



The KaleidoScope of Sustainability

Teaching Activity of the PhD Programme in
Environmental Sustainability and Wellbeing

11 March 2025, Thursday, 14:00-18:00 CET
Università degli Studi di Ferrara - Aula Magna IUSS - Sede Palazzo Turchi di Bagno, Corso Porta Mare 2, Ferrara.


Timber buildings for the decarbonization and innovation

Building with wood as a policy for decarbonising the economy and managing forests responsibly





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Dipartimento Territorio
e Sistemi Agro-Forestali



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- <https://www.italiaforestalegno.it>


- <https://www.etifor.com>


- <https://www.davidepettenella.it>





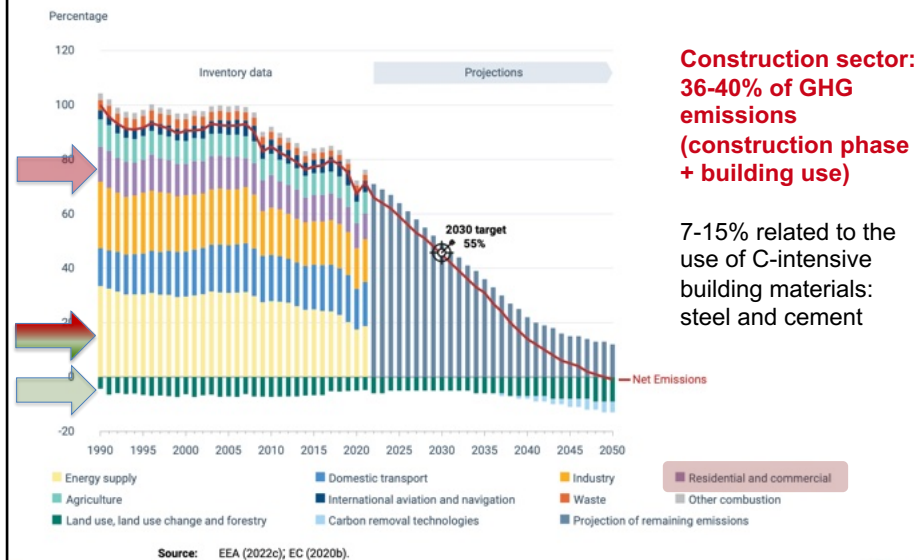
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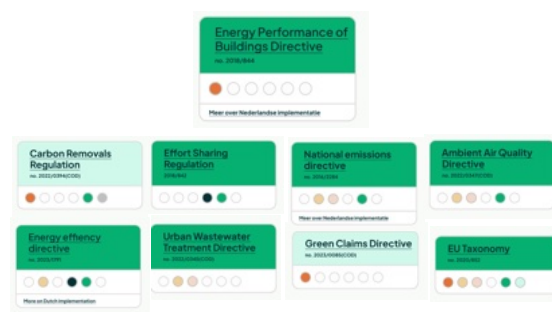
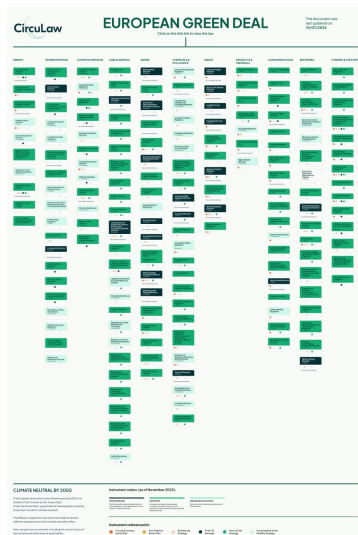
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The pathway to climate neutrality



3

Main Regulations or Directives connected to the building sector

Source: https://www.circulaw.nl/European_green_deal.pdf

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Outline

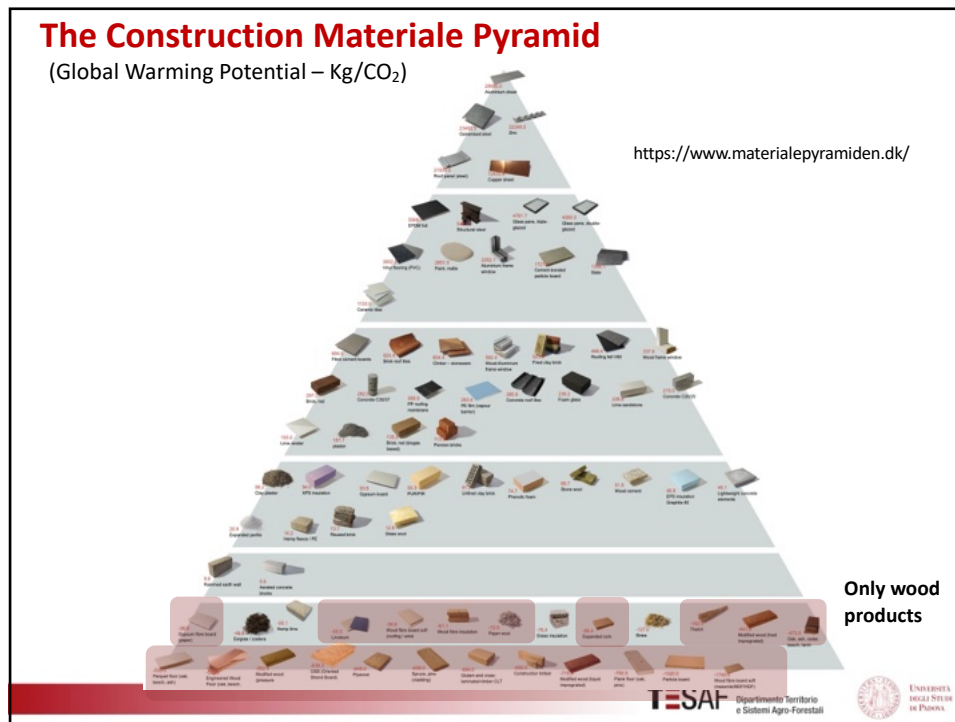
- **Why** to support wood as a building material?
- **Which** type of building?
- **How** to promote wood-based constructions?
- Final remarks

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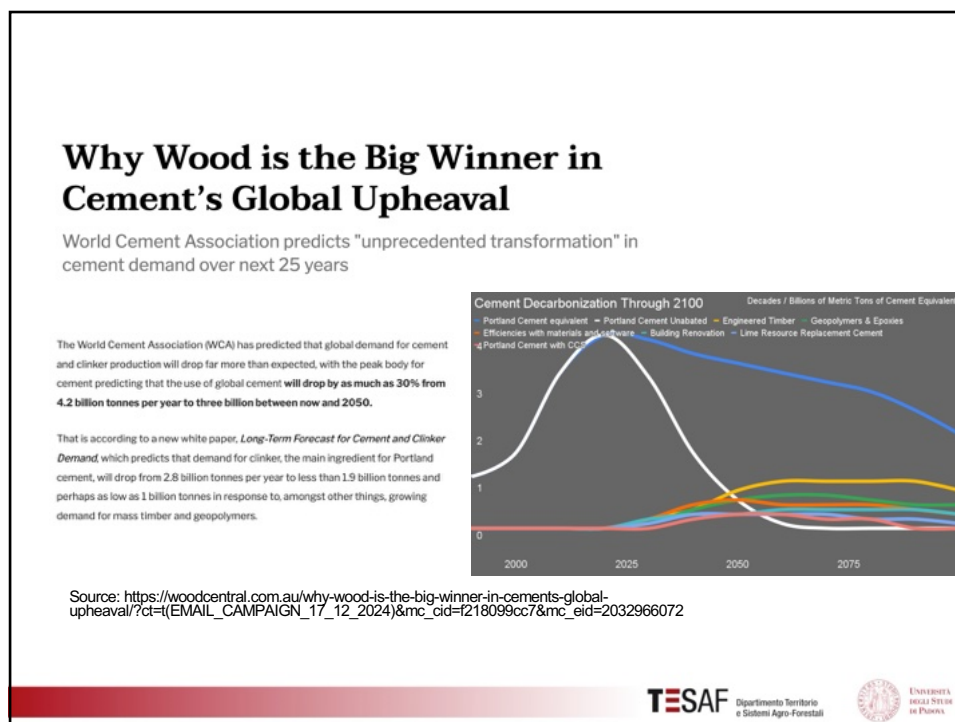
Outline

- **Why to support wood as a building material?**
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Substitution effects by product category

Product category	Average substitution effect (kg C/kg carbon wood product)
Structural construction (e.g. building, internal or external wall, wood frame, beam)	1.3
Non-structural construction (e.g. window, door, ceiling and floor cover, cladding, civil engineering)	1.6
Textiles	2.8
Other (e.g. chemicals, furniture, packaging)	1.0 to 1.5

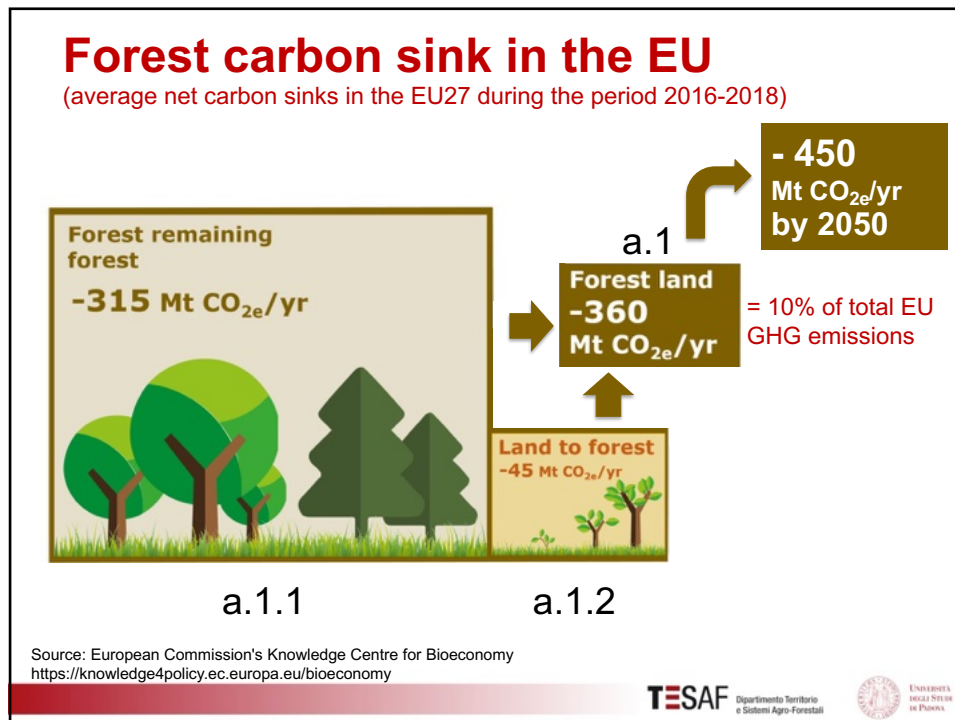
Note: Substitution effect means that for each kg of C in wood products that substitute non-wood products, an average emission reduction occurs expressed in kg C.

Source: Examples based on Leskinen et al. (2018).

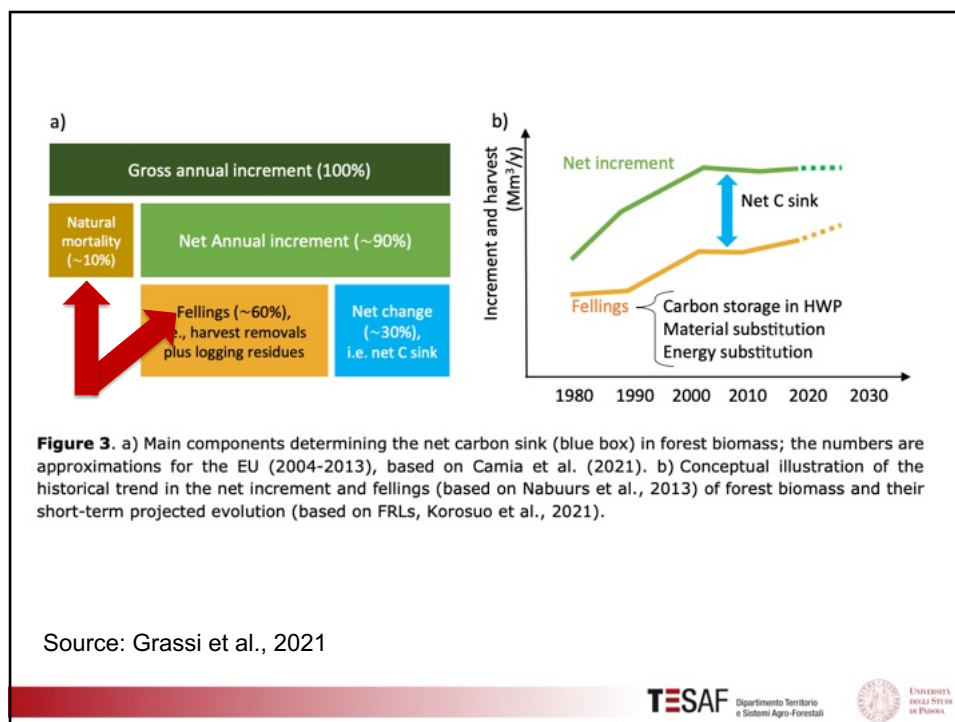
Bio-based materials go beyond wood



Source: Sevim AKTAS (2025) EC DG Clima
https://climate.ec.europa.eu/document/download/0f796d21-dbe4-4f5a-b0ef-d71247544db1_en?filename=event_20240924_presentation_en.pdf



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Italy: high urban concentration



Source:

<https://www.visualcapitalist.com/wp-content/uploads/2023/02/Visualizing-Population-Density-in-Italy-Full-Size.html>

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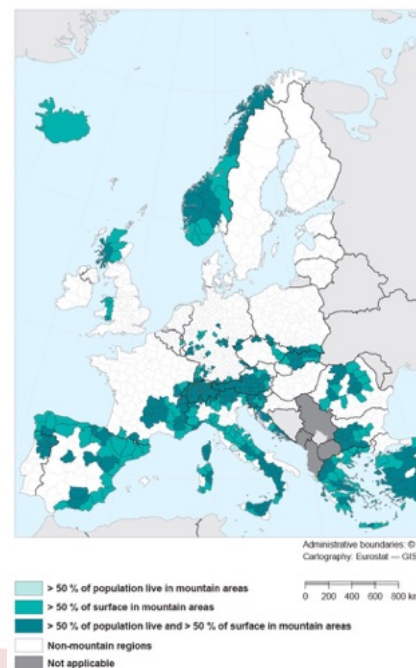
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Mountain areas (Source: Eurostat)

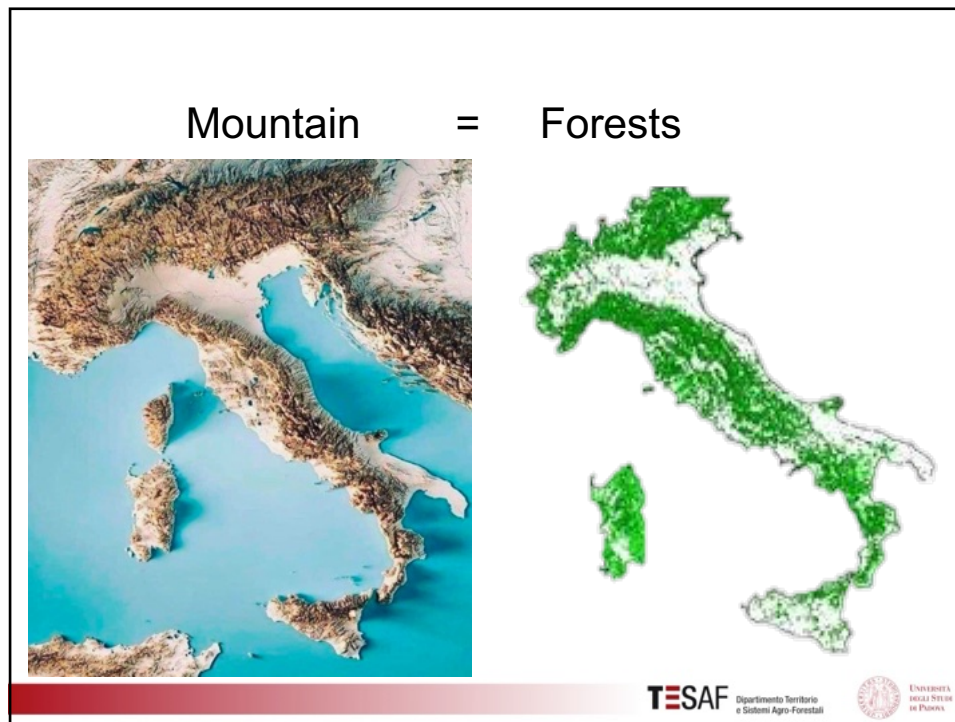
- **Italy** **66.0%**
- France 20.6%
- Germany 11.8%
- EU 32.6%



Mountain typology



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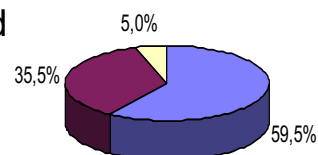


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Forests in Italy = mountains

95% of the forests in hilly and mountain regions:

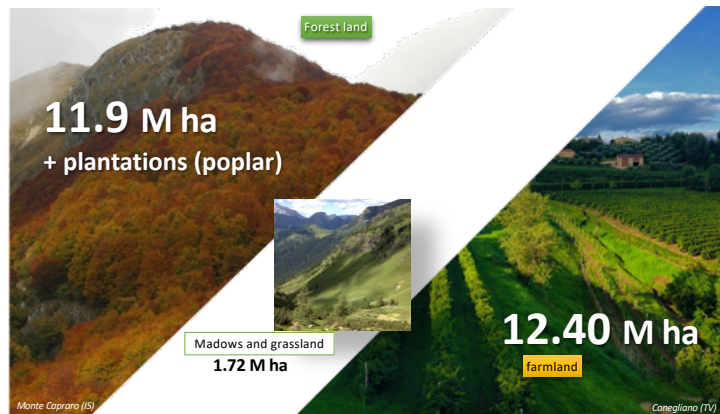
= less developed areas



→ multi-functional forests (soil protection, water cycle regulation, fuelwood and timber production, recreation, ...)

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2022: a landmark in landuse in Italy



Source: 2021 IUTI data (Inventario dell'Uso delle Terre in Italia)

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Some figures

- **Forests:** 11.9 M ha; 36.7% of the territory
- **Increments:** 37.8 M m³ ([INFC](#) 2015)
- **Forest Planning:** 15% of the forest land has a plan (public forests – 36.5% of the total forest cover – by law should be used with a valid management plan)

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Harvested Wood Products (HWP) pool in Italy

The pool is remarkable (old buildings, high quality solid wood furniture) but...

... with 70% of the wood harvested in Italy used for energy, the impact of **increased use** of national wood in long-living products is **very limited**.

Most of this increase is connected to the **import of wood**.

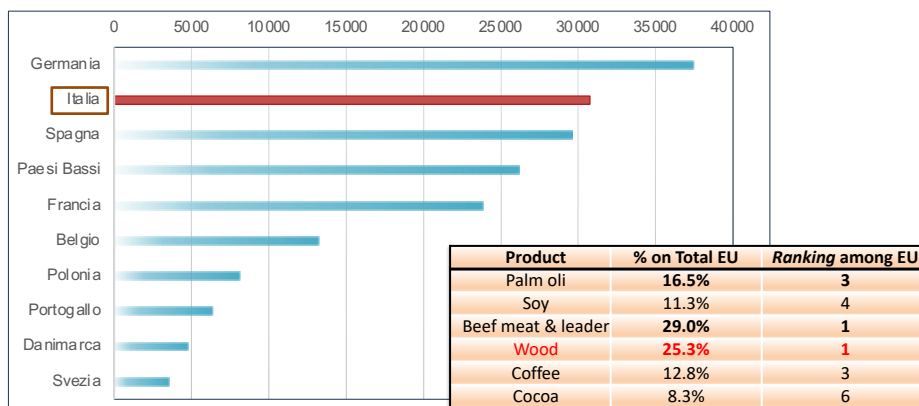
Production and trade of wood products (1,000 m3 or t; 2022)

		Fattore conversione	Import	Import (m3 eq.)	Export	Export (m3 eq.)	Produzione	Produzione (m3 eq.)	Consumo apparente	Tasso di autoappr.
Legna da ardere, conifere	m3	1,00		82	24		1.180	1.238	95,3%	
Legna da ardere, latifoglie	m3	1,00		459	18		10.100	95,6%		
Tondame industriale, conifere	m3	1,00		841	416		4.125	4.550	90,6%	
Tondame industriale, latifoglie	m3	1,00		2.228	149		2.956	29,7%		
Legno grezzo, conifere	m3	1,00		923	440		5.305	5.788	91,7%	
Legno grezzo, latifoglie	m3	1,00		2.687	167		10.536	13.056	80,7%	
Totale legname grezzo				3.610	607		15.841	18.844	84,1%	
Carbone da legna	t	6,00	57	340	1		60	115	52,0%	
Cippato e legname in particelle	m3	2,43	559	1.358	678	1.647	3.600	8.748	8.629	101,4%
Pellet di legno	t	2,19	1.916	4.195	7	15	450	986	2.894	34,1%
Altri agglomerati a fini energetici	t	1,83	151	277		13	20	37	181	20,2%
Segati di conifere	m3	1,82	5.243	9.543	193	351	400	728	5.778	12,6%
Segati di latifoglie								1.436	67,9%	
Tranciat								433	48,4%	
Compensati								566	107,7%	
Pannelli di particelle								851	47,9%	
OSB								420	40,0%	
Pannelli ad alta densità								289	8,7%	
MDF								2.513	68,3%	
Altri pannelli di fibra								83	4,6%	
Paste meccaniche e semichimiche								725	76,9%	
Paste chimiche	t	4,46	3.352	14.949	278	1.238	13	58	3.132	1,9%
Totale parziale semilavorati legno				39.112	0	6.705	0	15.290	28.047	54,5%
Carta da macero	t	1,19	296	352	1.481	1.762	5.394	6.419	5.008	128,2%
Prodotti legnosi riciclati	t	2,37	525	1.245	24	56	1.717	2.160	5.258	77,4%
Totale prodotti legnosi riciclati				1.597	1.818			10.489	10.267	102,2%

Recycling is 2 times the domestic removals of industrial roundwood

Fonte: dati FAOSTAT, salvo la produzione di Prodotti legnosi riciclati (fonte: Rilegno)

Embedded deforestation: data (hectares) for the first 10 major European importers (= 90% of the total EU import) (vamean values: 2005-2018, for wood products: 2005-2017)



Sources: from Pendrill et al. (2022) and Pendrill et al. (2020)

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To better understand the potential role of the Italian forests in the future of bioeconomy (→ decarbonization), it is important to understand the **development path of the wood market**

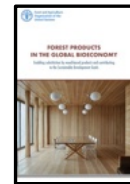
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Forest-based bioeconomy: 5 industrial strategic sectors for substitution

- Engineered wood products
 - Cross-Laminated Timber* (CLT or X-LAM): +37% annual growth (2014-20)
 - Laminated Veneer Lumber* (LVL): +6% annual growth

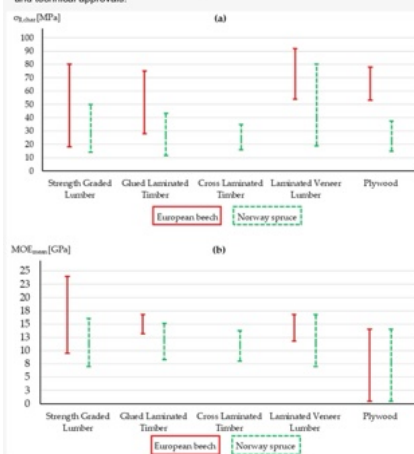


An alternative to spruce-fir-pine? beech

Potential use:
engineered wood products like glued laminated timber, cross-laminated timber and laminated veneer lumber

Source: Pramreiter and Grabner, 2023
<https://www.mdpi.com/1999-4907/14/7/1419>

Figure 1. Comparison of mechanical properties of available engineered wood products (EWP) made from European beech (references see Table 2) and Norway spruce (references see Table 3) wood. (a) range of characteristic bending strength ($\sigma_{B, char}$); (b) range of mean modulus of elasticity (MOE_{mean}). Values are based on standards and technical approvals.



Locally sourced raw material from sustainably managed forests

Pollmeier BauBuche

The green alternative to reinforced concrete posts and beams.
Outstanding CO2 storage!
BauBuche stores 1.171 kg CO2 per cubic meter.

Hardwood laminated veneer lumber – known as BauBuche – enables proprietors, architects and other decision-makers to construct buildings that preserve resources, especially in multi-story post and beam construction where softwood reaches its limits.





Fonte: <https://www.pollmeier.com/baubuche/>

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Forest-based bioeconomy: 5 industrial strategic sectors for substitution

- Engineered wood products
 - Cross-Laminated Timber (CLT or X-LAM):* +37% annual growth (2014-20)
 - Laminated Veneer Lumber (LVL):* +6% annual growth
- Bio-textile products










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Lenzing

LENZING™ Modal

Natural softness and comfort, efficient moisture management, enhanced breathability, good color fastness and the compliance with recognized safety standards for food contact make LENZING™ Modal fibers suitable for use in work wear, botanic nets, coated and car seat fabrics.


What Modal?

Innovative by nature

Modal is an artificial textile fiber obtained by spinning the cellulose extracted from beech trees. Modal part of the viscose family, it is a variety of Rayon originally developed in Japan in 1951 and marketed in the form of "artificial silk".

The main difference between Rayon and Modal resides in the raw material used: Rayon fiber is commonly extracted from the wood pulp of different trees, while the fiber of Modal it is extracted only from beech wood.

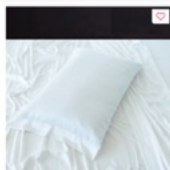
It is important to know that Modal it is not a natural fiber, but an artificial fiber of natural origin: although the beech plant is the natural raw material used for the production of Modal, this textile fiber is born thanks to the help of numerous chemical substances.



Lenzuola Completa in Modal

Completo Lenzuola - Su Misura Estratto Dal Legno Di Faggio da 199,00€

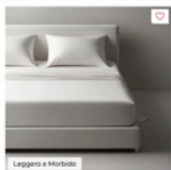
SCEGLI



Federa Modal Estratto Dal Legno Di Faggio

Federa Modal Estratto Dal Legno Di Faggio da 35,48€


SCEGLI



Lenzuola Setto Con Angeli

Lenzuola Setto Con Angeli - Su Misura - Modal Estratto Dal Legno Di Faggio da 85,62€

SCEGLI




Copripiumino Modal

Copripiumino + Federe - Su Misura - Modal Estratto Dal Legno Di Faggio da 222,94€

SCEGLI

Fonte: <https://www.lenzing.com/products/lenzingtm> e <https://www.purocolone.it/>

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5 strategic sectors

- Bio-plastics and wood-based composites (e.g., : PWC- *Plastic-Wood Composite*)
- Packaging
- Panels, foams and wood insulation









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The Italian bioeconomy

Industrial sectors	Production values (M€)			%	Employment		
	2020	2021	2022		2022	.000	
Agricoltura, silvicoltura e pesca	60.519	64.671	69.940	16,8	895	44,8	(3,7%) = 26 0.03%
Alimentare, bevande e tabacco	139.814	150.615	176.900	42,6	485	24,3	(5%) = 8,845
Tessile bio-based	7.695	9.292	10.998	2,6	51	2,5	(10%) = 1,099
Abbigliamento bio-based	12.246	14.625	17.962	4,3	95	4,8	(10%) = 1,796
Concia e pelletteria/ calzature bio-based	12.513	15.276	18.898	4,6	76	3,8	
Legno e prodotti in legno	11.667	15.873	19.104	4,6	91	4,5	(100%) = 19,104
Carta e prodotti in carta	22.689	26.006	33.549	8,1	86	4,3	(100%) = 33,569
Chimica bio-based	3.612	4.547	5.540	1,3	9	0,4	(30%) = 1,662
Farmaceutica bio-based	14.034	14.288	16.407	4,0	37	1,9	(30%) = 4,922
Gomma e plastica bio-based	1.163	1.417	1.630	0,4	5	0,3	(30%) = 489
Mobili bio-based	9.995	12.489	14.011	3,4	63	3,1	(100%) = 14,011
Bioenergia	2.209	2.818	4.150	0,9	2	0,1	(50%) = 2,075
Biocarburanti	292	1.843	ND	ND	ND	0	(20%) = 369 2.8%
Ciclo idrico	12.417	14.369	15.375	3,7	50	2,5	
Gestione e recupero dei rifiuti biodegradabili	8.741	10.116	10.824	2,6	52	2,6	
TOTALE BIOECONOMIA	319.604	358.245	415.308	100	1.996	100	87,967 M€ (21.1%)

Source: Intesa San Paolo on EUROSTAT and JRC data

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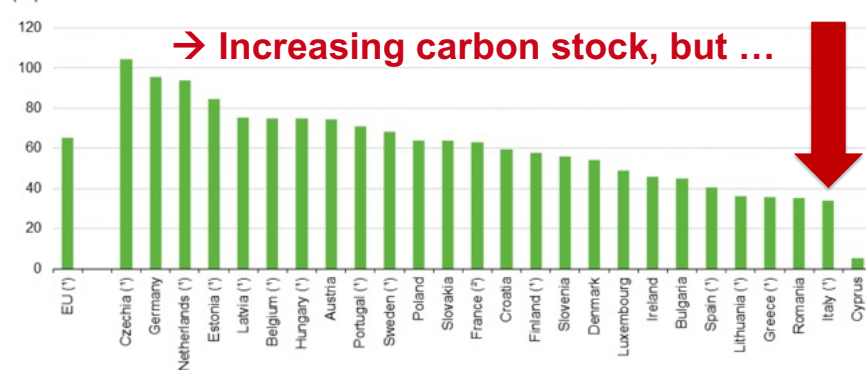


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In Italy much less wood removal than the average EU data...

Share of timber removals to net increment in EU forests, 2020

(%)



(*) Data are estimates.

(*) Data refer to metropolitan France and only forest available for wood supply.

Note: Increment refers to the volume of wood grown less average annual mortality. Removals are measured overbark. Malta: not available.

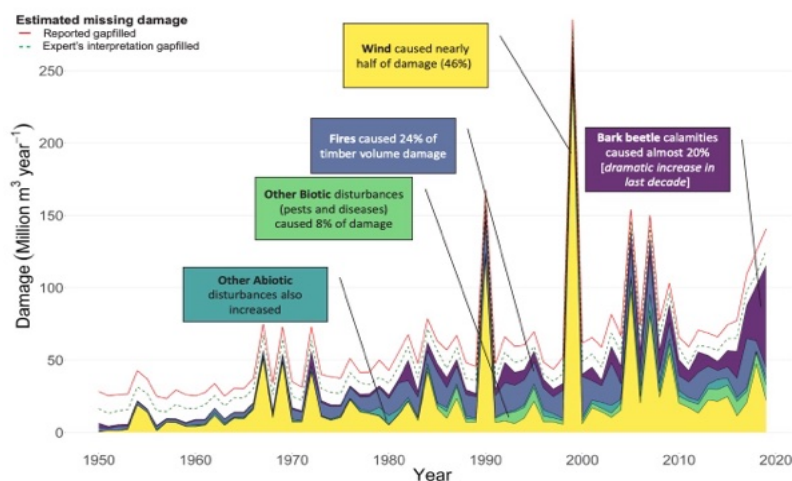
eurostat

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Increased frequency and intensity of damages to European forests



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... extreme events are becoming ordinary

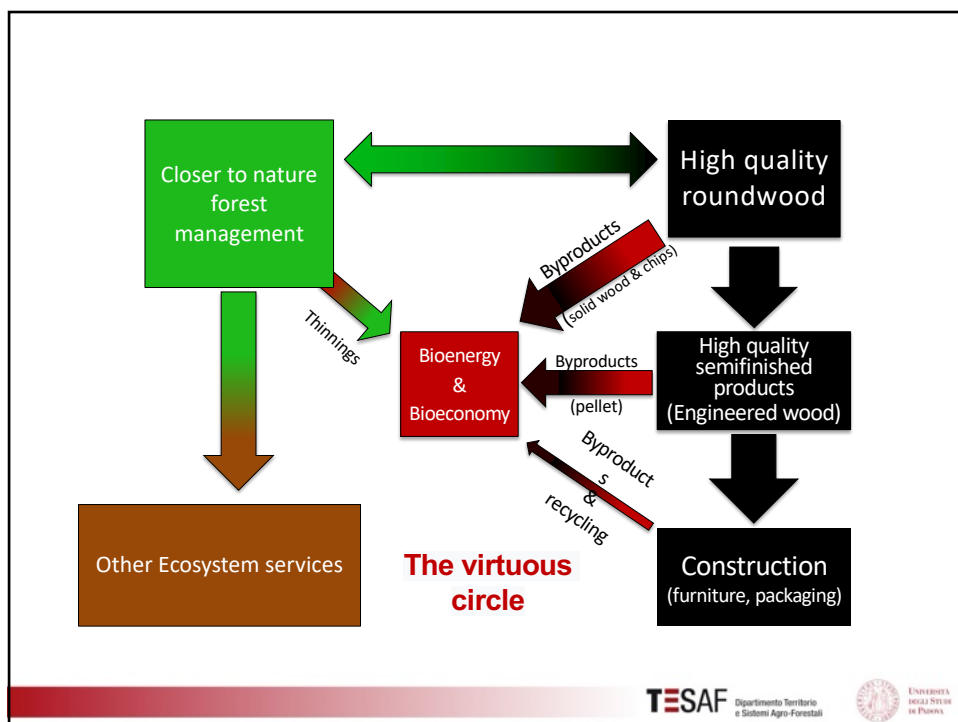
Increasing frequency of extreme events:

- **Vaia storm (2018)**: 42.000 ha; 16 M m³ (MIPAAF 2021)
- **Fires (2021)**: 170,000 ha; 8-10 M m³
- **Bark beetles (2021-24)** : +35.800 ha
- **Floods (2023-24)**: 2+1 in Emilia-Romagna
- **Evergreen oaks decline (2024)**: in Eastern Sardinia (80,000 ha)

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Outline

- Why to support wood as a building material?
- **Which type of building?**
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Wood in the construction sector

- **Structural use** of wood (internal or external walls, wood frames, beams)
 - Collective buildings (mass timber construction with Engineered wood)
 - Social housing, modular houses
 - Second houses
 - Emergency houses (pre-approved prefab modular houses)
 - Infrastructures (e.g. bridges, road barriers, shelters, playgrounds, ...)
- **Non-structural uses** (windows, doors, parquets, cover, dividing walls, cladding, ...)
- **Bio-energy** (chips, pellets, densified products, solid wood)

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Canada investment in wood-based social housing

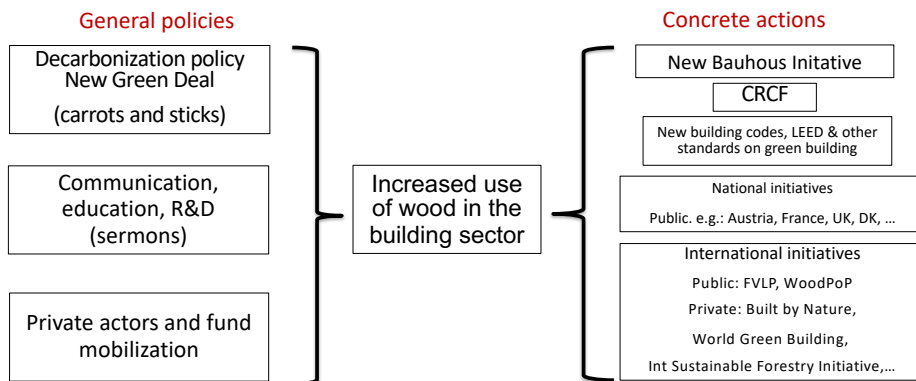
- Canada is turning to mass timber, 3D printing, and modular construction to fast-track affordable housing on its Atlantic coast. The move comes after the Trudeau government announced it would establish the **Regional Homebuilding Innovation Initiative (RHII)**, a **\$50 million (CAD) fund** over the next two years **to reduce construction time and costs**, making housing more affordable and sustainable.
- The RHII promotes advanced building methods, including the following:
 - **3D-printed homes**: Large-scale 3D printers quickly create walls or entire structures with materials like concrete, cutting down on construction time and labor.
 - **Modular homes**: Built in sections off-site, these “modules” are transported and assembled on-site, reducing time and waste while maintaining quality.
 - **Mass timber construction**: Engineered wood replaces traditional materials like steel, creating a strong, renewable alternative with lower environmental impact.
- The latest commitment comes just months after Canada pledged to invest **\$600 million (CAD)** into **prefab manufacturing, mass timber construction, panelization, 3D printing, and pre-approved housing designs**, which amounts to one of the strongest commitments by a national government to supercharge social and affordable housing.

Source: <https://getfea.com/engineered-wood-products-mass-timber/canadian-government-turns-to-mass-timber-3d-printing-and-modular-construction-to-speed-affordable-housing>

Outline

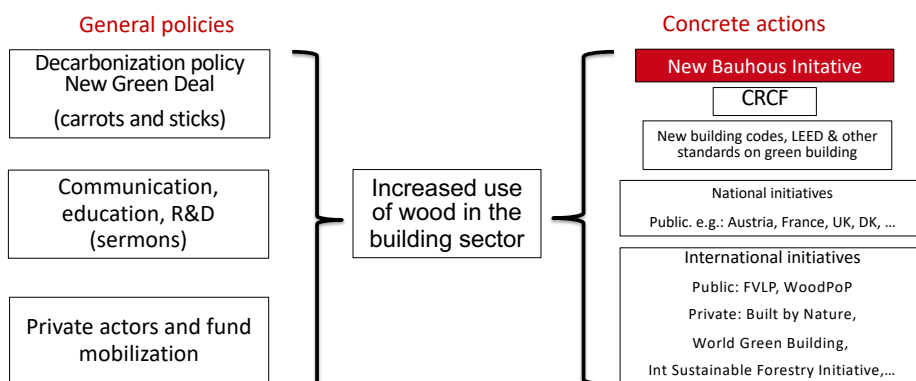
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Tools to promote the use of wood in the building sector



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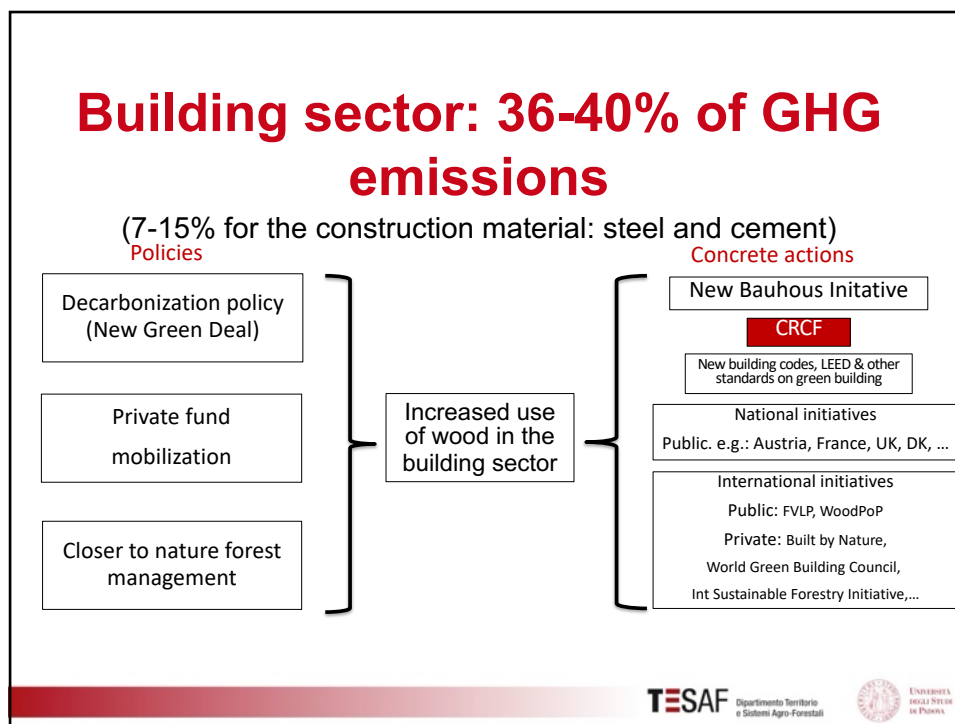
Tools to promote the use of wood in the building sector



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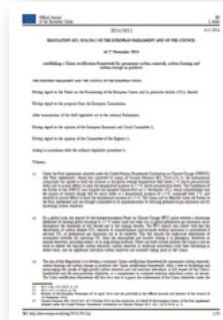
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The Carbon Removals and Carbon Farming (CRCF Regulation (EU/2024/3012))

- Published in the Official Journal of the EU on 6 December 2024
- The first EU-wide voluntary framework for certifying carbon removals in the voluntary market in Europe:
 - to facilitating and encouraging the uptake of high-quality carbon removals and soil emission reductions, in full respect of the Union's biodiversity and the zero-pollution objectives
 - unambiguous net carbon removal benefit, while avoiding greenwashing



3 sectors considered



PERMANENT STORAGE

E.g. Bioenergy with Carbon Capture and Storage (BECCS), Direct Air Carbon Capture and Storage (DACCS), biochar



CARBON FARMING

E.g. Afforestation, improved forest management, agroforestry, soil carbon sequestration, peatland restoration.
No avoided deforestation



CARBON STORAGE IN PRODUCTS

E.g. Use of wood-based materials in construction, long-lasting Carbon Capture and Utilisation (CCU)

Source: EC DGEnv

An ambitious task: 3 interest groups with some contrasting aims put together in the same frame of rules

Timeline

December 2024	Publication of CRCF in Official Journal	CRCF Regulation (linguist lawyer version): CO TA (europa.eu)
2025	Proposal of delegated acts on certification methodologies Proposal of implementing act on verification and registries	Permanent removals Carbon farming Carbon storage in long-lasting buildings
2026	Start of certification	EC recognition of certification schemes First issuance of certified units
2028	Start of EU registry	

Source: DG Clima, 2024

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Keypoints

- Methodologies should establish **standardised baselines**: highly representative of the standard performance of comparable practices and processes in similar social, economic, environmental, regulatory and technological circumstances and take into account the geographical context
- The Commission **should review at least every 5 years** and update, where appropriate, the standardised baseline.
- Where it is not possible to set such standardised baselines, an **activity-specific baseline** based on the operator's individual performance should be used. The activity-specific baselines should be updated by the operator at the beginning of each activity period, unless otherwise stated in the applicable certification methodologies.

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Formula for calculation C credit in the construction sector

$$\text{Temporary net carbon removal benefit} = CR_{\text{baseline}} - CR_{\text{total}} - GHG_{\text{associated}} > 0$$

with

- a. CR_{baseline} is the carbon removed under the baseline; ???
- b. CR_{total} is the total carbon removals of the carbon storage in products activity;
- c. $GHG_{\text{associated}}$ is the increase in direct and indirect greenhouse gas emissions, over the entire lifecycle of the activity which are due to its implementation [...]. 5 years?

Quantities for parameters (a) –(c) shall be designated with a negative sign (-) if they are net GHG removals and with a positive sign (+) if they are net GHG emissions. The parameters need to be expressed in tonnes CO₂ equivalent.

Source: Martin Röck, 2024

https://climate.ec.europa.eu/document/download/0f796d21-dbe4-4f5a-b0ef-d71247544db1_en?filename=event_20240924_presentation_en.pdf

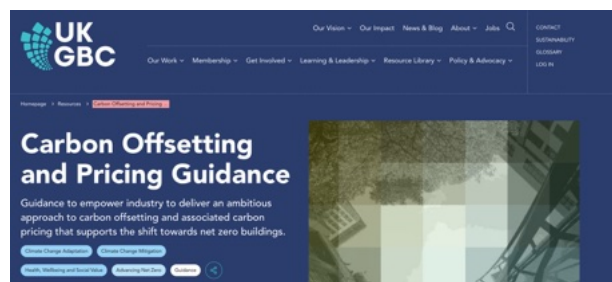
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In UK: Carbon sequestration credits from wooden construction: «best-in-class globally» (Supercritical, 2024)

<https://gosupercritical.com/blog?p=offsetting-guidance-for-the-built-environment>



UK GREEN BUILDING COUNCIL

<https://ukgbc.org/resources/carbon-offsetting-and-pricing-guidance/>

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Potential use of the CRFC certificate (non-exhaustive list)

- **Public procurement**
- **Net-zero claims (within value chain) & climate neutrality claims**
Corporate sustainability reporting regulation & green claims
Demonstrate leadership in environmental stewardship: "net-zero/carbon-negative/climate-positive building stock"
- **Unlock financial incentives/ attract investments**
As credible and transparent proof for green bonds, green mortgages or favourable loan or investment terms.
- **Increase property value**
Advantages when selling real estate; access to new customer segments
Sustainable buildings are more resilient to environmental risks, such as extreme weather - could lead to lower insurance premiums and increased property durability.
- **Help ensure compliance with specific sustainability standards, e.g. EU taxonomy**

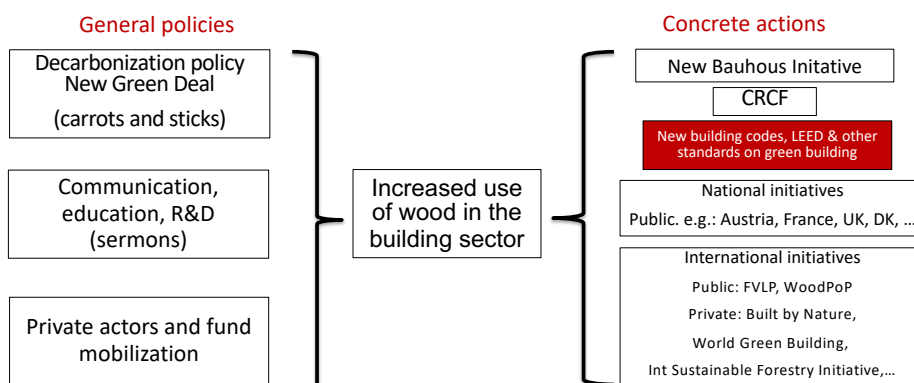
Source: Sevim AKTAS (2025) EC DG Clima
https://climate.ec.europa.eu/document/download/0f796d21-dbe4-4f5a-b0ef-d71247544db1_en?filename=event_20240924_presentation_en.pdf

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Tools to promote the use of wood in the building sector



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British Columbia changes building code to permit more mass timber

May 18, 2024


The update, which is now in effect, enables encapsulated mass-timber construction (EMTC) for buildings up to 18 storeys for residential and office buildings, a six-story increase from the previous limit.

The code changes also expand EMTC to new building types, such as schools, libraries, retail, light- and medium-industrial occupancies and care facilities.

"These changes will help reduce carbon pollution, support the forestry sector, create jobs, build more homes and lead to more vibrant communities," said Ravi Kahlon, the province's Minister of Housing.

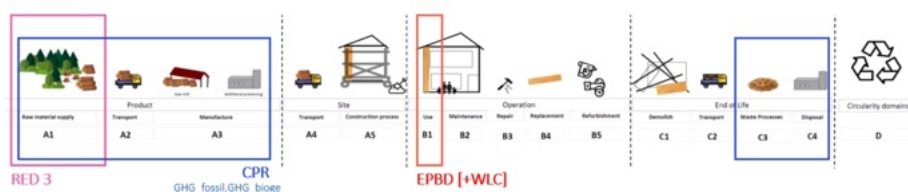


<https://www.equipmentjournal.com/construction-news/british-columbia-changes-building-code-to-permit-more-mass-timber/>

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Many certification and labelling schemes in the building sector



ZEB: zero emission building 2050 as target

- Energy Performance Building Directive in force since now (EPBD)
- Construction Products Regulation (CPR) will in force next year
- Lifecycle global warming potential (CGWP)

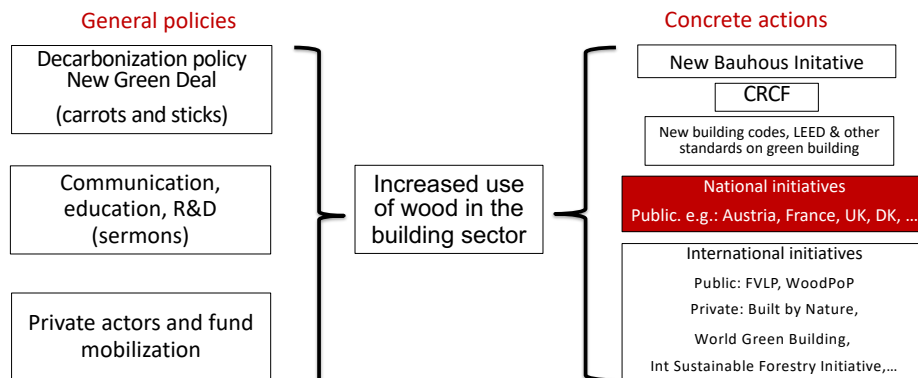
+

Certification for the forest management and Chain of custody (FSC, PEFC, RED3, Closer to Nature forest management in the future?)

Source: Sevim AKTAS (2025) EC DG Clima
https://climate.ec.europa.eu/document/download/0f796d21-dbe4-4f5a-b0ef-d71247544db1_en?filename=event_20240924_presentation_en.pdf

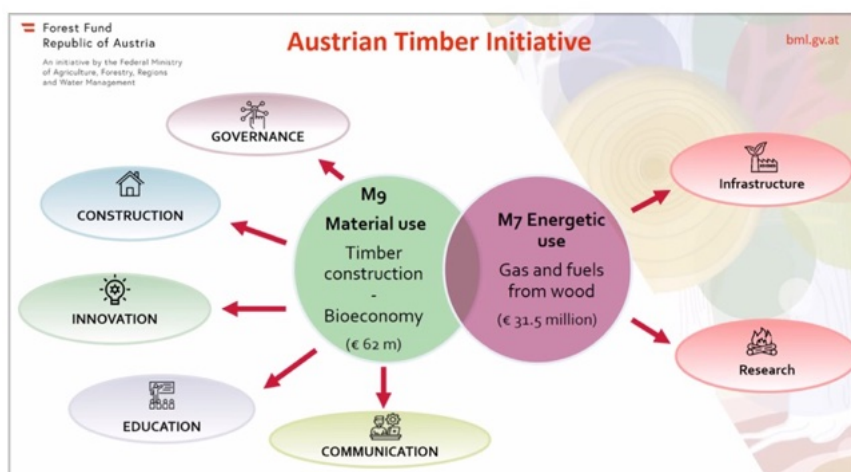
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Tools to promote the use of wood in the building sector



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Austrian Wood Initiative in 2022 “Creating a sustainable future with wood”: 93.5 M €

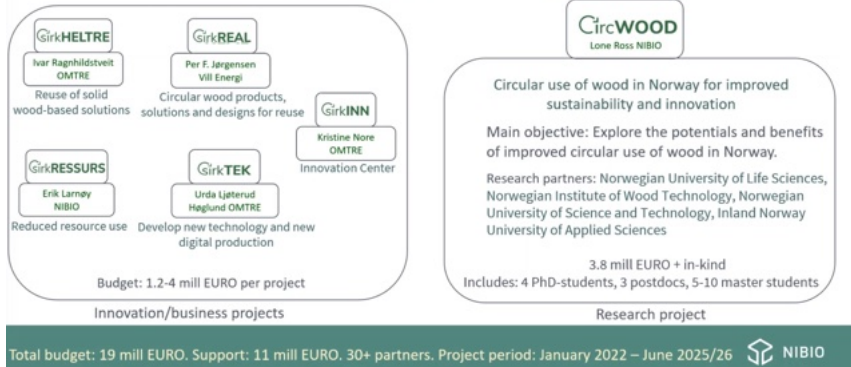


65

Norway: 19 M € for promoting wood-based bioeconomy

GirkTRE

Platform director – Kristine Nore, OMTRE



66



France: Notre Dame Cathedral in Paris



- 1300 oak trees
- 45 French sawmills involved in the construction of 36 cm beams
- 8 oak logs of exceptional size (+20 m)

67

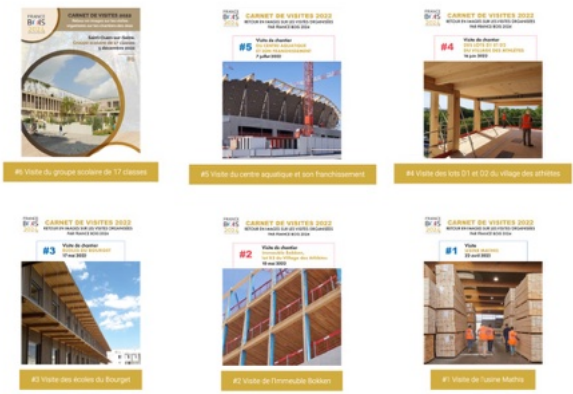
France Bois 2024

FRANCE BOIS 2024 DOCUMENTATIONS FORMATION LE BOIS ET LES JEUX ANNUAIRE APPELS D'OFFRE

Paris Olympics: 40% with the "Bois de France" brand with a 30% emission reduction effect compared to London and Rio

<https://www.francebois2024.com/>



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France Bois 2024

Le label BOIS DE FRANCE

Traçabilité garantie

Le label BOIS DE FRANCE est né de la volonté de mettre en valeur le bois français et sa transformation en France.

Il est aujourd'hui le seul label national à garantir la traçabilité du bois français, de la forêt jusqu'à son utilisation dans les produits de consommation et de la construction. Un produit bois vraiment français, c'est un produit BOIS DE FRANCE !

L'unique label national qui garantit la traçabilité du bois français

<https://bois-de-france.org>



Garantir un véritable produit français

Défendre les productions de nos forêts françaises est aussi important que de garantir sa transformation dans notre pays, pour l'économie locale ET pour l'assurance de l'utilisation de bois responsables.



Promouvoir le bois français et la filière professionnelle

Le label s'adresse à tous les professionnels (fournisseurs de bois, transformateurs, négociants) mais aussi aux prescripteurs, aux donneurs d'ordre et au grand public.



Développer l'unité de l'écosystème du bois français

Se regrouper, se structurer pour mieux se connaître et développer une communication adaptée et commune à tous les acteurs du bois français est une évidence et la garantie d'une future forêt.

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France: the national research program on forestry (40 M €) to support H2000 funds



Strategic Plan - December 2023

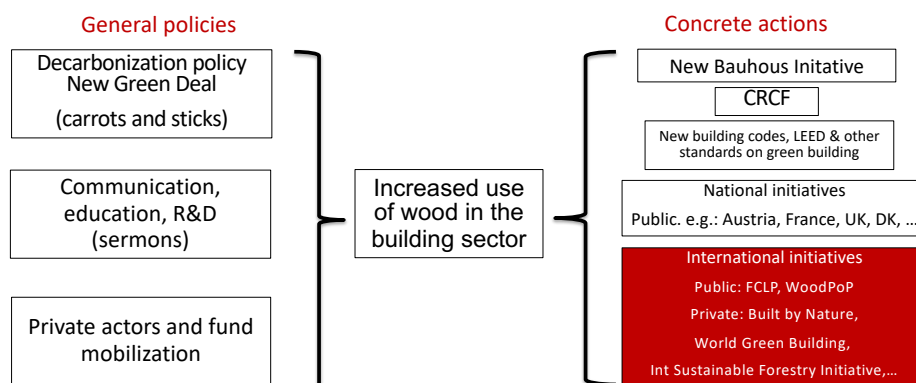
Source: <https://hal.science/hal-04503573>

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Tools to promote the use of wood in the building sector



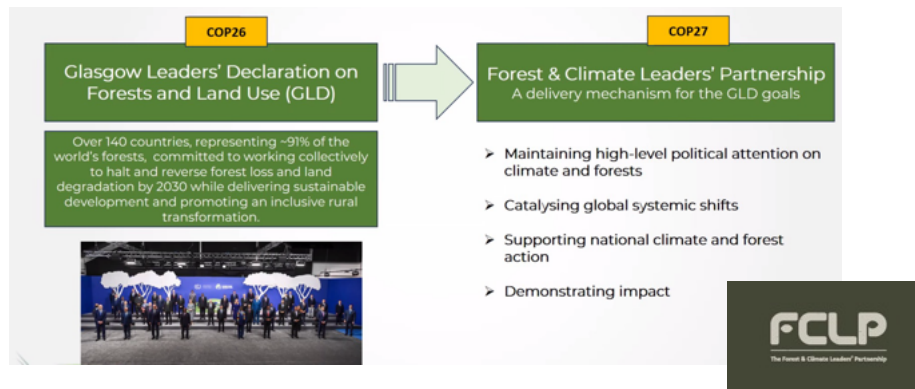
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The Forest & Climate Leaders' Partnership

<https://forestclimateleaders.org/>



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The Forest & Climate Leaders' Partnership

<https://forestclimateleaders.org/>

4 Action areas:

- International collaboration on the sustainable land use **economy and supply chains**.
- Mobilising public and **donor finance** to support implementation.
- Shifting the **private finance** system
- Supporting **Indigenous Peoples'** and local communities' initiatives.



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Forest Climate Leaders' Partnership: Greening Construction with Sustainable Wood Initiative

1. Governments of Kenya, Canada, France are co-leads of this initiative
2. COP28: a coalition of 17 countries committed to advancing policies and approaches that support low carbon construction and increase the use of wood from sustainably managed forests in the built environment.
3. Statement here: <http://forestclimateleaders.org/wp-content/uploads/2023/12/FCLP-COP28-Release-Buildings-06122023.pdf>
4. The coalition is now finalizing the workplan to COP30
5. To help deliver on priority actions, the coalition will be looking for ways to work with international institutions, NGOs and private sector to scale up work already underway, or to support new work
6. FCLP could help various programs to scale up, improve effectiveness and/or scale up impact

FCLP members

- | | |
|---------------|-----------------------|
| 1. Australia | 17. Guyana |
| 2. Belgium | 18. Japan |
| 3. Canada | 19. Kenya |
| 4. Colombia | 20. Netherlands |
| 5. Costa Rica | 21. Nigeria |
| 6. Denmark | 22. Norway |
| 7. DRC | 23. Pakistan |
| 8. Ecuador | 24. Peru |
| 9. Ethiopia | 25. Republic of Congo |
| 10. EU | 26. Singapore |
| 11. Fiji | 27. South Korea |
| 12. Finland | 28. Sweden |
| 13. France | 29. Tanzania |
| 14. Gabon | 30. UAE |
| 15. Germany | 31. UK |
| 16. Ghana | 32. USA |
| | 33. Vietnam |

WoodPoP

HomeAbout UsEventsNewsResources

EUROPEAN WOOD POLICY PLATFORM (WOODPOP)

WoodPoP is an innovative policy dialogue platform which brings together all relevant actors to advance the sustainable use of wood. It develops wood-related policy solutions, measures and recommendations to strengthen wood-based circular bioeconomy.



Source: <https://woodpop.eu/>

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European Wood Policy Platform | Policy Paper 2024

A WOOD-BASED CIRCULAR BIOECONOMY FOR A SUSTAINABLE EUROPE

GREEN CONSTRUCTION AND INNOVATIVE WOOD SOLUTIONS

Source: <https://woodpop.eu/>

4 CONSTRUCTION AND BUILDINGS

To incentivise the use of wood as a sustainable building material, we call on all relevant public and private actors to:

- Contribute to a new European Framework for the use of wood in mass-market development and high standard engineering and architectural solutions.
- Develop, streamline, harmonise, and simplify codes and standards regarding wood construction across countries, supporting the efficient and effective functioning of a pan-European market, building on the EU Common Market with its shared rules and bilateral agreements with third countries, for instance, the European Economic Area.
- Progressively remove and remove obstacles for wood construction, such as that on height and floor area allowances throughout national building codes and standards, incorporating scientific research results, knowledge, and practical experiences from early adopters, and front-running countries and regions to remove barriers to timber construction, including renovation activities.
- Launch and adopt pan-European, national, regional and local wood construction programmes/ initiatives.
- Enhance harmonised reporting on emissions for new buildings and major renovations and introduce maximum limit values on whole-life carbon/embodied emissions (to be progressively lowered, in line with science-based carbon budgets).
- Apply scientifically based Life Cycle Analysis (LCA) accounting rules, that duly reflect and quantify wood's climate benefits of long-term biogenic carbon storage, in Product Environmental Footprint (PEF) and Environmental Product Declarations (EPDs). The LCA should follow a harmonised standard from a European/International standardisation organisation, and financial and technical assistance should be offered to SMEs.
- Introduce carbon handprint regulation, and enable and promote the environmental and economic value of long-term carbon cycles in and on buildings in new construction and renovations.
- Promote modular and industrialised solutions for construction and building renovation.
- Leverage public procurement policies to promote environmentally friendly construction, for example, by favouring the use of wood-based materials, novel concepts, prefabricated building elements and other wood products.
- Encourage the adoption of innovative wood construction techniques among builders, architects, engineers, and workers through training programmes and other support schemes.
- Accompany efforts with guidance documents for different user groups, from suppliers to end users, at local, national, European and global levels.
- Develop risk management of buildings throughout their life cycle.

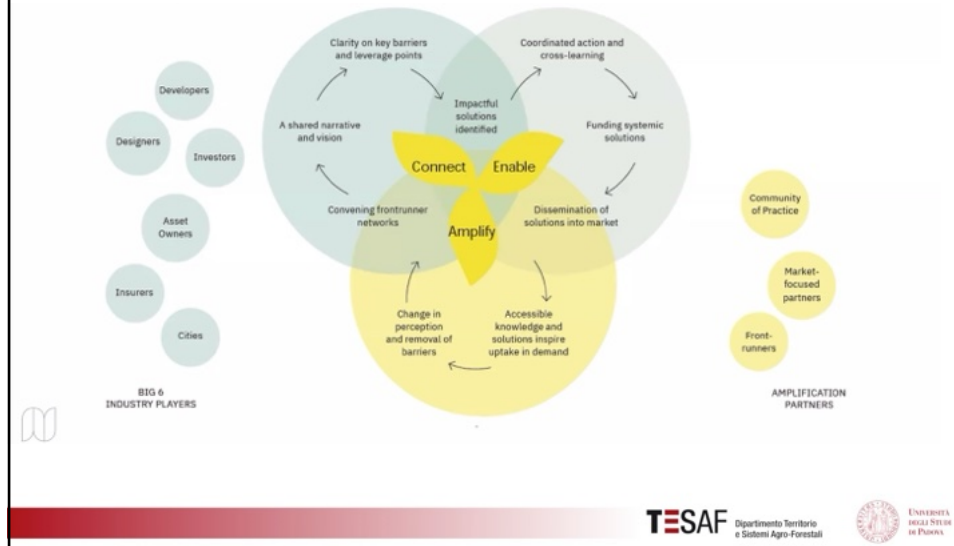
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Built by Nature: a built environment in unison with nature



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Built by Nature: a built environment in unison with nature

The screenshot shows the Built by Nature website with the following content:

- Navigation:** About, Networks, Solutions, Knowledge, BbN Fund, Prize. A "Join our newsletter" button is also present.
- IMPACTT:** Innovative Mapping and Processes, Advance Construction Timber Transparency.
- Projects and Topics:**
 - IMPACTT**
 - CARBON FOREST PERFORMANCE:** Top DATA from Tree to Panel
 - DESIGN PERFORMANCE INNOVATION:** Setting the standard on detailing multi-storey timber housing
 - CARBON DESIGN PERFORMANCE:** Optopreen
 - INVESTMENT COST POLICY:** Construction and Investment Costs of Biobased Materials in Residential Housing
 - PERFORMANCE INVESTMENT POLICY:** BauCite 4.0
 - CARBON FOREST:** Facilitating change through sharing value chain stories
 - POLICY:** Monitoring upscaling of timber construction in the Metropolitan Region of Amsterdam (MRA)

<https://builtbn.org/>

Logos at the bottom: TESAF Dipartimento Territorio e Sistemi Agro-Forestali, UNIVERSITÀ DEGLI STUDI DI PADOVA.

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International Sustainable Forestry Coalition

About the International Sustainable Forestry Coalition (ISFC)

- Established in September 2023, the mission of the ISFC is to help society build a nature-positive bioeconomy
- Currently 14 member companies managing more than 16 million hectares across 33 countries on six continents
- ISFC supports public policies that recognize the value of the private forestry sector in contributing solutions at scale to climate change, conservation of nature, support for indigenous peoples and rural communities and the transition to a circular bio-economy

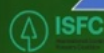
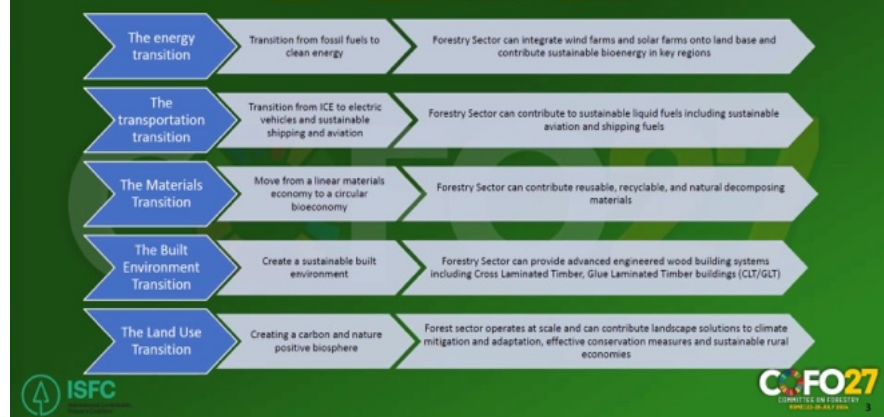


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The Role of the Private Forestry Sector in key Sustainability Transitions



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... and What about Italy?

Some advanced initiatives, like the Engineering Hub at University of Padova

- **2,540 m³ X-Lam** and **1,030 m³ laminated beams**: 4 floors, for 3,500 students, built in 2 months by Rubner (Brixen plant based on sawnwood from the group's Austrian sawmill in Styria - 400,000 m³/year)
- More info [here](#) and [here](#).
- Assuming Cross Laminated Timber (CLT) has a value about 632 kg CO₂/m³ ([Source](#)) or 0,632 t/m³,
- 2,540 m³ X-Lam and 1,030 m³ = 3,570 m³ x 0.632 = 2,256 t CO₂
- Carbon credit:
 - 2,256 t CO₂ x 50 €/t = **112,800 €**
 - 2,256 t CO₂ x 70 €/t = **157,900 €**



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U of T constructing Canada's tallest academic timber building

Unipd di nuovo prima in Italia per il QS Sustainability Ranking 2025

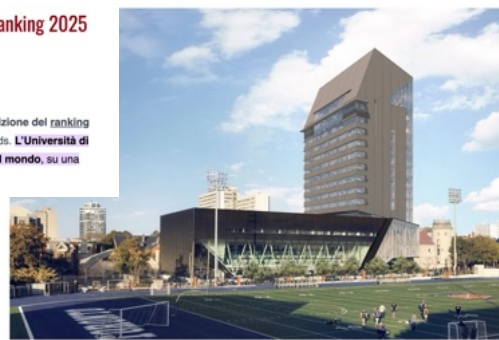
English version

10.12.2024

L'Agenzia di ranking internazionale QS ha pubblicato oggi i risultati della terza edizione del ranking **QS Sustainability**, l'ultimo nato tra i ranking della famiglia Quacquarelli & Simmonds. **L'Università di Padova si posiziona al primo posto italiano, al 53° in Europa e al 110° posto al mondo, su una base di 1751 atenei mondiali ammessi e considerati nel confronto.**



<https://www.utoronto.ca/news/u-t-constructing-canada-s-tallest-academic-timber-building>



The Academic Wood Tower has started to take shape in the Bloor Street cultural corridor, where it will serve as a beacon for green architecture – and provide high-quality spaces for three of the university's faculties and schools (rendering courtesy of Pabau Architects + 1994)

Published January 18, 2024

By Advancement Staff

The University of Toronto has begun raising a new 14-storey mass timber building that will set a precedent for sustainable design.

Once complete, the tower is expected to be the tallest academic timber structure in Canada and one of the tallest mass timber and steel hybrid buildings in North America.

U of T, which was recently named the world's most sustainable university by QS World Rankings, is committed to furthering its role as a global model with projects like these.

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City & Culture

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Important local initiatives



Provincia autonoma di Bolzano - Alto Adige

- At least **30% of public buildings** built in wood Timber Construction Fund created in 2023
- From 2023 and until 2030, with **1.2 million €** per year.
- Newly built buildings and works for public use in wood or mixed wood with a **minimum gross area of 300 m²**
- At **least 80% of the solid wood** used must have been felled and processed within a distance of **no more than 500 km from the construction site**.
- The contribution amounts to **500 € for each ton of carbon sequestered** in the long term (with a **maximum of 200k €** per single project)

Sources: <https://news.provincia.bz.it/it/news/edifici-pubblici-e-tutela-del-clima-fondo-per-le-costruzioni-in-legno>
<https://symbola.net/>



Ordinance of Commissioner Guido Castelli on the increase in the contribution for private reconstruction:
 an incentive equal to **10% of the public contribution** for the use of **wooden load-bearing structures** in the case of demolition with reconstruction of buildings with serious damage due to the earthquake (January 2025)

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Important signs of new policy trends also in Italy



Source:
https://cnbsv.palazzochigi.it/media/dccbpam/pai-16122024_italiano.pdf

PROGETTO-FARO 6 – IMPLEMENTAZIONE DI "HUB DI VALORIZZAZIONE FORESTALE" CON LE FILIERE LOCALI PER UNO SVILUPPO COMPLETO DELLA BIOECONOMIA BASATA SUL LEGNO	
INVESTIMENTO	€ 30 M
OBBIETTIVO	Il progetto ha l'obiettivo di integrare pienamente i settori forestali nazionali nel processo di attuazione della Bioeconomia, includendo tutte le filiere forestali nazionali, siano esse già avviate o in fase di startup. Per accelerare lo sviluppo di tali iniziative, è necessario supportare la creazione di centri logistici ed alta tecnologia: gli Hub di Valorizzazione Forestale (Forest Valorization Hubs). Questi centri saranno responsabili della gestione, lavorazione, trasformazione e valorizzazione delle materie prime forestali, in conformità con l'approccio a cascata. Di conseguenza, i residui risultanti saranno utilizzati e trasformati in valore all'interno delle appropriate catene di valore ("il legno giusto nelle giuste filiere"). Il progetto mira a migliorare ogni aspetto della gestione forestale sostenibile e a incrementare la competitività dell'intero sistema, a partire dalle aree in cui sono presenti foreste – in particolare i territori montani – che soffrono di spopolamento a causa della mancanza di opportunità di lavoro qualificato per le nuove generazioni. Il progetto segnerà un processo di investimenti pubblici e privati utili per la creazione di un percorso di partecipazione locale, con l'intento di strutturare una rete nazionale coordinata e monitorata, all'interno della quale le informazioni provenienti dai singoli hub saranno condivise e analizzate, favorendo un miglioramento continuo dell'intero sistema.
IMPATTO/ATTEN	<ul style="list-style-type: none"> • Sviluppare almeno 10 "Hub di Valorizzazione Forestale" in posizioni strategiche del paese, in base alla presenza di foreste e biomasse da valorizzare. • Aumentare significativamente il volume del legname nazionale prodotto all'interno delle diverse filiere. • Reclutare almeno 50 persone nella rete di hub e nell'entità nazionale di gestione e coordinamento. • Attivare il coinvolgimento di tutte le filiere nazionali, dalla costruzione ai pannelli (inclusi conglomerati e sugheri), dall'energia alla chimica verde, attraverso un piano coordinato per l'utilizzo delle risorse legnose, al fine di garantire la sostenibilità economica e sociale dei territori, inclusi i sistemi agroforestali (ad esempio, quello olio-pastore). • Mappare e analizzare lo stock di CO₂ nel legno destinato alla costruzione di edifici o ad altre applicazioni a lungo termine. • Stimolare l'attrattività delle aree montane come luoghi saluti alla vita sociale e lavorativa, grazie alla presenza di hub tecnologicamente avanzati e al contatto con la natura. • Ridurre lo stato di abbandono e degrado delle foreste non gestite in modo sostenibile e responsabile, incoraggiando la pianificazione forestale e la certificazione. • Limitare la diffusione di attacchi fitosanitari attraverso una gestione forestale attiva e sostenibile, insieme all'istituzione di un sistema infrastrutturale in linea con le esigenze operative e di sicurezza delle foreste, in particolare per la prevenzione degli incendi. • Promuovere la diffusione dei servizi ecosistemici e del turismo forestale, inclusi i prodotti forestali non legnosi, che possono essere destinati all'alimentazione. • Attraverso gli Hub di Valorizzazione Forestale sarà possibile diffondere nuove tecnologie tra gli operatori locali, garantire la tracciabilità in conformità con il Regolamento UE contro la deforestazione (EUDR), stimolare la diffusione della sicurezza nei cantieri forestali e fornire supporto per il Progetto-faro 1. Questo contribuirà al raggiungimento della Strategia Forestale Nazionale e a una maggiore valorizzazione delle risorse locali, promuovendo lo sviluppo della Bioeconomia nazionale.

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... but a long way to reach a consistent, coordinated policy

We have lost many opportunities (fiscal policy to support building restoration, NRRP funds, ...) and more recently:



Unfortunately, the forest-wood value chain is not considered a strategic sector in the recently published Green Paper on national wood industrial policy

I comparti strategici

178. Negli ultimi anni, la pandemia, la duplice transizione verde e digitale, i mutamenti del contesto internazionale – caratterizzato da un aumento di instabilità, guerre e tensioni geopolitiche – e l'emersione di nuovi domini economici hanno rafforzato la rilevanza strategica di alcuni comparti produttivi, nell'ambito dei quali la nuova politica industriale è chiamata a intervenire. Questi ultimi sono la siderurgia, l'automotive, la farmaceutica, la difesa, lo spazio e la cantieristica. Si tratta di settori che ricoprono un ruolo centrale nell'economia nazionale grazie al loro impatto sulla crescita economica e sull'occupazione, all'alto grado di innovazione e per il loro contributo alla sicurezza nazionale.

Source: https://www.mimit.gov.it/images/stories/documenti/allegati/Libro_verde_finale_2_2.pdf

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First of all, it is a matter of a new cultural approach

Longarone Fiere Dolomiti

CALENDARIO SPAZI ORGANIZZA + VISITA

Costruire

15 – 16 / 21 – 22 – 23
Febbraio 2025

↓

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Outline

- Why to support wood as a building material?
- Which type of building?
- How to promote wood-based constructions?
- **Final remarks**

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Take home messages

Let's invest in the use of wood in the construction sector:

- To decarbonize our economy **substituting carbon-intensive raw material** with renewable, efficient wood-based products
- To make available by-products for bioenergy and bioeconomy innovative segments with the «**cascade approach**» (e.g.: district heating - local scale community investments)
- Promoting a **closer to nature forest management**, i.e. forestland improvement and active management, to be able to produce relevant ecosystem services

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A strategic vision much needed!

