that Germany again became a net exporter of raw and residual wood in 2019, although this is likely to be temporary.

3.7.2 Government policy measures related to wood promotion

3.7.2.1 National Forest Strategy and Charter for Wood 2.0

Germany's National Forest Strategy 2020, developed in an open process by interested stakeholders and adopted in 2011, set out forest policy goals and an action plan for the period 2011 to 2020. Action areas included silvicultural improvement, cultivation of fast growing species on agricultural land, measures to encourage greater timber mobilisation, intensification of "wood cascading", increased efficiency of timber use, a movement towards closed cycling in the wood industry chain, and an increase in timber imports.

Recognition of the key role of the forest sector in contributing to wider policy goals in Germany was reinforced and extended in November 2016 when the Federal Government enacted a series of ambitious objectives and measures through the "Charter for Wood 2.0" as part of the nation's Climate Action Plan 2050 announced following the UNFCCC Conference in Paris. The Charter was signed by agricultural ministers of the Federal Government and the federal states (*Länder*) and as a signal of their conviction that "… *sustainable forest management, sustainable wood use and consistently using wood as a substitute for energy-intensive materials that have a harmful CO2 impact can make a significant contribution to reducing greenhouse gas emissions and to mitigating climate change overall, making these factors indispensable for reaching the goals set in the Paris Climate Agreement*." In this resolution, the agricultural ministers also emphasised the significance of sustainable forest management and wood use for strengthening the forestry and wood sector and thereby strengthening rural areas in particular.

The Charter acknowledges that wood is the "*most important renewable resource*" and that "*sustainably produced wood from structurally rich forests has the potential to increasingly replace materials produced on the basis of fossil resources and to conserve energy from finite resources while simultaneously mitigating climate change*".

The Charter is implemented through a dialogue process led by actors from industry, science, and the public sector in six thematic working groups. Strategically, the process is guided by a steering group. Working groups develop measures and recommendations in the following fields of action:

- Using wood in urban and rural construction
- The potential of wood in the bio-economy
- Material and energy efficiency
- Forests and wood as resources
- The forestry & wood cluster
- Forests and wood in society

The Charter has a dedicated website[69] explaining the rationale, providing recommendations for action by the public and private sector, providing news of Charter related activities and projects, reporting on case studies of innovative wood use in Germany, and access to a wide range of guides and promotional materials.

[69] https://www.charta-fuer-holz.de/

In addition to establishing goals and facilitating action, the Charter includes a commitment to regular scientific evaluation of outcomes to allow for continuous improvement in implementation. The evaluation was developed by the *Thuenen Institute* in coordination with the Charter actors and encompasses three elements:

- An outcome-oriented evaluation, which a) employs monitoring indicators to analyse the development of important variables in the Charter's fields of action and b) conducts in-depth analyses to examine the causes of developments.
- A process-oriented evaluation, which a) reflects on results and procedures of the Charter process and b) identifies options for the further development of the process.
- Short analyses of external framework conditions which may prove relevant for the Charter process in the future, e.g. on the level of EU legislation.

An updated National Strategy 2050 was published in 2020 which maintained many of the action points from the previous National Strategy, but which also builds on the Charter by including an even stronger focus on the impacts and policy implications of climate change. Drawing on the scientific evaluation of the Charter by the *Thuenen Institute*, the new Strategy notes that 2.6 billion tons of carbon is currently bound in biomass, dead wood, and soil in German forests and that each year an additional 57 million tons of CO_2 are sequestered in forests and 4.2 million tons of CO_2 in harvested wood products. This leads on to explicit recognition that "*when assessing the greenhouse gas reduction potential, a holistic assessment of the effects of forests, forest management and wood use in relation to carbon storage and the substitution of energy-intensive materials and energy sources with a disadvantageous ecological balance is required. In recent years, this has improved the greenhouse gas balance in Germany by up to 14%. This corresponds to almost 80 percent of road traffic emissions in 2016*".

Action points relevant to sustainable wood promotion in the National Strategy 2050 include:

- Strengthen information, education and knowledge transfer about sustainable forest management and intelligent use of wood in the most diverse areas of application via suitable media in a target group-oriented manner.
- Strengthen the dialogue and increasing R&D in support of Charter for Wood 2.0.
- Increase the proportion of timber used in construction.
- Increase proportion of wood products from sustainable, predominantly domestic forestry.
- Support further development of resource-efficient use of wood, in particular by promoting cascaded use and recycling, for all types of raw wood but particularly hardwood.

3.7.2.2 Forest Climate Fund

The Forest Climate Fund was created in 2013 under the joint direction of the BMELV and the Federal Environment Ministry (BMU) following a decision of the Federal Government to earmark an annual sum of €35 million to maintain and increase the contribution of forests to climate change mitigation. The decision responded to data indicating that German forestry and forest industries prevent emissions of around 127 million tonnes of CO2 per year.

In part the German government's commitment to the fund was a response to an earlier decision, in May 2011 in the wake of the Fukushima disaster, to phase out all nuclear energy production within 11 years. Before the decision, nuclear power accounted for around 20% of national electricity supply. Even without nuclear power, Germany has established far-reaching emission reduction targets during the last decade. An initial target of reducing emissions of greenhouse gases by 40 % by 2020 and at

least 80 % by 2050 (taking 1990 as a base year), was upgraded in November 2016 to cut emissions by at least 55 percent by 2030 on the way to achieving greenhouse gas-neutral by 2050.

The measures supported by the fund are designed to take both ecological and economic aspects into consideration and to achieve the greatest possible benefit in terms of mitigating climate change and adapting forests to the consequences of climate change. Wherever possible, the intention is to harness synergies between climate change mitigation, the preservation of biodiversity and the adaptation of forests to climate change.

Measures are funded in the following priority areas:

- adapting forests to climate change;
- safeguarding carbon storage and increasing the CO2 sequestration of forests;
- increasing storage in wood products and reduction/substitution of CO2 via wood products;
- research and monitoring; and
- information and communication.

Since the launch of the Fund in 2013, around 198 projects have been approved with a total funding volume of around €65.61 million, in practice well below the initial target expenditure. The responsibility for delivering the project was transferred to the Agency for Renewable Resources (FNR) on 1 January 2019. FNR was founded in 1993 by the German Federal Ministry of Food, Agriculture and Consumer Protection. The main responsibilities are to support research and development in the area of renewable resources and to inform the public about current research results, give advice on a range of applications of renewable resources and organise and take part in scientific events. FNR have provide some support to the wood sector for research, a process that started when HAF existed, but which subsequently declined. This may change now that FNR administers the Forest Climate Fund

3.7.3 Private sector promotion campaigns

While Germany has a very large forest industry and wood manufacturing sector, wood marketing activities are highly fragmented. A federal wood marketing fund (*Holzabsatzfonds*) existed prior to 2010. It was very active and well-funded as a result of a mandatory levy (at 0.5% of the product value) raised on sales of logs and timber from forest owners and sawmills. These funds were collected at local state level then managed by the wood industry under supervision from German Ministry of Agriculture. However the right to draw these levies was challenged in the German courts, who ruled the action was not lawful. Therefore the organization folded in 2009.

No national or large inter-sectoral initiative for wood promotion has been launched since. Instead, there are numerous regional and sectoral initiatives promoting the use of timber and timber products or highlighting certain product properties of timber products in Germany. Some of the larger and more active campaigns at national and regional level are summarised in the table below.

Campaign name	Initiative Furnier & Natur (IFN) (Natural Veneer)	Initiative Pro Massivholz	Pro Holz Baden-Württemberg	Pro Holz Bayern (Bavaria)
Website	https://www.furnier.de/en/	https://www.pro-massivholz.de	https://proholzbw.de	https://proholz-bayern.de
Product focus	Wood veneers	Solid wood furniture	All wood types	All wood types. Focus on sustainable forestry.
Budget	Not disclosed	Not disclosed	Not disclosed	€0.4-0.5 million/year
Theme & objectives	Promoting the use of real wood veneers in all decorative and new creative applications.	Promote solid wood furniture for quality and value.	Promoting the use of wood along the supply chain, from forestry to the end user. Focus on sustainable forestry, climate change, sustainable and affordable building. Strengthen the market position of timber and timber products.	Promoting the use of wood in construction. Establishes connection between use of wood in construction and helping mitigate climate change.
Supporters	Veneer producers & trade. German timber trade association and Kölnmesse.	Interest group of eight manufacturers of solid wood furniture	European Regional Development Fund, Federal States of Bavaria/Baden Württemberg, Holzbau Offensive (timber building initiative)	Private forest owners, forest-sector associations and wood processing companies/associations. Bavarian ministry of food, agriculture and forestry
Targets	General public and professional converters e.g. furniture producers, joiners and carpenters	Furniture retailers and end consumers	All industry sectors using timber, general public	All actors along the supply chain.
Messages	Wood veneers are promoted for their beauty and eco-friendliness. Change the perception of veneer from "cheap" to "the world's thinnest solid wood" (valuable, ecofriendly, individual)	Wood furniture is valuable, robust, low-maintenance, durable, beautiful and eco-friendly.	Highlights sustainability aspects of buidling with timber as well as technical proporties of timber as a construction material.	"*Wir bauen auf heimisches Holz*" (we build on local wood) Sustainable forestry and sustainable use of wood helps mitigate climate change.
Plans & activities	Boost veneer sales through strong PR activities including: - Press releases and press trips - Participation in trade shows - Information brochures - Social media campaign "Veneer Stories" Materials are available in German and English language.	Website and PDF booklet provides information on suitable wood species for furniture production, manufacturing processes, design trends and wood furniture maintenance. Press releases on a regular basis.	Improve the image of wood as a construction material through intensive communications. Improve networking and cooperation between forestry and timber industry. Provide information and advice to the public, especially regarding building with timber.	Campaign for use of local timber, regional supply chains.

3.7.4 Key observations

In terms of wood promotion Germany has tended to punch well below its weight. Partly this is due to industry fragmentation. Unlike other European countries, where the private sector has overcome such fragmentation by introducing mandatory levies on industry for market development purposes, similar initiatives have been prevented for legal reasons in Germany. At the same time the unusual supply situation, in which the vast majority of the available commercial softwood production is already utilised, and the focus on developing other non-commercial forest values, has meant that public authorities have attached a lower priority to wood promotion than in some other European countries.

More recently, there have been signs of a change in attitude to wood promotion at a political level, particularly driven by increased recognition of the potential of the forest products sector to help Germany meet ambitious climate mitigation targets. The Charter for Wood 2.0 signed by the agricultural ministers of the German Federal Government and of all the federal states (*Länder*) in November 2016 following the Paris Climate summit signalled a renewed commitment to support increased use of wood in Germany, particularly for long-lived construction products. This commitment is not unconditional being linked with a requirement that wood should be derived from sustainable forests, and a preference where possible for domestic wood, particularly hardwoods, over imports. Nor is there any explicit requirement in public policy, as in France, setting a minimum requirement for timber use in public projects.

However, the Charter for Wood website is now generating a constant stream of news about wood use and provides ready access to guidelines and other promotional materials, and access to annual evaluations of progress in line with the Charter's objectives. The latest 2021 assessment points to some positive trends, notably a consistent rise in timber use for residential building in Germany, from 15% in 2014 to nearly 19% in 2019. But not all trends are positive, partly because of disruption to wood products markets due to recent storm and pest damage which contributed to a reduction in overall efficiency of wood processing and economic output per unit production, for example.

The private sector initiatives, although still constrained by lack of access to a long-term sustainable stream of funding, are now able to exploit the more positive public attitude to timber use in Germany. Interviews with representatives of the leading promotion campaigns for this report highlighted several points:

- Business-to-business (B2B) marketing/promotion and communication in Germany has generally been more productive and cost-effective than business-to-consumer (B2C) marketing.
- For B2B marketing, fact-based communication and transparency are most effective.
- For B2B marketing, a focus on compliance with norms and requirements, especially in the building sector, and the advantages in terms of CO2 emissions/carbon footprint supported by full LCA data, is seen as particularly beneficial.
- While most marketing is still B2B, social media is providing new opportunities for cost-effective and successful end-consumer marketing.
- Unlike for professional audiences, B2C marketing needs to focus on emotionalising wood as a material, both in the context of design, individuality and investing in materials of value and in the thematic context of protecting the environment and reducing the personal carbon footprint.
- But even emotional B2C campaigns must be complemented by factual information, especially regarding climate change and protection of the environment or unique product properties e.g. in timber building.

3.8 Switzerland

Table 3.8: Switzerland Statistical Indicators

Population, total (millions)	8.64
Population growth (annual %)	0.7
Surface area (sq. km) (thousands)	41.3
Population density (people per sq. km of land area)	218.6
GNI per capita, Atlas method (current US$)	82,620
Income share held by lowest 20%	7.5
Life expectancy at birth, total (years)	84
Forest area (sq. km) (thousands)	12.7
Terrestrial and marine protected areas (% of total territorial area)	9.7
Urban population growth (annual %)	0.8
GDP (current US$) (billions)	752.25
GDP growth (annual % 2020)	-2.4
Inflation, GDP deflator (annual %)	-0.5
Agriculture, forestry, and fishing, value added (% of GDP)	1
Industry (including construction), value added (% of GDP)	25

Source: World Bank – World Development Indicators https://data.worldbank.org/country/switzerland?view=chart

3.8.1 Relevant background

The Swiss have a strong cultural attachment to forests and wood, drawing on a very long tradition of sustainable forestry based on community regulated systems of management. For over a century Swiss national forest law has placed considerable emphasis on maintenance of forest, a central principle being “no deforestation without afforestation”. Wood frame building also occupies an important position in the Swiss construction sector. In 2019, the proportion of load-bearing structures made of timber was 15.3% overall but rising to 19.8% for residential buildings with up to two dwellings, 21.4% for education and training buildings and 37.6% for agricultural buildings.

Swiss experience of communal action on forests is now reflected in national policy and legislative frameworks which forge a close link between efficient forest management and wood demand. Amongst European countries, Switzerland is unusual for the extent to which there is coordination of government policy on forests, material procurement, housing, energy, and climate change. There is also co-ordination of wood marketing activities, with close links forged between the co-operative wood marketing activities of Swiss communities, the Swiss Cantons (states) which have primary responsibility for forest law enforcement, and the private sector.

So successful has Switzerland been in co-ordinating domestic timber production and demand, that the country is almost self-sufficient in wood. This is all the more remarkable given the ruggedness of much of Swiss terrain and the fact that Switzerland is surrounded by large timber producing countries. Between 2000 and 2019, Switzerland timber harvest averaged slightly less than five million m3. Around two thirds derived from public forests and one third from private forests. Around 50% of the harvest comprised sawlogs, 10% comprised pulpwood, and the remainder comprised fuelwood. Around 90% of sawlog production comprises softwood and 10% hardwood.

Swiss log imports are low and mills source logs almost exclusively from domestic forests. Swiss sawlog imports are less than 50,000 m^3 per year. In 2019, 1.86 million m3 of sawlogs were processed by 333 sawmills into 1.13 million m^3 of sawn wood. 96% of this was softwood and only 4% hardwood. In the same year, Switzerland imported 306,000 m^3 of sawn softwood and 58,000 m^3 of sawn hardwood. The country exported 201,000 m3 of sawn softwood and 22,000 m3 of sawn hardwood.

In addition to sawn wood, Switzerland produces around 400,000 m^3 of particleboard and 200,000 m^3 of fibre board. Switzerland is a net exporter of these products. Switzerland produces no plywood or OSB and typically imports respectively around 200,000 m^3 and 100,000 m^3 of these products each year.

While Swiss producers maintain their importance in the domestic market, they have faced challenges. Profitability in Swiss forestry enterprises tends to be low and has been hit in recent years as increased storm, drought and pest damage has resulted in a higher proportion of logs being of low quality derived from salvage felling. Private building contractors in Switzerland, as in many other countries, still favour non-wood materials and building methods. Export markets for Swiss wood products have been weakening, notably in Italy which has been an important sales channel for Swiss timber. Swiss sawn softwood producers face increasing competition from German and Austrian glulam manufacturers able to offer strong and stable products at relatively low prices in Switzerland. Another problem is that there is little processing capacity to utilise Switzerland's domestic hardwood resource with the result that much of the hardwood harvest ends up supplying lower value sectors, particularly the growing market for energy wood, rather than potentially higher value construction markets.

3.8.2 Government policy measures related to wood promotion

3.8.2.1 Wood Resource Policy

Switzerland is notable for the high level of government intervention in wood market development. The Federal Office for the Environment (FOEN) is responsible for managing access to Switzerland's natural resources. As such, FOEN sees its role extending into the sustainable and efficient use of wood from native forests. To implement these objectives in a targeted way, FOEN formulates a Wood Resource Policy (WRP), the latest covering the period to 2030.

The revised Forest Act (SR 921), in force since 1 January 2017, provides the legal framework for the WRP. This policy and its implementation are based, in particular, on Art. 34a on the sale and use of wood: "*The Confederation promotes the sale and use of sustainably produced wood, in particular through the support of innovative projects*."

A Wood Action Plan (WAP) is developed and regularly reviewed to facilitate the target-oriented implementation of the WRP. FOEN actively coordinates the WRP with policies in other sectors. The opening section of the WRP clearly sets out how the WRP contributes to Swiss policy objectives in relation to forests, sustainable and regional development, spatial planning, biodiversity, soil, air pollution, landscape and parks, waste and the circular economy, and climate and energy.

The FOEN acts as lead agency for the policy and assumes responsibility for the implementation of the WAP in coordination with the relevant actors. An advisory committee comprising representatives of the Swiss forestry, timber and energy wood industry, the cantons, other federal authorities, environmental organisations, the property sector and communications collaborates on strategic programme committee issues. An expert group supports programme management on project evaluation.

Since 2010, FOEN has earmarked CHF 4 million per annum for implementation of the policy and action plan. This continuing commitment of funds is encouraged by regular evaluations which confirm that the plan is encouraging greater use of timber in construction. Funding by FOEN in support of the plan requires financial contributions of at least 50% by the implementing partners.

The Wood Action Plan sets out priority areas for measures to be supported, the questions to be answered, and the main targets for each measure. Quantifiable indicators are also included to allow consistent evaluation of progress.

Three priority measures for which projects could be submitted during the period 2017 to 2020 were identified: optimised cascade use; climate appropriate building and refurbishment; and communication, knowledge transfer, and cooperation. On the last priority measure, which is most directly relevant to wood promotion, the action plan notes "*The demand for wood from Swiss forests among private building clients is very low. Although institutional clients are showing a growing interest in sustainability, they rarely focus on wood as a building material. Architects, planners, engineers, and the property and finance sector require target-group-specific information. Greater cooperation between science, business and the public sector is considered necessary*".

Examples of projects funded during the period 2017 to 2020 include:

- City of Wood publication and series of events to raise awareness of timber construction among institutional clients/investors.
- WOODVETIA campaign targeting the general public and working with ""an emotional concept in order to make a connection between the forest and the Swiss people""
- Adapting legislation on fire safety to extend use of wood in construction; publication of Lignum Fire Safety documents to communicate new uses of wood.
- Forest and Wood Initiative 4.0 to monitor and support industry in digital transformation.
- BIM Transformation and Parameters project involving 3D modeling and display of product properties and components.
- Two studies on chemical use of wood focussing on 1. Requirements and feasibility of a bioproduct plant and 2. Business models for extracting and adding value to constituents from Swiss wood.
- Project on recycling ash from wood energy production

The latest action plan for the period 2021 to 2026 focuses on two priority measures – "eco-friendly buildings" and "Swiss wood value chains" – and two crosscutting themes – "communication" and "innovation". Projects related to "eco-friendly buildings" are required to pursue two objectives:

- To increase the use of Swiss wood in construction, refurbishment and heating
- To highlight the environmental advantages of wood and wood-based products

Projects related to "Swiss wood value chains" aim to strengthen and develop value-added networks and to develop new markets for Swiss wood. In this context, there is explicit recognition of the benefits of promoting the "cascading approach" to ensure "optimum exploitation of wood as a renewable resource".

3.8.2.2 Federal government support for forest and timber research

The Swiss government is notable for the relatively high level of priority and funding it allocates for forest and timber research. The Foundation for the Promotion of Forest and Timber Research (Fonds zur Förderung der Wald- und Holzforschung - WHFF) has supported projects in the area of "applied forestry and wood research" since 1946[70]. Annually, the WHFF has a total of CHF 770,000 at its disposal.

[70] In 2020, the WHFF which previously administered both Federal and Canton funds in support of forest and timber research was officially dissolved and replaced by another entity – referred to as WHFF-CH - responsible only for disbursing Federal funds. This followed a Swiss Audit Office report in 2017 that had concluded that

The federal government finances CHF 470,000 per year. The cantons support projects worth CHF 300,000 each year. The Swiss National Science Foundation (SNF) also supports research projects on wood and derived timber projects.

An even larger research program on wood was available during the period 2011 to 2017 following authorisation of the Federal Council of the National Research Program (NRP 66) on "Strategies and technologies for the optimised use of the resource wood". This allocated CHF 18 million to provide a "scientific, technical and application-oriented basis for increased use of wood". The program was divided into six thematic modules including: raw wood – availability, procurement policy and processes; life-cycle management of wood-based material flows; material conversion of wood into exploitable chemical substances; energy use of wood; wood as a material for components; and wood as a material for structural framework and buildings. Two new professorships were created at the University of Basel and the Swiss Federal Institute of Technology Zurich (ETHZ) as part of NRP 66.

A report on conclusion of NRP 66 noted that "*the program emphasised the importance of knowledge and technology transfer between research, industry and public authorities, notably by conducting 17 workshops on specific topics. The results have been impressive: intensive knowledge transfer with more than 200 external professionals, the creation of three start-ups, and numerous declarations of intent to continue collaborating in the areas of research and development*"[71].

3.8.2.3 Swiss CO_2 Act

Through the Swiss Federal CO_2 Act, which was passed in 1999, Switzerland first aimed to reduce energy related CO2 emissions by 10% during the period 2008-2012 (as compared with 1990 levels). Since then, the Act has been fully revised several times progressively extending and ratcheting up emission reduction targets. The version currently in force required that emissions be reduced by 20% compared with 1990 level by 2020, and by a further 1.5 per cent annually between 2021 and 2024 compared with 1990 levels. Since January 2008, the Act has imposed a CO_2 tax on fossil fuels (including heating oil & natural gas). From 2014 the tax rate was CHF60 (USD62.7) per tonne of CO2. The tax is not levied on biofuels, including energy wood, and has thereby provided an indirect incentive to increase use of wood for energy in Switzerland. Annual revenue from the tax, estimated to be approximately CHF800m (USD835.8m), is redistributed to taxpayers and companies.

From 2012, in line with Kyoto Protocol commitments, the Act specified that forest management activities and harvested wood products (HWP) will be accounted for in the Swiss national carbon account. A fund was established to develop the necessary capacity and technology and to gather the data to achieve this. This commitment was an important factor encouraging Swiss government support for measures to increase carbon storage in domestic forests and domestically produced wood.

Under the terms of the Act, the Swiss government also analysed the costs of different carbon mitigation options. The results indicated that interventions to reduce energy use in the building sector are likely to be the most efficient and cost-effective. As a result, CHF 300 million from the CO2 tax was earmarked to subsidise carbon mitigation measures in buildings. At least two thirds of this funding was dedicated to a nationally harmonised building refurbishment programme (insulation of roofs, walls, floors and ceilings and replacement of windows). One third was available as matching funding for cantons' efforts to promote renewable energy (including wood-fired heating systems), waste heat utilisation and building services engineering.

WHFF had no legal mandate to distribute both Federal and Canton funds. In practice however, the main research areas and funding principles were unaffected by this change.

[71] https://www.empa.ch/web/s604/nfp66

3.8.2.4 Regulation of Wood placed on the Swiss Market

Between 2012 and 2021, trade in wood products in Switzerland was subject to the Ordinance on the Duty of Declaration for Wood and Harvested Wood Products, partly a response to the EU Timber Regulation (EUTR). The Ordinance was based on the principle of market transparency. It did not contain any restrictions or new border controls but obliged all traders who sell wood products to declare the type of wood used and its country of harvest to the end consumer. The information provided by the declaration was intended to enable consumers to make an informed decision when purchasing a product.

From 2022, a new Ordinance on Placing Timber and Wood Products on the Market was introduced which closely mirrored the requirements of the EUTR, including an equivalent prohibition on the placing of illegally harvested wood on the market and a specification for a due diligence system

3.8.3 Private sector initiatives

3.8.3.1 Lignum Campaign

Switzerland has a large unified national wood promotion campaign. The Lignum campaign brings together 16 associations of the forest and timber industry, 34 regional working groups in the Cantons, 3900 individual members and 450 company members. The campaign's aims are to establish the optimal market conditions for sustainable wood use in Switzerland and to ensure continuous growth in market share for wooden buildings. Lignum has received financial support from the FOEN Wood Action Plan, by the NRP funding of the federal government and the central Swiss cantons and by the agriculture and forest department of the canton of Lucerne. Precise information on the annual budget is not publicly available, however judging by the amount of finance Lignum directs towards technical development projects, funding must be in the seven figure range (Swiss francs).

Lignum undertakes a wide range of promotional activities including: publication of a quarterly bulletin in French and German (*Holzbulletin*/Bulletin Bois) to provide wood-related information to building professionals; active participation in technical committees relating to construction and material use with the objective of ensuring these give appropriate recognition to wood properties; political lobbying both nationally and internationally; preparation of technical documentation (brochures, books); delivery of technical courses and assistance (hotline); participation in trade shows; sponsorship of the Lignum Prize for wooden architecture awarded every 3 years (most recently in 2021); preparation of consumer brochures; and a website providing information for both building professionals and consumers.

Besides these fact-based communications targeting professionals in the building and design sectors, Lignum also organises more emotional marketing campaigns. A recent and very successful example is *Woodvetia* which attempts to build a connection between Swiss wood and the Swiss people. Woodvetia involves an exhibition of 20 life-size wooden statutes of 20 famous Swiss personalities carved from Swiss wood. Each statute is made from a different wood species. The unveiling of the statutes was accompanied by a broad media/social media campaign.

3.8.3.2 Swiss Origin Label

Since September 2011, all wood originating from Swiss forest areas can be marked with the "*Herkunftszeichen Schweizer Holz*" (HSH) label. It is managed by Lignum, the Swiss timber sector marketing organisation, and compliance is monitored by the cantonal forestry sector associations. Its main purpose is to show and prove the Swiss origin of timber products. The intention is to raise awareness of end users that Swiss wood is produced in accordance with strict sustainability

requirements set out in national legislation. It also seeks to exploit (simplistic) consumer perceptions that low transport distance equates to low carbon emissions associated with a product. The HSH guarantees the traceability and documentation of a wood product from its origin in Switzerland to the end user. Products bearing the HSH label may contain up to 20% of wood of foreign origin if it comes from a comparable (low risk) region of origin and is supported by a sustainability certificate or equivalent declaration of origin.

3.8.4 Key observations

Of all European countries, Switzerland may come closest to being a model of the ideal approach to wood promotion. No doubt the framework that has evolved has flaws and in some respects the practice may fall short of the comprehensive plans on paper. However, Switzerland has gone further than most other countries in attempting to develop a framework for wood utilisation and promotion that integrates domestic forest resources and wood supply with the nation's response to related issues such as climate change, biodiversity protection, energy policy, and construction.

In achieving this, Switzerland has been able to build on a long tradition of communal action on forests and local democracy. It has also put the concept of "cascaded" wood utilisation and resource efficiency right at the heart of government policy and taken concrete steps to act upon it. The private sector has also been able to build on a large and unified wood campaign which delivers significant funding not only for promotion, but also for research and development and political lobbying.

An interview with a Swiss marketing expert for the Lignum campaign undertaken for this report emphasised the following key components of sustainable wood promotion campaigns:

- The need for continuity, dependent in turn on a reliable sustained long-term source of funding and requires significant efforts to build a wide and resilient network.
- The need for coordination of marketing measures through an umbrella organisation to minimise contradictions and inconsistency in communication among the different sectors of the wood and forestry industry.
- Where differences of opinion or priorities exist between industry sectors, it is crucial to have in place an institutional framework to discuss these differences and find consensus to speak with one voice in public.
- The need to build trust with specifiers, end-users, and the general public, requiring that communications are science-backed and based on credible technical data.

3.9 United Kingdom

Table 3.9: United Kingdom Statistical Indicators

Population, total (millions)	67.22
Population growth (annual %)	0.6
Surface area (sq. km) (thousands)	243.6
Population density (people per sq. km of land area)	277.8
GNI per capita, Atlas method (current US$)	39,830
Income share held by lowest 20%	6.8
Life expectancy at birth, total (years)	81
Forest area (sq. km) (thousands)	31.9
Terrestrial and marine protected areas (% of total territorial area)	28.8
Urban population growth (annual %)	0.9
GDP (current US$) (billions)	2,759.80
GDP growth (annual % 2020)	-9.4
Inflation, GDP deflator (annual %)	5.3
Agriculture, forestry, and fishing, value added (% of GDP)	1
Industry (including construction), value added (% of GDP)	17

Source: World Bank – World Development Indicators https://data.worldbank.org/country/united-kingdom?view=chart

3.9.1 Relevant background

Compared to other European countries, the UK wood sector has a relatively high level of dependence on imports. UK saw and veneer log production is around 6 million m^3 per annum, consisting of around 99% softwood and only 1% hardwoods. The UK has quite significant MDF and particleboard manufacturing capacity with total production of these products averaging around 3.3 million m3 per year in the last decade. Only a proportion of UK sawlog production is destined for structural timber, much consists of lower grade material used for pallets and fencing. Each year, the UK imports around 20 million m^3 (RWE) of solid timber products, including 13 million m3 from inside the EU and 7 million m^3 from outside the EU. A large proportion of structural grade timber is imported into the UK from Scandinavia and the Baltic States. Appearance grade timber for joinery or furniture manufacture is rarely cut from British-grown softwood trees and the vast majority is therefore imported.

The contrast between the UK wood sector and the EU countries covered in this report is also highlighted by wood balance flow diagrams shown in the Annex. The UK diagram in Annex A.6 reveals that in 2019 total UK wood harvest, including all industrial roundwood and fuelwood, was 6.0 million tonnes (dry weight), overshadowed by imports of 17.0 million tonnes. With exports of only 0.6 million tonnes, apparent consumption totalled 20.8 million tonnes. A feature of the UK wood balance is that nearly half the wood fibre consumed in the country - 9.5 million tonnes - is for energy, largely in the form of pellets of which around 9 million tonnes are imported, mainly from the United States. Policy in the UK is heavily skewed to favour this trade in pellets. To reduce reported carbon emissions, the government has heavily subsidised the conversion of coal-fired power stations to burning of biomass. It has been calculated that the DRAX power company, the largest recipient of this subsidy in the UK, will receive £11 billion in subsidies between 2012 and 2027 for this conversion[72]. The process is driven primarily by the UNFCCC procedures for national carbon accounting, which require that countries report emissions from biomass combustion only in their land-use sectors. Importers of biomass can

[72] https://ember-climate.org/insights/research/subsidies-for-drax-biomass/

therefore treat biomass as carbon neutral as the emissions are accounted for in the exporting country[73].

Relative lack of UK domestic wood supply compared to other European countries has meant that there has been less of a government incentive to actively promote wood products for uses other than energy and less availability of promotional funds from the home-grown industry. Another constraint is that, unlike many other European countries, only a very small proportion of the population owns forest property or is otherwise engaged in forest activity. Although 73% of the UK's woodland resource is privately owned – by individuals, family trusts, charitable trusts or companies - there are only about 40,000 private owners of woodland greater than five hectares, and much comprises smaller neglected areas on mixed estates and farms. The bulk of commercial wood supply is from a small number of larger privately owned estates and from state owned land managed by the Forestry Commission.

As a result government policy in relation to forest products has traditionally focused more on issues surrounding illegal logging and certification of sustainable forestry practices than positive engagement to develop wood markets. There are no central or local government policies in the UK giving explicit preference to wood products, whether or not locally produced. Instead, there is a UK Government Timber Procurement Policy that sets out requirements for all wood purchased in government contracts to comply with a detailed set of criteria to demonstrate it is from a legal and sustainable source. This effectively restricts purchases to wood certified by FSC, PEFC, or *Grown In Britain* (see below), or to FLEGT licensed timber[74].

Some sign of a change in attitude came in 2013 when the UK government issued a new Government Forestry and Woodlands Policy Statement. This drew on the recommendations of the Independent Panel on Forestry (IPF) set up in 2011 following a "public outcry" at the then Government's proposals to privatise 258,000 hectares of state-owned woodland directly managed by the UK Forestry Commission. A key conclusion of the IPF deliberations was that the UK needs to "*grow a new appreciation of woods and forests*". The 2013 Policy Statement explicitly set out to "reinvigorate the woodland economy, bring neglected woodlands back into management, and help create jobs and growth". A major outcome was the "Grown in Britain" (GiB) initiative which has since evolved into a more effective program to promote products certified as derived from UK forests.

More recently, UK policy makers have become more interested in the wider potential of the forest products sector (i.e. other than just as a source of biomass), to help the country meet ambitious climate mitigation targets. In 2020, the Committee on Climate Change (CCC), the official adviser to UK government on climate policy, called for an "urgent" overhaul of the UK's land and agricultural sector to meet the government's legally binding net-zero target by the year 2050. The CCC concluded increasing forest cover to "at least 17%" of the UK's land area, together with improved woodland management, would sequester an additional 14MtCO2e each year. This would require planting of 30,000 hectares annually from 2024. Furthermore, the CCC suggested that an additional annual 14MtCO2e could be displaced elsewhere in the economy using wood harvested in UK forests. At

[73] The London-based think tank Chatham House and the Woodwell Climate Research Center in Massachusetts, formerly the Woods Hole Research Center, have calculated that U.S.-sourced wood pellets burned for energy in the U.K. were responsible for 13 million to 16 million tonnes of carbon dioxide emissions in 2019, almost none of which were included in U.K. official greenhouse gas inventory. If they were, this would have added between 22 and 27 percent to the emissions from U.K. electricity generation, or 2.8 to 3.6 percent of total U.K. greenhouse gas emissions in 2019.

[74] UK government procurement policy is also skewed to favour use of wood for energy which is covered by a different standard – the so called "Timber Standard for Heat and Electricity" (TSHE) - which is more flexible with respect to acceptable certification systems. Specifically, in contrast to the UK Timber Procurement Policy applied to solid timber, TSHE accepts risk based certification procedures so as to accommodate the Sustainable Biomass Program used for the bulk of U.S. origin biomass.

present the UK is falling well short of these targets. Only around 10,000 hectares of new forests were planted per year between 2015 and 2019, while progress to bring more forests into active management has been "painfully slow", according to a recent report by the Royal Forestry Society[75].

A continuing challenge for wood promotion in the UK is that while the country has set an ambitious zero carbon target there is little government guidance as to how it is to be met in the built environment industry. Moreover, to date, policy has focused entirely on operational emissions; emissions resulting from energy consumption in the day-to-day running of a property, like heating. In comparison, "embodied emissions" from the construction process, maintenance, and demolition of buildings, have been ignored. These emissions, which can be most effectively reduced through increased use of timber, are not required by current policy to be assessed or controlled, other than on a voluntary basis. Measures are beginning to be introduced by local authorities and cities, for example the Greater London Authority (GLA) guidance means that all public projects subject to approval by the Mayor of London must undertake whole-life carbon assessments. However, the approach is piecemeal and lack of a national methodology and of freely available assessment tools remains a major constraint.[76]

More positively from the perspective of sustainable wood promotion in the UK, the Grown in Britain initiative is at last gaining traction, while the UK remains a very large consuming market for a wide range of timber products, with the result that it is a focus for wood promotion by external wood suppliers, notably in Scandinavia and North America. Historically the UK's Timber Trade Federation (TTF) has played an important co-ordinating role in wood promotion in the UK. Coordination of the wood promotion function in the UK is set to improve dramatically following the merger in 2021 of the TTF with Timber Research and Development Association (TRADA) to form a new organisation, Timber Development UK (TDUK).

3.9.2 Wood promotion campaigns in the UK

3.9.2.1 Grown in Britain (GiB)

GiB[77] was started in 2013 by forestry, construction, and other business leaders, including Dougal Driver the current CEO. The triggers were twofold. There was the concern at the time over the potential sale of the Public Forest Estate and widespread pressure for it to be safeguarded. GiB's founders also wanted to see more UK woodland brought into productive management, given that large areas were neglected, while the country then imported over £7 billion of timber.

GiB's main role today is to certify products from forests that are "*actively managed in accordance with the UK Forestry Standard (UKFS)*". The UKFS is the government's standard for sustainable forest management across the UK which applies to all woodland, regardless of who owns or manages it. All forest owners must demonstrate compliance to the standard - including conditions for forest planning, stakeholder consultation, and restocking - when applying for a felling license, which is mandatory for all harvesting of trees in the UK, or when applying for forest or woodland grants.

[75] Bringing woodland into management: the missed opportunities in England and Wales, Royal Forestry Society, January 2019, www.rfs.org.uk

[76] Building to net zero: costing carbon in construction, House of Commons Environment Audit Committee, First Report of Session 2022–23, https://publications.parliament.uk/pa/cm5803/cmselect/cmenvaud/103/report.html#:~:text=There%20is%20no%20Government%20policy,emissions%20within%20the%20built%20environment.

[77] https://www.growninbritain.org/

However, due to fragmentation of ownership and generally low returns from forest management, a significant proportion of UK woodland area is neglected and not subject to any form of management[78]. To incentivise forest owners to achieve GiB certification and bring more areas into active management, the UK Government Timber Procurement Policy explicitly recognizes GiB certification as compliant with the criteria for legal and sustainable timber, effectively equivalent to FSC or PEFC certification which are also judged to have met the criteria.

GiB states that its objective is not to compete with, but to complement international certification frameworks such as FSC and PEFC. According to the GiB website, "*there will always be the need for international certification schemes, but the UK's woods and forests have their own unique requirements and our certification is tailored specifically to address them. Only the Grown in Britain logo guarantees timber has been grown legally in the UK, in accordance with the UK Government Timber Procurement Policy and conforming to the UK Forestry Standard*".

GiB now certifies 300,000ha of forest a year and 14% of all forest products sold in the UK via certification of primary and secondary processors of timber including sawmills, wood fuel, furniture and other wood product makers.

GiB also has an R&D programme to develop application of UK forest products, working with hardwood and softwood suppliers, construction companies, universities, tool manufacturers, sector foundations and landowners. Recent projects include assessment of sweet chestnut's suitability for use in structural insulated panels, trialling of ash for tool handles and development of the use of thermal modification with British hardwood, leading recently to the first UK company that is using the process commercially.

GiB highlights that its objectives and activities contribute to the UK's drive to greater sustainability and a net-zero economy. It promotes creation of new woodland and bringing of established woodlands into management, emphasising that these need to be done strategically and to ensure maximal benefits for all stakeholders. It highlights too that buying local and reducing 'unnecessary' imports cuts timber miles and carbon emissions. GiB's revenue comes from two main sources; certification fees and funders of its R&D.

For communications GiB primarily uses social media, which it sees as its most impactful form of engagement into the future. The highlight of its year in terms of outreach is Grown in Britain Week. This celebrates home-grown timber in all its forms. It's backed by an extensive social media campaign and provides a nationwide platform for GiB certificate holders to promote their businesses and products through everything from presentations and special offers to woodland walks. It also includes the annual Forestry Conference, which targets a landowner and the timber trade audience and is addressed by public and industry figures. GiB runs stand-alone webinars and presentations too and works with Ecosystems Knowledge Network to mount the annual *Accelerating Woodland Creation and Management* conference.

Timber producer, buyer and end-user businesses are GiB's main communications targets, but it sees its campaigning becoming more consumer-facing as more GiB-certified homewares become available. It maintains it has won the trust of government, private sector and NGOs and is now advising organisations on developing a 'GiB-certified timber first' procurement policy. Through its 'I AM grown

[78] Specifically in England, in 2020, 41% (536,000 has) of woodland area was not actively managed according to Forestry Commission data

in Britain' social media campaign it also highlights how buying UK timber supports local jobs and economies.

It sees the timber business in the UK increasingly moving to 'shorter more robust' supply chains, making its role bringing UK timber supplier and buyers together and developing wider applications for UK-grown timber ever more important.

Mr Driver sees Grown in Britain becoming more of a household name as the number of certified GiB products grows, with its brand increasingly sought after by 'conscientious consumers'. The campaign, he adds, can also only see use of UK-grown timber rising.

"*Public interest in sustainability is high and set to increase; the percentage of woodland cover and of woods under management in the UK is increasing and will continue to do so, and imports are facing more and more challenges*," he says. "*There are many reasons why homegrown timber will become more widely utilised, and we will continue to drive that transition, while ensuring natural British resources are used responsibly and sustainably*."

3.9.2.2 Wood for Good (WfG)

The UK timber marketing programme Wood for Good was launched in 2000, making it one of the longest-established timber promotional campaigns. It was founded by the UK Confederation of Forest Industries (Confor) and Swedish Wood, the marketing arm of the Swedish Forest Industries Federation. The stated aim was to create a single UK campaign for imported and UK-grown timber. Today the two founding organisations continue to be Wood for Good's key funders. It is also backed by larger businesses, trade bodies and public sector supporters such as sawmillers BSW and James Jones, Timber Development UK and Scottish Forestry. It says its support base continues to grow and diversify, with backers now including organisations elsewhere in Europe and recently the PEFC became a supporter.

Wood for Good's budget is described by director Sarah Virgo as 'modest', averaging in the low six figures in pounds per annum, but she maintains this increases focus and inspires creativity. She said the campaign consistently out-performs targets and increases its reach and visibility each year. Its website views grow at 20% annually and its PR is claimed to reach millions among its key targets in the design and construction sectors; architects and other specifiers, engineers, interior designers and building contractors.

Wood for Good promotes the technical performance and aesthetic appeal of wood but has primarily concentrated its messaging on the low carbon and wider environmental benefits of using more timber, principally in the construction sector, and it believes this consistent focus has increased its impact. Today, it believes, it's even more critical to highlight these aspects of wood, as the need to cut carbon emissions generally and specifically to decarbonize the built environment, one of the main sources of human activity-generated CO_2, becomes ever more critical and widely appreciated.

At the same time it is responding to latest thinking and developments in tackling the climate crisis, with its messaging underlining wood's potential to be among the prime construction and manufacturing materials as the world moves to a circular bioeconomic model. It is also highlighting what many see as the increasingly scientifically validated mental and physical health benefits of living with wood, tapping into the ever greater construction sector and consumer concern with well-being.

Wood for Good communicates largely through digital channels; its website, online newsletters and social media. It also uses the lead UK timber and building sector trade media and says it further

extends its reach by encouraging supporters to relay its messaging to their customers via their own communications channels.

Its latest project is the ongoing *Wood CO2ts Less* ("wood costs less") campaign. Its aim is to 'break down the carbon [and well-being] story around wood into simple facts';

- Using sustainable timber helps mitigate climate change by capturing CO_2
- Wood is a key material for building the circular bioeconomy, renewable, repairable and recyclable
- Wood use results in biophilic positives – used in the built environment, it's good for our health.

Wood CO2ts less has had a significant impact, said Ms Virgo. 50,000 people visited the Wood for Good website and the campaign got 100 media mentions in its first six months. Website visitor numbers have also continued to rise since the campaign launch. Importantly it has had strong buy-in too from construction professionals, enabling Wood for Good to develop a network of timber ambassadors in architectural and engineering sectors helping generate peer to peer communication of the benefits of using more wood.

Wood for Good continues to develop. In its latest phase it is responding to increasing construction sector conversation about circularity, developing a new campaign about timber's inherent circular properties. However, the campaign's core message will be fundamentally unchanged:

"*The strongest arguments in favour of using more wood is simply that wood is good – it's good for the environment, for the planet, for occupants, for workers*," said Ms Virgo. "*There is no other building material that has the same range and capabilities that is naturally renewable. There is no other material that literally grows on trees*."

3.9.2.3 Timber Development UK

Timber Development UK is a new force in timber communication, education, promotion and market development in the UK. It was formed in 2021 from the merger of the Timber Trade Federation, representative of the UK timber production, importing and distribution sectors, and the Timber Research and Development Association (TRADA), supplier of technical support to the timber industry and of information, guidance and education on timber performance and applications to timber specifiers and end users. The combined organisation has a seven-figure budget and a membership of 1,800 businesses. The latter range from sawmillers, and timber merchants, to manufacturers, architects, engineers, designers, academic and other research professionals.

The rationale for bringing these two bodies together as TDUK was to better represent the wider timber sector and create an organisation better able to act as a communication channel between timber supplier, specifier and end user. It was also a response to a growing international trend of timber companies diversifying into businesses further along the supply chain. This, says TDUK, brings them more into contact with construction and manufacturing industry professionals, such as architects, engineers and designers and demands that they have a better understanding of their requirements. At the same time, it maintains, specifiers and end users are increasingly focused on the operation of product and materials supply chains, with a particular interest in sustainability chain of custody and carbon and wider environmental profile of goods from source to site. Being an organisation with membership coverage from sawmill to specifier, TDUK says, uniquely equips it to provide supply chain news and information and a channel for 'two-way' dialogue between different points in the chain. The overall goal is to make buyers, specifiers and end -users confident and comfortable in choosing timber,

to strengthen suppliers' understanding of customer requirements and to continue wood's development as a mainstream manufacturing and construction material.

According to Chief Executive, David Hopkins, TDUK's wider strategy to promote timber use and support market development has two principal focuses; information and inspiration.

Firstly it is building significantly on TRADA's heritage as the UK's lead provider of technical support and data for timber specification and use. It has entered a partnership with Edinburgh Napier University's Centre for Timber Engineering to develop the TDUK Knowledge Library, an extensive online and print resource covering the range of timber topics from design, engineering and construction principles to environmental issues.

Working with Sweden's main timber marketing and communications body Swedish Wood, TDUK is also tackling a key area of concern about using wood in construction and interiors, fire risk. Together with independent, external experts it is developing a central hub of information on all aspects of wood design and fire safety.

To coincide with COP26, TDUK worked with partners worldwide to mount the World of Wood Festival focused on publicizing developments in timber legality and sustainability assurance and the potential of wood use to mitigate climate change. World of Wood is now being developed as a platform for international exchange and information on these topics.

Also vital for market development, believes TDUK, is building expertise in timber's specification and use across the supply chain. It is extending TRADA's university liaison programme to help develop their courses, and providing training programmes for timber suppliers, specifiers and end users. It will also soon announce a partnership with a new engineering institute to support development of its advanced timber technology curriculum. In addition it is working with Swedish Wood-backed UK marketing campaign Wood for Good to promote development of timber Environmental Product Declarations and use of life cycle analysis. Again, says TDUK, it's about boosting confidence and assurance in timber use. To the same end it is also developing a net-zero roadmap for the UK timber sector.

TDUK's activities to inspire the wood market growth include publications featuring highly visual case studies of latest applications and interviews with end users and specifiers. One of the most effective ways to communicate with the latter, it maintains, is through peer to peer knowledge and experience exchange. So it also runs numerous webinars, presentations and discussions with architects, engineers, designers and manufacturers as speakers, talking about their use of timber. These are also seen as ideal opportunities for the timber sector to listen to its customer base and learn about what they're doing with timber and where they want to take it in the future.

TDUK's other vehicle for inspiring timber use is the Wood Awards. Run in association with the UK Carpenters Company and other sponsors, this recognises achievement in timber construction and interiors, furniture and other products. It is now regarded as one of the UK's prime building and product design competitions, attracting up to 200 entries annually, including from the big names in architecture and furniture design and manufacture. It is judged by an independent panel of construction and design professionals and, once more, says TDUK, is about peer to peer affirmation of the potential of timber, as well as highlighting its cutting edge application. In 2022, TDUK is also launching a Wood Awards Exhibition, featuring displays on the entries, which will be open to the public as well as the timber trade and building and design professionals.

3.9.3 Key observations

In the past UK wood promotion activity has lacked coherence and continuity, hampered by the lack of a large homegrown forest resource, domestic forest industry, and strong wood culture. Even now the UK government, while heavily subsidising use of wood for biomass, has not developed any formal policies that directly favour solid wood products, nor even to give credit for their embodied carbon. In fact, a strong preference in the public sector for wood that is certified sustainable, without any equivalent requirements being imposed on alternative materials, may have worsened market conditions for wood products. The leading wood promotion campaign, Wood for Good, boasts a budget of no more than the low six figure range, small for a country with a population of nearly 70 million, and a fraction of the resources devoted to wood promotion in France, for example. The Grown in Britain campaign, while providing the UK domestic forest sector with a larger voice than in the past, boosted by the carbon message, is also constrained by lack of funds. Part of the GiB messaging also relies on a critique of the UK's reliance on imports for timber supplies, which may undermine efforts to grow the overall size of the wood market.

Unsurprisingly, the position of wood in key UK end use sectors has remained quite fragile. Regular and consistent data on the proportion of new build with timber frame no longer seems to be available in the UK, but reports from the NHBC, the UK's leading provider of warranty and insurance for new homes, suggests that in 2018/19 only around 16% of new homes in the UK were timber framed. This compares to NHBC figures a decade before when over 25% were timber frame. Timber frame seems to have lost share to more traditional construction methods, notably cavity masonry construction which in the latest available statistics accounted for about 75% of new homes in the UK. In joinery applications, considerable efforts to develop more sophisticated products with long-life guarantees using engineered wood, often in combination with metals and other materials, has helped to stabilise timber's share, but there is no clear evidence of any real breakthrough in terms of market growth.

However, there are positive trends. The *Wood for Good* campaign has been a continuous presence in the UK now for the last 20 years, and *The Wood Awards* have become an increasingly high profile date in the U.K. calendar. Boosted particularly by some very high profile design-led marketing by the *American Hardwood Export Council* – which has a very active marketing team based in London – the profile of wood in the architectural and wider design community in the UK has been rising and there is a growing appreciation of the technical, aesthetic, and environmental benefits of timber. U.K. policy makers attitudes to timber are still relatively unsophisticated overall, often focused on simplistic notions about the benefits of tree planting and looking for shortcuts to achieve ambitious zero-carbon goals by burning wood. However the UK's Committee on Climate Change is now more ready to acknowledge the benefits of using harvested wood products in the building sector. The prospects for the UK government to give greater recognition of the embodied carbon and environmental benefits of timber are improving. Particularly now with the emergence of Timber Development UK, an organisation that should be able to bring greater financial resources and technical capacity to bear on the issue. The UK has also been more active than any other European country in market development of FLEGT-licensed wood products, a sign of a relatively high degree of openness to imports and recognition of the benefits of national forest programs in tropical timber producing countries.

4 Conclusion

4.1 No single “best approach” to promotion

This report has highlighted the wide variety of activities both by the public and private sectors in the U.S. and Europe contributing to the development of markets for sustainable wood products. A key lesson from this review is that there is no single “best approach” and that activities must be tailored according to specific circumstances; the specific products involved, supply situation, level of forest owner and industry consolidation, the key targets, cultural preferences, existing market demand, major competitors, prevailing political situation, and access to funding. The extent to which international programs like French Timber and Swedish Wood have to adjust promotion activities to suit different markets, even when promoting equivalent products, highlights the need for a flexible approach.

4.2 Cost-effectiveness of promotion activities

On the question of funding, another observation is that in practice it is not possible to provide specifics on the cost-effectiveness of different promotion actions, except in the broadest of terms. Despite interviewing representatives of a wide range of wood promotion campaigns, only a few were willing to provide information on the total budget available, and none provided details of expenditure on specific activities. Even if this information were available, it is questionable whether reliable conclusions could be drawn with regard to actual impacts in terms of increased turnover or market share for the products involved. This is partly because there is very little data available on the share of different materials for various applications either in the United States or in Europe.

There is also the question of attribution; if there is a rise in share, to what extent is this due to specific wood marketing campaigns or to other factors? In the construction sector, for example, architects and building contractors, when asked about the reasons for their rising interest in timber products, tend to attribute the trend to immediate on-site factors such as speed and ease of construction, or to price and availability of the material. Promotion activities – to increase awareness of timber, provide training and guidance on its application, to undertake product testing in accordance with standards, and to influence the content of those standards – will have been crucial pre-requisites for their increased use of wood. But separating out which specific promotion activities were most effective, and how important they were compared to other drivers of demand, is not possible. It may not even be particularly useful, given that promotion campaigns come as a package developed and adapted according to specific circumstances.

Having said that, this review of wood promotion campaigns indicates that effective campaigns do not need to be particularly expensive, at least not relative to the overall level of turnover of the sectors concerned or the likely benefits to be derived. Even the largest campaigns described in this report have an annual budget in the low seven figure range (in US$ terms), a figure which can be readily raised through a levy which is a tiny fraction (well below 0.5%) of turnover. Continuity and collective commitment by the public and private sector, allowing the evolution and continuous development of campaigns that exactly match specific market needs, and building capacity including a strong cadre of committed marketing experts, appear to be more important than the absolute level of funds.

4.3 Factors contributing to successful promotion

The review identifies a number of other general principles, identified below, which have contributed to successful campaigns in the United States and Europe and which are likely to be universally relevant.

Get the policy environment right

Promotion is only one of the key ingredients to successfully market a product or material. Often it can be the vital element of the communication process that helps tip the balance and provide greater awareness. But good promotion is also about timing, the conditions need to be right for the messages to be most effective. Government policy plays a critical role in establishing these framework conditions. The most successful marketing campaigns operate in countries – such as Switzerland - where there has been a concerted effort to develop a framework for wood utilisation that integrates domestic forest resources and wood supply with the nation's response to related issues such as climate change, biodiversity protection, rural development, energy policy, and construction. In contrast, promotion struggles to have an impact in those countries where this policy consistency is lacking – for example in the UK where tough procurement standards for wood are not necessarily matched by equivalent sourcing requirements for non-wood (typically non-renewable) materials and where embodied carbon is not credited in green building systems.

Ensure promotion is aligned with supply

Great public relations and branding can be easily wasted if industry is not ready to deliver the products and respond quickly. A key component of successful promotion in both the United States and Europe has been a concerted effort to mobilise wood from smaller non-industrial forest owners, both through extension activities to promote active forest management and research and development to improve processing efficiency and develop new applications of the products the forest is able to supply. Equally, those engaged in wood promotion need to have a clear understanding of supply and technical characteristics of the products being marketed and of appropriate applications.

Build resilient networks

Fragmentation is frequently cited as an obstacle to effective promotion in the wood sector, particularly in relation to competing materials and product industries that are often less fragmented, better financed and organised for delivering generic marketing messages and lobbying for policy change. However, some of the promotion initiatives reviewed in this report – such as Lignum in Switzerland, CODIFAB in France, and some state networks in the U.S. – show that this fragmentation can be overcome through development of large and resilient networks. In fact, fragmentation can be turned into a strength as the vast numbers of individuals involved in some of these networks are a major lobbying voice and source of creativity in their own right. In the successful cases reviewed here, direct government support, both financial and through legislative measures, was important in building the networks and overcoming the challenges due to competing private sector sectors.

Resolve differences and identify common ground

A key constraint for effective wood market development has been a lack of cohesion amongst wood promotion organisations, and a lack of trust between groups that inhibits them from pooling resources and finding ways to work more closely together in a unified way. Strong single voices with a common message are much more effective. In the wood sector, it is not uncommon for there to be tension between homegrown and imported wood interests, with contradictory messaging undermining the promotion efforts of both sides. An important part of building effective promotion campaigns is to resolve these differences as far as possible, to encourage trust and pooling of resources. Wood industry sectors need to recognise that the main competitors come from non-wood materials, and that there is common ground when promoting sustainable wood of all types from all sources. Again,

the public sector can facilitate this process, both directly through support for the formation of networks, and indirectly by establishing inclusive and equitable procurement standards.

Ensure strong public-private partnership

Fragmentation and competing interests mean that promotion undertaken exclusively by the private sector can be inconsistent and uncoordinated. In extreme cases, where industry is fragmented, there may be no effective promotion at all and little or no investment in research required to identify and develop new products and markets. Equally, promotion implemented and guided exclusively by the public sector can suffer from lack of genuine insights into the product types available, the technical performance of these products, and the key markets. The most effective wood promotion campaigns forge close linkages between the public and private sector, the former providing grants to the private sector or developing cost sharing agreements for promotional activities.

Leverage independent forest certification & verification

Requiring that wood is subject to some form of independent verification of sustainable forest management at source has become a key component of sustainable wood promotion in both the United States and Europe. Independent verification of sustainable forestry has proven important for building trust with both business clients and consumers and has also helped to simplify the often complex messaging around sustainable forestry. In both regions, independent certification has also to varying degrees been integrated into the wider regulatory framework for forests. This is particularly true of the SFI in the United States which has involved creation of state implementation committees engaged in wider activities to extend the practice of certification to smaller operators. Equally, it is critical to ensure that requirements for independent verification imposed on wood suppliers are equitable and do not create technical barriers for specific forest operators, particularly smallholders. If they do, then these requirements may do more to limit than to expand market access for genuinely sustainable wood products. Wood promotion campaigns need to play an active role to encourage innovation in forest certification, for example by ensuring target markets recognise new forms of forest certification specifically adapted to smallholders, for example risk-based jurisdictional and landscape verification procedures.

Provide public support for science and innovation

The comparatively high level of industry fragmentation has contributed to generally low capacity for research and innovation in the private timber products sector. There is a sharp contrast here between the wood products sector and other materials supplying sectors – such as plastics and steel – which have a much greater access to R&D funding. Funding for R&D in the forest products sector, particularly to develop new products from lesser utilised species, lower grade and small dimension wood, is a crucial component of wood market development.

Whenever possible generate funds for promotion through industry levies

Some of largest wood promotion campaigns in this review – such as the American Softwood Lumber Board and CODIFAB in France - have benefitted from consistent and continuous funding derived from mandatory levies imposed on the private sector. There's an important role for the public sector to reach agreement with the private sector and establish a legislative framework for implementation of these funding mechanisms.

Leverage high level of political and consumer concern for climate change

The high level of political and consumer concern over climate change, now manifested in highly ambitious zero-carbon commitments, particularly in Europe, has offered a unique opportunity for wood market promotion. It is contributing to reappraisal of wood's environmental credentials and driving strong demand for green building. A focus on energy-efficient construction and refurbishment

play to wood's natural qualities as a thermal insulator. Even larger market benefits for wood accrue as building standards take more account of embodied carbon alongside operational emissions. This is particularly true now that UNFCCC procedures for national carbon accounts allow recognition of carbon storage in Harvested Wood Products. Wood marketing experts interviewed for this report frequently cited the carbon message having particularly strong traction with policy makers, building professionals and consumers.

Back claims with science

A key message of interviews with wood marketing experts for this report was the emphasis placed on ensuring promotion messages are fully supported by independent and unbiased scientific research. Underlying this is a strong belief that the wood sector has nothing to hide, that wood's technical, environmental, and social credentials speak for themselves, and that ultimately wood benefits more than other materials in the marketplace by taking the high ground on data transparency. In the same way, wood marketing experts are often the first to emphasise that wood products need no special treatment in product environmental standards imposed by procurement officials, green building initiatives, and large buyers. Rather they need a level playing field best delivered by basing environmental standards on scientific life cycle analysis.

Actively engage in standards setting

Active engagement in standards development processes is sometimes a neglected aspect of wood promotion, partly due to the expense and technical knowledge and capacity required. However, it is becoming increasingly critical both to develop applications and expand share in markets requiring high levels of technical performance, such as the structural sector, and to overcome widespread misconceptions about wood, for example in relation to fire risk, durability, and environmental impacts.

Know your market and target campaigns appropriately

Regular and accurate analysis of market trends is an essential component of effective wood promotion, both to ensure that messaging and communication channels are appropriately targeted, and to improve monitoring of the impact of market development programs and activities. Market monitoring is often most effective when carried out cooperatively by the public and private sector. The former can provide statistics and funds, perhaps by integrating the market monitoring function into national wood development programs (such as the Chart for Wood 2.0 in Germany). Through regular interviews and other surveys (for example to prepare business confidence indices), the private sector can provide regular insights into the changing market environment and help identify and prioritise business opportunities and constraints.

Focus on education and training

Far-reaching efforts to engage target audiences directly in education and training programs are a key feature of nearly all the wood promotion campaigns reviewed in this report. Establishing deep knowledge and enthusiasm for forest products, particularly in the early years of training of building and design professionals, but also through continuous professional development programs, will have a lasting impact on demand for these products. Such activity has been a particularly high priority in Europe where wood construction techniques have not featured strongly in architectural and engineering school syllabuses. Equally, wood industry professionals can themselves benefit significantly from regular training in communication and marketing.

Identify and inspire influencers

Identifying and directly targeting key influencers – such as business leaders and high-profile architects and designers – has become an increasingly prominent feature of modern creative wood marketing campaigns. Finding and enthusing prominent – and independent - individuals to convey positive

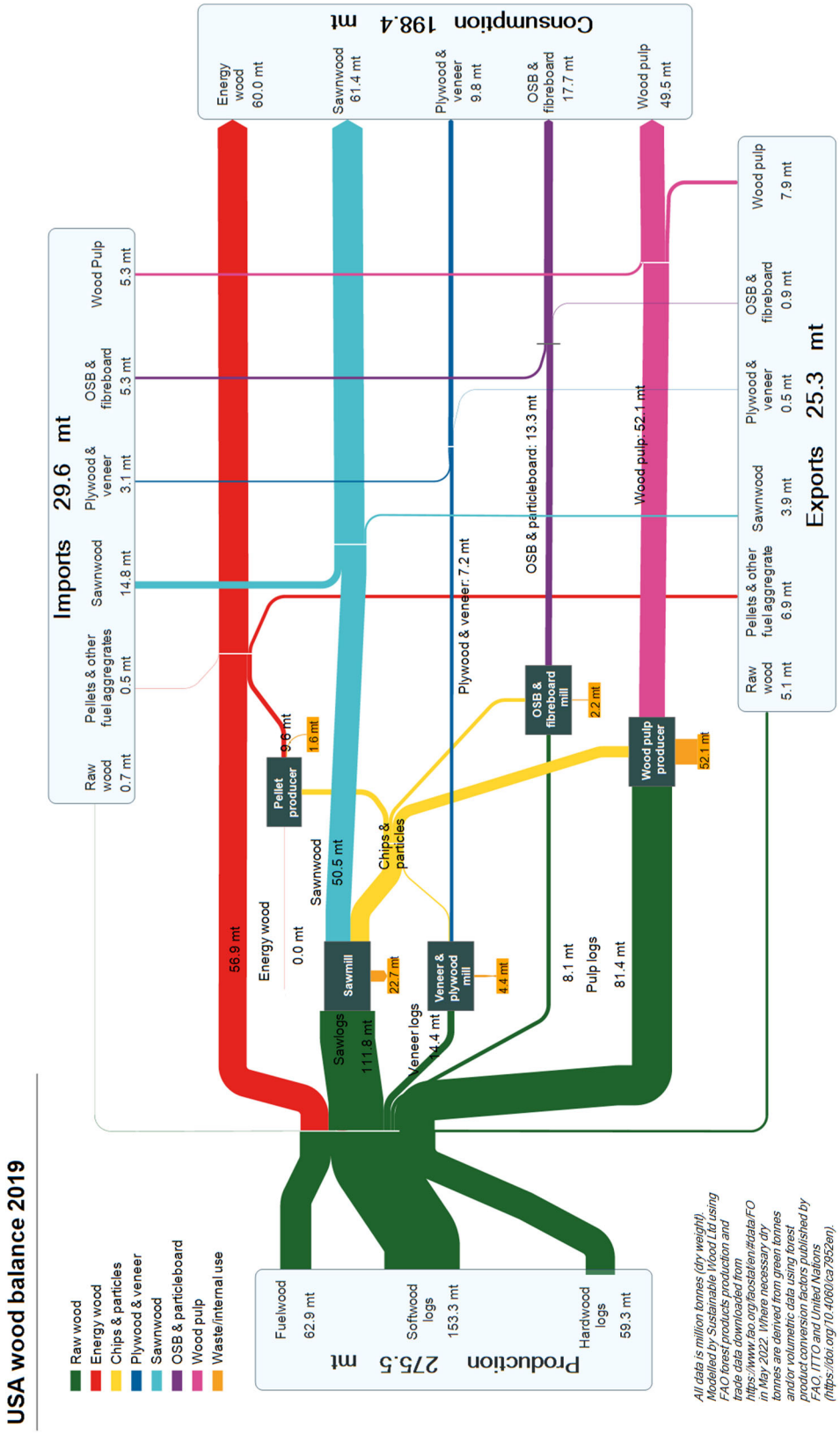
messages about wood is often a far more efficient and effective means of reaching a large audience than more traditional marketing channels. Engagement with key influences can be facilitated through annual Awards for wood buildings and furniture, such as the Wood Awards in UK, and arranging annual festivals. The New European Bauhaus and associated Wood4Bauhaus campaign, is a particularly good illustration of a joint public-private partnership in support of creative wood market development.

Invest in social media to reduce costs and extend reach to consumers

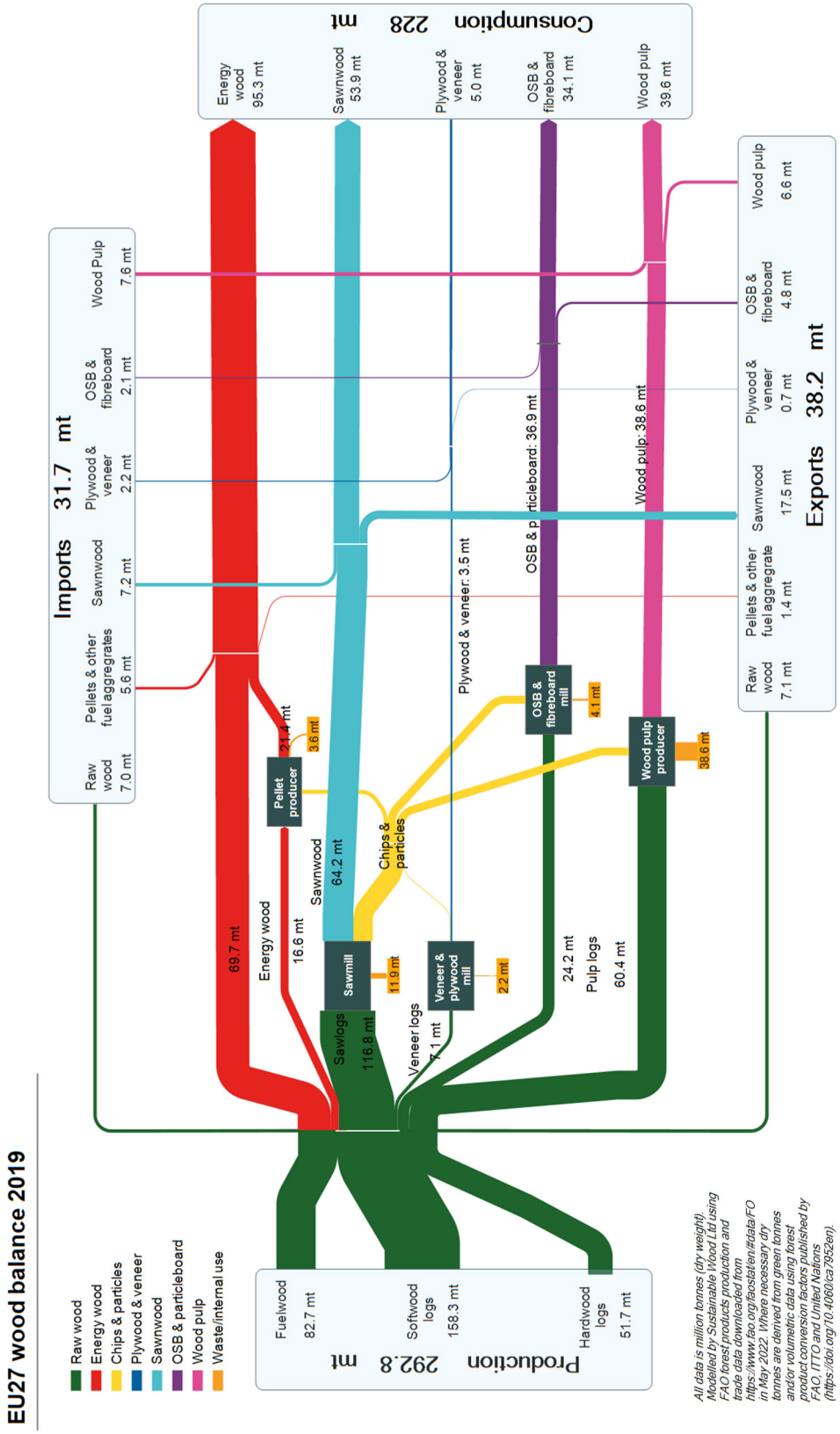
High cost is frequently cited by wood marketing experts as a key reason for wood promotion campaigns to focus on B2B communication rather than large consumer campaigns. This remains a legitimate concern and in practice for most campaigns with limited funds a focus on B2B will be more cost-effective. However, the massive development of social media in recent years is opening up new opportunities for larger consumer campaigns to be delivered at much lower cost. Acquiring and developing social media skills is increasingly seen as an essential requirement for any wood promotion campaign. Some wood promotion campaigns – for example UK Grown in Britain – are now almost entirely reliant on social media as their principal communication channel.

Annex A: Country Wood Balance

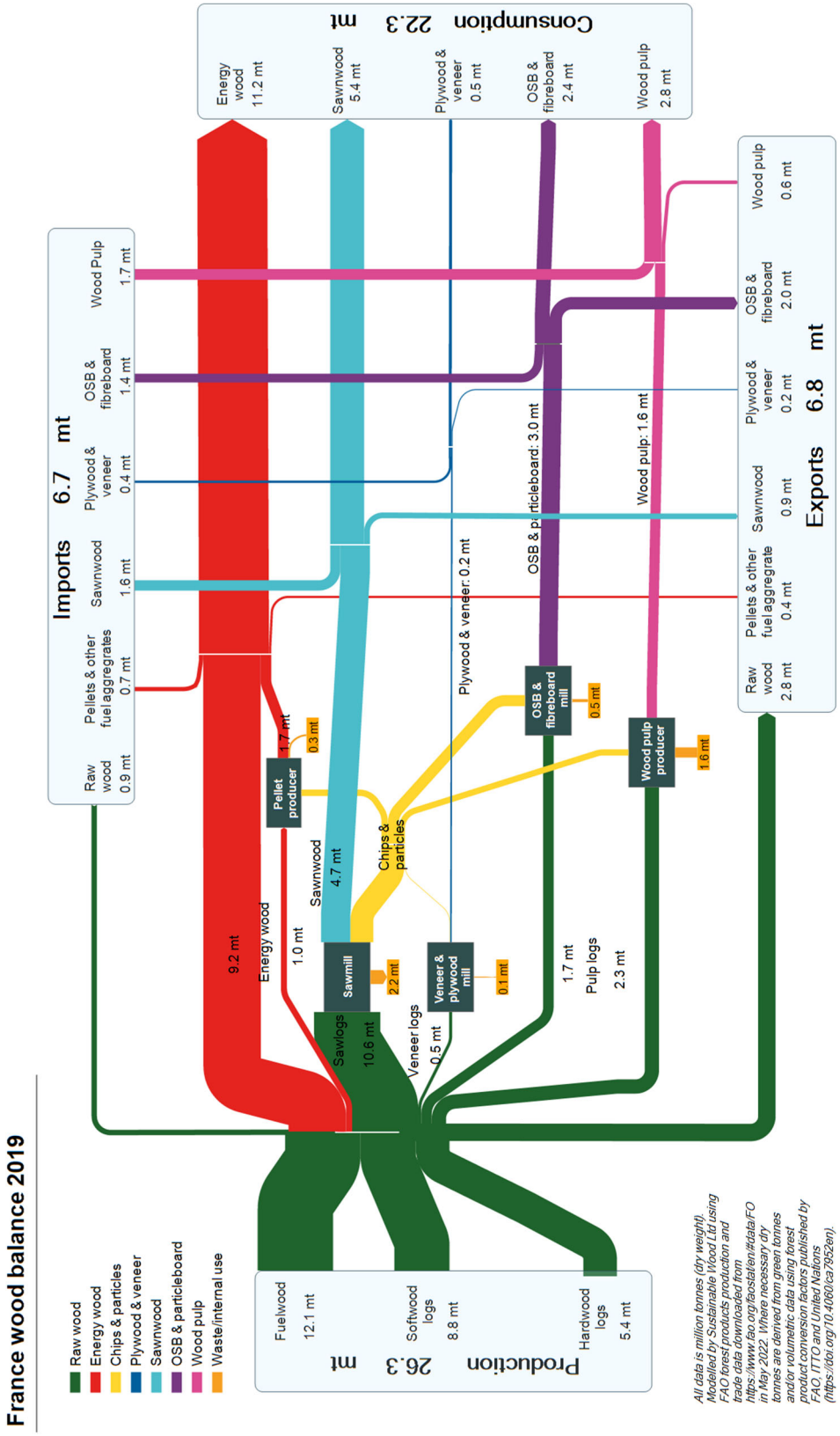
A.1 USA



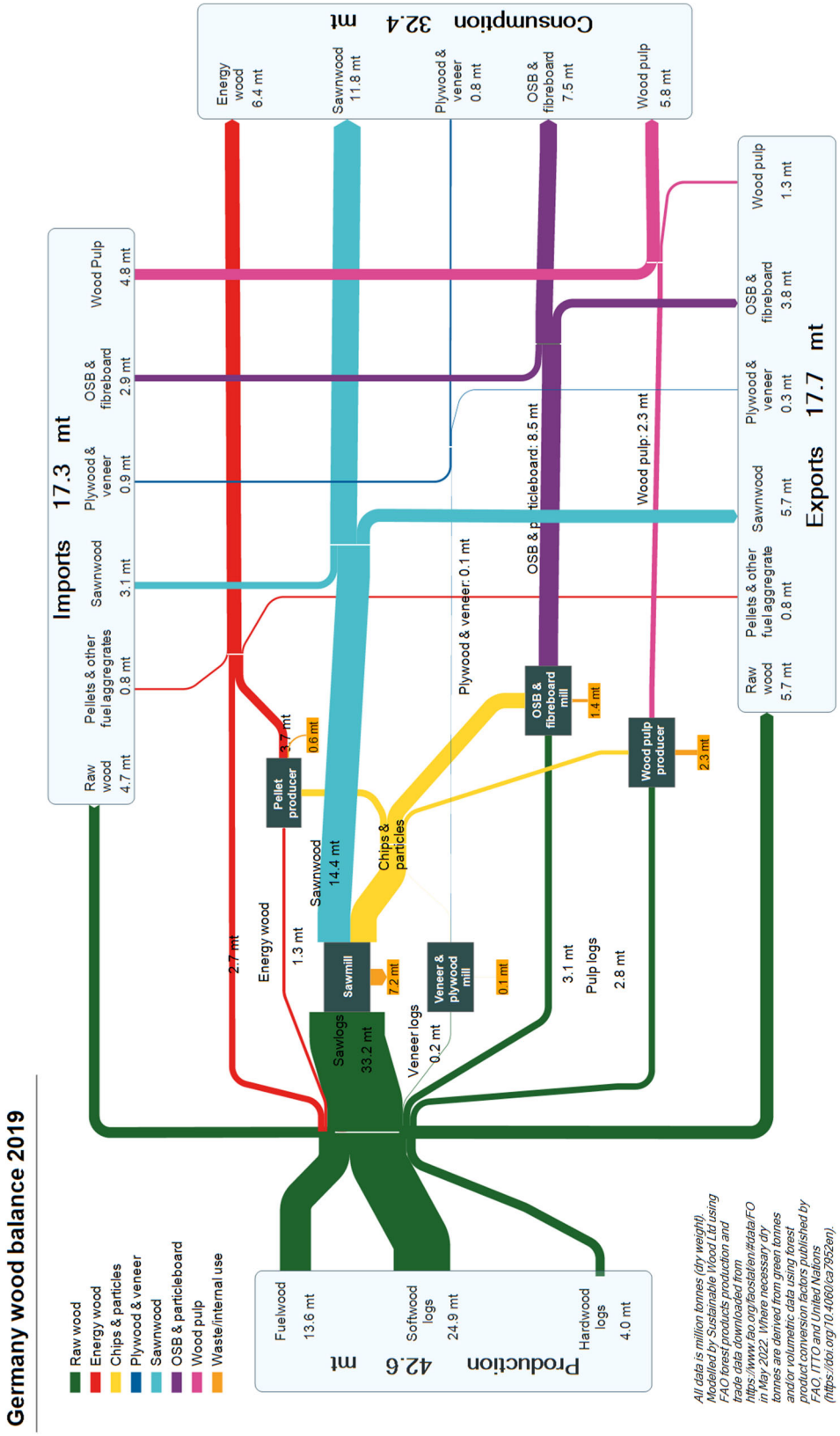
A.2 EU27


EU27 wood balance 2019
Raw wood
Energy wood
Chips & particles
Plywood & veneer
Sawnwood
OSB & particleboard
Wood pulp
Waste/internal use
Production 292.8 mt
Fuelwood 82.7 mt
Softwood logs 158.3 mt
Hardwood logs 51.7 mt
Imports 31.7 mt
Raw wood 7.0 mt
Pellets & other fuel aggregrates 5.6 mt
Sawnwood 7.2 mt
Plywood & veneer 2.2 mt
OSB & fibreboard 2.1 mt
Wood Pulp 7.6 mt
Consumption 228 mt
Energy wood 95.3 mt
Sawnwood 53.9 mt
Plywood & veneer 5.0 mt
OSB & fibreboard 34.1 mt
Wood pulp 39.6 mt
Exports 38.2 mt
Raw wood 7.1 mt
Pellets & other fuel aggregrate 1.4 mt
Sawnwood 17.5 mt
Plywood & veneer 0.7 mt
OSB & fibreboard 4.8 mt
Wood pulp 6.6 mt
69.7 mt
Energy wood 16.6 mt
Pellet producer
21.4 mt
3.6 mt
Sawnwood 64.2 mt
Sawlogs 116.8 mt
Sawmill
11.9 mt
Chips & particles
Veneer logs 7.1 mt
Veneer & plywood mill
2.2 mt
Plywood & veneer: 3.5 mt
OSB & particleboard: 36.9 mt
OSB & fibreboard mill
4.1 mt
24.2 mt
Pulp logs 60.4 mt
Wood pulp: 38.6 mt
Wood pulp producer
38.6 mt
All data is million tonnes (dry weight).
Modelled by Sustainable Wood Ltd using FAO forest products production and trade data downloaded from https://www.fao.org/faostat/en/#data/FO in May 2022. Where necessary dry tonnes are derived from green tonnes and/or volumetric data using forest product conversion factors published by FAO, ITTO and United Nations (https://doi.org/10.4060/ca7952en).

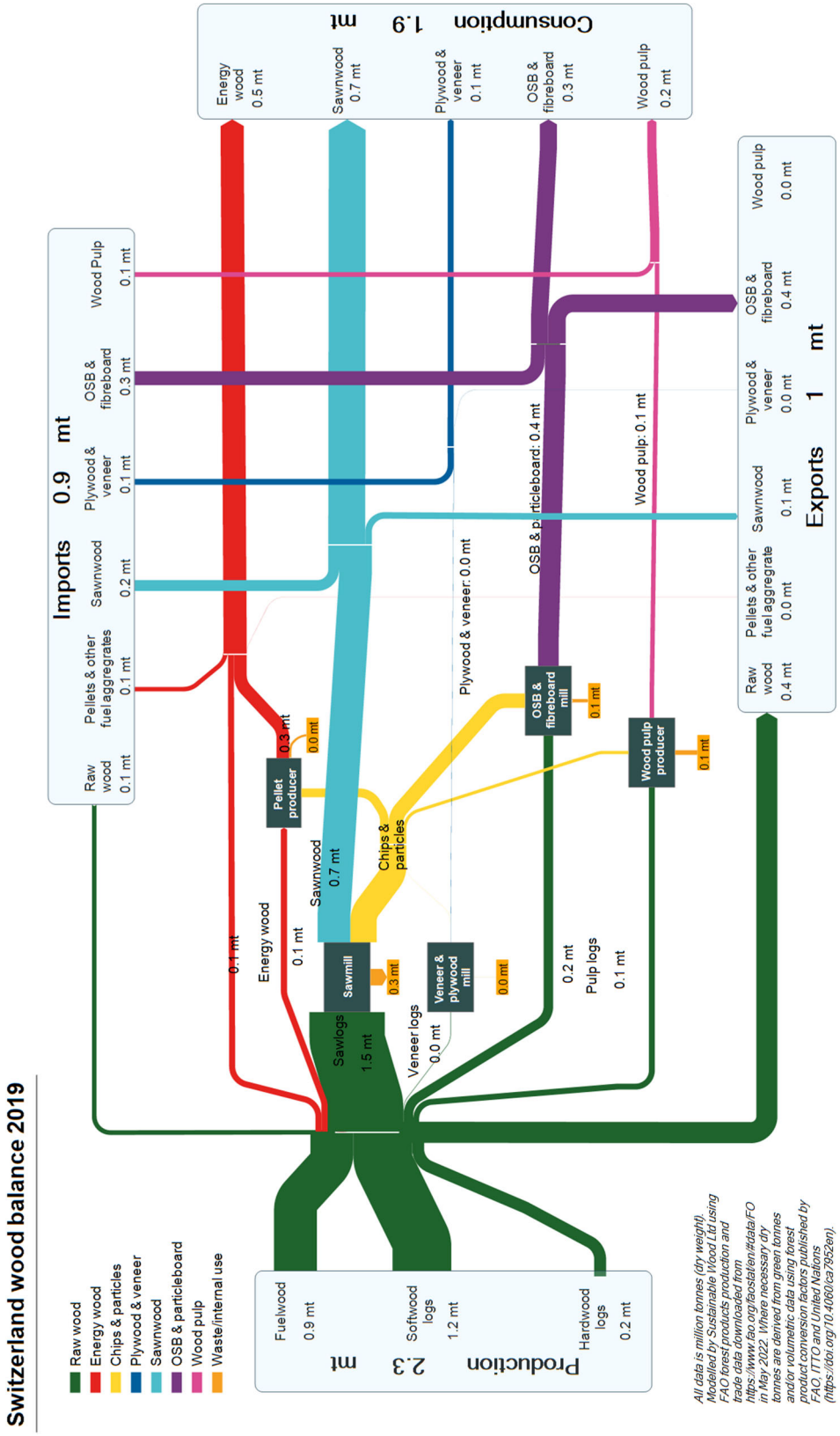
A.3 France


France wood balance 2019
Raw wood
Energy wood
Chips & particles
Plywood & veneer
Sawnwood
OSB & particleboard
Wood pulp
Waste/internal use
Production 26.3 mt
Fuelwood 12.1 mt
Softwood logs 8.8 mt
Hardwood logs 5.4 mt
Imports 6.7 mt
Raw wood 0.9 mt
Pellets & other fuel aggregates 0.7 mt
Sawnwood 1.6 mt
Plywood & veneer 0.4 mt
OSB & fibreboard 1.4 mt
Wood Pulp 1.7 mt
Consumption 22.3 mt
Energy wood 11.2 mt
Sawnwood 5.4 mt
Plywood & veneer 0.5 mt
OSB & fibreboard 2.4 mt
Wood pulp 2.8 mt
Exports 6.8 mt
Raw wood 2.8 mt
Pellets & other fuel aggregrate 0.4 mt
Sawnwood 0.9 mt
Plywood & veneer 0.2 mt
OSB & fibreboard 2.0 mt
Wood pulp 0.6 mt
9.2 mt
Energy wood 1.0 mt
Pellet producer
1.7 mt
0.3 mt
Sawnwood 4.7 mt
Chips & particles
Sawlogs 10.6 mt
Sawmill
2.2 mt
Veneer logs 0.5 mt
Veneer & plywood mill
0.1 mt
Plywood & veneer: 0.2 mt
OSB & particleboard: 3.0 mt
OSB & fibreboard mill
0.5 mt
1.7 mt
Pulp logs 2.3 mt
Wood pulp: 1.6 mt
Wood pulp producer
1.6 mt
All data is million tonnes (dry weight).
Modelled by Sustainable Wood Ltd using FAO forest products production and trade data downloaded from https://www.fao.org/faostat/en/#data/FO in May 2022. Where necessary dry tonnes are derived from green tonnes and/or volumetric data using forest product conversion factors published by FAO, ITTO and United Nations (https://doi.org/10.4060/ca7952en).

A.4 Germany


Germany wood balance 2019
Raw wood
Energy wood
Chips & particles
Plywood & veneer
Sawnwood
OSB & particleboard
Wood pulp
Waste/internal use
Production 42.6 mt
Fuelwood 13.6 mt
Softwood logs 24.9 mt
Hardwood logs 4.0 mt
Imports 17.3 mt
Raw wood 4.7 mt
Pellets & other fuel aggregrates 0.8 mt
Sawnwood 3.1 mt
Plywood & veneer 0.9 mt
OSB & fibreboard 2.9 mt
Wood Pulp 4.8 mt
Consumption 32.4 mt
Energy wood 6.4 mt
Sawnwood 11.8 mt
Plywood & veneer 0.8 mt
OSB & fibreboard 7.5 mt
Wood pulp 5.8 mt
Exports 17.7 mt
Raw wood 5.7 mt
Pellets & other fuel aggregrate 0.8 mt
Sawnwood 5.7 mt
Plywood & veneer 0.3 mt
OSB & fibreboard 3.8 mt
Wood pulp 1.3 mt
Sawlogs 33.2 mt
Veneer logs 0.2 mt
Pulp logs 2.8 mt
Sawmill
7.2 mt
Veneer & plywood mill
0.1 mt
Pellet producer
3.7 mt
0.6 mt
OSB & fibreboard mill
1.4 mt
Wood pulp producer
2.3 mt
2.7 mt
Energy wood 1.3 mt
Sawnwood 14.4 mt
Chips & particles
Plywood & veneer: 0.1 mt
OSB & particleboard: 8.5 mt
Wood pulp: 2.3 mt
3.1 mt
All data is million tonnes (dry weight).
Modelled by Sustainable Wood Ltd using FAO forest products production and trade data downloaded from https://www.fao.org/faostat/en/#data/FO in May 2022. Where necessary dry tonnes are derived from green tonnes and/or volumetric data using forest product conversion factors published by FAO, ITTO and United Nations (https://doi.org/10.4060/ca7952en).

A.5 Switzerland



A.6 United Kingdom