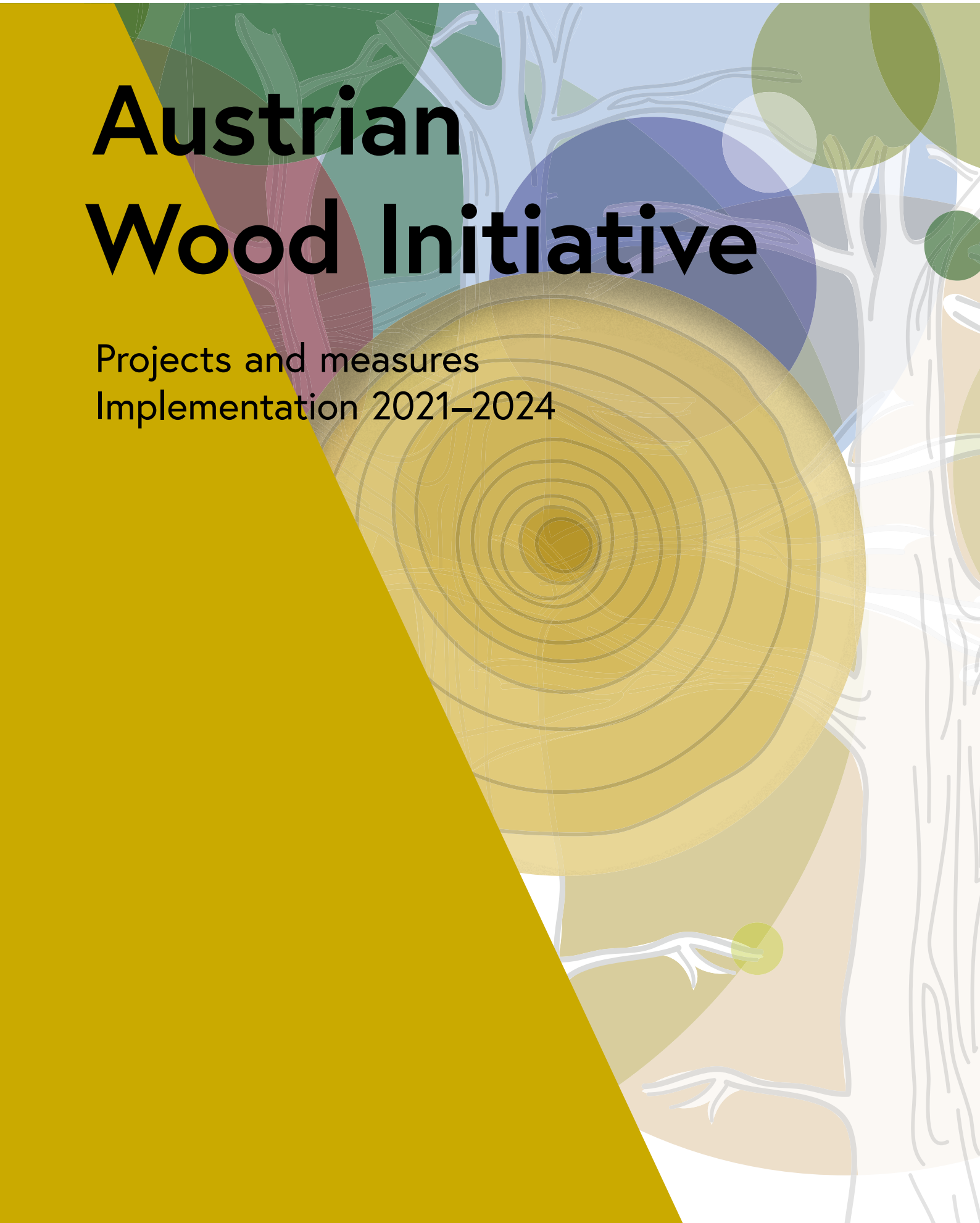
Forest Fund
Republic of Austria

An initiative by the Federal Ministry
of Agriculture, Forestry, Regions
and Water Management

Austrian Wood Initiative

Projects and measures
Implementation 2021–2024



Austrian Wood Initiative

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Implementation 2021–2024

Vienna, 2024

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Preface

Federal Minister
Mag. Norbert Totschnig, MSc

The renewable and sustainable resource wood can play an important role in offering solutions to the ecological, social and economic challenges of our time. Under the slogan 'Creating a sustainable future with wood', the Austrian Wood Initiative highlights the value of wood and its enormous potential for innovative and sustainable growth.
The forestry and timber sector contributes significantly to value creation in Austria's rural areas. However, the sector also has to deal with considerable challenges. The Austrian Federal Government established the Austrian Forest Fund in response to the effects of climate change on our forests. In addition to granting financial aid to forest owners to make their forests more resilient and climate fit, the Forest Fund supports projects to increase the material and energetic use of sustainable wood. A total sum of around 110 million Euros is available for this purpose.
The projects supported within the frame of the Austrian Wood Initiative vary from climate-friendly building to improving and developing legal and technical guidelines for the increasing use of wood in the construction sector, as well as basic and applied research for the use of wood as a raw and building material as well as energy source. More than 130 timber buildings have already been subsidised within the programme "CO_2 bonus". The Austrian network of timber construction consultants, another project supported by the Wood Initiative, is the first point of contact for building with wood.
This brochure presents the wide range of topics covered by the Austrian Wood Initiative and provides an overview of the numerous projects that have already been implemented or are currently underway.

Mag. Norbert Totschnig, MSc
Federal Minister for Agriculture, Forestry, Regions and Water Management

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1 Austrian Forest Fund

With the Forest Fund, the Austrian federal government has indicated a large and unique package for the future of our forests with a budget of 450 million euros.

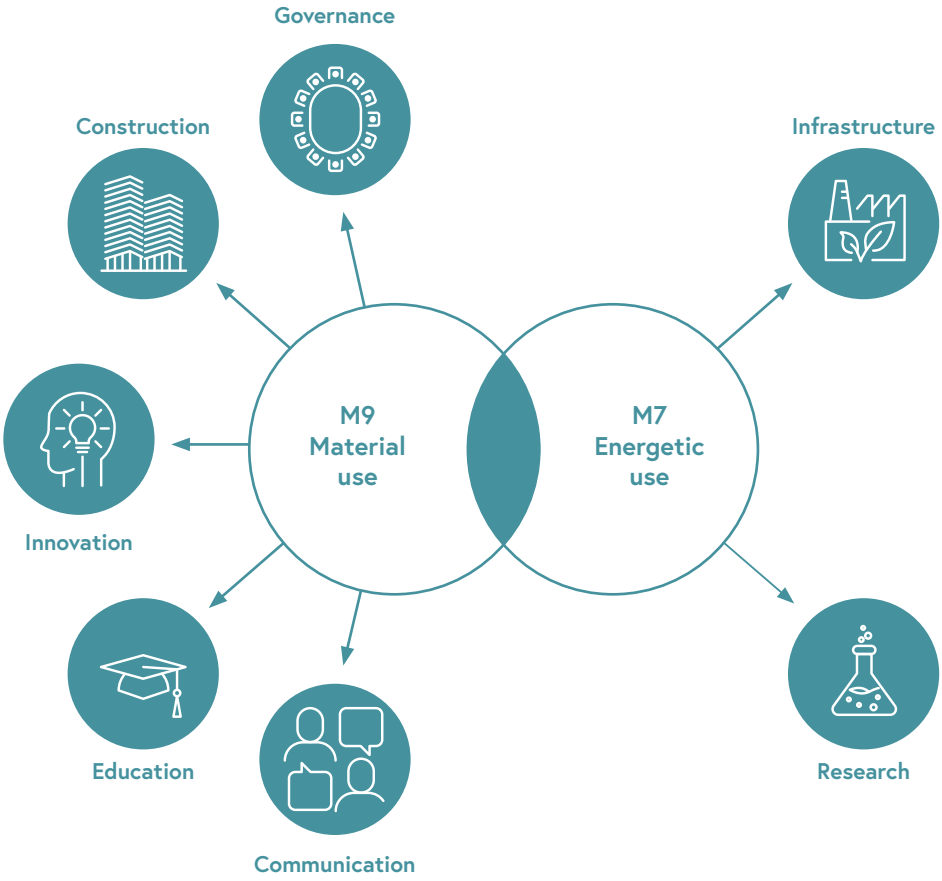
Sustainable forest management, that increases resilience and is adapted to climate change, safeguards the important functions of forests, such as the conservation of biodiversity, the optimisation of the carbon sink or the recreational use of forests, as well as the utilization of the raw material wood and protection against natural hazards. The Forest Fund consists of ten different measures that take into account the core area of forestry, the entire wood-based value chain and the needs of the society.

Package of measures:

1. Reforestation and tending measures after damage events
2. Development of climate-fit forests – tending operations
3. Compensation for bark beetle damage caused by climate change
4. Establishment of deposits for damaged wood
5. Mechanical debarking as a forest protection measure
6. Measures to prevent forest fire
7. Research priority and research facility for the production of wood gas and biofuels
8. Research priority “Climate-fit forests”
9. Measures to increase the use of wood as a raw material
10. Strengthening, preserving and promoting biodiversity in forests

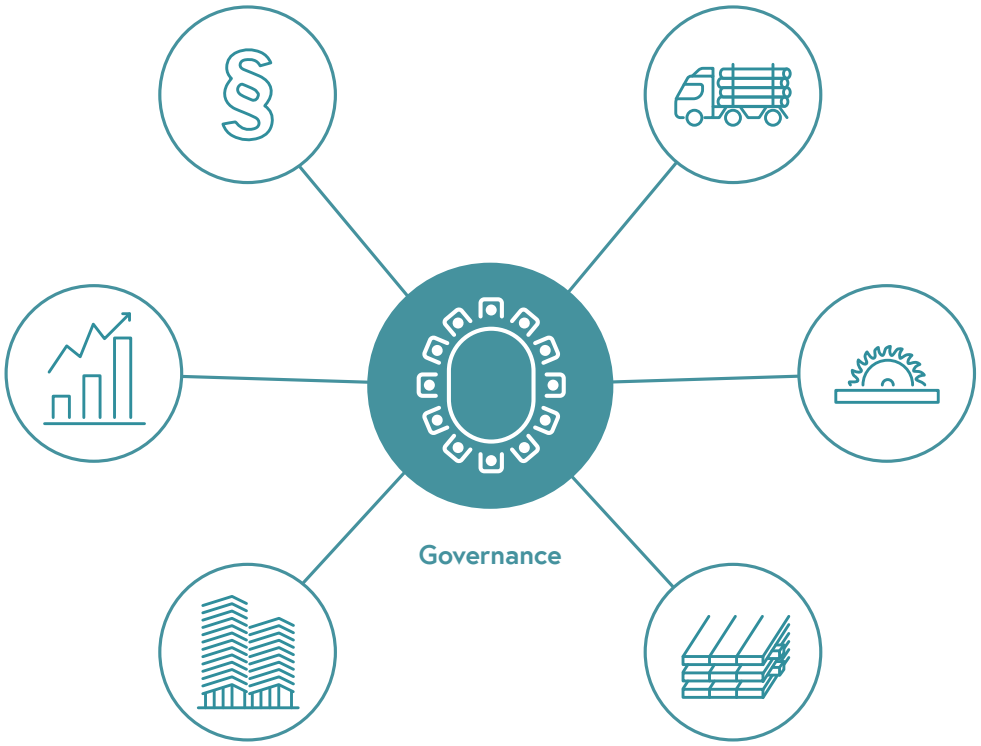
2 Austrian Wood Initiative

A key objective of the Forest Fund is to promote the use of sustainably grown wood in the interest of the bioeconomy and climate protection. Within the Austrian Forest Fund a total of around EUR 110 million is available to promote the material and energetic use of wood. The Austrian Wood Initiative is structured around the following thematic modules:



3 Governance

Based on the guiding principle **'Together we are stronger'**, the thematic module 'Governance' focuses on targeted measures to strengthen the political, legal, ecological, financial and structural framework conditions for the sustainable use of wood. The aim is to promote dialogue within and across sectors and cooperation between companies, research institutions, administrations and policymakers at national and international level. The objective is to consolidate expertise and to position and further develop Austria as a role model country for the use of wood. Networking, cooperation, consultation and exchange of experience are important elements in the transition to a sustainable, global, woodbased bioeconomy and circular economy. At the same time, new impulses will be given for the further development of existing framework conditions, thus creating improvements for the sustainable and efficient use of wood.



3.1 Wood consulting network

Wood offers the greatest climate benefits when it is used in buildings over the long term. It is therefore in the social and political interest to make timber construction more common. One of the biggest barriers to timber construction is the lack of expertise in the decision-making process, especially in the early stages of a project. The 'timber consulting network' provides free and independent advice to builders, planners and authorities. Advice is provided by eight regional consultants who work closely together to provide fast and competent support. Specific technical questions (such as fire protection, sound insulation, damp-proofing, etc.) are answered as well as basic information on how to get started in timber construction. Advice is given in person, by telephone or by e-mail, as required. The focus is on large volume timber construction in urban areas, because of the great potential there. Advice also focuses on public buildings (schools, kindergartens, community centres, etc.). The high quality standard of the expert advice is guaranteed by a continuous training concept in cooperation with Holzforschung Austria. In addition to the technical advice, a new survey system for the share of timber construction is being developed. Existing survey structures will be used to provide politicians, associations, authorities and decision-makers in the construction industry with a good database for future decisions. As part of the funding project, ECOPLUS is developing a pilot project to support interested non-profit housing developers with experienced timber construction experts as coaches for the first timber housing projects.

Project management:

proHolz Austria
Am Heumarkt 12
1030 Vienna

www.proholz.at

3.2 Standardisation Coordination Unit for wood and wood construction

Timber competes with other building materials in terms of construction and design options, planning effort, flexibility, durability, environmental performance and life cycle costs. Targeted projects are needed to promote timber construction in order to strengthen its competitiveness. The work packages in this project take a comprehensive approach to promoting sustainable construction with a focus on recycling and reuse to optimise resource use and minimise waste. The development of BIM suitability of sustainability certificates and multi-layer building components is crucial for efficient building submissions. In addition, building physics requirements for fire, sound, heat and moisture performance need to be regularly updated to meet the needs of multi-storey and large volume buildings. Participation in standards committees and the Construction Products Regulation (CPR) is essential. It supports the development and standardisation of timber construction and provides a framework for innovative, sustainable construction practices. The topics have been defined in specialised committees with cooperation partners. The projects are awarded to research institutes and companies following a call for tenders. Publications in peer-reviewed journals ensure scientific validation and dialogue with peers. The results will also be disseminated on digital platforms to raise awareness of innovative approaches to sustainable construction.

Project management:

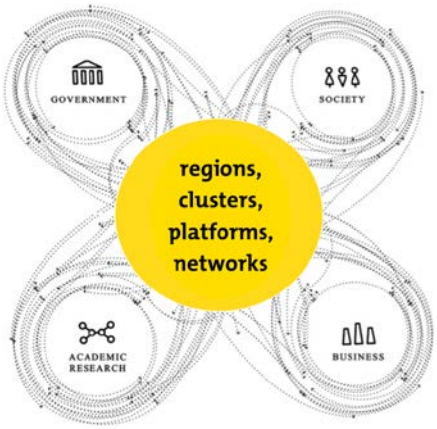
Association of the Austrian Wood Industries
Schwarzenbergplatz 4
1030 Vienna

www.holzindustrie.at

3.3 Bioeconomy Austria

Preparation of a national bioeconomy cluster

As the umbrella brand for the nationwide bioeconomy cluster, Bioeconomy Austria is included in the current government programme. It is a flagship project of the National Bioeconomy Strategy and is funded by the Austrian Forest Fund. Achieving a sustainable bioeconomy means moving away from fossil resources and promoting renewable raw materials. In the sense of an eco-social market economy, this creates new opportunities for the business location, protects the climate and takes into account competing land use interests. Bioeconomy Austria is a growing, Austria-wide bioeconomy network of companies, research, politics and society. Bioeconomy Austria identifies and initiates joint projects with the aim of exchanging knowledge and closing cycles. For the bio-economy, renewable resources from forests, water and fields create regional added value, security of supply and sustainable living conditions. Austria already has a broad landscape of platforms and clusters. A national bio-economy cluster should therefore be created from a network of regional clusters and platforms. Industrial processes, regional entrepreneurship, national and international research, political and ecological framework conditions, consumption patterns and social demands as well as media trends have an impact on innovation processes within the bioeconomy. Accordingly, the Quadruple Helix Model according to Carayannis and Campbell (2009) applies to the Bioeconomy Austria project. At the beginning of the Bioeconomy Austria project, the focus is on wood as a raw material and thus on the forest-based bioeconomy.



Project management:

ecoplus Platform for
Green Transformation &
Bioeconomy
Niederösterreich-Ring 2
3100 St. Pölten

www.bioeconomy-austria.at

3.4 WoodPoP

Secretariat of the pan-European Wood Policy Platform

The importance of wood as a renewable resource, wood-based products and the wood-based value chain for climate change mitigation – as a carbon sink and as a substitute for fossil-based products – and as part of a circular bioeconomy is increasingly recognised. A wood-based circular bioeconomy integrating sustainable forest management principles generates a wide range of goods and services. Consequently, investment in innovative uses of wood is growing, contributing to job creation and local development in both urban and rural areas. However, to unlock the full potential of wood, more cooperation is needed between countries, involving stakeholders and research.

Since 2021, the European Wood Policy Platform (WoodPoP), initiated by Austria and Finland, has enabled the systematic exchange and cooperation along the wood-based value chain as a contribution to a climate-neutral and circular bioeconomy at pan-European level. WoodPoP unites representatives from 27 countries as well as representatives from industries and research. The WoodPoP Policy Paper contributes to a joint understanding between public and private actors to strengthen the wood-based circular bioeconomy in Europe with a special focus on the construction sector (https://woodpop.eu/resources/wood-policy-paper/).

Project management:

International Union of Forest Research Organizations (IUFRO)
Marxergasse 2
1030 Vienna

www.woodpop.eu

3.5 Wood for Globe

Development of a global wood policy platform

Timber and non-timber forest products and their value chains make a significant contribution to rural and urban livelihoods and to achieving sustainability goals. The forest-based sector is predestined to make a significant contribution to achieving this goal. Wood for Globe aims to strengthen wood policy networks and platforms by mobilising policymakers, academia and society to promote the global exchange of knowledge, experience and best practice. The project is implemented in coordination with Sustainable Wood for a Sustainable World (SW4SW), a joint initiative of the Collaborative Partnership on Forests (CPF).

The project includes the following main activities:

- Exchange of technical knowledge and policy experience: Inviting and networking policy and technical experts and practitioners to share best practice on priority issues related to sustainable use of wood.
- Sharing scientific knowledge and experience: Identifying and mobilising scientific expertise to promote informed policy dialogue and technical exchange through syntheses of the latest scientific innovations and findings.
- Global and regional policy dialogues: Organising and conducting global and regional policy dialogues on experiences in scaling up the contribution of sustainable wood-based materials.

Project management:

International Union of Forest Research Organizations (IUFRO)
Marxergasse 2
1030 Vienna

www.iufro.org

3.6 Circular Timber

Wood on the pathway to a sustainable circular economy

At the moment, 'circular design' is mentioned in many presentations, discussions and in the media. The impression is that the topic has arrived in the industry. However, a DGNB study found that more than half of all new buildings met less than 50% of the requirements.[1] Furthermore, the development of the circular built environment is declining globally, from 9.1% in 2018 to 8.6% in 2020 and to only 7.2% in 2022.[2] More and more materials are being extracted and consumed. However, if the material quotas are not met, even in projects that focus on the circular economy, the EU taxonomy will not achieve its steering effect. The aim of this research project is therefore to show how timber and timber-hybrid construction - new buildings and refurbishments - can be planned and built in a circular way (using the raw material wood in a way that is geared towards recycling). The instruments and methods used to assess the sustainability of buildings during the planning phase and the effects of the EU Taxonomy Regulation will be critically examined. A comprehensible applicability of the EU taxonomy in this sector will directly promote the Austrian economy and local companies. In the first phase of the research project, meta-studies will be conducted with the involvement of numerous stakeholders and analyses will be carried out on the impact of the EU taxonomy, in particular the circular economy, on the resource-efficient use and cascading use of wood in the construction industry. Based on this, the second phase of the research project will develop an overview of technical solutions and concepts for reuse, recycling, reutilisation and further use of timber construction based on best practice examples.

Project management:

TU Wien – Department of Structural Design and Timber Engineering
Karlsplatz 13
1040 Vienna

iti.tuwien.ac.at

1 The Austrian Sustainable Building Council (ÖGNI), 'Study on the marketability of the criteria of the EU Taxonomy for Buildings'

2 Circle Economy Foundation, 'Circularity Gap Reporting'

3.7 CO_2operation

Promoting timber in the construction sector

The project 'CO_2operation – Promoting timber in the construction sector' will create new economic incentives by rewarding the carbon storage and substitution performance of wood as a material through voluntary carbon trading, in order to promote the use of wood from sustainably managed forests. In cooperation with key stakeholders in the forestry and timber industry, a scientifically sound, credible and harmonised instrument for trading CO_2-certificates will be developed. This will serve to promote timber as a material in the construction sector, as well as the sustainable development and optimisation of the CO_2-cycle in the forestry industry, and as an efficient tool for achieving climate targets. A cross-compliance framework will ensure additional environmental benefits. A focus on increased resilience to climate change, the promotion of forest diversity and other ecosystem services, as well as the extension of the life cycle in timber construction, should be promoted and positively evaluated.
The first step is to analyse the political, legal and economic framework as well as potential risks. In a second step, existing examples of good practice will be identified, compared and evaluated. Against this backdrop, solutions and recommendations for an Austrian certification model will be developed in a third step together with key stakeholders. Finally, this model will be tested in a pilot application and the potential ecological and economic added value of a nationwide roll-out will be analysed.

Project management:

HumusPlus Modell Ökoregion
Kaindorf GmbH
Kaindorf 58
8224 Kaindorf

www.humusplus.at

3.8 FORHOLZ

Increased use of wood from the sustainability reporting obligations

The timber industry is facing new challenges as a result of stricter sustainability reporting requirements, such as the Taxonomy Regulation and the Corporate Sustainability Reporting Directive (CSRD). These regulations increase the pressure on companies to use more environmentally friendly materials and processes. At the same time, the increased use of wood products offers an opportunity to reduce greenhouse gases and promote the circular economy. The project aims to quantify the environmental benefits of durable wood products in current and future sustainability reporting. The regulatory framework will be analysed to identify synergies and verify the eligibility of wood products in the reports. In addition, the potential to reduce greenhouse gas emissions by increasing the use of wood in different sectors will be calculated. The project includes a detailed analysis of sustainability reporting requirements and a quantitative assessment of the environmental benefits of wood products. National and product-specific assessment methods will be used, including Life Cycle Assessments and Environmental Product Declarations (EPDs). Finally, the eligibility of these benefits in different reporting schemes and the calculation of potential CO_2 reductions will be analysed. There will also be plenty of opportunity for dialogue: Through a series of workshops (online and offline), company representatives from the wood industry will learn from each other how to prepare their companies for sustainability regulation and what challenges they may face.

Project management:

Institut für industrielle Ökologie
Rennbahnstraße 29/B3
3100 St. Pölten

www.indoek.at

3.9 HEART – Health – Architecture – Tourism

Healthcare buildings with “heart and wood”

There are a number of factors that point to investment in the healthcare sector in Austria - for example, the structure of hospitals is changing - small regional hospitals are being replaced by centralised clinics, family care is becoming less common, and medical tourism is on the rise as health awareness increases. The aesthetics of treatment rooms are playing an increasingly important role. This affects not only patients, but also healthcare staff. The idea of customer and employee focus is therefore becoming increasingly important in the healthcare sector - and wood could play a central role in this. The content of the project is the development of a meta-study with a potential survey for ‘wood in healthcare buildings’ and an associated catalogue of measures to promote the use of wood in this specific sector. The focus will be on researching the legal and normative framework. The basis for this is an interdisciplinary collaboration between experts in timber construction, health and tourism. The aim is to increase the use of wood in the health sector in the medium to long term by identifying potential and planning and implementing appropriate measures. Data relevant to the project will be collected through secondary and primary research (expert interviews). The results will be evaluated and complemented in interdisciplinary workshops. Based on the findings, key factors for the use of wood in the healthcare sector will be identified - a catalogue of measures with suggestions for potential activities will be developed.

Project management:

proHolz Steiermark
Reininghausstraße 13a
8020 Graz

www.proholz-stmk.at

3.10 HOLGER

Wood governance - increased use of wood in the construction industry for a bio-based circular economy

The increased use of wood in construction contributes to the reduction of greenhouse gas emissions. Despite Austria's pioneering role in timber construction, there are numerous legal, structural, financial and technical barriers to the optimal use of wood in a circular economy. Important impulses for the development of a circular bioeconomy and for the use of wood have been set at European level, but in many cases there are only targets without specific implementation steps. The aim of this project is to assess the potential impact of these regulations from the various policy areas on forests and wood-based value chains and to identify suitable instruments for the implementation of the policy objectives. This shall support policy coordination and development at national and European level and strengthen Austria's role as a 'wood country'. To this end, the relevant EU policies and their implications for the bio-based circular economy and timber construction in Austria will be analysed in a first step using document review and expert interviews. At the same time, the institutional framework for timber construction in Austria and specific funding measures to increase the use of wood in the construction industry are analysed. Furthermore, country comparisons of the framework conditions and support measures for timber construction are compared with those in other countries ('good practice examples' in Germany, Switzerland, and Finland) and finally barriers and favourable factors are evaluated and recommendations and instruments are derived.

Project management:

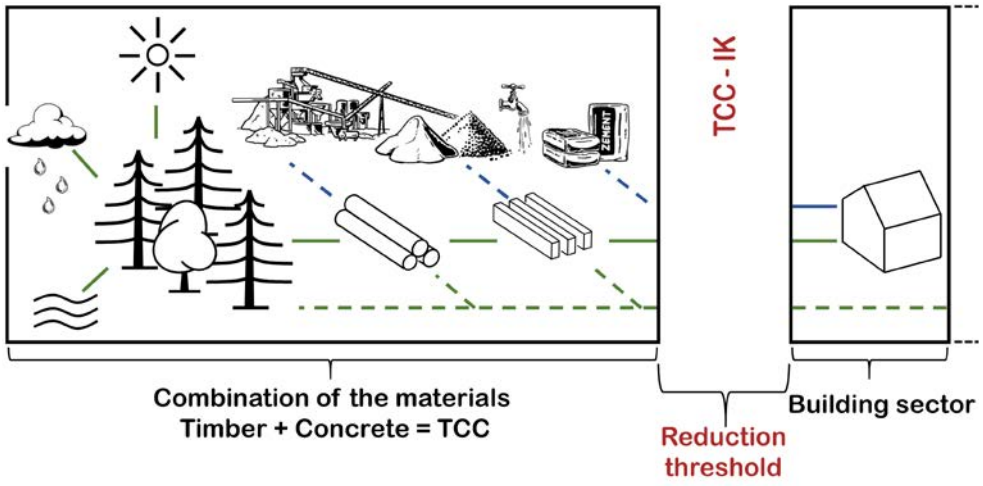
University of Natural Resources and Life Sciences, Vienna (BOKU) – Institute of Forest, Environmental and Natural Resource Policy
Feistmantelstraße 4
1180 Vienna

boku.ac.at

3.11 Timber-concrete composite construction

Measures for increased application through the development of knowledge

Timber-concrete composite (TCC) construction is an important building block in promoting sustainable construction. It takes advantage of both wood and concrete. The concrete absorbs the compressive stress and the wood absorbs the tensile stress. This means that the wood can replace the steel reinforcement in the concrete. However, this construction method has only been regulated by approvals (BTZ, abZ, ETAs) for fasteners and composite materials. This is one of the main reasons why many structural engineers are reluctant to use TCC. The aim of this project is to present the partly separate technical codes and approvals in an integrated way. The recognised codes of practice will be presented in a clear and compact manner, summarised with examples, and an insight into the state of the art will be given. The aim is to provide the basis for a clearly defined set of rules, which will also serve as a planning aid for decision-makers. The resulting policy document should include all currently available and relevant research. The focus will be on technical developments, including joining technology, as well as the construction process and disassembly. The integrative presentation of existing approvals for the TCC construction method is also a focal point of this research work. The aim is also to identify those areas where additional experimental or numerical investigations are required. The expertise of the Timber Construction Department and the capabilities of the Technical Research and Testing Institute provide the best basis for answering questions such as shear in CLT elements and lift-off protection by screws through an experimental approach.



Project management:

University of Innsbruck –
Institute for Construction
and Material Sciences
Technikerstraße 13
6020 Innsbruck

www.uibk.ac.at/holzbau

3.12 Wood and Health

Timber construction is becoming increasingly important in the face of climate change, as wood can replace CO_2-intensive building materials and store carbon over the long term. In addition, wood is considered a 'healthy' building material, as it has been shown to have positive effects on indoor climate and health. The 'Wood and Health' project aims to summarise the current knowledge on the health effects of wood as a building and interior material in a systematic review and publish it in an international peer-reviewed journal. This knowledge will be summarised in a German compendium to provide policymakers and developers with a sound basis for promoting the use of wood in the construction industry. It will also help timber companies to communicate with their customers. The main objective is to promote the use of wood from sustainably managed forests through comprehensive knowledge transfer and awareness raising among all relevant stakeholders, including legislators, companies and customers.

- Work package A will prepare a systematic review that will comprehensively and structurally analyse the health effects of wood and publish the results internationally.
- Work Package B will develop a German language compendium that presents these results as a set of arguments for Austrian stakeholders. This is the first time in Austria that such a comprehensive scientific analysis of this topic will be published.
- Work package C focuses on the communication and dissemination of the results via networks and multipliers in order to promote the use of wood and its application in the construction industry.

Project management:

Paracelsus Medical University – Institute of Ecomedicine
Strubergasse 22
5020 Salzburg

www.pmu.ac.at

3.13 HolzKreislauf

Solutions for a circular timber construction in Austria

Current climate policies and measures increase the need for innovation along the entire product lifecycle and value chain in the construction sector to realise the potential of circularity in construction products. Strategies to increase circularity are essential for the increasing share of wood in buildings and the associated long-term carbon storage in the wood used. The aim of the study is to analyse the current circularity of different building products in construction based on a literature review and to identify the main challenges and fields of action in the different phases of the building life cycle to improve circularity. The wood material flow in construction is transformed into a 2050 scenario with optimised circularity. The current flows are determined from existing primary data, combined with estimates from the literature and expert knowledge, and presented graphically. Technical, legal and economic barriers and research needs are identified with experts. One focus is on the logistical barriers, which are analysed using the example of the "Gründerzeithaus" (timber from mixed construction) as a wood resource for new timber construction. Based on these results, the wood material flow for the year 2050 will be illustrated in an optimised recycling scenario.

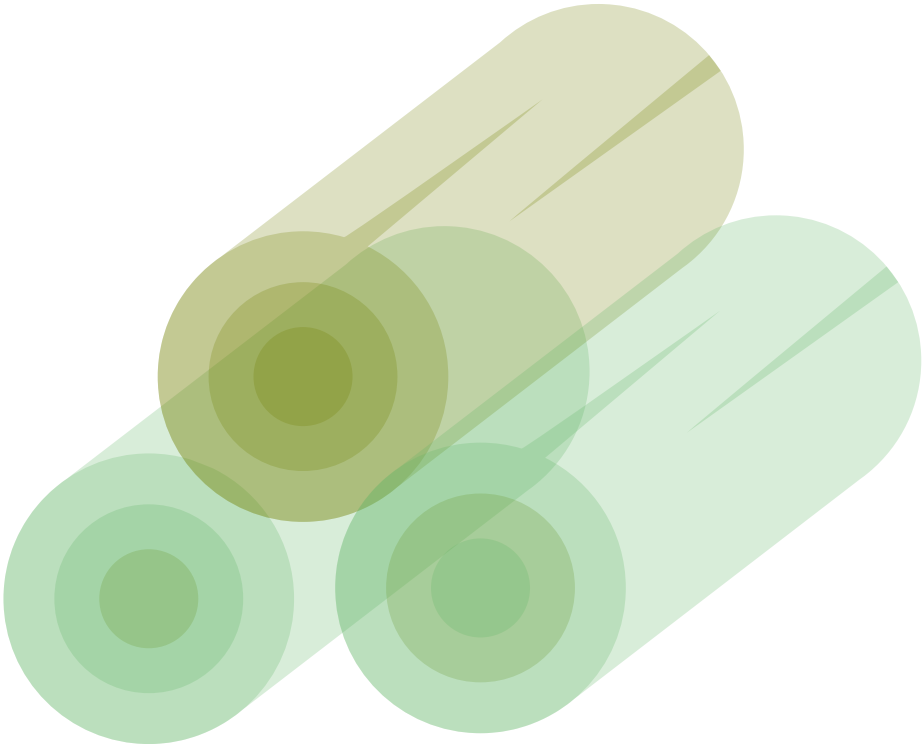
Project management:

ÖGUT – Austrian Society for Environment and Technology
Hollandstraße 10/46
1020 Vienna

www.oegut.at

3.14 Guidance for the implementation of the EUDR

The EU Deforestation Regulation (EUDR) entered into force on 29 June 2023. The objective of the EUDR is to minimise the EU's contribution to global deforestation and forest degradation and thereby reduce global deforestation. The obligations of the EUDR must be implemented in the timber sector from 30 December 2024. Despite the annual increase in Austria's forest area, Austrian stakeholders must implement the EUDR due to WTO rules. The regulation poses significant challenges for the sectors concerned. For example, it requires strict traceability of raw materials back to the place of production (e.g. the place where the wood was harvested) using geo-localisation data. Legality information must also be provided along the entire value chain. All relevant data must be uploaded to a digital platform ('EU Information System'). This project aims to standardise and efficiently transfer the necessary EUDR information within the timber value chain. The aim is to support the Austrian forest-based sector in the national and international market in carrying out its activities in a legally compliant and effective manner. In order to minimise the risk for market partners, a stakeholder-related (forestry-timber-paper) guideline for the implementation of the EUDR in the wood-based panel sector will be jointly developed on the basis of the interest representation (Austropapier). These guidelines will be developed in close cooperation with the competent authorities and the practitioners of the market partners and will take into account the following requirements: 'EUDR-compliant, practical for all market partners, efficient, resource-saving, digital'. Due to a lack of implementation tools (EU information system), an extension of the deadline by one year is under discussion.



Project management:

Austropapier
Gumpendorfer Straße 6
1060 Vienna

www.austropapier.at

3.15 Potential wood use in NEB neighbourhoods

Fürst Holding GmbH, a 150-year-old wood processing company is transforming its former production site into the 'Tischlerei Melk' neighbourhood. The project is developed as part of the New European Bauhaus programme. Fürst Holding GmbH is therefore aiming to evaluate the potential that this offers for the forestry and timber industry and present the findings to the industry and the public. As part of the project, a guideline for assessing the potential opportunities for the timber industry through the NEB programme will be drawn up. The guideline is intended to offer wood-processing companies the opportunity to assess the potential for their own company in connection with the NEB programme. The 'Tischlerei Melk' neighbourhood project, which will be outlined and examined as an international flagship for the domestic forestry and timber industry as part of the NEB programme, serves as an exemplary case study. The 'Tischlerei Melk' neighbourhood will be used to demonstrate the application of the guidelines and to provide an example of the areas in which increased use of wood may be conceivable as a result of the NEB. Specific criteria for assessing the positive effect of timber construction on the development of NEB neighbourhoods are defined. The assessment is supplemented by planning targets that must be met in order to demonstrate the positive effects. A comparative analysis of the 'Tischlerei Melk' neighbourhood is carried out in an exemplary conventional and timber construction design.

Project management:

Fürst Holding GmbH
J. Prandtauerstraße 11
3390 Melk

www.fuerst-moebel.at

3.16 Reduce

Potential carbon reduction through increased use of timber construction in multi-storey residential buildings

Construction activity in the multi-storey residential sector in Vienna is high, with a record number of more than 15,500 units built in 2021. Even if wood as a primary construction material offers substantial benefits for the climate and the environment, the percentage of timber buildings is still relatively low. This research project takes a closer look at the gap between the competing materials and aims to determine the amount of carbon reduction of timber construction compared to solid construction in multi-storey residential buildings. Comparative life cycle assessments will provide information on material-specific indicators such as the Global Warming Potential, show current trends and point out how a strategic shift towards timber construction could potentially reduce the impact of the building industry on the climate. The paper will offer a profound recommendation for promoting sustainable building practices. Based on existing statistical data on the construction activities substantiated parameters should be introduced to enable assumptions on carbon reduction in Vienna and on a national level. A project assistant was hired to ensure the efficient implementation of the project. In a kick-off meeting the project partners agreed on the main objectives. Valuable synergies were identified and a prospective project pool for the data analysis is in the making.

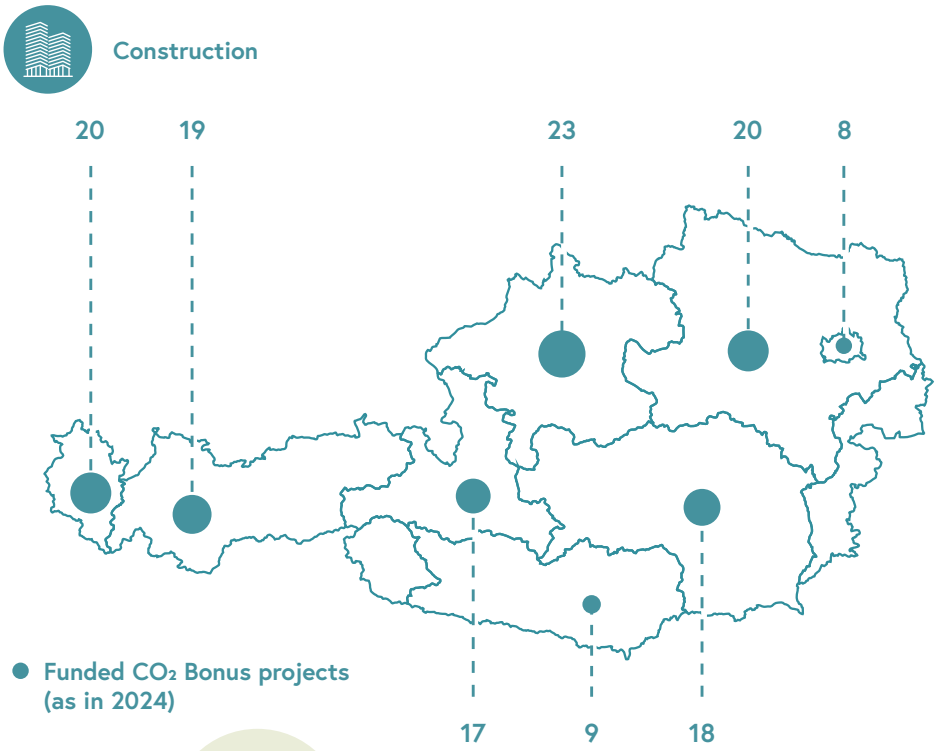
Project management:
TU Wien – Institute of Architecture and Design
Karlsplatz 13
1040 Vienna

ar.tuwien.ac.at

4 Construction

Building with wood from sustainable forestry contributes to the decarbonisation and ecologisation of the building sector. The Wood Initiative promotes the systematic and efficient use of wood in the interest of climate protection and a future-proof bioeconomy. By promoting large-volume timber buildings, especially in the public and semi-public sector, specific steps are taken to increase the share of wood construction in Austria. The CO_2 bonus projects of the Austrian Wood Initiative are overseen by Kommunalkredit Public Consulting (KPC).

In addition to the direct support to wood construction, numerous other activities are being implemented, such as the development of survey methods for the national share of wood construction. In addition, potential analyses and feasibility studies are carried out on the key topic "wood and health" in order to identify and overcome existing barriers to the use of wood in the health care sector.



Further information about the lighthouse projects can be found here:

www.waldfonds.at/leuchtturmprojekte/

CO_2 Bonus – Funding opportunities

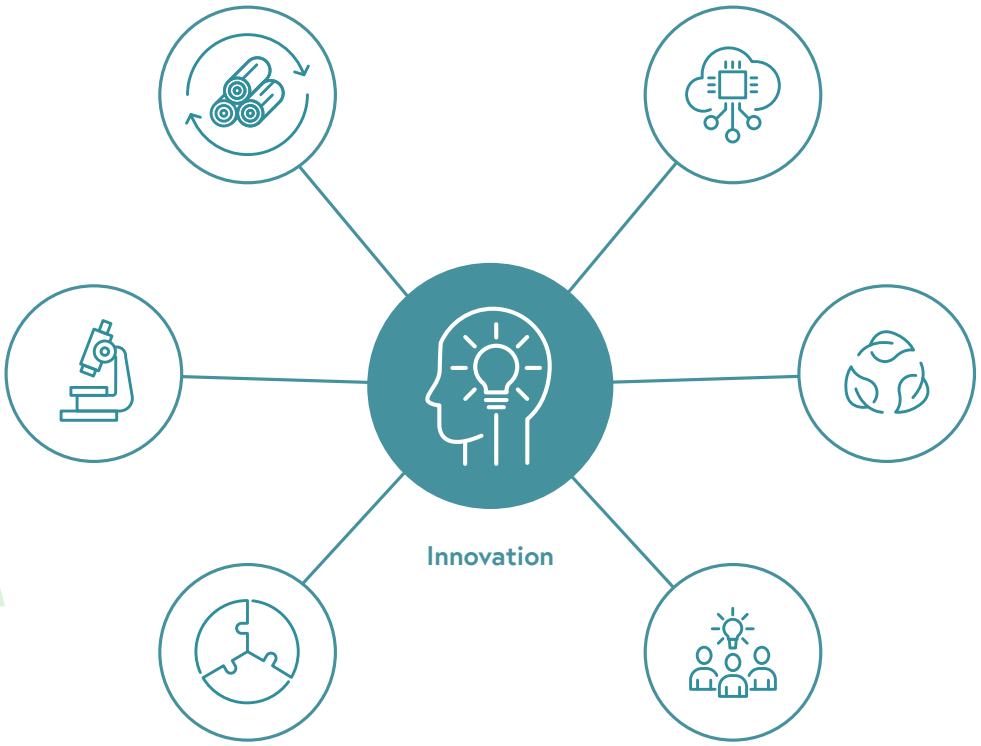
- Funding for new buildings, extensions and expansions of buildings for residential or public purposes and infrastructure in large-volume timber construction
- 1 euro per kg of wood used from verifiably sustainable forestry
- Increased by a further 10 cents per kg of wood if insulation materials made from renewable resources are also used
- Special attention is paid to the efficient use of wood in the evaluation criteria

Further information can be found here:

www.umweltfoerderung.at

5 Innovation

Research and innovation are the driving forces behind our economy, therefore targeted funding of research projects in this area is essential. The main idea of supporting research projects is to close gaps in knowledge, to break new ground and to use synergies from existing research activities. The research projects of the Wood Initiative are overseen by the Austrian Research Promotion Agency (FFG) under the motto 'THINK.WOOD.Innovation'. These include both individual projects of companies in the wood-based value chain and co-operative projects between companies and scientific partners. The focus of the funded research projects is to strengthen the sustainable and innovative use of wood as a raw material and construction material. In addition to research on wood-based materials and the development of innovative and recyclable wood products, funding priorities such as the digitalisation of procurement, planning and production processes and the modelling of optimised carbon models contribute to the further development of the wood-based value chain.

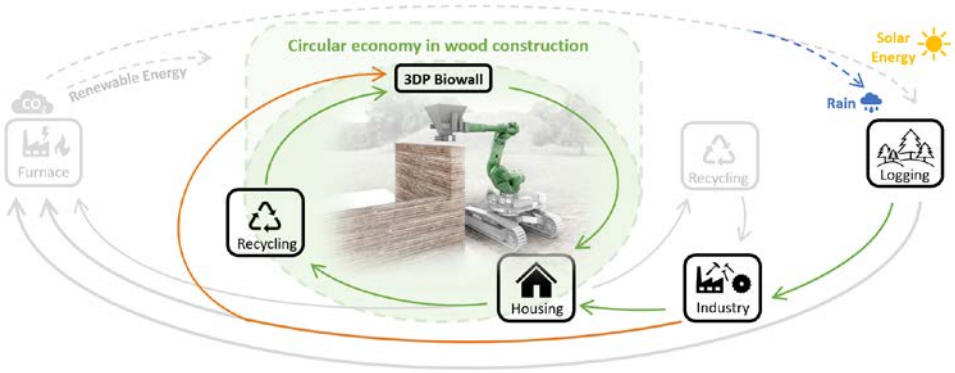


www.ffg.at

5.1 3DP Biowalls

Additive manufacturing of fully recyclable wall systems made from renewable materials

The construction sector accounts for more than 50% of total raw material consumption and is responsible for more than 40% of solid waste. It is therefore one of the most resource intensive sectors with low material efficiency. As a result, there is an urgent need to use materials more efficiently and to develop closed-loop approaches that will extend the life of building materials and components. Building with wood as a biogenic building material has great potential to contribute to resource-efficient construction, among other things due to its ability to store CO_2. In order to further increase the share of timber buildings, new strategies and methods are needed to use the available material more effectively. Based on this, the project has two overarching objectives: (1) to develop a fully recyclable material made exclusively from bio-based raw materials, preferably from side streams (e.g. from the paper and sawmill industries), and (2) to develop a robotic additive manufacturing process (3D printing) for wall components suitable for the use of this material. A mixture of lignin, starch and sawdust is printed, either in powder form or using a granulate as an intermediate product. In addition to the experimental development of the printing material and the printing process (including the print head), the recyclability will be investigated and a life cycle analysis will be carried out.



Project management:

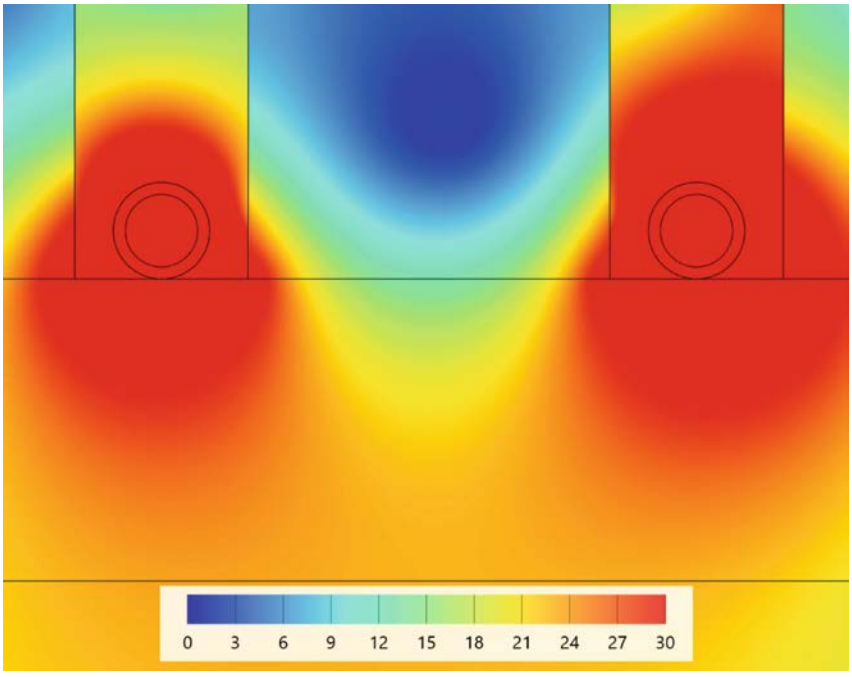
University of Natural Resources and Life Sciences, Vienna (BOKU) – Institute of Green Civil Engineering
Peter-Jordan-Straße 82
1190 Vienna

boku.ac.at

5.2 Activation.Wood

Research on thermally activated timber construction systems for heating and cooling

Reducing energy consumption and increasing energy efficiency in buildings to reduce CO_2 emissions are important goals for the coming decades. The initial simulation-based results and their verification by laboratory tests showed the fundamental suitability of wood as a material for component activation by applying temperature (heating and cooling) to the component via water pipes. The suitability of hardwood species (e.g. beech) for the use of thermal component activation and for approaches to the use of phase change materials (PCM) in timber construction is of particular interest for future applications and will be investigated in this project. The innovative content of the project is the development and investigation of thermally activated timber construction systems for possible applications in new buildings, renovation and densification. This includes the promotion of thermal activation of components and the investigation of heat storage using bio-based and renewable PCM as thermal storage technology. The basis for innovative timber construction systems as energy storage and climate control for different applications will be established and researched. Component and building simulations will be used to estimate and validate the thermal energy inputs and outputs of the new systems based on monitoring data from the prototypes. The project aims to assess the substitution potential of conventional component-based systems with biogenic renewable resources.



Project management:

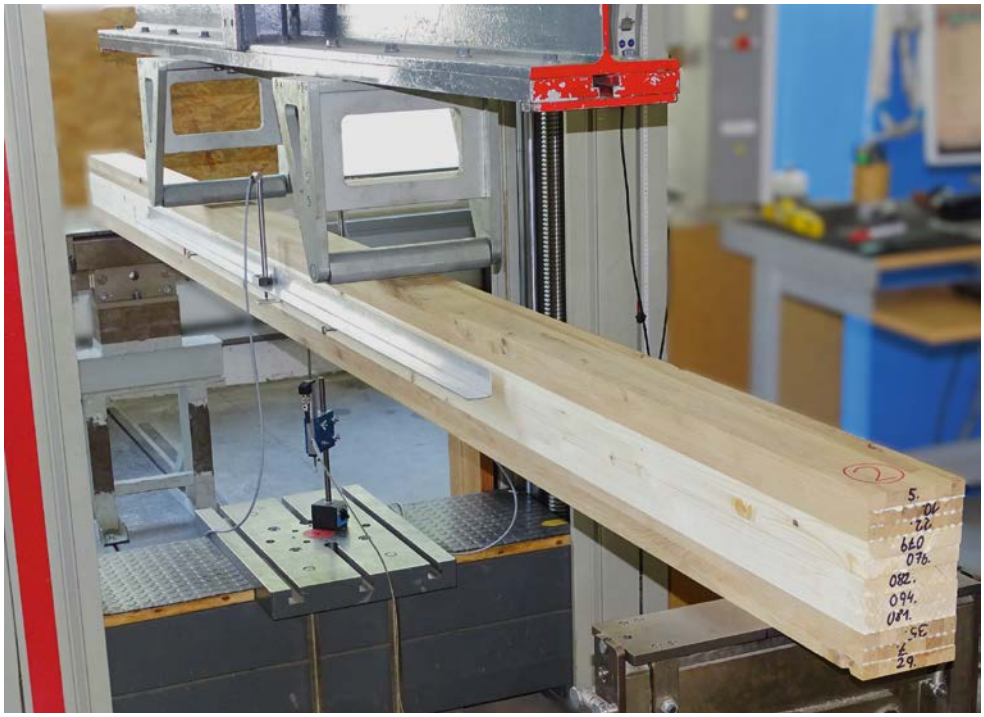
Salzburg University of Applied Sciences GmbH
Markt 136a
5431 Kuchl

www.fh-salzburg.ac.at

5.3 Building with hardwood

Glued high-performance structural wood products made from pure hardwood and hybrid layups

The use of wood as a sustainable and renewable raw material in the construction industry is growing in importance and market volume. However, hardwood is currently not established on a broad scale for structural applications. In the future, the proportion of hardwood will increase significantly due to the climate-related conversion of large areas of forest in Central Europe. As a result of this development, hardwood needs to be used more in order to meet the growing demand for timber construction products. The research project building with hardwood aims to create a basis for the efficient use of domestic hard-wood species in structural wood products. The focus is on the development of a novel processing method to increase yield while improving the homogeneity of the raw material. Sawn timber will be used as raw material for manufacturing structural wood products. A board-based strength classification of individual boards is made obsolete through homogenisation of the mechanical properties. A strength profile for the new semi-finished product 'strip-like lamination' will be established. Strip-like laminations will provide manufacturers of glue laminated timber products with a raw material based on hard-wood resources and optimised in terms of strength properties. A contribution to the future availability of raw materials and security of supply is made, while making special products with higher mechanical performance possible thanks to the properties of the hardwood species.



Project management:

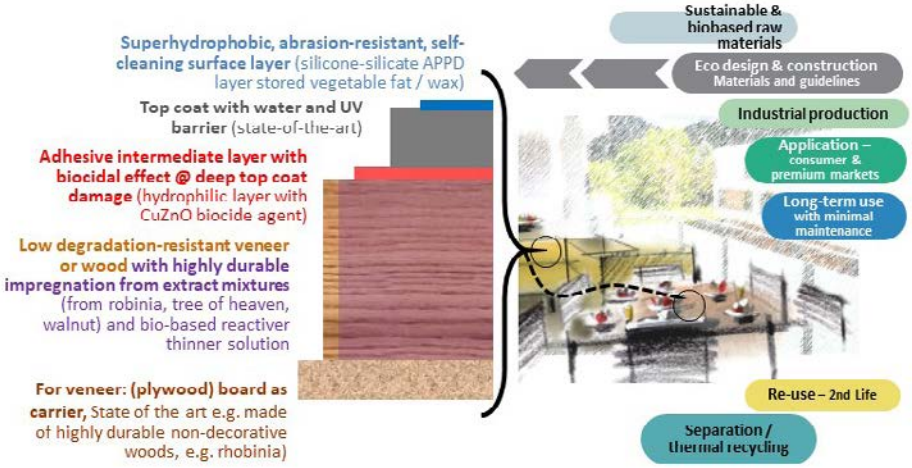
Holzforschung Austria
Franz-Grill-Straße 7
1030 Vienna

www.holzforschung.at

5.4 bioSHIELD4wood

Bio- & plasma-based protection of low-resistant Austrian wood species in sustainable outdoor applications

Intelligent room concepts that open up the interior of living spaces with a flowing transition to the outside will be an important living trend from 2030. The material wood will be at the centre of users' choices, but legislation will also emphasise ecology and sustainability. On the customer side, future outdoor furniture is expected to feature colours and textures already familiar from interior wood applications, as well as new surface functions ('self-cleaning') for wall cladding and balconies. The aim of the bioSHIELD4wood project is therefore to prevent the rapid biodegradation of domestic construction and furniture decorative woods with very low resistance to colour altering and wood degrading fungi in outdoor applications, with the loss of mechanical and visual-decorative properties. The focus is on the development of an innovative and biological wood preservative without synthetic, environmentally toxic biocides, i.e. transparent impregnation of domestic decorative woods with new mixtures of extracts from highly resistant tree species. Thin atmospheric pressure plasma coatings (APPC) with a silicone/silicate matrix serve as adhesion promoters for the above highly hydrophobic impregnations. At the same time, embedded Cu/ZnO provides biocidal protection against deep mechanical damage to the overlying moisture and UV barrier topcoat (state of the art). APPC layers on the topcoat surface enable a 'self-cleaning' effect with super-hydrophobic, fluorine-free, non-toxic composites based on silicates with embedded vegetable oils/waxes. The key to achieving the target properties is (i) consistent sustainability optimisation of the material concept with repair and end-of-life concepts and (ii) scientific understanding of the biocidal mechanisms of action against fungal decay at the macro to sub-micro level.



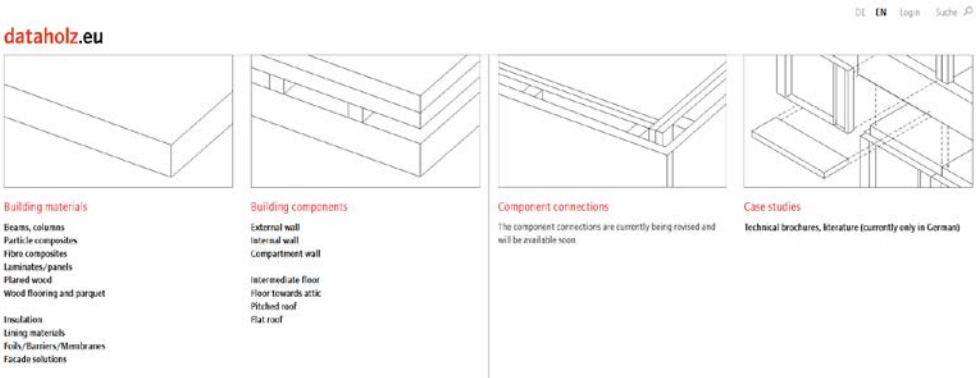
Project management:
Joanneum Research Forschungsgesellschaft mbH - Institute for Sensors, Photonics and Manufacturing Technologies
Leobner Straße 94
8712 Niklasdorf

www.joanneum.at

5.5 dataholz build up

Further development of the online platform dataholz.eu into a digitalised multifunctional construction tool

Timber construction in the 21st century is a high-tech construction method with a wide variety of products and designs, which requires reliable sources of information. Since 2003, the freely accessible online component catalogue 'dataholz.eu' has provided the timber industry with up-to-date specialist knowledge and has been officially recognised in Austria and, since 2018, in Germany. Further digital development of the platform with interfaces for planning and BIM-compatible formats is necessary to continue to support planners. This support is particularly needed in the development process for urban timber construction and multi-storey residential buildings. The aim of the project is to develop the online component catalogue into a multi-functional design tool. The focus is on the analysis and evaluation of efficient wood and wood-hybrid components that meet the increased requirements for sound insulation and fire protection in multi-storey residential buildings. New ecological filters allow transparent comparison of designs in terms of sustainability. New web services and BIM-compatible formats are also being implemented to transfer component information directly to the design software. This further development of the platform is expected to make a significant contribution to improving the integral design and construction process in timber construction. The methodological approach will be implemented in several steps. First, a comprehensive analysis of existing data and requirements in the field of multi-storey residential construction will be carried out. On this basis, specific components will be identified, evaluated against the defined criteria and included in dataholz.eu. At the same time, the digital development of the platform is being driven forward, with interfaces to databases and BIM-compatible formats (IFC) being developed by software partners.



Project management:

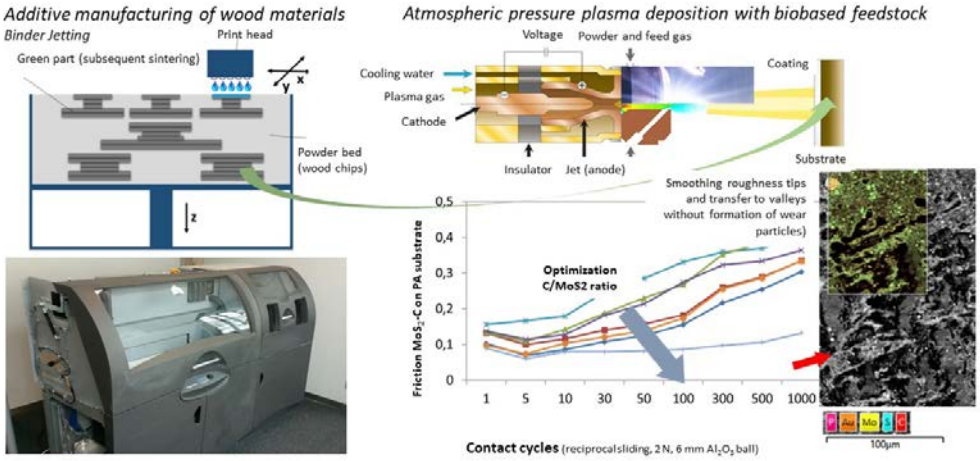
Holzforschung Austria
Franz-Grill-Straße 7
1030 Vienna

www.dataholz.eu

5.6 functionalWOOD2print

3D printing of high-strength wood & bio-based structural materials with a sustainably maintainable functional surface

Compared to conventional processes, additive manufacturing significantly expands the design freedom and customisation of components and assemblies. However, there has been a lack of technically and industrially viable processes for mechanically resilient, tough materials made from wood and bio-based raw materials, which are available in large quantities as by-products of the wood and paper processing industries, for example. While laser-based processes quickly damage wood fibres due to the high local energy input, binder jetting processes avoid this by 'selectively bonding' a binder applied via nozzles within the applied powder layer to the underlying layer in the areas forming the component with only very low heat input for curing. There is a lack of adapted bio-based infiltration resins, which are used to close open porosity and improve mechanical properties after the component has been removed from the powder bed and cleaned. Sustainable eco-design for future products made from wood and bio-based materials using additive manufacturing also includes functionalising the surface for durability and the ability to maintain or replace it to extend service life. Similarly, protection against water vapour ingress, which is the basis of microbial wood degradation caused by excessive moisture, requires the application of protective coatings. These two core technological issues for energy- and resource efficient components of the future are the development goals of functionalWOOD2print. The functionalWOOD2print project focuses on the development of demonstrators together with SMEs from the Austrian wood processing industry in high-value application areas.



Project management:

Joanneum Research Forschungsgesellschaft mbH - Institute for Sensors, Photonics and Manufacturing Technologies
Leobner Straße 94
8712 Niklasdorf

www.joanneum.at

5.7 FutureWoodTrans

Sustainable Autonomous Forestry Logistics

Forestry operations encompass a wide array of activities, requiring modern machinery for harvesting, selecting, processing, and transporting timber. These tasks often take place in challenging environments, as forests are frequently located in remote mountainous and valley regions. Unfortunately, forestry work carries a high risk of serious accidents, often caused by human error or poor judgment. Additionally, timber transportation relies heavily on diesel-powered vehicles. In Austria alone, forestry logistics account for nearly 36 million kilometers travelled annually, resulting in CO_2 emissions of 29,333 tonnes per year. To address these challenges, FutureWoodTrans proposes researching sustainable and automated timber harvesting and transport processes. The project focuses on two primary objectives: (1) reducing CO_2 emissions through electrification and the use of locally available renewable energy, and (2) implementing fully-automated transport systems in forest environments. Fully-automated operations in forests are particularly complex due to steep topographies, difficult terrain, and the challenges of navigating forested areas. To achieve this, advanced sensor and actuator technologies must be developed to enable fully-automated machinery to detect obstacles and respond to unforeseen events in real time. Furthermore, the loading and unloading systems will require innovative sensors and actuators capable of identifying, gripping, and sorting logs by their respective classifications. This integrated approach aims to enhance efficiency while reducing environmental impact and improving safety in forestry operations.

Project management:

Graz University of Technology – Institute of Automotive Engineering
Inffeldgasse 11
8010 Graz

www.tugraz.at

5.8 GREEN_GANTRY

The future of overhead bridges on main traffic arteries in innovative timber construction

The global reputation of wood, together with the professionalism of the design, production and logistics involved, has enabled timber to become a viable economic and environmental alternative to the more energy-intensive methods of concrete and steel. An example of this in the field of infrastructure are the so-called overhead bridges, usually portal frames, which are used on Austria's (Europe's) motorways to provide information to road users or to obtain information from road users. The current common designs show a comparatively large variability in terms of design, component type and structural system, with structural steel in particular being the dominant material for the production of these gantries. The aim of the GREEN_GANTRY project is to provide the technological basis for replacing conventional construction methods with innovative timber construction solutions in the medium term. Experimental investigations will be carried out on small samples in the laboratory to investigate the load-bearing behaviour of such exposed timber structures, particularly with regard to moisture-induced stresses and material fatigue. On the other hand, a 1:1 test rig will be designed and built to verify the findings from the small-scale tests in real life. Proof of successful substitution in terms of CO_2 savings will also be provided objectively and comprehensibly by means of a product life cycle assessment.

Project management:

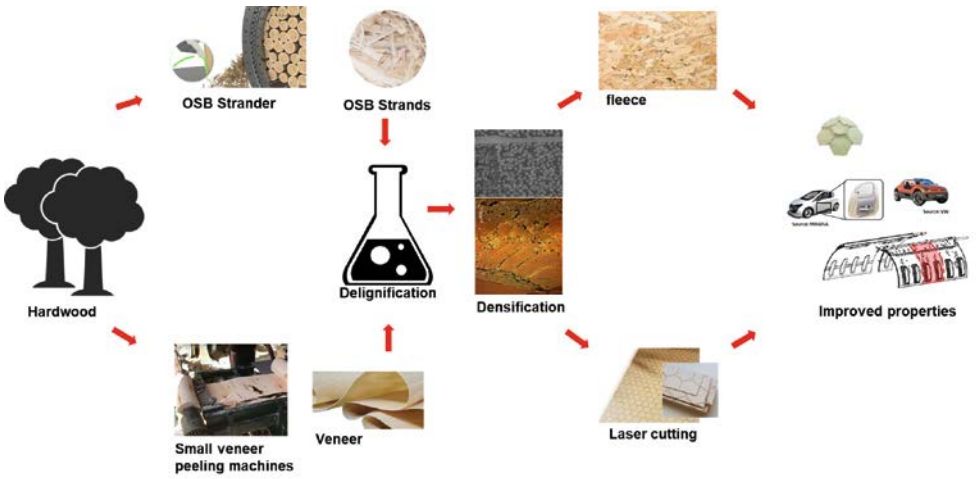
Graz University of Technology – Institute of Timber Engineering and Wood Technology
Inffeldgasse 24
8010 Graz

www.tugraz.at

5.9 HolzF³

3D elements made of woodF³ - solid, mouldable, fire-resistant

HolzF³ stands for solid, fire-resistant and formable wood structures. Previous projects (WoodC.A.R., MoveWOOD, CARpenTiER, etc.) have demonstrated the calculability of wood-based materials, making it possible to calculate and design wood-hybrid materials using state-of-the-art methods. On the other hand, projects (e.g. Strong Cellulose Composites) have shown that high-performance materials can be produced from wood by densifying veneers. Basic studies on biomimetic approaches for the production of free formable wood structures with high fracture energy have yielded interesting results. The aim of the project is therefore to combine the results of the various projects to achieve new, ambitious goals and thus create the possibility of using low-value hardwood resources to produce high-quality, high-performance bio composites that meet the requirements of the aerospace and automotive industries. For the production of densified wood composites, the two basic principles of the construction of wood-based materials are followed: Strand or particle materials and veneer-based shell structures. Where appropriate, the materials and structures developed will be reinforced with (natural) fibres and combined with other materials (metals, plastics). In addition to the ambitious scientific objectives, the consortium aims to translate the results into demonstrators for the aerospace and automotive industries.



Project management:

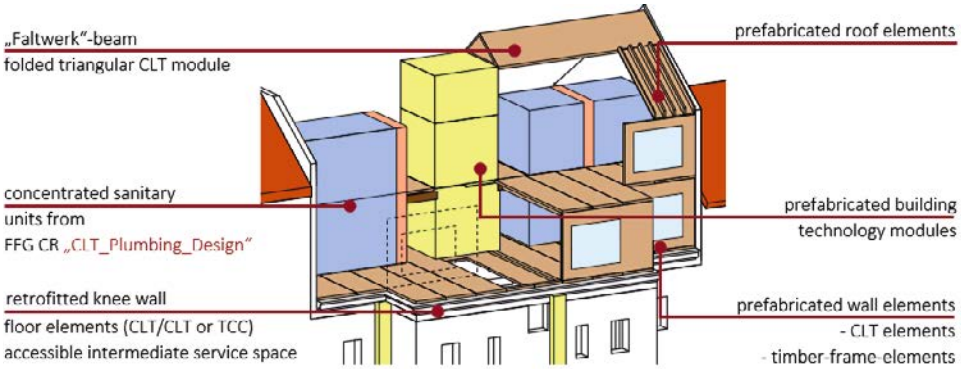
University of Natural Resources and Life Sciences, Vienna (BOKU) – Institute of Wood Technology and Renewable Materials
Konrad Lorenz-Straße 24
3430 Tulln an der Donau

boku.ac.at

5.10 HOT

„Holz-On-Top“ – Urban densification with modular wood constructions

All over the world, including Austria, people are moving to cities: Graz and Vienna have been the most dynamic cities in Austria over the last 10 years, with population growth of around 2% per year. Urban housing cannot keep up with demand, and current practices no longer meet today’s societal demands for environmental sustainability and resource conservation. One strategy to prevent increasing soil sealing in the peri-urban areas is the redensification of city centre areas with proper infrastructure (e.g. so-called Wilhelmenian blocks). At present, the redensification in these areas is usually realised in mixed construction (masonry and/or reinforced concrete) or steel construction. Due to the high additional dead load, these variants have in some cases a negative impact on the existing building. The aim of this research project is therefore to demonstrate the suitability and performance of timber as a building material and the concepts implemented for redensification of roof spaces. The concepts / design variants developed in this project are intended to respond to the different roof typologies of existing buildings in both technical and economic terms. In combination with wood and other sustainable building materials, the aim is not only to enable energy-saving, functional and cost-effective use of living space, but also to contribute to long-term CO_2 storage.
In summary, the aim of the research project „Holz-On-Top“ is to avoid planning errors in advance and to enable a quick and uncomplicated construction/assembly process on site. This allows contractors to concentrate on the implementation. At the end of the project there should be a catalogue/guide summarising the issues raised and the solutions proposed. This should serve as a reference for architects, planners, engineers, the timber construction industry and timber construction companies, as well as developers, building owners, property managers and authorities.



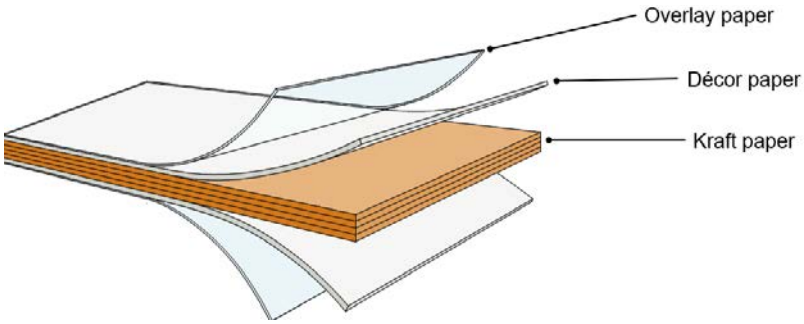
Project management:
holz.bau forschungs gmbh
Inffeldgasse 24
8010 Graz

www.holzbauforschung.at

5.11 Impresin

Impregnation resins from environmentally friendly/renewable resources

Decorative High Pressure Laminates (HPL) are multi-layered and can be used in a variety of ways. HPL consist of three phases: a core layer, a decorative paper layer and a wear layer. Each layer is treated with impregnation resins to ensure the durability of the product. The core layer is usually impregnated with phenol-formaldehyde resins. The 'Impregnation resins from eco-friendly/renewable resources' project aims to replace the fossil raw materials phenol and formaldehyde with renewable, healthier raw materials. The aim of the project is to develop a new resin system based primarily on renewable raw materials. By using kraft paper made from recycled wood fibres in combination with the new bio-based impregnation resin developed in this project, decorative high-pressure laminates will remain environmentally friendly as a wood-based material. Lignin, a natural component of wood and a natural phenolic monomer, is very often used as a partial substitute for phenol. Therefore, a broader research approach was taken in this project: Biopolyesters based on natural polyols and natural polyacids in various combinations will be developed to replace phenol-formaldehyde resins for the impregnation of recycled kraft paper fibres. Selected environmentally friendly and economically relevant raw materials, whose availability is guaranteed, will be analysed using various analytical methods. The promising raw materials resulting from the analyses will then be processed into a preliminary non-toxic concept resin based on at least 70% renewable raw materials.



Project management:

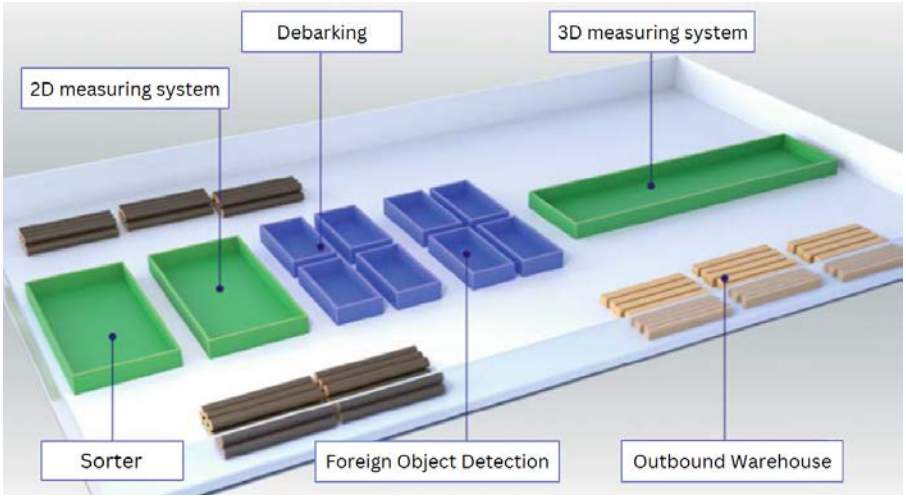
Wood K plus - Kompetenz-zentrum Holz GmbH
Altenberger Straße 69
4040 Linz

wood-kplus.at

5.12 KI4Holz

Artificial intelligence for better and more sustainable use of wood as a raw material

Wood is a sustainable raw material with many positive properties that should be used in the best possible way and in a variety of ways to achieve climate goals. It therefore makes sense to use and process this raw material as efficiently and sustainably as possible. The KI4Holz project uses machine learning techniques and mathematical optimisation in the wood processing industry to improve (a) the flow of wood in sawmills and (b) order and shift planning in sawmills. The first objective is to determine the ideal configuration of the material flow, i.e. the optimal arrangement of the individual machines in a sawmill. This optimisation takes place during the design and construction of a new sawmill and prior to the rebuilding or expansion of an existing sawmill. A system trained with historical data can generate decision proposals much faster than a complete simulation. In addition, the characteristics of the real implementation can be taken into account better than in a classical simulation. After the optimisation of the material flow, the main challenge for the operation of a sawmill is the simulation of orders and the generation of shift plans. This optimisation is fundamentally different from conveyor flow optimisation: it takes place during operation; it is time-critical and requires a solution before idle and downtime occurs; it must respect or take into account dynamic constraints. In reality, current planning of orders and shift schedules is usually carried out by a few people in relatively short periods of time before the actual implementation. Artificial intelligence methods and the creation of a prototype optimisation system under laboratory conditions are a first step towards putting this planning phase on a more solid basis.



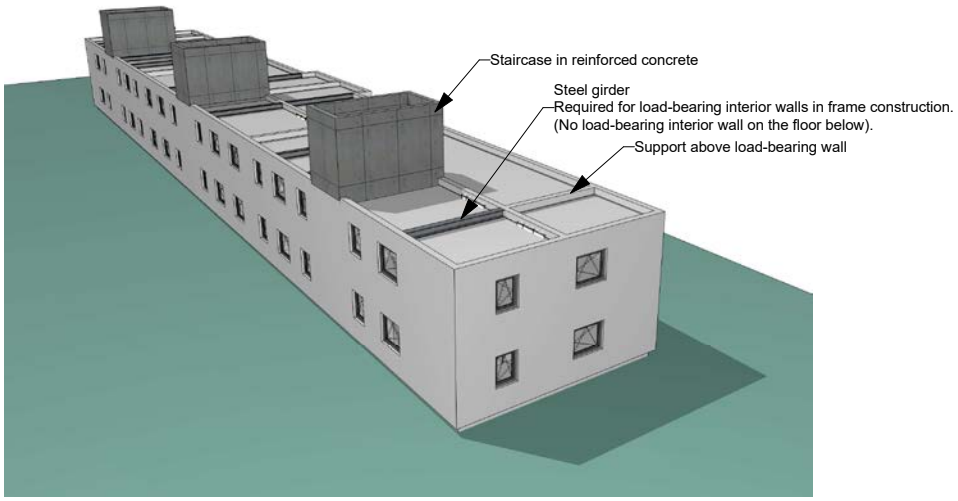
Project management:
Fraunhofer Austria Research GmbH
Lakeside B13a
9020 Klagenfurt

www.fraunhofer.at

5.13 LoftConcept

Parametric best practice solutions in solid timber construction for the extension of existing buildings

Urban densification will be the key construction task of the future, as it creates additional floor space without further soil sealing and infrastructure development. Much of the housing stock dates from the 1950s and 1970s and is because of a simple structural system and high similarity of flat design well suited to densification, particularly the addition of storeys. Prefabricated timber construction is ideal for this task due to its short and dry construction process, low dead weight and low impact on residents. However, the wide variety of timber construction methods, the lack of standards for building class 5 and company-specific production methods lead to uncertainties in planning, costs and quality and thus hinder the growth of the sector. The LoftConcept project will provide the structural and building physics basis for the extension of existing buildings using solid timber construction, and will develop a parametric solid timber construction system for densification in Austria and southern Germany on an interdisciplinary basis. Digital models will ensure coherence between early design decisions and suitability for construction. The basis for the automated calculation of performance parameters and building properties will be determined based on generic designs derived from analyses of the building stock of the forementioned period. The project will primarily contribute to theory formation by parameterising and automatically deriving performance characteristics of elements and joint details for residential densification as well as by developing standardised basic building modules to reduce complexity and simplify application. Secondarily, it will provide examples of multi-storey timber construction with approaches to typology, load-bearing structure, acoustic insulation, fire protection, thermal insulation and life cycle assessment.



Project management:

Salzburg University of
Applied Sciences GmbH
Markt 136a
5431 Kuchl

www.fh-salzburg.ac.at

5.14 MeRu

Recognition of roundwood characteristics

The industry's assessment of logs from the forest is an important process in the wood value chain and is therefore strictly regulated. In sawmills, officially calibrated electronic log measuring systems already measure the volume, quality, taper and curvature of the logs delivered. Other value-determining wood characteristics - such as knots, discolouration, shakes or resin pockets - are visually detected by mill workers within seconds. The aim of the project is to simplify the acceptance process and to make the identification of characteristics more objective, i.e. independent of individual human judgement. The aim is to lay the foundations for an AI-based automation solution in roundwood assessment, in order to close the existing digitalisation gap in roundwood quality assessment. This could improve efficiency along the entire value chain through the best possible sorting and thus optimal utilisation of the wood. Thousands of logs (spruce and fir) are being photographed and inspected for characteristics such as cracks or discolouration in a pilot plant at the timber yard of Österreichische Bundesforste in Amstetten. Experts from the forestry and sawmilling industries then evaluate the characteristics recorded in a database. The database grows with each additional photograph and evaluation. These findings and experiences form the basis of a learning database that reduces inconsistencies in the identification of roundwood characteristics.

Project management:

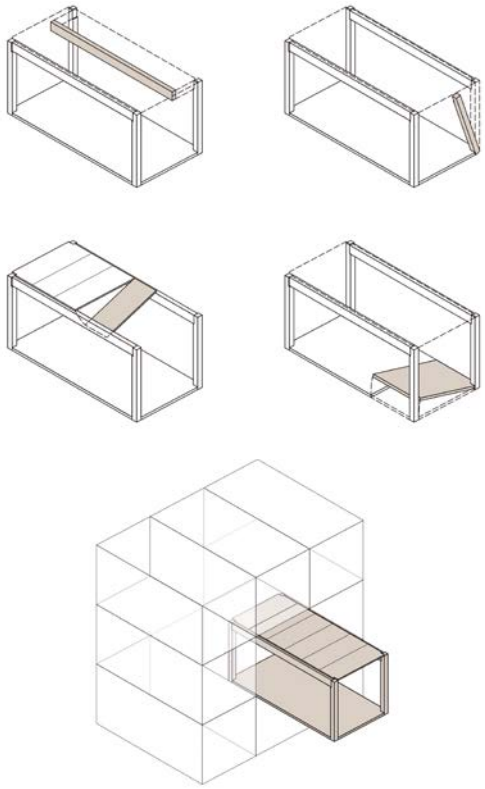
Österreichische
Bundesforste AG
Pummergasse 10-12
3002 Purkersdorf

www.bundesforste.at

5.15 MOHOHO

Modular wooden high-rise building

The construction industry is responsible for around 60% of global resource consumption, 50% of global waste production and around 50% of global greenhouse gas emissions. The research and development of a three-dimensional timber skeleton module will provide a circular and resource-efficient alternative to current building practices. The primary construction of the modules forms a visible skeleton structure with a clear column grid. Point load transfer reduces timber consumption and facilitates subsequent alterations. In addition, the wall fillings and the floor structure can be optimised according to ecological, economic or social aspects. On the one hand, the focus is on the development and investigation of the skeleton module with removable walls described above. On the other hand, a connection node will be developed and investigated that allows the subsequent replacement of entire modules or module elements independently of the overall supporting structure. This research project focuses on multi-storey timber buildings with stiffening core development. For this building typology, several floor plan variations will be developed and analysed. One of these exemplary floor plans will be developed in more detail for further investigation. Load cases, material consumption and fire protection concepts will be developed and tested with this floor plan.



Project management:

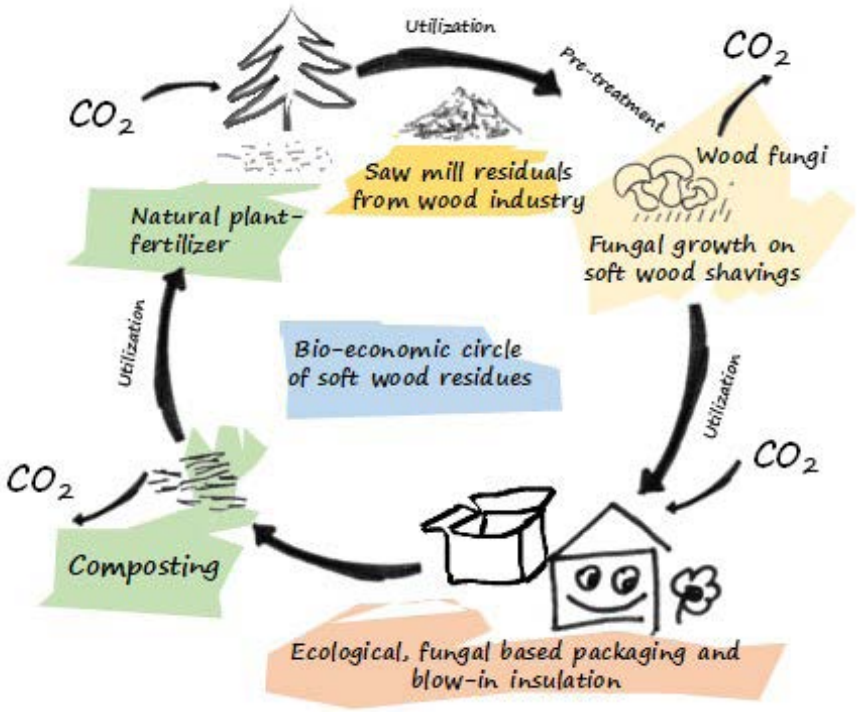
Graz University of Technology – Institute of Architecture Technology
Rechbauerstraße 12
8010 Graz

www.tugraz.at

5.16 MycoSoft

Residues from coniferous wood from the sawmill industry as a raw material for the production of fungus-bonded packaging and insulation materials

The processing of roundwood by the sawmill industry produces various by-products such as branches, chips, sawdust and bark, the majority of which is sawdust that cannot be utilised directly. Some sawdust is sold to the panel industry for the production of chipboard, but the majority is processed into pellets or incinerated directly in the plant. Biogenic residual particles, bound by fungal mycelium to form a solid 'mycomaterial', have the potential to become a sustainable alternative to fossil-based insulation and packaging materials, as they can be used in a bioeconomic cycle. However, the most readily available biogenic waste material in Austria - coniferous wood sawdust - is not yet suitable for the efficient production of 'mycomaterials' due to its fungus-inhibiting natural constituents. The 'MycoSoft' project is concerned with the research and optimisation of raw material pre-treatment and growth conditions in order to enable the efficient production of 'mycomaterials' based on coniferous wood chips. The suitability of the resulting materials will be tested in two prototype applications as packaging material and as blown-in insulation. The cascading use of sawmill residues as a raw material for the production of fungus-bound packaging and insulation materials should enable the complete recycling of sawmill residues in the sense of a closed-loop economy.



Project management:
Wood K plus - Kompetenz-zentrum Holz GmbH
Getreidemarkt 9
1060 Vienna

wood-kplus.at

5.17 Plates2Structures

Plates to Structures - Transforming panel materials into structures

The combination of digital methods in timber construction and increased awareness of sustainability has led to a disruptive boom in the timber industry. In order to build faster, more resource efficient, less expensive and more sustainable, this project aims to focus on thin plate materials and their structural properties. Plates2Structures develops origami-inspired strategies to construct components and structures for the construction industry using wooden panels. These are manufactured flat and transported to the construction site as compact packages, where they are folded into their load-bearing form. Folding on this scale is made possible by technical aids such as cranes or tensioners. Depending on the type of folding method and geometry, either independent complex components or complete load-bearing structures can be produced with little waste.
The focus of this research is to further develop the fundamentals for load-bearing components or support structures made from folded sheet materials. Within the scope of the project, new and known folding patterns will be developed and adapted specifically for timber construction, so that they can be produced from thin wooden sheets. Subsequently, methods will be developed to produce them from wood panels and to fold them into shape, and to determine under which circumstances they offer advantages over conventional methods. In addition to the folding patterns, calculation and simulation methods will be developed to reliably predict structural properties not only in the final state, but also during the folding process.
These results will be combined with carpentry and manufacturing data in a digital model to define an optimized manufacturing and construction method for these new typologies. The approach will result in a holistic digital model that maps structural or manufacturing qualities, allowing designers to directly analyse designs for performance and manufacturability.

Project management:

University of Innsbruck
Institut für Gestaltung
Technikerstrasse 21c
6020 Innsbruck

www.structureanddesign.at

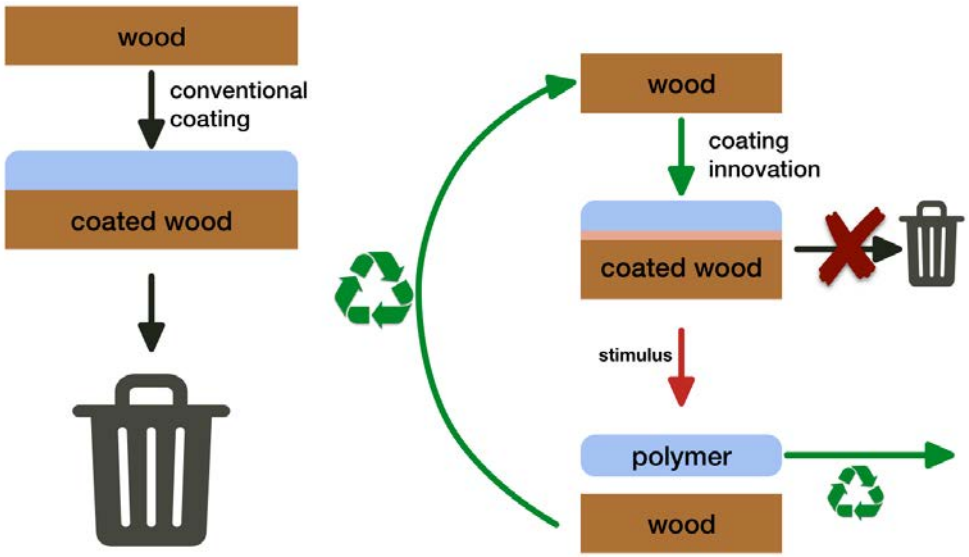
5.18 ReCoWIL

Selective component separation and recycling of coated wood-based products

In the state of the art, coated wood is usually discarded at end of life. However, wood, especially such of high quality, is limited. A circular or at least cascadic reuse is therefore highly desirable. To enable this, complete and technically feasible separation of the wood and coating must be achieved. At present, this 'paint removal' is time-consuming and involves the use of chemicals or the generation of problematic dusts.

The aim of this project is to develop an innovative coating system that enables debonding on demand for wood coatings as described above. The solution is the integration of a predefined sacrificial layer through self-organisation or a primer. The use of a tuneable stimulus completely removes adhesion of said sacrificial layer at will, which consequently allows easy separation of the components.

On the substrate side (wood), it is important to remove the coating as complete as possible. As coatings are chemically highly cross-linked layers, it is inherently impossible to recycle them into new coatings after application. It is therefore necessary to ensure that no substances of concern are present after separation of the components in order to identify circular applications for the removed polymer. The composition of this protective layer is therefore also critically evaluated and optimised.



Project management:

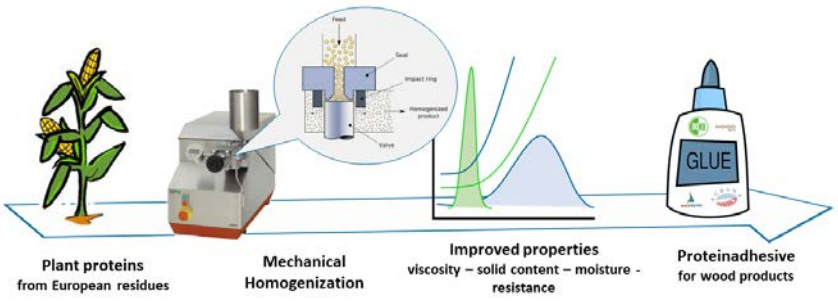
University of Innsbruck
Institut für Chemieingenieur-wissenschaften
Innrain 52 c
6020 Innsbruck

www.uibk.ac.at

5.19 reTHINK.PRO.AD

reTHINK.PROTEIN.ADHESIVES – Mechanical treatments to improve the properties of protein adhesives

The vast majority of wood-based products are glued during their manufacture. Increasing environmental and health awareness is driving the demand for new bio-based adhesives. Plant proteins have been identified as a possible raw material. They are regionally available, have good inherent adhesive properties and can be processed as aqueous dispersions. Their use as adhesives is currently limited by two main factors in particular: the lack of moisture resistance of the materials produced with them, and the difficulty of processing them due to their high viscosity or the resulting limited solids content of the adhesive. The reTHINK.PROTEIN.ADHESIVES project is investigating how the adhesive and processing properties of proteins can be improved through mechanical treatments. Physical protein denaturation processes can save process time, energy and chemicals compared to the alkaline methods currently used. The primary structure of the proteins remains largely unchanged. In addition, European resources such as maize, wheat, rapeseed, peas or potato proteins are being made available for the production of adhesives as an alternative to soy proteins, which are available in large quantities in North America. Research is also being carried out to determine how the reactivity of the adhesives can be influenced by mechanically modifying the protein structure and thus the surface properties. By adding additives to improve physical or chemical cross-linking, a protein adhesive is produced on a laboratory scale whose solids content, rheological properties and (wet) strength meet the requirements of modern wood building products.



Project management:

University of Natural Resources and Life Sciences, Vienna (BOKU) – Institute of Wood Technology and Renewable Materials
Konrad-Lorenz-Straße 24
3430 Tulln

boku.ac.at

5.20 SINK.CARBON

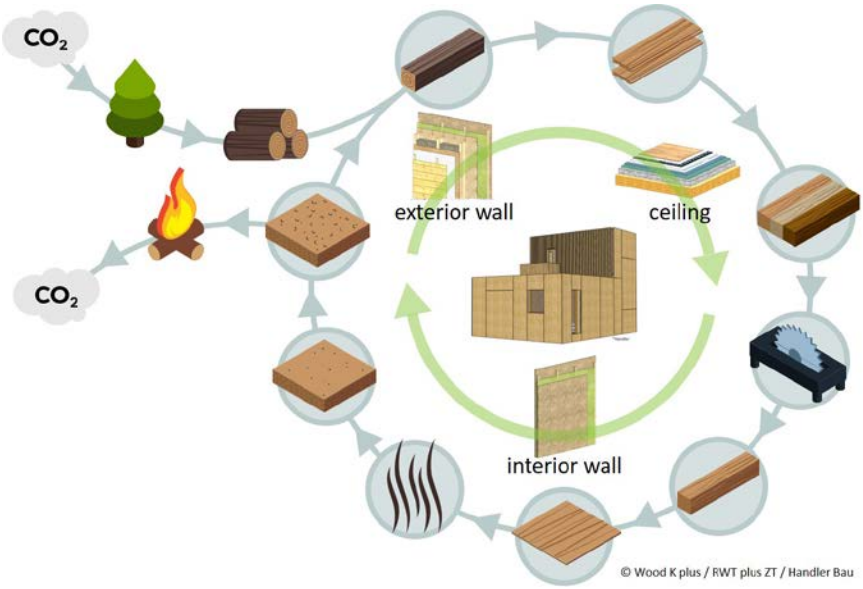
Hybrid wood construction as a carbon sink through innovative reusable and recyclable components

Wood as a renewable resource is, in contrast to conventional energy intensive construction materials, considered to be a climate-friendly construction material. Looking at the entire carbon cycle, the usage of wood is classified as CO_2 neutral, as carbon is released after material use.

The research project SINK.CARBON aims at keeping wood hybrid construction elements as long as possible in the stage of material use to enable a long-term carbon sink, and hence relieve pressure on our climate. This is achieved by innovative concepts for reuse and recycle wood hybrid construction elements.

Construction elements are designed to maximise the overall ecological benefit. Technological challenges such as the dismantling of connections as well as the disintegration or the reassembly of elements are investigated in laboratory scale. These research activities are accompanied by an ecological evaluation of the construction system. Additionally, the political framework as well as objectives and opinions of relevant stakeholders are investigated to derive measures for supporting the innovative construction system.

The research project generates basic technological knowledge for new ways of thinking and concepts how to use materials in wood hybrid constructions. The design of novel wood hybrid construction elements focuses on the material use in construction. Potential effects on the environment are considered already in the design phase. The current political framework is determined and necessary measures for improvement are identified.



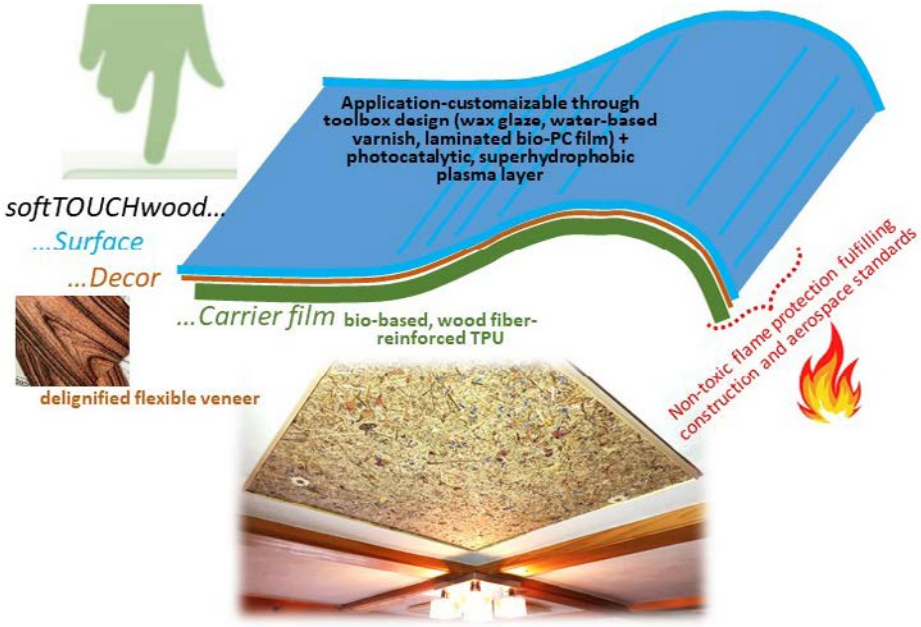
Project management:
Wood K plus - Kompetenzzentrum Holz GmbH
Konrad-Lorenz-Straße 24
3430 Tulln

wood-kplus.at

5.21 softTOUCHwood

Highly flexible, scratch-resistant, easy to clean, flame-retardant, easily recyclable decorative wood films made from wood residues

The product is flexible and malleable, similar to plastic films, yet still retains its rigidity, making it ideal for use in a variety of settings. Its scratch-resistant and easy-to-clean properties are comparable to those of synthetic resin, while its ecological sustainability aligns with that of natural materials. This unique combination of characteristics makes it an excellent choice for wood surfaces. The combination of flexible wood veneers on bio- and wood fibre-based carrier films with highly durable 'easy-to-clean' surfaces has the potential to combine the previously mentioned properties with a long service life, while maintaining the same visual-decorative and haptic quality, both economically and ecologically. The aim of the 'softTOUCHwood' project, in line with long-term eco-design trends, is to develop such a material that is also fully recyclable. Therefore, innovative materials and manufacturing technologies are being developed that do not produce toxic emissions during use and at end-of-life, using industry-relevant roll-to-roll processes for carrier films, decors and surfaces. For the application of these decorative films to future functionalised design surfaces, in addition to direct lamination or bonding, deep-drawing with subsequent back-injection technology with foamed biocomposites is also being developed for the production of injection-moulded 3D parts. The objective of the developments for future applications is to create guidelines for technology utilisation based on the design and production of demonstrators. These demonstrators will be used to show the potential of the technology for a range of applications, from small back-injected 3D moulded parts to large-area 3D laminated architectural and furniture structures.



Project management:

Wood K plus - Kompetenzzentrum Holz GmbH
Altenberger Straße 69
4040 Linz

wood-kplus.at

5.22 Stitch!

Stitched veneers to prevent rolling shear failure and delamination

Wood is a versatile material offering a wide range of strength properties. When subjected to tensile stress in a longitudinal direction, a hardwood such as birch has a tensile strength of up to 140 MPa. However, when subjected to shear stress perpendicular to the longitudinal direction, known as rolling shear, it has a strength of only around 4 MPa. In plywood or laminated veneer lumber, bending loads often cause rolling shear failure in areas, which are subject to high shear loads. The 'Stitch!' project is investigating whether tension rods can be introduced, using stitching to enhance the limited rolling shear strength of wood. The research hypothesis of the 'Stitch!' project is that sewing veneers can prevent shear failure in the core of the laminates while also reducing delamination of the outer layers.

This significantly increases the flexural strength and energy absorption during flexural impact loads. The key process parameters for increasing the strength of wood laminates are systematically collected. 'Stitch!' investigates parameters of the substrate, the tension rods (the yarn) and the sewing machine. In order to be able to examine the very large parameter space as comprehensively as possible, 'Stitch!' relies on a combination of numerical and experimental studies. The impact of manufacturing-induced damage is evaluated in tensile and compression tests. A variety of substrates are pierced with different machine parameters (but initially without yarn) and then subjected to mechanical characterisation in order to determine the induced damage. The final stage of the process is the production of a hybrid laminate demonstrator. The objective is to identify suitable process parameters, which allow the utilization of stitching as a targeted mechanical strengthening technique for veneer laminates.

Project management:

Graz University of Technology – Vehicle Safety Institute
Inffeldgasse 23/I
8010 Graz

www.tugraz.at

5.23 Sys.Wood

Optimisation of the Austrian system for timber construction

The share of wood buildings in Austria is continuously growing. The increasing complexity of requirements for high wooden buildings presents both challenges and opportunities, particularly in light of developments in digitalisation and automation. The research project follows the planning processes from the preliminary draft to the execution planning and the transfer for the execution with prefabrication and assembly in order to generate new interfaces, methods and principles for system optimisation in Austrian timber construction. The project's primary objective is to optimise planning processes and methods, detailed construction solutions, the integration of timber structures throughout their life cycle and quality management in planning and execution. The objectives of the associated work packages are clear and consistent processes, reliable and forgiving component structures and building constructions, the optimisation of timber structures in their life cycle and improved quality management for planning and execution. The results of the project should also promote the sustainability of small and medium-sized companies through cooperation and expand their fields of activity to include larger projects. Potential lies in improved personnel and digital processes and new approaches in the linking of planning, production and assembly processes. There is potential for improvement in personnel and digital processes, as well as new approaches to linking planning, production and assembly processes. The component structures and building construction details of existing and planned timber constructions are collated and evaluated using failure mode and effects analysis (FMEA) techniques. This increases the redundancy of building construction in timber construction, achieves a reduction to safe solutions and simplifies planning.

Project management:

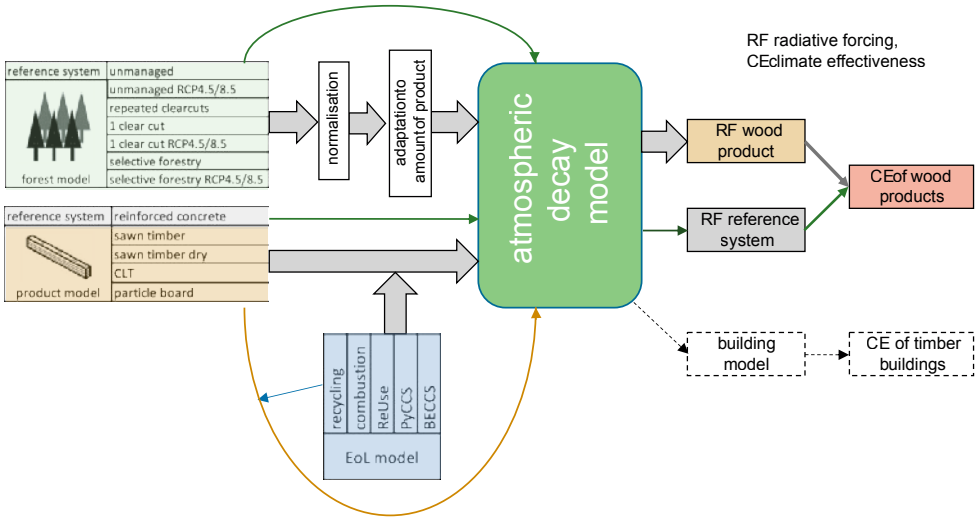
Joanneum Research Forschungsgesellschaft mbH – Institute for Sensors, Photonics and Manufacturing Technologies
Alte Poststraße 154
8020 Graz

www.fh-joanneum.at

5.24 TimberBioC

Critical evaluation of the effect of biogenic carbon in wood products on climate change using dynamic models

As it grows, wood absorbs carbon dioxide (CO_2) from the atmosphere and stores it in the form of carbohydrate, thereby reducing the impact of this greenhouse gas on the environment. This results in making a significant contribution to addressing the climate crisis, particularly if CO_2 remains stored in the wood for an extended period. However, this positive effect cannot be reflected using the current method of life cycle assessment of construction products. A primary goal of TimberBioC is therefore to develop a comprehensive system for mapping the temporary CO_2 storage of long-lasting wood products. The key parameters for quantifying the effect are the rate of greenhouse gas removal in the atmosphere and the net carbon uptake in the forest during the service life of the construction product. These depend, among other things, on the rotation times of the relevant tree species and their predicted fluctuations due to climate change. These parameters are determined using a dynamic forest model and will subsequently serve as input parameters for a dynamic wood product model that has also been developed to assess CO_2 storage. The adequate consideration of reuse and recycling is also incorporated into the product model as input parameters. Most notably, the integration of recirculation management as a factor in the assessment of long-lasting timber construction products, which has not been included in life cycle assessment models previously, represents a significant advancement. The expected result is a holistic quantification of the CO_2 sink of construction timber, considering all relevant and time-variable input parameters until 2150 in different scenarios.



Project management:

IBO – Association and GmbH
Alserbachstraße 5/8
1090 Vienna

www.ibo.at

5.25 TimberLoop

From the construction industry, for the construction industry – the basics of the recyclability of wood

In the context of climate protection, politics and industry are increasingly relying on wood products, especially in the construction industry. This includes the efficient processing, long-lasting use and multiple application of wood in order to use the resource as sustainably and efficiently as possible. TimberLoop aims to preserve the structure of wood from previous use as much as possible and to return it to the cycle in order to minimise waste streams. With the slogan 'From the construction industry for the construction industry', (regulative) obstacles and potentials of raw material quality up to laboratory-based solution concepts are identified and processed. The project offers a framework for the entire timber industry that enables stakeholders to develop individual technical solutions and business models for recyclable timber products. The project investigates technological approaches for the structure-preserving reuse of wood from a wide range of previous uses with minimal mechanical intervention such as sanding, planing or sawing. TimberLoop develops concepts for load-bearing and non-load-bearing timber construction products that enable companies to switch flexibly between primary and previously used wood. In addition, methods to avoid the use of wood preservatives are researched in order to maximise the share of reusable wood and thus promote sustainable use in the construction industry. Furthermore, TimberLoop closes significant gaps in knowledge regarding the use of the circular potential of timber construction by creating key figures relevant to the life cycle assessment.

Project management:

Holzforschung Austria
Franz-Grill-Straße 7
1030 Vienna

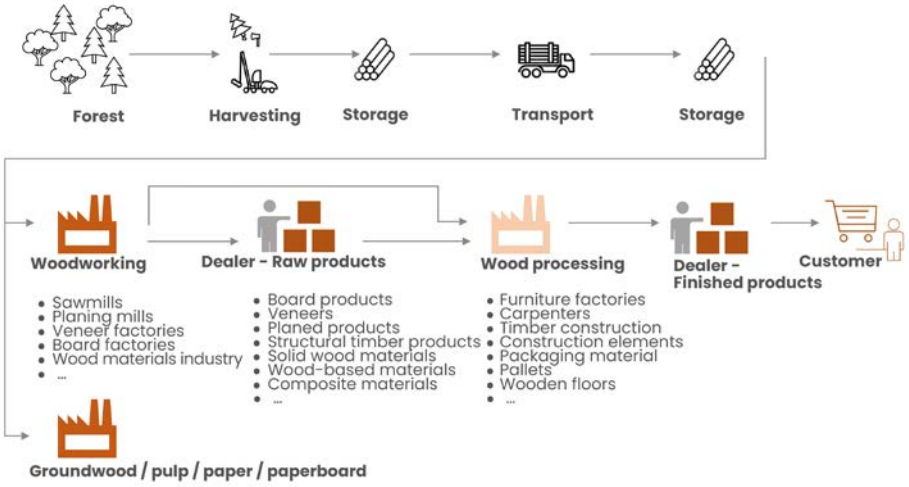
www.holzforschung.at

5.26 trace-wood

Intelligent traceability of wood as the basis for a sustainable circular economy

Subsequent generations need to have access to resources of resilient forests. Hence, a complete and unforgeable traceability of wood from furniture to trees need to be guaranteed, to ensure a sustainable use of wood, transparent value chains and consequently, real carbon sinks. However, using state of the art processing, there is a missing link between saw milling and post processing, because labels are lost due to subtractive manufacturing. The present research project tackles this missing link using a new technology of wood identification. The primary objective of the project is to evaluate the feasibility of marking technologies for tracing raw material along the entire value chain. This technology serves as a digital fingerprint and connects intra-logistic process steps and product life cycles. The idea is to connect unique codes with machining data, quality data and information from the forest in real-time. Data need to be automatically readable by electronic devices and are incorporated into a comprehensive and secure IT-architecture.

The harsh environment in wood processing require printing technologies that perform in extreme working conditions and dyes that adequately adhere to wood surfaces. At the end of the project, a digitally embedded demonstrator will be developed that serves as a basis for complete, unforgeable, cost-efficient and paperless traceability of wood throughout its value chain.



Project management:

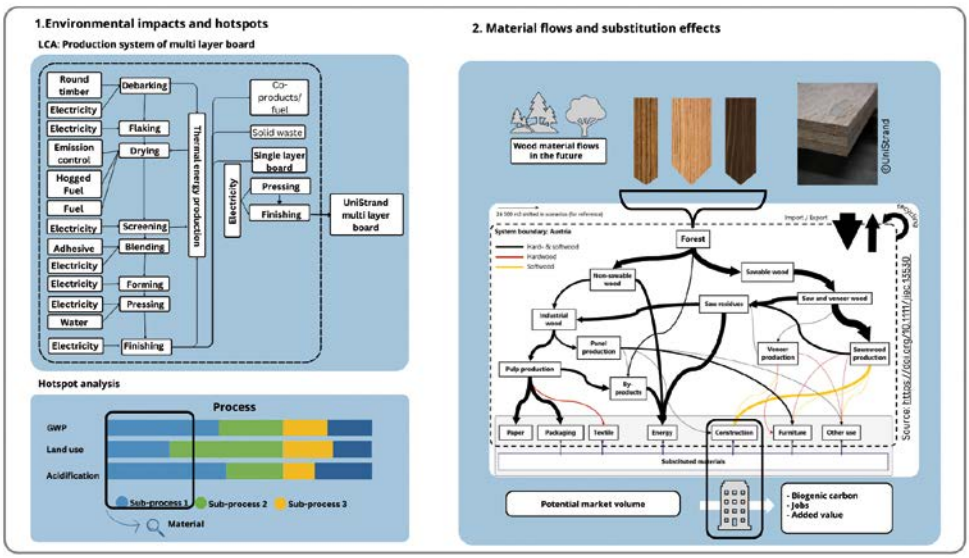
Wood K plus - Kompetenzzentrum Holz GmbH
Konrad Lorenz Straße 24
3430 Tulln

wood-kplus.at

5.27 UniStrand

Next-generation structural timber material

In recent years, wood construction has been able to prove its suitability for multi-storey construction through various lighthouse projects. Currently successful timber construction products such as cross-laminated timber are mainly based on coniferous sawn timber and have a low raw material yield (30-40%) due to the process. The 'UniStrand' project aims to outline and research the technological and constructive foundations for a wood-based building material that is several centimetres thick, plate-shaped and suitable for multi-storey, structural construction applications. Long, thin wood particles (strands), which can be produced with a high raw material yield from underutilized assortments, serve as the starting material. The raw material should be hardwood and softwood or a combination of both. By bonding strands into boards of varying densities in a largely unidirectional fashion, the aim is to create a predictable intermediate product with improved mechanical properties compared to established strand-based products. The required disc effect and material thickness of the layered wall and ceiling elements is achieved by bonding layers crosswise. Based on the constructive optimisation of the finished elements, coupled with application-oriented cutting optimisation, elements can be produced that use high-performance plate material only where it is statically necessary. The results are evaluated by a process-oriented life cycle and a technology impact assessment.



Work package 6: life-cycle and technology-impact assessment of UniStrand board

Project management:

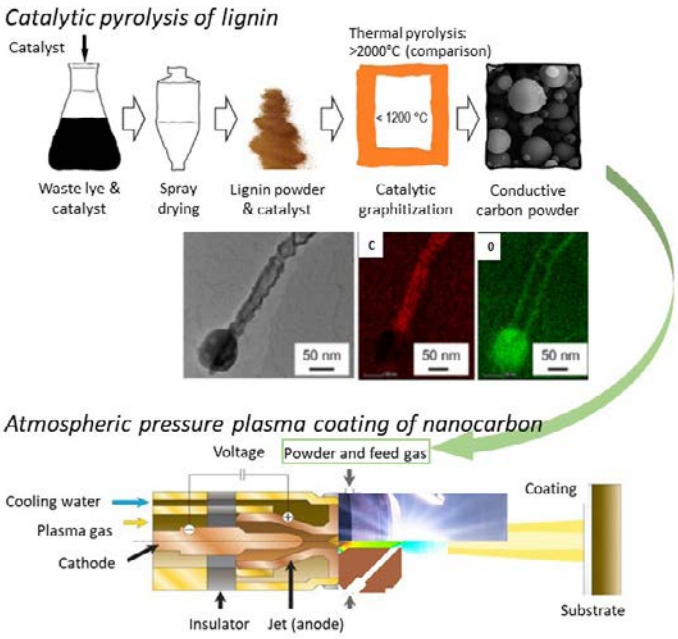
University of Natural Resources and Life Sciences, Vienna (BOKU) – Institute of Wood Technology and Renewable Materials
Konrad Lorenz Straße 24
3430 Tulln an der Donau

boku.ac.at

5.28 WOODconduct

Sustainable electrical conductors and insulators made of wood waste for ShyTech functionalisation and heating of wood-based materials

Smart wood-based materials in interior design and furniture construction currently require complex copper wiring to supply power to the sensors, light and display components that are invisibly attached according to the 'shy tech' concept. All these technologies for 'electrical' integration use metals as electrical conductors as well as polymers and varnishes based on fossil hydrocarbons for electrical insulation and the printability of papers. The aim of the industrial research project 'WOODconduct' is therefore to develop alternative conductor track materials, processes and application technologies on wood-based materials and paper that can be laminated onto them. Atmospheric pressure plasma processes (APPP) are used to embed the pyrolysis carbon powder in a mechanically flexible matrix of nanocrystalline and amorphous carbon that compensates for moisture-related wood swelling and allows easy control of conductivity via the powder/matrix ratio. A special focus is on the simple integration of state-of-the-art electronics and future bio-based and biodegradable sensor, switching and light/display elements in industrial production and assembly. High sustainability of the overall system under consideration also includes the further development of non-toxic (non-eco-toxic) flame resistance of the wood and paper substrates, as well as bio-based electrical insulator coatings. Furthermore, the objective is to achieve an exceptionally long service life, which is typical of furniture and interior design. This is supported by comprehensive process and material characterisation at all levels, from macro to nano level, as well as by simulation in the R&D process for material modelling.



Project management:

JOANNEUM RESEARCH
Forschungsgesellschaft mbH
Leobner Strasse 94
8712 Niklasdorf

www.joanneum.at

5.29 WoodMod

Improved engineering models for new possibilities in timber construction

The long-term behaviour of timber in the dimensioning of timber constructions is currently considered in a rather basic way. This is because the initial material and structural response is in-creased by means of so-called deformation coefficients. This basic approach is insufficient for the ongoing expansion of timber applications, which are experiencing higher stress on components and connections. The objective of the project is to develop an enhanced model for the realistic representation of the time-dependent behaviour of timber components and joints. The aim is to expand the application possibilities of timber by developing a realistic description of the behaviour of timber structures, which will also enable predictions to be made. To this end, we are implementing an innovative test programme that will investigate the time-dependent behaviour of timber components and joints. The objective of these tests is twofold: firstly, to identify the time-dependent behaviour of wood and secondly, to validate the model description that is to be developed. The final stage of the project is to transfer the developed model into a calculation tool suitable for practical use. This will be demonstrated on two exemplary timber structures.

The anticipated outcomes include the development of a validated model for describing the time-dependent behaviour of wood, an experimental methodology for recording the time-dependent behaviour of wood, creep tests on wooden components and joints. Moreover, the objective is to implement the developed model in a practical calculation tool, including its application to two selected timber structures. This will enable the prediction of the long-term behaviour of timber components and joints, which will in turn provide a basis for the planned expansion of the possible applications of timber as a building material.

Project management:

University of Innsbruck
Institut für Konstruktion und Materialwissenschaften
Technikerstraße 13
6020 Innsbruck

www.uibk.ac.at

5.30 WoodSigns

Printed Electronics for Wooden Aircraft Interiors

A key objective of this project is to demonstrate that wood can be transformed into a highly functional and aesthetic material through targeted material optimization and functionalization. Wood and wood-based composites are vital elements of the Austrian industrial landscape, traditionally used in construction, furniture, and automotive applications. Increasingly, the mobility and automotive industries value wood for its sustainable and elegant properties, particularly in luxurious interior designs.

This project focuses on the development and integration of additively manufactured electronics, such as printed displays and wireless sensors, on real wood veneers. These electronic components are fabricated using resource-efficient printing technologies and are designed to eliminate not only conventional batteries but also other electronic components, replacing them with streamlined, wireless solutions. To achieve this functionality, the veneers are pre-treated to enhance their mechanical properties and ensure compatibility with transparent, printable materials.

The goal is to position wood as a sustainable, smart material suitable for versatile applications, while preserving the visual elegance and premium quality of its surface. This project contributes to expanding the application potential of wood through innovative, sustainable technologies that seamlessly integrate modern electronics into natural materials.

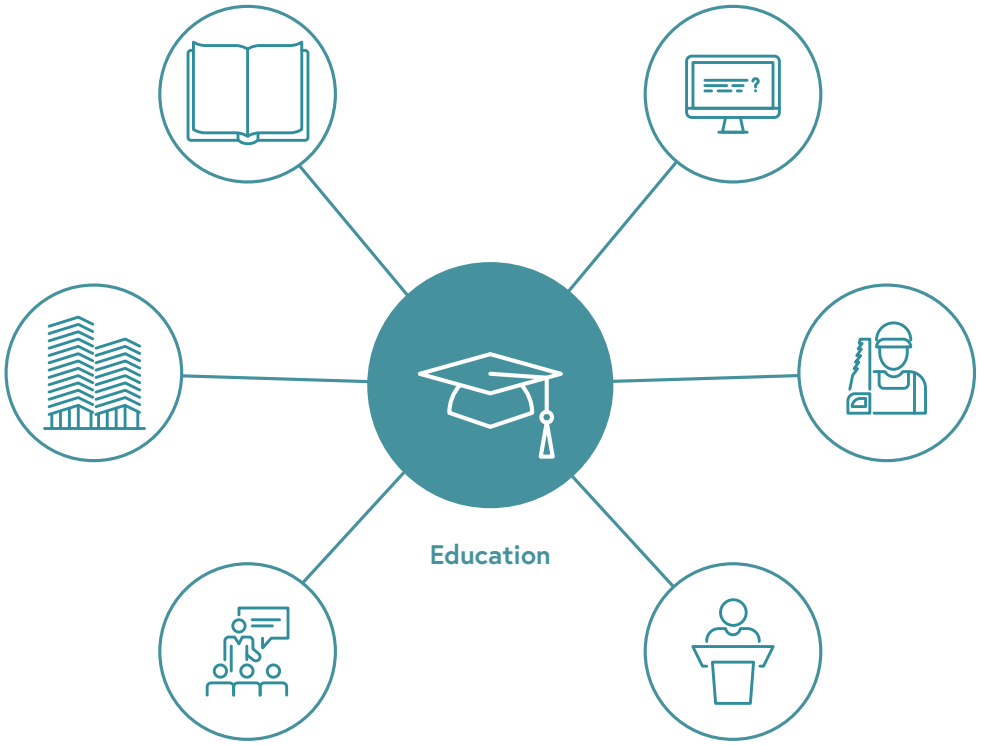
Project management:

Silicon Austria Labs GmbH
Inffeldgasse 33
8010 Graz

silicon-austria-labs.com

6 Education

In order to meet the growing demand for skilled workers along the wood value chain, it is necessary to further develop the range of training courses in terms of quality and quantity. The Austrian Wood Initiative therefore focuses on modern and target-group-oriented methods of preparing, imparting and applying knowledge about wood. This includes, for example, the development and adaptation of educational content, test and development environments, and the digitalisation of teaching and learning materials with a focus on apprentice training. The establishment of thematically focused endowed professorships in the fields of planning, architecture and sustainable wood construction is intended to strengthen the important field of wood construction and its research and to position Austria as a centre of innovation.



6.1 Endowed Professorship for Timber Construction – Architecture, Resource Efficiency and Fabrication (University of Innsbruck)

In view of the ecological challenges of our time, the renewable and sustainably available resource wood will play a decisive role in future architecture.
The endowed professorship will create a new research group at the Faculty of Architecture at the Department of Design. The professorship will combine architectural expertise in drafting, designing and building with wood with civil engineering topics, in particular modular construction, automation and building physics (e.g. fire protection, sound insulation, energy design).
Together with the research assistants, the professorship covers the structural engineering-oriented subject areas on the one hand and focuses on their integration into the design and a holistic perspective on the other. The new professorship thus expands the existing subject areas of the faculty, for example building construction, and in particular the Department of Design (housing, building typology, interior design, structure and design, lightweight structures). The organizational embedding of the endowed professorship in the Faculty of Architecture with links to the Faculty of Technical Sciences and other related disciplines at the University of Innsbruck creates optimal framework conditions for high innovation potential. Europe-wide initiatives to reduce the consumption of resources (New Bauhaus) and the resulting fundamental transformation of the construction industry as well as the establishment of sustainability as a fundamental principle and development goal of the University of Innsbruck (EP 2022-2027) underline the importance of the endowed professorship.

Project management:

University of Innsbruck
Fakultät für Architektur
Technikerstraße 15
6020 Innsbruck

www.uibk.ac.at

6.2 Endowed Professorship for Timber Construction and Design in Urban Areas (TU Wien)

The offered courses on timber construction in urban areas aim to equip students with the skills necessary to design dense living spaces that responsibly utilize existing resources, consider climate impact and, at the same time, preserve building traditions. By incorporating practical experiences, such as site visits and tours of production facilities, students gain a thorough understanding of the construction process and material sourcing. Students are taught to design with a clear understanding of production conditions from the start. To keep the teaching at the cutting edge, ongoing research and networking are key. By collaborating with international experts and participating in current projects and competitions, students become part of a vibrant and engaged community. The philosophy behind the professorship is rooted in the belief that architecture goes beyond construction; it is a reflection of how we interact with the world and its resources. The goal is to establish a new department at TU Wien that conveys the above-mentioned values through a well-rounded teaching approach. This will include design studios for both bachelor's and master's students, lectures, excursions, and guidance for final theses. Additionally, a network of contacts with companies and institutions will be built, and relevant research projects will be launched and conducted.

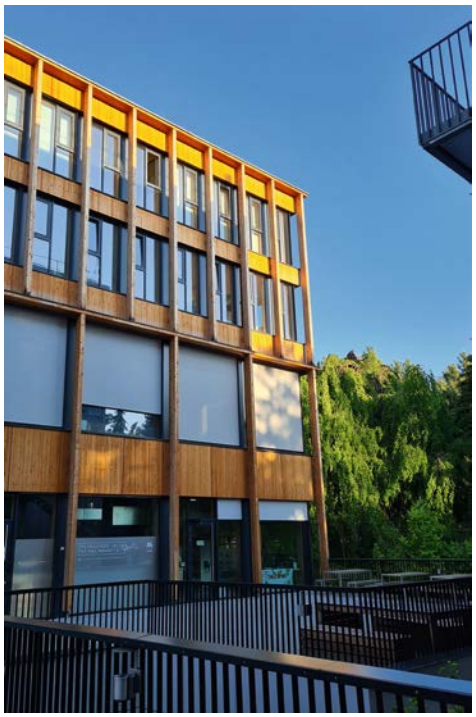
Project management:

TU Wien
Institute of Architecture and Planning
Karlsplatz 13
1040 Vienna

ar.tuwien.ac.at

6.3 Endowed Professorship for Sustainable Design and Building (University of Natural Resources and Life Sciences, Vienna)

Reducing the environmental impact of the construction sector is one of the key challenges our society faces in order to counteract increasing environmental pollution and the scarcity of resources. Buildings, neighbourhoods and cities contribute greatly to global resource and energy consumption over their respective life cycles, from construction to operation, renovation and demolition. Over the last 20 years, resource and energy efficiency in the building sector has become a high priority due to national and international climate protection targets. The appointee will deal with the connection between biology on the one hand and construction and resource-efficient building construction on the other hand in research and teaching and thus make an essential contribution to the challenges mentioned above. It is envisaged that one focus will be on the use of bio-based materials, particularly wood, and holistic energy efficiency. The principles of the New European Bauhaus (aesthetics, social inclusion and sustainability) will also play a central role in the research strategy. Furthermore, networking regarding the research activities with national and international initiatives on the New European Bauhaus is desirable. The professorship will be successfully established by the time the project is completed.



Project management:

University of Natural Resources and Life Sciences, Vienna (BOKU) – Institute of Green Civil Engineering
Peter-Jordan-Straße 82
1190 Vienna

boku.ac.at

6.4 eLABoration Wood

Development of user-centred teaching and learning materials in the field of forestry, wood and bioeconomy

Currently, education and training as well as the development of teaching and learning materials in the field of wood and in the general education sector in the forest and wood value chain take place in various educational institutions and at different quality levels. The aim of 'eLABoration Wood' is to develop, implement and disseminate digital and haptic teaching and learning materials that are as consistent as possible throughout Austria. This will promote the contemporary and innovative use of wood in technical and general training centres. The aim is to raise awareness among teachers and students of topics such as climate-friendly forestry, sustainability, wood-based bioeconomy, resource efficiency, wood products and climate protection in connection with 'FOREST & WOOD'. A further goal is to support the training of skilled workers with up-to-date teaching and learning materials in a contemporary form, thus increasing the attractiveness and quality of the training. The 'eLAB' enables the assessment of existing topic-specific educational activities in the field of wood and in general education, the identification of potential gaps and the development or creation of corresponding offers and content. Furthermore, the 'eLAB' establishes a connection between the knowledge of wood-related institutions and the pedagogical-didactic methods of teacher training colleges and other educational experts on a national level for the first time. These offerings provide an incentive for integration of forest and wood topics into general education curricula on an interdisciplinary basis. The project benefits from the involvement of a network of key stakeholders, including teacher training colleges, universities, and environmental umbrella organisations, ensuring that the developed materials reach their intended target groups.

Project management:

Salzburg University of Applied Sciences GmbH
Department Green Engineering & Circular Design
Markt 136a
5431 Kuchl

www.fh-salzburg.ac.at

6.5 HOLZBAUlink

The aim of the project is to develop new conditions and objectives that align with the principles of climate change adaptation, sustainable resource management and modern knowledge transfer. The project has identified a number of areas where there is a potential for conflict between the teaching and research activities of universities and those of other organisations, as well as the issue of economic exploitation. This project will establish a new point of contact between the scientific community (research and teaching) and industry. The long-term objective is to establish new concepts in knowledge transfer.

- Increased use of wood from sustainable forestry in line with the principles of bioeconomy and circular economy
- Knowledge transfer and awareness raising on the topic of material and energetic use of wood as a contribution to climate protection
- Development of solid project partnerships, which are consolidated by the presence of cooperation partners and their declarations of support

A variety of methods are employed:

- An evaluation of existing teaching and training formats for content on component development will be conducted, with particular consideration of bioeconomy and circular economy aspects.
- Preparing the relevant content and materials to further develop the teaching and training formats. This encompasses the planning, development and implementation of component mock-ups.
- Transferring the developed content and materials into specific teaching and training formats. We provide support for the implementation and realisation of these initiatives at both university and non-university levels.
- Consolidation and expansion of the cooperation network for the development and implementation of new, sustainable and effective knowledge transfer and awareness-raising concepts for modern and sustainable timber construction.

Project management:

University of Innsbruck –
Unit of Timber Engineering
Technikerstraße 13
6020 Innsbruck

www.uibk.ac.at

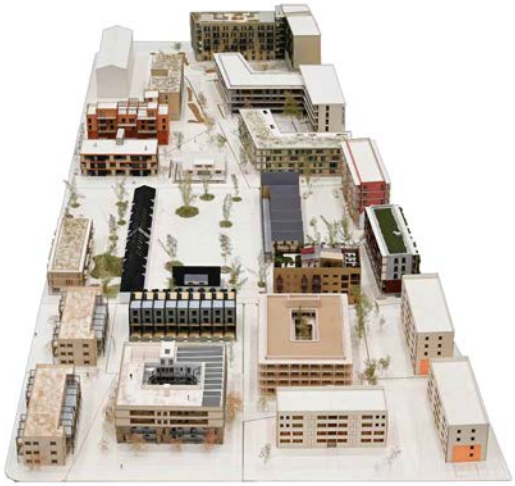
6.6 NEXTGen.Wood

Generalised expertise in the field of timber construction

The economic crisis, the Covid-19 pandemic, the energy crisis, the war in Ukraine and climate change illustrate the dependence of the construction industry on global supply chains and jeopardise planning security. It is therefore essential to focus on regional resources and local value creation. Despite the long-standing tradition of timber construction in this country, the planning of timber buildings is still considered a specialised field of architecture. However, ecological building culture requires a broad and generalised knowledge of timber construction, which is taught at Graz University of Technology under the direction of Prof. Tom Kaden in a practice-oriented way. A contribution is made to raising awareness of the increased use of wood from sustainable forestry, although sustainability requires more than just increasing the share of wood used in construction. In addition to teaching the basics, the focus is on topics such as the resource-optimised use of building materials, structural and architectural resilience, reuse and recycling. It is only through the long-term design of architecture and urban planning that we can achieve a significant carbon sink.

Objectives:

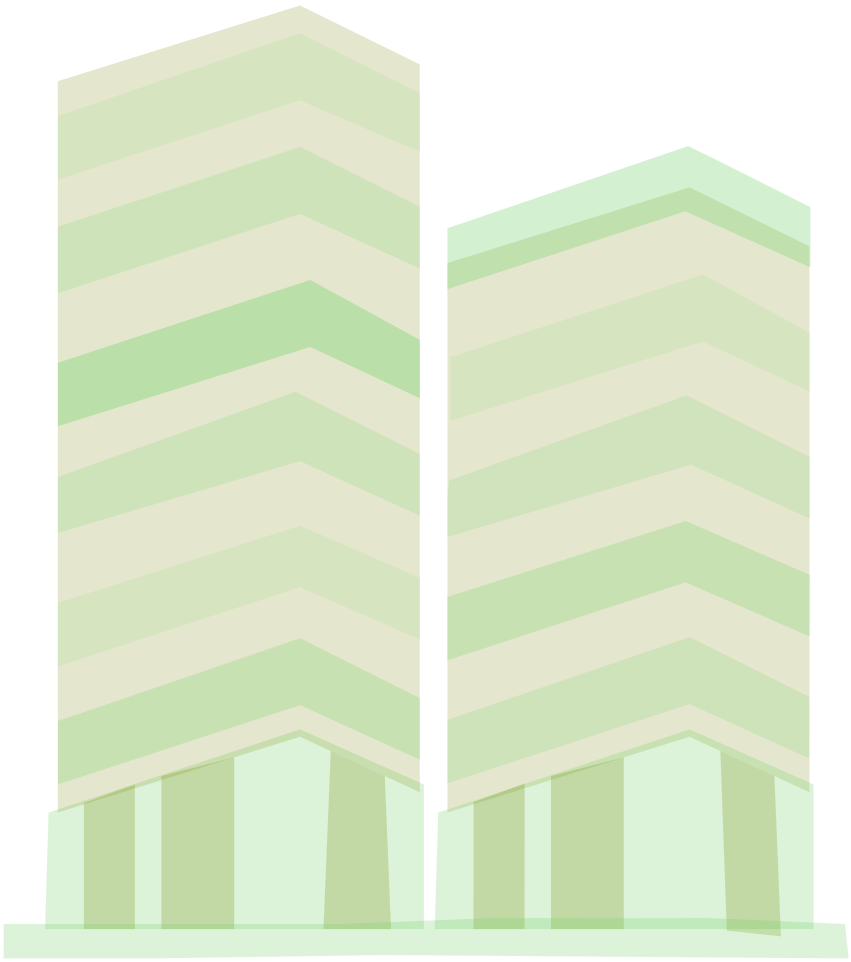
- increase basic research in wood building, including in the Bachelor's programme in Architecture, as a logical basis for more advanced teaching in the Master's programme in Architecture
- increase innovative and forward-looking topics in timber construction teaching and research
- strengthen cross-institutional advisory activities
- increase public presence



Project management:

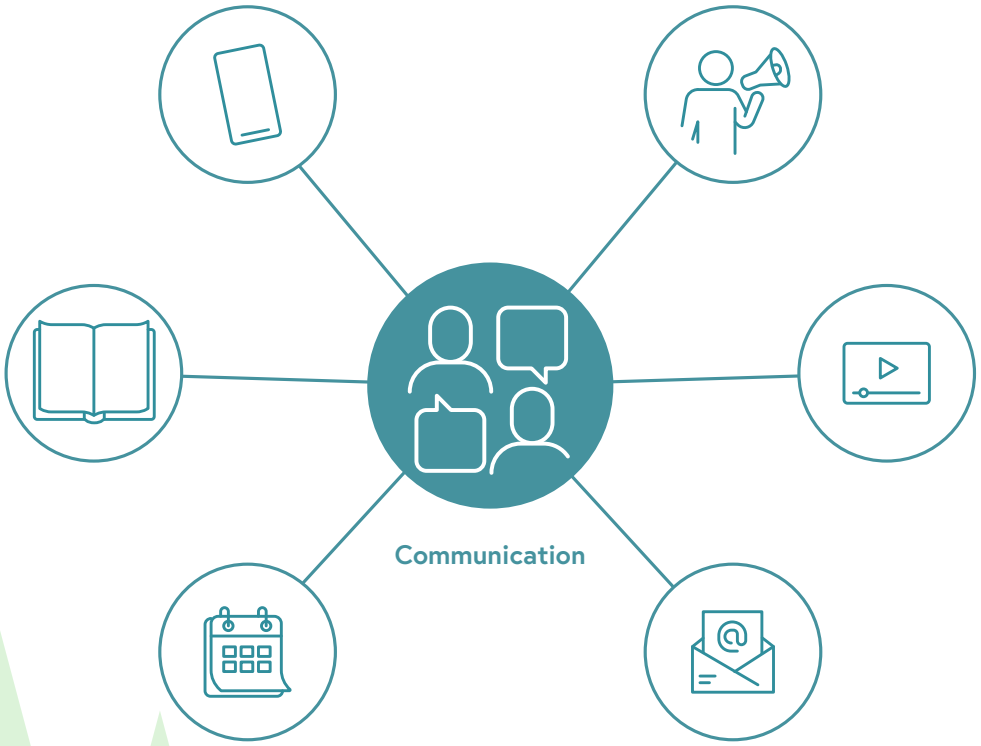
Graz University
of Technology
Rechbauerstraße 12
8010 Graz

www.tugraz.at



7 Communication

Awareness raising campaigns and public relations activities foster a comprehensive understanding of and interest in sustainable forestry and the benefits of using wood for climate protection. The objective is to disseminate information about the utilisation of renewable raw materials for material and energetic use. Regional and national measures and activities to raise awareness will be implemented, information provided and knowledge shared. The activities include, among other things, individual projects, a forestry and wood campaign throughout Austria, and accompanying communication measures such as short videos, the 'woodLetter' (newsletter of the Austrian Wood Initiative), and an event-series called 'woodCircle'.



7.1 Awareness campaign ‘Wald-Holz’

Wood as a material has a positive reputation, its contribution to climate protection is socially recognised and the use of wood is generally desired. At the same time, however, forest management is increasingly scrutinised, trees should not be felled and forests should primarily serve as large carbon stores. It is therefore important to emphasise the value of forest management and its effects for the population (availability of wood, protection against natural hazards, adaptation of forests to climate change, etc.) and to anchor it positively in social awareness. Forest management and timber harvesting are the basis for the timber industry – one of the most important economic sectors in Austria. The strength of the industry and the variety of jobs it creates are still quite unknown. Similarly, the efficiency of timber construction, especially when it comes to large-scale construction, has not yet reached the centre of society. The image campaign ‘Hey, Wald!’ (‘Hey, forest!’) aims to create approval for forest management and to charge the use of wood with the feeling that it is doing something good for the forest. It stages a dialogue between humans and the forest, whereby the forest is always portrayed as large, powerful and healthy. How does the forest manage to be so fit? ‘Using wood cares for the forest’ is the core message and answer. The youth campaign ‘Wood be nice’ highlights the attractiveness of the timber industry as employer. ‘Safe & high-tech. That’s what wood jobs are like.’ is the subclaim of the campaign, which draws attention to the many job profiles and career opportunities in the timber industry. Based on the timber construction awards in the federal provinces, the ‘Staatspreis Holzbau’ (‘State Award for Timber Construction’) offers an up-to-date showcase of timber construction that honours builders and architects and brings Austrian expertise to the fore. The ‘Material World of Wood’ as part of a large permanent exhibition at the Vienna Museum of Technology shows wood as a versatile and powerful material and its potential for a more sustainable future. The additional development of a mobile exhibition for use in public spaces means that broader target groups can also be reached in the federal provinces.

Project management:

proHolz Austria –
Am Heumarkt 12
1030 Vienna

www.proholz.at

7.2 Historical-ecological significance of wood as a material in the Austrian Open-Air Museum Stübing

For over 60 years, the Austrian Open-Air Museum in Stübing has been fulfilling the task of preserving rural cultural heritage from all federal states for future generations on behalf of the Republic. Like no other material, wood characterises the living environments of the 103 historic buildings from all over Austria. The diversity of proven wood species and working techniques form the basic knowledge for the preservation of this cultural heritage. Keeping the path from 'good old to good new' in mind is a fundamental task of the museum's work in Stübing. In 2023, the approximately 70,000 guests' attention was drawn to the high functionality and sustainability of wood as a material with special focus campaigns. Historical woodwork – usually in the background – became the centre of attention. The shingle roof was the centre of attention, as this type of roofing has a clear sustainable future perspective. For the first time, the roofing could be 'experienced' and functionally understood directly on the roof, at the height of a roof, using a walkable scaffold. Wooden channels and pipes, the advantages of chopped wood, fences made of 'inferior' pieces of wood or the many uses of willow branches or other shrubs, to name just a few, were able to raise awareness of the high value of wood in all areas of life and in every age. Job placements, expert talks, workshops, information boards and hands-on activities guided all generations through the museum year in a focused way. A study by the BOKU proved the current usability of a wooden roof. An extended museum educational project with proHolz Steiermark was implemented on site with up-to-date 'wood knowledge'. In cooperation with LebensGroß, a training module for the production of shingles was developed, where shingles for smaller roof projects could be offered in the future. In addition to the visitors' increasing awareness of wood as a material, three lasting networks were established.

Project management:

Austrian Open-Air
Museum Stübing
Enzenbach 32
8114 Stübing

www.freilichtmuseum.at

7.3 Holz im Garten

Exhibition “Terrasse 2030 – Holz im Außenbereich“

A key problem is the lack of expertise and the existence of prejudices regarding the use of wood in outdoor areas, which leads to suboptimal application results. The project therefore aims to raise awareness of the diverse application possibilities of native wood as a sustainable building material. The focus is on educating the general public about the ecological and aesthetic advantages of wood, particularly in the context of bioeconomy and climate protection. The exhibition ‘Holz im Garten’ (“Wood in the Garden”), a further development of the 12-year predecessor project, serves to communicate comprehensive research results to a broad audience. The aim is to present the findings from the areas of durability, safety and sustainability of wood products in outdoor areas in a comprehensible and practical way. The exhibition not only wants to inform, but also to spark and promote interest in the use of Austrian wood for future house and garden projects. By combining scientific research results with practical applications, the knowledge is presented in an easy-to-understand way. The exhibition uses vivid illustrations and practical examples to break down existing barriers and facilitate access to this valuable knowledge. The aim is to create a well-founded knowledge base that is accessible to both experts and the general public in order to promote the acceptance and use of wood in outdoor areas.

Project management:

Association of the
Austrian Wood Industries
Schwarzenbergplatz 4
1030 Vienna

www.holzindustrie.at

7.4 Installation woodpassage – European Capital of Culture Salzkammergut 2024

The ‘European Capital of Culture’ title has been awarded by the European Union to cities and regions in Europe for around 40 years. Bad Ischl and the Salzkammergut region were selected for 2024. Forest management and wood processing are closely linked to the UNESCO World Heritage region of Inneres Salzkammergut. The European Capital of Culture offers an excellent framework for raising awareness and addressing interested visitors about the benefits of using wood, a sustainable raw material available in the region, for the climate and society. The tree grows in the forest - the tree becomes wood - the wood becomes the house. The woodpassage brings this process to the Capital of Culture region in a memorable way. The wood installation will be shown at two prominent locations: in Bad Goisern on the market square in the immediate vicinity of the Handwerkshaus and then at Almsee, at the foot of the Zwölferkogel in the midst of an impressive natural landscape. At both locations, the woodpassage provides the setting for numerous cultural events. The Millennium Camera by American conceptual artist Jonathan Keats is installed at the summit of the Zwölferkogel. It is part of the Capital of Culture project Temporal Forest, which captures the forest and wood using the fastest and slowest photographic techniques. In keeping with this, proHolz is organising a photo competition together with the Prague School of Photography on the theme: ‘Culture and Nature - Images of Forest and Wood’. The best submissions will be shown in an exhibition at the Papermaking Museum in October.

Project management:

proHolz Austria
Hessenplatz 3
4020 Linz

www.proholz.at

7.5 Murauer HOLZ bewegt!

A total of 90 Holzstraße Murau objects are located in the region. They represent the diverse applications of wood. From architectural heritage and cultural traditions to regional energy generation and natural attractions, the theme is a key focus across the entire region.

New information boards have been installed adjacent to the objects to provide key information. By using the QR codes, visitors can access the virtual presentation of the Holzstraße (‚Wooden Road') objects on the spot and find more information. The Murau ambassadors have developed a series of guided tours, focusing on a range of topics, which are available for groups. To ensure the most up-to-date information is available, virtual 360-degree tours have been created at www.holzstrasse.at. The virtual tours show the region and its individual wooden objects in the most appealing way, inviting visitors to embark on a digital stroll. The Holzstraße Murau can be explored in a playful way with the help of short information texts, videos, fantastic photos and drone shots. A further key objective of the project is to promote education and awareness about wood, starting from primary school age. Furthermore, a wood workshop has been established at Murau primary school, enabling primary school children to gain an early awareness of wood as a material. Another key objective was the development and delivery of a bespoke exhibition at the St. Ruprecht / Murau Wood Museum in 2024. This was created under the title 'HOLZ KANN FAST ALLES' ('WOOD CAN DO ALMOST ANYTHING'). The opening was attended by Simone Schmidtbauer, Agricultural Councillor. The original objective of the project, 'Murauer Holz bewegt!', which aims to increase the use of wood as a raw material, will be fully achieved by the end of the project period. The positive responses from the population and guests in the region greatly assist in the realisation of the project.

Project management:

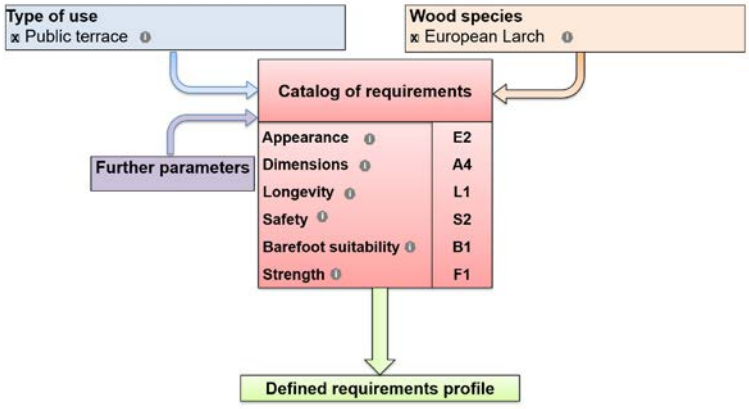
Holzwelt Murau
Bundesstraße 13a
8850 Murau

www.holzstrasse.at

7.6 Terrasse digital

A web-based planning guide for outdoor wooden decking

Decking for terraces, balconies and similar outdoor areas represents one of the most significant and challenging applications for wood in this context. The variety of expectations and possibilities, coupled with the lack of standardised regulations, presents a significant challenge for many planners and clients when defining the requirements. Inadequately formulated customer wishes and services provided by executing companies that deviate from the agreed specifications lead to dissatisfied users, complaints and disputes. In the worst case, this can result in significant defects and a drastically shortened service life of the decking. The Decking Planning Aid is a digital tool designed to meet users' specific needs. In just a few clicks, you can create a property-specific requirements profile, complete with all the necessary accompanying information, without the need for any special expertise. The planning tool identifies the relevant requirements from the extensive body of expert knowledge. The free online tool is embedded in the established knowledge platform dataholz.eu and is available to interested parties at any time and from any location for planning all types of outdoor wood decking. Once the planned type of use, desired type of wood and load-bearing function have been selected, the minimum requirement profile is generated. In the second step, the tool enables users to specify and personalise the results for their particular case. The result can be output in a format suitable for the specific application in question and used as a basis for further construction work, for example, as a reference for placing an order.



Project management:

Holzforschung Austria
Franz-Grill-Straße 7
1030 Vienna

www.holzforschung.at

7.7 Wald:Viertel erleben

The Waldviertel is a region in northern Lower Austria, named after the importance of the forest in this area. The region's historical and current significance is reflected in the variety of ways in which the forest and wood are utilised, both ecologically and economically. In contrast to other regions, the Waldviertel has experienced a period of sustained growth in the tourism industry in recent years. This initial situation provides an ideal foundation for focusing on the topic of FOREST. The project's objective is to position the Waldviertel as a model region for sustainable forest management and wood utilisation, while also raising awareness among the local population of the importance of 'their forest'. In particular, the importance of sustainable forestry and the use of wood in the context of climate protection should be emphasised and made accessible to all stakeholders. The activities also target groups that are not directly involved in forestry. The Waldviertel is an ideal location for this objective, given its long tradition of forestry and wood processing. The first step was to conduct a detailed, comprehensive analysis of the WALDviertler 'hotspots' in relation to forest and wood resources. This involved creating an overview map that succinctly captured the findings. In collaboration with local tourism facilities, forest owners and other businesses and facilities in the region, we have developed and tested a series of 'experience packages'. These have been evaluated in reflection rounds, among other things.

Project management:

Verein zur Förderung des Waldes
Überländ 18
3633 Schönbach

www.waldundholz.at

7.8 Waldstoff

Native wood as a climate-friendly raw material for textiles

Around 60 percent of all textiles currently contain plastic fibres, and the trend is rising. These fibres are a significant contributor to the contamination of the world's oceans and are also responsible for environmental pollution in a number of ways. During the course of the project, the potential of wood fibres from native forestry as a climate-friendly substitute for the production of textiles was identified and communicated. Given Austria's strong presence in both the forestry and technology sectors, the objective of the 'Waldstoff' project was to present a comprehensive value creation cycle for the use of wood fibres in textiles, tailored to the needs of specific target groups. Consideration was given to a number of factors, including water consumption, environmental impact, climate change, and the quality of the textiles produced. Dialogue between interested stakeholders was also encouraged, with the aim of raising social awareness. A number of partners and experts from Austria and abroad, as well as from business, science and civil society, were involved in analysing and presenting a prototypical cycle. Knowledge and experience in the production of wood fibres and the subsequent refinement processes were accumulated in various formats and made accessible to the public and specific target groups at different levels.

Project management:

Common Affairs GmbH
Bergstraße 14
3871 Alt-Nagelberg

www.waldstoff.at

7.9 Wood goes Europe

For generations, the “Salzkammergut” has been an important forest region with a long tradition of forest management and wood processing. Wood goes Europe is a leading project that could be expanded over Austria. It aims to bring forests, wood and culture closer to both the public and guests of the European Capital of Culture 2024. The project team aims to emphasise the importance of sustainable forest management and the resulting timber product. The local forestry and timber industry is encouraged to highlight its sustainable management practices. The app serves as an interface to the public and enables forest owners and businesses to present their methods transparently. The aim is to increase understanding and appreciation of working with forests and wood. Therefore, a meta-narrative was developed to link the content. Four avatars guide visitors digitally through the forest via artificial reality (AR) and explain its functions. Events and over 100 visiting points are also included in the app. In the Salzkammergut villages, interesting places, activities, projects and forest cultural features are recorded and documented with texts, photos and videos. These points are available on an interactive map. At the beginning of the project, workshops were held with forestry experts to define the main topics and the methodological approach.

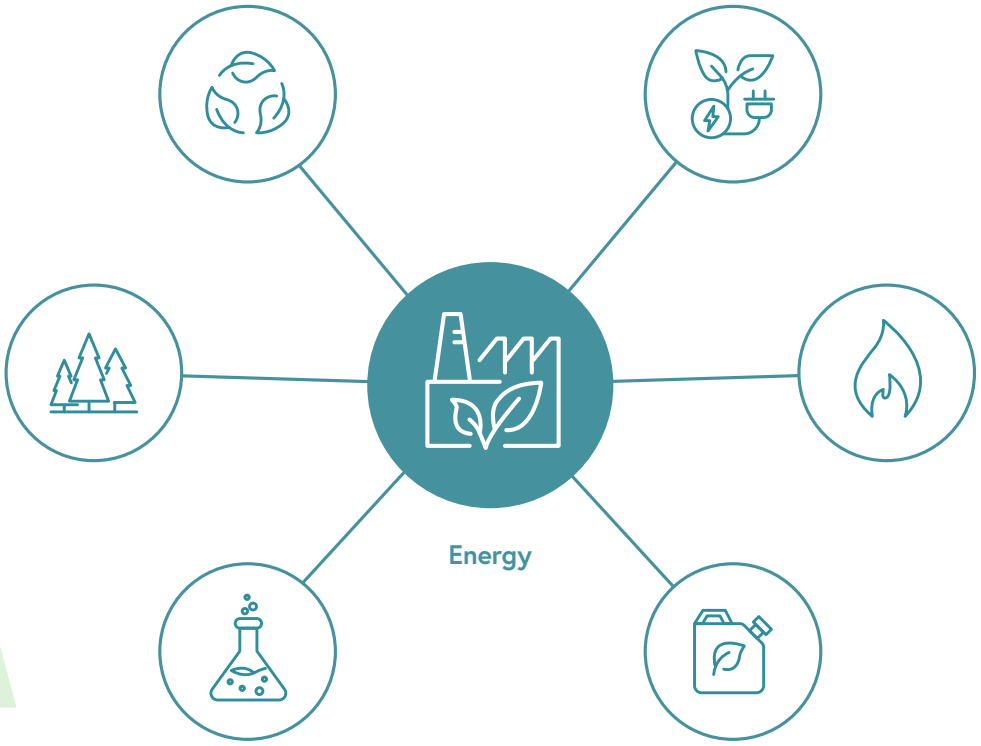
Project management:

Forstverein für
Oberösterreich und Salzburg
Auf der Gugl 3
4021 Linz

www.forstverein-ooesbg.at

8 Energy

In order to achieve sustainable development, it is necessary to replace fossil fuels with alternative energy sources. Forestry biomass and other renewable resources can play a significant role in this regard. By-products and waste materials from forestry, wood processing, paper, pulp and food production industries represent a sustainable solution for ensuring a climate-friendly energy mix. The utilisation of biomass as an energy source also serves to reduce reliance on imported fossil fuels and enhances the security of supply. The development of domestic biomass use is a forward-thinking strategy that creates jobs and added value in the regions. In light of the circumstances outlined above, research infrastructures and projects are being developed with the objective of producing green gases and biofuels based on wood and other renewable raw materials.



8.1 Advanced Bioenergy Lab

Living Lab for Green gases and biofuels from wood

The conversion of biomass and solid biogenic residues into synthesis gas has already been demonstrated on numerous occasions worldwide. However, the coupling with units for the production of wood diesel or wood gas is not yet sufficient. To bring this technology up to the commercial stage, a number of research questions still need to be answered. This project will address these questions and provide solutions over the next five years. The Advanced Bioenergy Lab eGen (ABL) is owner of the facilities and lead partner of a national Austrian R&D infrastructure project. The ABL brings together the main interest groups along the entire value chain, whose long-term strategic interest is the commercialisation of the investigated process chains (biomass to green gases (e.g. SNG) and biofuels). ABL was founded in April 2024; the ownership shares are divided into 45% held by the Resources and Raw Material Suppliers Group and 45% held by the Companies Group, which are the users of the technology and purchasers of the products. 10 % is held by the Research Group. The owners and other co-operation partners of the ABL will financially secure the future research operations of the living lab. The ABL will be the owner of the living lab and will plan, organise and carry out the future operation and research work with the lessons learned from the planning, construction and commissioning of the facility. It is a constant process to involve other partners, which is one of the reasons why the cooperative was chosen as the organisational form. The complete technical solution, comprising detailed plans, pipework and instrumentation lists, 3D models, mass and energy balances, and analysed operating data from the research operation, will be made available upon completion of the project to the owners and stakeholders group. Additionally, a comprehensive range of supporting documentation, training plans and strategies for overcoming non-technical barriers will be provided. This can be used in follow-up projects to make cost estimates for large-scale industrial plants, calculate profitability and, above all, carry out due diligence so that this technology becomes bankable, which is the crucial point for large-scale implementation.

Project management:

Advanced Bioenergy
Lab eGen
Holzinnovationszentrum 3
8740 Zeltweg

abl-research.at

Media links

Website of the Austrian Forest Fund
https://www.waldfonds.at/

Funding information
https://info.bml.gv.at/en/topics/forests/forest-fund.html

Brochure of the Austrian Wood Initiative
https://info.bml.gv.at/themen/wald/waldfonds/oesterreichische-holzinitiative.html

Subscribe to the Wood Initiative newsletter (woodLetter)
https://bml.liland.cloud/app/registration/form/client/bml/event/4234/customizableclass/Invitation?0

Podcast on the Austrian Forest Fund and the Wood Initiative
https://woodcast.buzzsprout.com/1735369/12412923-paul-ehgartner-bml-osterreichischer-waldfonds-und-holzinitiative

Videos on the Austrian Wood Initiative
https://www.waldfonds.at/videos/