
TACKLE CLIMATE CHANGE
USE WOOD
PLANT A SECOND FOREST

FOREWORD

Gaston Franco, MEP

Host of the exhibition
Member of the European Parliament
President of the "Club du Bois" within the EP
President of the Forest group within the EP Intergroup
"Climate change, biodiversity and sustainable development"

Wood is probably the most environmentally friendly material that nature has given to man. It is made from CO_2, captured from the atmosphere by trees and stored in wood, where the carbon will remain locked for the entire lifespan of the wood.

It is not only a magnificent ecological material, it is also a technological material, perhaps even the most innovative and the most extraordinary one at man's disposal. Today, tomorrow, and for centuries to come, wood is and will continue to be this wonderful natural material, at the same time common and mysterious, beautiful and technical, visionary and renewable.

Serving as a versatile raw material for construction, furniture, packaging, panels etc., it not only inspires artists within industry, but also those that have made art their profession; the artists who make us question reality and dream about other solutions.

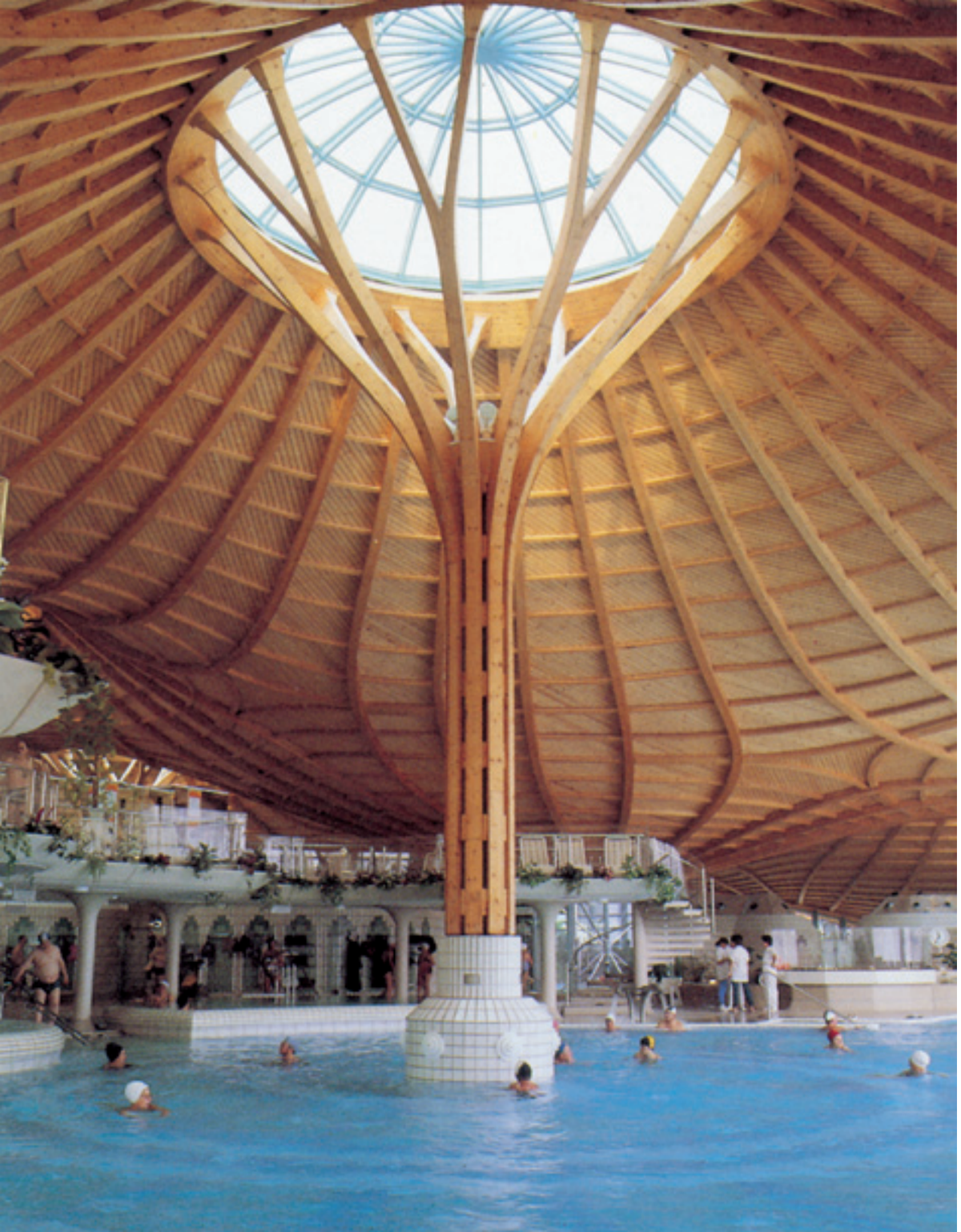
Wood as a material deserves to be worked by these artists for our pleasure and our search for better ways to master the future.

It is for all these reasons, that I love wood and wood-based products.

Through this exhibition at the European Parliament, entitled *Tackle climate change: use wood*, to which I gladly lend my name, the artists seek to emphasise and demonstrate the variety that wood in all its facets has to offer, whether it be as sculpture, craft, decoration or message.

It is my hope that this exhibition will convince many that using wood and wood-based products now more than ever before will help us in achieving our main policy goals which are to create a better, safer, kinder world.

For society, there is one truly naturally renewable resource which plays to man's capacity for innovation: namely wood!



WOOD IN ART AND THE EUROPEAN WOODWORKING SECTOR

Matti Mikkola
Chairman CEI-Bois

Ladislaus Döry
President EPF
Vice-Chairman CEI-Bois

Hannu Kasurinen
Chairman EOS

We are pleased to thank Gaston Franco, MEP, chairman of the Club du Bois, for the renewed opportunity to inform the Members of the European Parliament and other European policy makers and institutions, by means of an exhibition inside the European Parliament, about the importance of the European woodworking sector and the benefits it offers to the EU as it seeks to meet its main climate and sustainability policy targets.

In fact, although six years have passed since we launched the 'Tackle climate change: use wood' slogan, such calls to action are more relevant than ever. With the effects of climate change becoming more and more visible to EU citizens, through major calamities across the globe such as the recent ravages of 'superstorm' Sandy in North America, attention needs to be constantly drawn to how an increased use of wood and wood-based products can help in mitigating the present alarming situation. In this context, we are pleased to note that the services of the European Commission and the European Parliament are working on implementing important decisions taken in Durban concerning the recognition of harvested wood products as carbon stores in greenhouse gas accounting schemes.

This exhibition puts forward wood-based art from well-known European contemporary artists as top quality examples of harvested wood products storing carbon for years, in fact for ever, we hope. They act as a point of attraction and encourage the visitor to learn more about how wood and wood products can be of immediate assistance in finding appropriate solutions to the myriad of challenges faced by society today.

Did you know, for instance, that:

- 1 m^3 of wood stores about 1 tonne of carbon?
- If we used 10% more wooden houses in Europe, 25% of the Kyoto targets concerning CO_2 reduction would be realised?
- Forests are growing in Europe? Over the last 20 years, the forest area has expanded in all European regions, gaining 0.8 million hectares each year. Over the same period (20 years) the total growing stock of forests in Europe has increased by 8.6 billion m^3, equivalent to the total combined growing stock of France, Germany and Poland.
- Of all building materials, wood has the best carbon balance?
- Wood products have an eco-efficient life cycle and can be repaired, reused, recycled and finally recovered as energy? When the products are burned at the end of their life cycle, CO_2 is released back into the atmosphere. This means that wood is carbon neutral, having a 'zero' carbon footprint.
- The manufacturing of materials for a wooden building uses 28% less primary energy and emits 45% less carbon than the manufacturing of materials for a similar concrete building?

The subtitle 'Plant a second forest' refers to a 'second forest' of harvested wood products which we could 'plant' in our cities, villages and homes by using substantially more wood products. As these products continue storing carbon throughout their serviceable life, they are in fact counterparts to forests storing carbon in the trees.

We hope that this exhibition and related catalogue will give you a better insight into the European woodworking sector, the role and importance of using wood and wood products and the solutions they offer. In this context, the European Woodworking Industries look forward to a continuous open dialogue with all stakeholders in order to use the benefits offered by wood and wood products to a greater and greater extent.

Wood: the solution!

ARTS AND INDUSTRY

Dany Vandenbossche

Curator of the exhibition

Honorary Member,
Flemish Parliament

This is not our first attempt at bridging the gap between two seemingly opposite worlds: arts and industry. You would be amazed at how closely related they are. Take for instance *The Sequence*, the monumental piece of art by Arne Quinze that will continue to embellish the entrance to the Flemish Parliament until 2014. The wooden sculpture of course reflects an artistic message, but also echoes what the wood industry is seeking to tell us.

When the European Panel Federation (EPF) organised an event around *The Sequence* in 2010, their aim was to draw the attention of policy makers, the press and the general public to the value of sustainable wood use. The giant construction was built outside the Flemish Parliament in 2008 in the context of the Festival of Politics, an event held every five years in the Parliament. The wooden installation will finally be dismantled in 2014 and will be completely recycled and reused. It is the artist telling us to use wood carefully. The event received significant coverage in the local and foreign press.

This collaboration between the arts and the wood industry proved to be useful in getting the wood industry's message across to policy makers but also to the general public. Not only to create more general ecological awareness, but also to draw attention to the benefits of a more sustainable use of wood as material; not only for the sake of the wood industry itself, but for society in general.

That is how the idea was conceived by CEI-Bois, EPF and EOS (European Organisation of the Sawmill Industry), the federations that unite the wood industry in Europe, to repeat the politico-economic message to the European policy makers, again by means of an art exhibition. A fresh way of communicating, which enables the message to appeal to an even wider audience.

We searched and found five renowned European artists who use wood as a basic material for their art, but also lend it an everlasting value. For the overall concept of the exhibition, we turned to Tijdsbeeld & Pièce Montée nv, experts in the development of design concepts for exhibitions and museums, to help us create an environment that allows the two worlds to blend together seamlessly.

It was not our intention to present an exhaustive selection of artists. We would have liked to have more works and wood products on display, but the limited space obliged us to make a tight selection. The selected works by five artists each carry the message the European wood industry wishes to convey.

It is probably hard to imagine the amount of discussion and countless meetings preceding an event like this. But we got there in the end and we are very proud of this catalogue, which also reflects both worlds: that of the visual arts, where economic factors can no longer be ignored, and that of the European wood industry, which wants to draw attention to the threats and opportunities of the sector, which represents hundreds of companies and hundreds of thousands of employees in the European community.

The European Parliament is hosting this original initiative, thanks to MEP Gaston Franco. Five artists are displaying their work in a setting that does not bear any resemblance to a traditional stand in a fair, but is conceived as a truly artistic space, shared equally by art and economics.

It seemed only logical that Arne Quinze's work would form part of the exhibition. When *The Sequence* was built on the Leuvenseweg in Brussels, the Flemish Parliament decided to purchase the scale model in order to have a lasting reminder of the work. The Parliament was kind enough to loan it to *Tackle climate change: use wood. Plant a second forest*. Our thanks go to the Speaker of the Flemish Parliament, Jan Peumans and also to John Thielemans, who is in charge of the Parliament's impressive art collection.

Richard Long was another obvious choice. The sculptor, painter and photographer was born in Bristol in 1945 and is one of the best-known British land artists, renowned for his use of natural materials including wood. A famous example is *Driftwood Line* (1977), made up of driftwood gathered on one of his long walks, and 'recycled' into an evocative statement. In 1989 Richard Long won the prestigious Turner Prize, the most important British visual arts prize, which is awarded by the Tate Gallery in London. This work is part of the collection of the Municipal Museum of Contemporary Art (S.M.A.K.) in Ghent (Belgium). We would like to express our thanks to Philippe Van Cauteren, Artistic Director and to Odelinde Van Thieghem, Collection Care and Loan Manager of the museum, which is one of the leading institutions in Europe and houses a wide-ranging collection representative of contemporary art.

Who else to open our exhibition than Jan Hoet, honorary curator of S.M.A.K. and responsible for its outstanding contemporary art collection, and honorary director of MARTa in Herford (Germany). As a result of his work in European contemporary art, Jan Hoet has received several important awards not only in Belgium, but also in France and Germany. We are grateful to him for his contribution to this initiative and for his help in obtaining the loan of *Suicide d'objet* (2001) by French artist Philippe Ramette for the exhibition. Ramette started his career as a sculptor and gained international acclaim with his surreal, gravity-defying photographs.

We also welcome German artist Stephan Balkenhol, internationally known for his roughly carved and painted sculptures. Typical of his work is that sculptures and pedestals are carved from the same piece of wood. Even though the sculptures are painted in the end, he sees to it that the original material remains visible. The work on display at the European Parliament is *Weiblicher Akt* (2012), which is on loan from the Deweer Gallery (Belgium). We are especially grateful to Jo Coucke for his support and co-operation. Art galleries are, of course, the perfect example of how art and daily economic reality go hand in hand.

Another welcome guest at the exhibition is Romanian artist Dumitru Gorzo. His work is on loan from Slag Contemporary Gallery (New York) but we are also grateful for the help and support of the Gallery Mie Lefever (Destelbergen, Belgium), which specialises in Romanian art. Gorzo is a typical example of a contemporary artist

who re-introduced traditional Romanian wood craft into contemporary art. The work on display is *Different Perspective* (2012, oil on carved lime).

It goes without saying that an event like this could never have been realised without the help and co-operation of several institutions and galleries, to which we express our profound gratitude.

The collaboration with all parties involved did not always run entirely smoothly, which made this 'mixed' initiative all the more interesting. Fitting the issues expressed by the woodworking sector into an exhibition setting proved a real challenge. The application of wood in the construction industry or other commercial fora is explained by means of video displays, which is one example of how we have tried to integrate the concerns of the industry into the artistic design of the exhibition. Let us not forget that they provided the financing for this project, for which we express our gratitude to EPF, EOS and CEI-Bois. It was particularly pleasant to work with Ladislaus Döry, the erudite President of EPF. Special thanks go out to Kris Wijnendaele, Secretary General of EPF, for launching the initiative and to Filip De Jaeger, Secretary General of CEI-Bois. Finally we also thank Karel de Gucht, European Commissioner for Trade, for opening the exhibition together with MEP Gaston Franco. Incidentally, the Commissioner is the perfect example of how one person can combine a love of art with a profound interest in trade and industry.

Our hope is that this unique collaboration between visual arts on the one hand and the woodworking sector on the other, will receive the acclaim it deserves. With this event we call attention to an industry that will play an important role in tomorrow's Europe, not only with regard to employment, but also to sustainable economic development. The production of sustainable materials and industries that respect the world's ecology are vital in today's society.

As curator of this exhibition, I hope we have succeeded in blending the two worlds together, without making too many concessions on either side. In order to provide wider access to the exhibition, we have created the website www.secondforest.eu, as physical access to the premises of the European Parliament can be quite an undertaking for the general public.

Perhaps the exhibition will contribute to a better understanding of the main concerns of the European wood industry, which has everything it needs to play an even greater part in the creation of a better living environment in Europe.

ART TAKING ON NEW MEANINGS

Jan Hoet

In their search for new meanings, whether out of a desire or a necessity to break new ground, which has always been the core business of art, artists today – like society in general – have been showing a growing interest in the ecological perspective and anthropological involvement with nature. As a result, the materials they use possess a tautological reflex with regard to the way they relate to their environment and to the nature of things.

When Joseph Beuys placed basalt blocks next to his *7000 Eichen* (7000 Oaks) in order to protect them from bad weather, he also referred to a past in which earth minerals engaged in a direct dialogue with the trees, attempting to raise more 'Umweltbewusstsein' (environmental awareness).

Artist Richard Long operates in a similar but more reserved way, claiming the act of walking as art. He displays traces of these walks in the form of driftwood, found on one of his walks along the beach near Bristol, and 'reduces' them into a carefully arranged rectangle.

Whereas artists of the past viewed the landscape from behind their easel, Richard Long places himself *in* the landscape. To him, the materials function like the fire in the fireplace. They contain traces of the places he has visited: the branches in the forest, the driftwood along rivers or on beaches. It is precisely this material that allows us to have an aesthetic experience, after it has been transformed by the artist from something insignificant or meaningless into something graceful and/or sublime. It is as if art is recreating a platonic love affair between us, the viewers, and the world.

This can also serve as an example of the 'playing artist'. I refer to the words of Hegel, who took inspiration from the Aristotelian tradition, which saw natural science as a 'ludus serius' or a 'serious game of rules' which, like life itself, also includes the idea of accidental necessity.

In the same sense, the art of Philippe Ramette is also a game, one that seeks to evoke surreal alienation. His work hovers between reality and fiction, as it is not the function of his prosthetic sculptures or his furniture that prevails, but the concept behind them, and more specifically the ideas and new information they engender. A joined set of chairs does not meet the expectation of communication, but is more likely to cause indifference and/or a withdrawal into ourselves.

Similarly, Stephan Balkenhol's roughly carved and painted sculptures do not look us straight in the eye. Set in a surreal atmosphere, the introverted figures appear to be staring into the unknown.

Arne Quinze, known for his gigantic wooden sculptures in public spaces, tends to be more frivolous, and is clearly familiar with the idea of art as a game.

As a political artist, Dumitru Gorzo wants to challenge us to take part in a subtle game of conflicts within society, aiming to force us to make autonomous decisions. Often hurtful and eccentric, the artist is not afraid to provoke his audience with a radical view on the art of painting. His representations contain social violence and harshness and present a mixture of eroticism and ecstasy, of craftsmanship and freedom, of painting and sculpture.

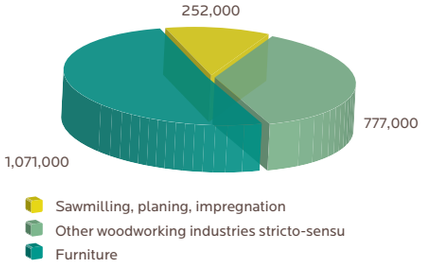
THE EUROPEAN WOODWORKING INDUSTRY, ITS ECONOMIC IMPORTANCE AND ORGANISATIONAL STRUCTURE

NEARLY 2.1 MILLION JOBS AND WORTH MORE THAN 201 BILLION EUR IN 2010

A PROVIDER OF WELFARE IN EUROPE

In 2010, the woodworking industry provided jobs to nearly 2.1 million people in the 27 EU countries (EU 27). In common with all traditional industries, it plays an important part in achieving the EU goal of becoming the world's most competitive region. The woodworking industry is a major employer in many of the Member States of the European Union and features among the top three industries in Austria, Finland, Portugal and Sweden.

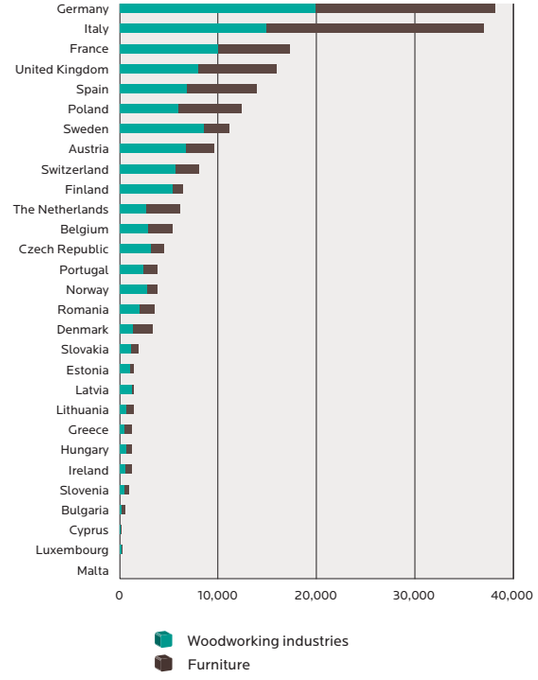
Employment per sub-sector, 2010



A DRIVING FORCE IN THE GLOBAL ECONOMY

In 2010, the production value of the EU 27 woodworking industries totalled more than 201,000 million EUR. More than half of this was accounted for by the woodworking sector, representing 109,500 million EUR. EU manufacturing is dominated by Germany and Italy. France comes in third position at some distance from the leaders, closely followed by the United Kingdom, Spain and Poland. In 2010, the strongest growth rates of production value were recorded in Slovakia, Estonia, Latvia and the United Kingdom.

Production value per country, 2010 (million EUR)

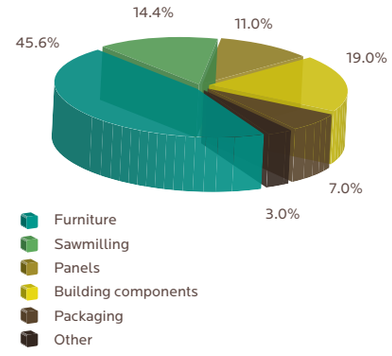


A CONTRIBUTOR TO RURAL DEVELOPMENT

Companies are often located in remote, less industrialised or developed areas, making an important contribution to the rural economy.

A diversified industry

The industry covers a wide range of activities, from sawmilling, planing and pressure treating to the production of wood-based panels, veneer and boards; from construction products to joinery; from pallets and packaging to furniture.

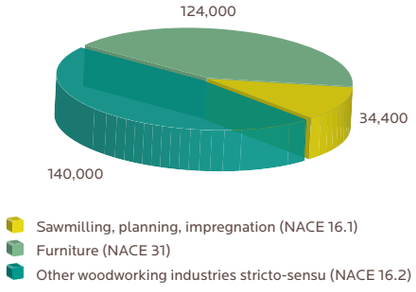


AN INDUSTRY OF SMALL AND MEDIUM-SIZED ENTERPRISES (SMEs)

The companies within the woodworking industry are mostly SMEs, with only a few large groups, typically in the softwood sawmill, panel and parquet sectors, operating on a European or global scale.

The total number of businesses in the EU 27 wood industry was estimated at 300,000 in 2010, of which 124,000 are in the furniture sector.

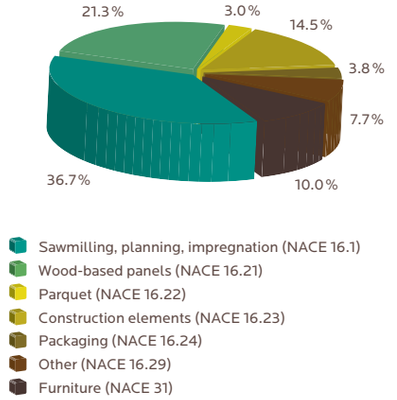
Number of enterprises per sub-sector, 2010



AN EXPORTING INDUSTRY

In 2010, the overall value of EU 27 exports of wood-working products amounted to 19.3 billion EUR, i.e. 15% more than in 2009. Exports of both woodworking products and furniture increased by 19.7% and 11% respectively.

Extra-EU exports by subsectors, 2010



INDUSTRY SECTORS

As main subsectors of the woodworking industries one can distinguish:

- Furniture
- Sawmilling (sawn and planed timber, engineered wood products, wood preservation, ...)
- Wood-based panels (particleboard, MDF (Medium-Density Fibreboard), OSB (Oriented Strand Board), hard- and softboard and plywood)
- Building components (windows, doors, flooring, industrial joinery, housebuilding, ...)
- Packaging and pallets
- Other (musical instruments, skis, ...)

THE CONSTRUCTION SECTOR

The performance of the woodworking industry, even the furniture sector, is highly dependent on the performance of the construction industry, as the vast majority of the products manufactured by the European woodworking industry find their way into the construction sector, both for structural and non-structural applications, as well as for decorative purposes such as furniture. The industry therefore makes a significant contribution to a building segment that represents 12% – 14% on average of EU Member States' GDP.

In the short term, little growth is expected from new construction in Western Europe, most coming from Eastern Europe and from Repairs, Maintenance and Improvement (RMI). RMI currently accounts for roughly 39% of the total residential, and 48% of the non-residential, construction markets in Western Europe; 30% and 32% in Eastern Europe. Timber frames' share of residential construction is growing, particularly in Central Western Europe and the United Kingdom. In Western Europe, the market share is around 7% and in Eastern Europe, it is nearer to 3%. The disparity between Western and Eastern European construction output has widened. Eastern Europe has remained attractive to foreign investors, as EU membership has implied less bureaucracy and positive trading conditions with other Member States.

THE FURNITURE SECTOR

The sector is a major user of wood-based panels, but also an important user of sawn wood, especially hardwood. Therefore, the development of the European woodworking industry is closely linked with the furniture sector. In countries like France, Italy and Spain, the furniture sector consists largely of small, artisanal companies, whereas German manufacturers tend to be larger and more 'industrialised', with half of their market accounted for by companies with over 300 employees. Within the new EU Member States, the furniture industry is rapidly gaining in importance.

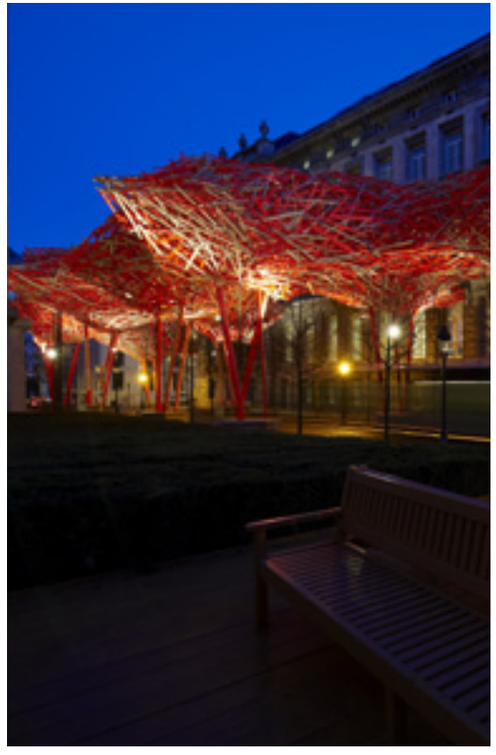
In 2010, the European furniture industry realised a total production value of more than 91 billion EUR. Italy remains Europe's leading producer and Germany ranks second. Estonia and the United Kingdom made the greatest progress in 2010.

ARTISTS' STATEMENTS: USE OF WOOD

ARNE QUINZE – THE CASCADE USE OF WOOD: USE, REUSE, RECYCLE

The Sequence (2008), a giant wooden installation, was built on the Leuvenseweg in Brussels in 2008, connecting the Flemish Parliament with the House of Flemish Representatives. The construction will eventually be torn down, but the hundreds of wooden planks will be completely recycled and reused for another project.

Besides the artistic message, the work clearly carries an ecological message as well and is a good example of Arne Quinze's very contemporary interest in sustainability: 'Working with natural material gives the installation a very pure and human aspect. I always work in a sustainable way. This is one of the most important things for me. All used wood has the PEFC label, a European standard. For every tree felled a new one will be planted. All wood is 100% recyclable into something else, and is going to be completely reused after it has been dismantled.'



PHILIPPE RAMETTE – EXPLORE THE UNEXPECTED FACETS OF WOOD

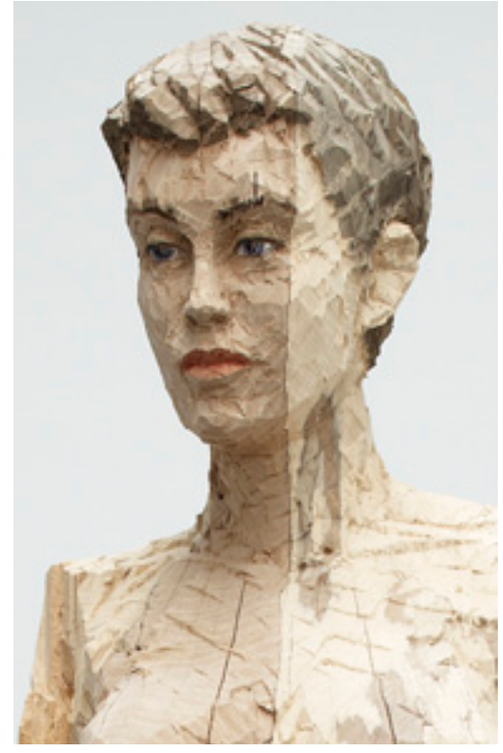
Philippe Ramette's work has always been based on the conception and creation of objects maintaining a relation to the body. His series of 'objects for reflection' are designed for a specific use, usually indicated by their title, and offer us the chance to experience what is usually only a thought process. It is not the objects themselves that prevail, but the concept and ideas they conjure up.

Through his art, Philippe Ramette creates a world where the conventional laws of nature do not apply, blurring the lines between dream and reality, between objects and subjects; often tinged with a hint of irony. His objects are in constant dialogue with their human characteristics, as in *Suicide d'objet* (2001), which also contains an allusion to wood as a (formerly) living material.

STEPHAN BALKENHOL – EXPLOIT WOOD AS EVERLASTING SCULPTURE MATERIAL

From the sculptor's traditional material, wood, Stephan Balkenhol carves figurative work that mixes references and traditions. Whether sculpting humans, animals, or scenes from his imagination, there is always something strange and enticing about his mute, reserved and peacefully contemplative figures.

Balkenhol's work contains references to the Middle Ages and to the wooden sculpture traditions of the Nordic Renaissance. The works are roughly hewn from one block of wood, usually wawa wood, poplar or Douglas fir. From a distance, his sculptures seem sensual and sturdy, however, on closer inspection, their splintered and chisel-marked surfaces suggest a raw fragility.



DUMITRU GORZO – REVIVE TRADITIONAL WOOD CARVING

A large part of Dumitru Gorzo's art work constitutes a revival of the traditional Romanian wood carving to be found in the artist's native village of Leud, Maramures. In his paintings on carved wooden reliefs, the artist portrays relatives and neighbours over relief sculptures of primitive characters carved into panels of lime or fir.

The pieces speak of an ongoing engagement with rural Romania, its people and landscape, the use of wood and clay lending the work a natural, earthy quality.

RICHARD LONG – REUSE (DRIFT)WOOD

A pioneer of Land Art, Richard Long has turned the act of walking into an art form. His work has taken the form of photographs, maps, drawings and sculptures; generally lines or circles constructed from natural materials that Long gathers on his walks. His works articulate ideas about time and space, relativity, natural forces and human experience. For him, the landscape is at once the medium and subject of his work.

'You could say that my work is (...) a balance between the patterns of nature and the formalism of human, abstract ideas like lines and circles. It is where my human characteristics meet the natural forces and patterns of the world, and that is really the kind of subject of my work.' (Richard Long, *Walking in Circles*, p. 250).

During one of his walks through the landscape, he sent us this message:
Dear Dany Vandenbossche,
Thank you for your message.
Unfortunately I don't have the time to come for the opening. I haven't done many works in wood, but you are welcome to use any images (finger-print works on Driftwood etc.) that you can find in catalogues, or from my gallery Haunch of Venison in London (contact Ben Tufnell).
Good Luck !!
[Signed] Richard Long

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3-7 December 2012
European Parliament, Brussels

STEPHAN BALKENHOL

01
Weiblicher Akt, 2012, beech, paint,
263.5 x 80 x 59.5 cm, courtesy Deweer Gallery,
Otegem, Belgium. (Photo Frederik Vercruysse)

02
Kleine männliche Figur, 2012, cedar, paint,
44.5 x 20 x 17 cm, private collection,
courtesy Deweer Gallery, Otegem, Belgium

03
Reiter, 1986-1996, patinated bronze,
150 x 145 x 72.5 cm, ed. V + I A.P.,
courtesy Deweer Gallery, Otegem, Belgium

www.deweergallery.be

German sculptor Stephan Balkenhol was born in Frizlar in 1957. Between 1976 and 1982 he attended the Hamburg School of Fine Arts, and since 1992 he has been professor at the Academy of Fine Arts in Karlsruhe.

His first solo exhibition dates from 1983 and was held in the Löhrl Gallery in Mönchengladbach. Since then he has exhibited widely in Europe and the United States. His work is to be found in many private and public collections across the world.

Balkenhol has been concentrating on the human figure for over two decades and began his sculptural process of figurative wood carving in the mid-eighties. His first figurative wooden sculptures of single male or female nudes attached to pedestals placed the human figure at the centre of his work and reintroduced it in contemporary sculpture, in contrast with the abstract and minimalist tradition of the time. In the 1990s he added animals, hybrids and architectural scenes, all carved from single blocks of wood.

The artist uses a hammer and chisel to carve his figures out of a tree trunk, leaving the shavings and traces of the tools visible in the wood. He then uses paint to structure the sculpture and accentuate the anatomy without adding any expressiveness, and leaving much of the natural wood exposed. Balkenhol has been representing contemporary figures of the ordinary man or woman, either as free-standing sculptures or reliefs in wood, in order to strip them of any narrative content. Thus the viewer is able to project his own image onto them. They are understated humans or animals, devoid of any individual expression, seeming both familiar and anonymous, solitary and distant.

Stephan Balkenhol has reinvented figurative sculpture by mixing the traditions of European woodcraft with a modern and contemporary discourse, making him one of the most original and inventive sculptors of his time.

The artist has been awarded the Karl-Schmidt-Rottluff Grant, the Baden-Württemberg International Prize and the Bremen Art Prize. He lives and works in Karlsruhe, Germany, and Meisenthal, France.

01

02

03

DUMITRU GORZO

01
Different Perspective, (2012), oil on sculpted wood, 161 x 55 cm, courtesy of the artist and Slag Gallery, New York

02
Dumitru Gorzo in Maramures, Romania, 2011, courtesy of the artist

03
The Fiasco of the End of the World, 2011, installation view at Jecza Gallery, Timisoara, Romania

04
Wunderkabinett, 2010, installation view at Laika, Romania

Dumitru Gorzo was born in Leud, Maramures, Romania in 1975. In 1997 he received a visual arts degree from the University of Fine Arts in Bucharest, Romania. He was the co-founder of 'Rostopasca', an influential contemporary artistic movement in Romania.

Gorzo's methods of working have ranged from street prankster to performance artist to studio painter and sculptor – effectively evading any strict categorisation. In 2006 he was the subject of a major, one-person exhibition at the Romanian National Museum of Contemporary Art (MNAC) in Bucharest. The exhibition then travelled to the Brukenthal Art Museum, Sibiu, Romania. Since 1999 he has featured in many exhibitions in Romania where his work has garnered extensive press coverage and a growing audience.

His exhibitions have frequently generated controversy for their political and sexual subject matter and the artist's unusually bold treatment of issues that are still considered quite controversial in Romania.

Part of his work evokes the traditional Romanian art of woodworking of his native village. In his paintings on carved wooden reliefs, the artist portrays relatives and neighbours over relief sculptures of primitive characters and archetypes carved by the artist into panels of lime and fir. Gorzo has returned repeatedly to the inhabitants of the village as his subject.

In addition to numerous solo exhibitions in Romania, Germany, Austria and Luxembourg, his work has been included in group shows in Austria, Belgium, Germany, Italy, Luxembourg and Romania. Earlier this year, Dumitru Gorzo featured in a public art exhibition in Red Bank, New Jersey, presenting a series of paintings titled *Heads* on the exteriors of historic and contemporary buildings.

The artist divides his time between Bucharest and New York.

www.slaggallery.com
www.nj.com

01

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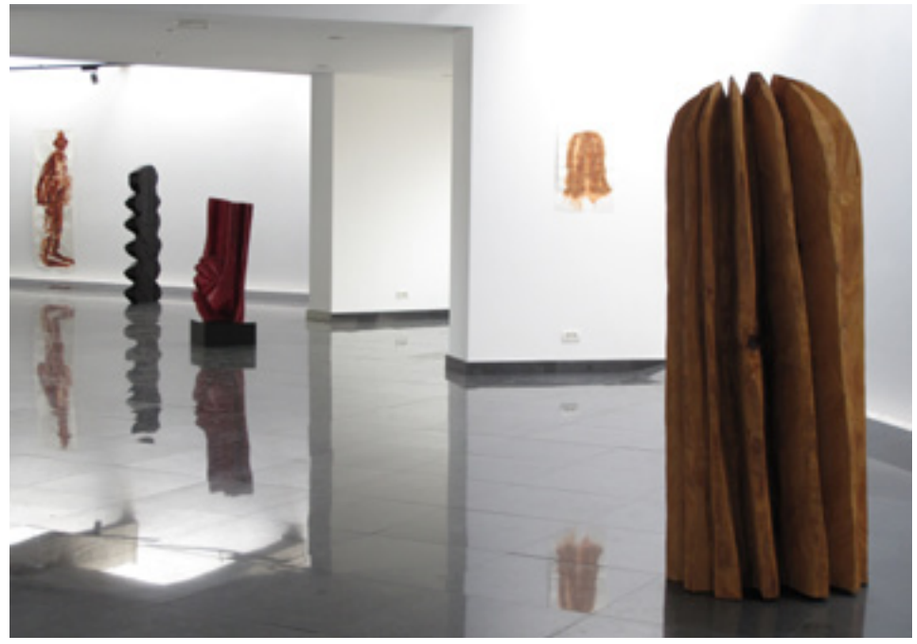


03

04

ARNE QUINZE

01 - 02
The Sequence, scale model, 2008, 243 (L) x 114 (W) x 170 cm (H), courtesy The Flemish Parliament. (Photograph Kurt Van Strijthem)

03
The Sequence, 2008, 16 x 80 m, wood, Leuvenseweg, Brussels

Arne Quinze was born in 1971 in Belgium. Once a graffiti artist, Quinze now creates large and small sculptures, drawings and paintings as well as large-scale installations. Recurring fundamentals in his oeuvre are the use of multiple types of wood, electrical colours in fluorescent paint, and themes referring to social interaction, communication and urbanism.

What drives Quinze is the belief in the possible realisation of an idealistic society, where all individuals communicate and interact, which aims to bring people together and foster vigorous dialogue. His installations are built to provoke reaction and to intervene in the daily lives of passers-by as they are confronted with his sculptures. His unconventional installations feature in various public spaces, including several city centres in Belgium (*Cityscape*, *The Sequence*), Germany (*The Traveller*), France (*Camille*, *Rock Strangers*), Lebanon (*The Visitor*), China (*Red Beacon*) and USA (*Uchronia*, *Timegate*).

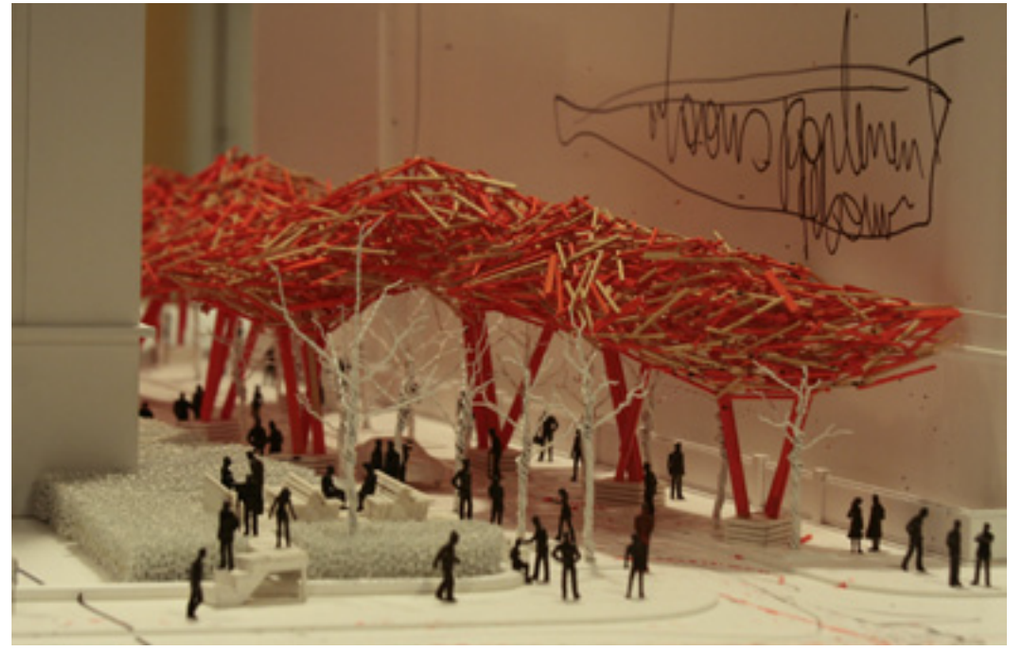
Besides building monumental public sculptures, Arne Quinze creates complex art pieces and video installations inscribing his vision in society of how people see themselves and society. Works such as *Bidonvilles*, *Stilthouses*, *Chaos* and *My Home My House My Stilthouse*, *My Secret Garden* have been the subject of many exhibitions.

The installation T*he Sequence* (2008) is a wooden construction which will stand in the Leuvenseweg in Brussels for two more years. With its intense colour, the sculpture aims to contrast with its natural surroundings and create a sense of estrangement. '*The Sequence* bridges the communication gap between people and generates movement in the city. I want to reconnect people and let them interact with each other as they did in the past in squares. At least people talked to each other then', says Quinze. The sculpture is made of concrete and wood; after it has been dismantled, all of the wood will be completely reused.

Arne Quinze lives and works in Sint-Martens-Latem in Belgium.

www.arnequinze.com
www.thesequence.be

01



02

03

PHILIPPE RAMETTE

01
Suicide d'objet, 2001, mixed media, variable dimensions, exhibition view: *Gardons nos illusions, 1987-2008*, MAMCO, Genève, Switserland, 2008, courtesy Galerie Xippas. (Photo Marc Domage)

02
Dès qu'on a le dos tourné, 1998, wood, 101 x 75 x 71 cm, courtesy Galerie Xippas. (Photo Frédéric Lanternier)

03
Espace Meeting, 2007, benches, lectern, platform, 500 x 900 x 115 cm, exhibition view: *Gardons nos illusions, 1987-2008*, MAMCO, Genève, Switserland, 2008, courtesy Galerie Xippas. (Photo Marc Domage)

Sculptor Philippe Ramette was born in Auxerre, France in 1961 and became well known in the 1990s as part of the French contemporary art scene, creating strange wooden and metal instruments and objects, all designed for a specific use as their titles suggest: *Objet pour voir le monde en detail* (Object for seeing the world in detail), *Objet pour communiquer avec soi-même* (Object for communicating with yourself), etc. 'Generally,' says Ramette, 'it's not the object that's important, it's the idea of a possible future use and especially what that use is going to entail in terms of transformation.'

Between 2003 and 2008 he completed his series of gravity-defying photographs that picture the artist himself in seemingly impossible positions. These optical illusions do not involve any digital manipulation, Ramette simply offers us a different perspective on the earth, turning it upside down or sideways. He explores themes of gravity and man's relationship to the landscape in his works, turning the earth into a strange playground where virtually anything is possible.

The artist has taken part in many solo and group exhibitions across the world and his work has found its way into many public and private collections worldwide.

www.xippas.com

www.guardian.co.uk/global/2009/sep/12/philippe-ramette-interview

01

02

03

RICHARD LONG

01
Driftwood Line, 1977, 10 x 1265 x 114 cm, driftwood

English sculptor, photographer and painter Richard Long was born in 1945 in Bristol. He studied at the West of England College of Art there before graduating from St. Martin's School of Art and Design in London. Richard Long is a landscape artist; for him, the landscape is at once the medium and subject of his work. He introduced the act of walking as an art form as early as 1967.

Long had his first solo exhibition at the Konrad Fischer Gallery in Düsseldorf in 1968, and just a year later was showing in Paris, Milan and New York. After 1969, Long created environmental works all around the world, documenting his walks with texts, maps and photographs. As Long began exhibiting more frequently, he was forced to realise different modes of presentation to bring his experience of nature back into the museum or gallery. In 1970, at the Dwan Gallery in New York, he walked a spiral on the floor with boots muddied from the soil of England. In the 1980s, Long began making new types of mud works using handprints applied directly to the wall. He also constructed large lines and circles made of stones, slate, and sticks, often collected on his walks or, in later years, from locations near the exhibition sites.

In *Driftwood Line* 171 pieces of driftwood, gathered from a beach near the artist's house, are randomly arranged within a rectangular shape. The worn wood and its reference to the eternal rhythm of nature lends the work its still, meditative and poetic atmosphere.

Long has exhibited extensively at museums and galleries internationally, recently holding solo exhibitions at Haunch of Venison, London and Berlin (2003, 2006, 2008), San Francisco Museum of Modern Art, San Francisco (2006), Scottish National Gallery of Modern Art, Edinburgh (2007) and at the Musée d'Art Moderne et d'Art Contemporain, Nice, France (2008). The artist has won numerous awards and honours, including the Turner Prize, and his work features in many important public and private collections worldwide, including Tate London, the Museum of Modern Art, New York, the National Gallery of Canada, Ottawa, and the Musée d'Art Moderne de la Ville de Paris, Paris, among many others. He was awarded the highest international distinction for achievement in the arts, the Praemium Imperiale Prize for Sculpture in 2009. The artist lives and works in Bristol.

www.richardlong.org
www.haunchofvenison.com
www.guggenheim.org
www.smak.be

01

THE IMPORTANCE OF WOOD PRODUCTS AND THE WOOD PRODUCTS INDUSTRY IN EU POLICY MAKING

INTRODUCTION

As already explained, the European wood products sector occupies a prominent position in the European economy. Using wood as its prime raw material, it forms an integral part of the bio-economy and, as such, contributes greatly to achieving the major policy goals the EU has set itself.

Within the context of this exhibition at the European Parliament, focus is put on the sector's raw material use, on the contribution of wood products to the mitigation of climate change, on the achievement of resource efficiency, and on the actions taken by the sector in this respect.

Further information on the various aspects covered is available from the respective industry associations.

A SUSTAINABLE, NATURAL AND GROWING RESOURCE FOR THE EUROPEAN WOODWORKING SECTOR

Europe's forest cover

Europe has 1005 million hectares (ha) of forest spread over 46 countries, equivalent to 25% of the global forest and to 1.4 ha (more than two football pitches) per capita. Although the Russian Federation accounts for over 80% of this forest area, EU forest cover averages 45% per country while the 27 EU countries (EU 27) have an average forest cover of 37.6 %, amounting to 157 million ha of forest.

Europe's forest growth

The forest area in all European regions has increased since 1990. Europe is the only region to have had a positive net change in forest area for the past 20 years. Europe has gained 5.1 million ha of forest and other forest land since 2005 and 16.69 million ha since 1990. The total standing volume in Europe in 2010 amounted to 96,252 million cubic metres, 21,750 of which are in EU 27 countries.
The net annual increment of EU 27 is estimated at 620 million cubic metres. In practice just 64% of the net annual increment is harvested.

The basis: sustainable forest management

Due to the wide variety of historical, demographic, economic, climatic and ecological circumstances, different management and regeneration methods are used across Europe – from large scale regeneration felling in uniform coniferous monocultures to group, or even single tree, selection systems in mixed or broadleaved forests. European forestry management is moving towards methods that enhance natural processes and produce authentic forest structures which are environmentally appropriate, socially beneficial and economically viable. More and more often forests are third-party certified for sustainable management practices, FSC (Forest Stewardship Council) and PEFC (Programme for the Endorsement of Forest Certification) schemes being the most prominent among them.

Furthermore, almost 39 million ha or 18% of the European forest area (excl. Russia) are set aside to conserve ecological and landscape diversity. More than 2.3 million ha are strict forest reserves, with no active human intervention. 85-90% of the forest area of Europe is used for economic, recreational, and other multiple-use purposes and also helps to protect the soil, water, and other ecosystem functions, such as biodiversity, air quality, climate change and land stability.

The European forestry industry recognises that its future is inextricably linked with the protection and expansion of its forests. This, coupled with strong and effectively-enforced laws, ensures that more trees are planted than are harvested.

All European countries have policies and practices requiring reforestation. Although the number of trees planted per hectare will vary depending upon the species, site and management system, it will always be more than the number felled, in order to allow for natural losses and for the forest to be well stocked. Therefore there should be no confusion between deforestation in tropical regions, e.g. due to poverty or forest conversion for agricultural purposes, and forest management practices in Europe.

As stated earlier, only 64% of the annual increment of European forests is harvested and the forest area is constantly increasing.

Left entirely to nature, forests will achieve a climax stage. At this point the forest only grows as trees fall due to age, wind, landslip, disease or fire. Although natural regeneration will occur, the dead and dying trees will decay or burn, emitting CO_2 from the stored carbon. Growth is matched by decay and, with no forest management, there is no net increase in carbon storage. Harvesting trees as they mature allows much of their carbon to be stored throughout the life of the resulting wood products, while at the same time giving the industry an incentive to plant new trees in their place.

Sound forest management and use of the wood produced are, therefore, the best guarantee to secure Europe's forests for decades to come and guarantee income for the forest owners, and raw material for the wood industry.

In addition, many European countries are now using green public procurement policies to guarantee that wood and wood products come from sustainable

forest management. It is important to appreciate that over 90% of Europe's wood consumption is sourced from European forests which are characterised as 'generally stable, well managed and in surplus production'. The consumer or specifier can therefore be reasonably sure of the environmental credentials of their product.

With the implementation of the European Union Timber Regulation (995/2010/EC) in March 2013, prohibiting for the first time the placing on the EU market of illegally harvested timber and products derived from such timber, further reassurance will be given to the consumer that wood and wood products found on EU markets are legal.

WOOD AND WOOD PRODUCTS, AND IN PARTICULAR WOOD CONSTRUCTION, HELP THE EU IN FULFILLING ITS POLICY GOAL

MITIGATION OF CLIMATE CHANGE

Basics regarding carbon storage and substitution

There are two ways to reduce CO_2 in the atmosphere: either by reducing emissions, or by removing CO_2 and storing it – reducing 'carbon sources' and increasing 'carbon sinks'. Wood has the unique ability to do both.

Reducing carbon sources

Embodied energy

The energy used to create the materials that make up a building is typically 22% of the total energy expended over the lifetime of the building, so it is worth paying attention to the materials specified, as well as to the energy efficiency of the structure.

There is no other commonly used building material that requires so little energy to produce as wood. Thanks to photosynthesis, trees are able to capture CO_2 in the air and to combine it with the water they get from the soil to produce the organic material, wood.

This process of photosynthesis also produces oxygen; all the oxygen we breathe and on which all animal life relies comes from the photosynthesis activity of plants and trees. So, from every molecule of CO_2, photosynthesis produces two key components essential to life: one atom of carbon, around which all living materials are built, and one molecule of oxygen, on which all life relies.

Substitution for other materials

Not only is the production and processing of wood highly energy efficient, giving wood products an ultra-low carbon footprint, but also wood can often be used to substitute for materials like steel, aluminum, concrete or plastics, which require large amounts of energy to produce.

In most cases the energy necessary for processing and transporting wood is less than the energy stored by photosynthesis in the wood. Every cubic meter of wood used as a substitute for other building materials reduces CO_2 emissions to the atmosphere by an average of 1.1t (tonnes) CO_2. If this is added to the 0.9t of CO_2 stored in wood, each cubic metre of wood saves a total of 2t CO_2. Based on these figures, a 10% increase in the percentage of wooden houses in Europe would produce sufficient CO_2 savings to account for about 25% of the reductions prescribed by the Kyoto Protocol.

Increasing carbon sinks

The carbon cycle

Carbon is present in our environment in a variety of different carbon reservoirs: dissolved in our oceans; in the biomass of plants or animals, whether living or dead; in the atmosphere, mostly as CO_2; in rocks (limestone, coal...), etc.

This carbon is being exchanged continuously between the different carbon sources and sinks in a process called the 'Carbon Cycle'. As most carbon exchanges involve CO_2, the entities commonly known as carbon sinks are really sinks of carbon dioxide – those elements in the cycle able to capture CO_2 and to reduce its concentration in the atmosphere. Each year mankind contributes 7900 million tonnes of carbon to the atmosphere, of which the carbon

sinks absorb 4600 million tonnes, leading to an annual net increase of 3300 million tonnes. This imbalance is so acute that it will not be enough simply to reduce carbon sources, as required by the Kyoto Protocol: carbon sinks will also have to be increased, and one of the simplest ways to do this is to increase the use of wood.

Forests as carbon sinks

Thanks to photosynthesis, the trees in a forest can trap large amounts of CO_2 and store it as wood. Some 0.9t CO_2 is trapped in every cubic metre of wood. The total carbon stored in Europe's forests, excluding the Russian Federation, is estimated at 9552 million t, increasing annually by 115,83 million t, while an additional 37,000 million t, increasing annually by 440 million t, is stored by the vast forests of the Russian Federation.

Managed forests are more efficient carbon sinks than forests which are left in a natural state. Younger trees, in vigorous growth, absorb more CO_2 than mature trees, which will eventually die and rot, returning their store of CO_2 to the atmosphere, whilst most of the CO_2 of the trees harvested from a managed forest continues to be stored throughout the life of the resulting wood product.

Wood products as a carbon store

Wood products are carbon stores, rather than carbon sinks, as they do not themselves capture CO_2 from the atmosphere. But they play an important part in enhancing the effectiveness of the forest sinks, both by extending the period that the CO_2 captured by the forests is kept out of the atmosphere, and by encouraging increased forest growth.

MAKE YOUR LIFE GREENER, CHOOSE WOOD PRODUCTS

There is a very simple way to respect the environment and to preserve it for future generations: simply by choosing wood products one reduces greenhouse gas concentrations in the atmosphere which has great benefits for the environment.

It is imperative that governments and citizens make the greatest efforts to reduce greenhouse gas emissions.

Increases in CO_2 emissions can be offset to an extent by their accumulation in carbon sinks such as forests and other plant biomass. It has also been recognised that wooden materials (harvested wood products) are an important pool of carbon and that they constitute a carbon sink (see e.g. Brown 1998, IPCC 2006, IPCC 2007). Choosing wood products reduces atmospheric levels of greenhouse gases in two particular ways:

- It is well known that trees clean the air by absorbing carbon dioxide (CO_2). But not everybody knows that wood products continue to store much of this carbon, which is kept out of the atmosphere for the lifetime of the product – even longer if the wood is re-used and recycled. Basically, 50% of the dry weight of wood is carbon.
- Manufacturing processes associated with wood products require less (fossil fuel-based) energy and are responsible for far less greenhouse gas emissions than the manufacture of other major building materials. According to research *'substituting wood products for more greenhouse gas (GHG)-intensive building products in cladding, wall, roof and floor framing could reduce the GHG emissions of a typical house by up to 18 tonnes over its life*'.

Until the 17th session of the Conference of the Parties to the UN Framework Convention on Climate Change (COP17) held in Durban, South Africa, in December 2011, the role of wood as a carbon store was not officially recognised. The regulatory framework that resulted from the Kyoto Protocol made it possible to place a value only on emission reductions linked to the utilisation of wood as a renewable energy source. In the Kyoto Protocol – United Nations 1998 – carbon sequestration of wood products is not included as a possible tool for countries to use in meeting their CO_2 emission targets (principle of the default method that assumes instantaneous release of all carbon at the time of harvesting).

However, during COP17, the accounting for forest management and harvested wood products was made mandatory for developed countries. Finally it was clearly recognised that the default assumption was ignoring the reality that carbon is stored for decades in wood products and eliminating a significant portion of the wood product life cycle. Furthermore, it gravely underestimated the role of wood products in reducing GHGs and as part of the solution to mitigating climate change.

Following the Durban decision, the European Commission had the intention of closing the current gap in greenhouse gas accounting in its climate policy and proposed, in March 2012, a harmonisation of the rules to account for forests and agricultural soil emissions across the EU as a first step to incorporating these sectors into the EU's reduction efforts. Through the Durban Decision and the Proposal for a European Decision, Member States will be able to provide incentives to increase sequestration of CO_2 either by increasing the carbon stock in wood products or by using wood as a substitute for more energy-intensive materials.

The proposed European Decision establishes accounting rules for harvested wood products; this will provide an enabling framework for more targeted policies at national and at European level, officially recognising that carbon can be stored for a very long time in harvested wood products (houses, bridges, furniture, paper products). National wood-product inventories would need to be carried out regularly, while annual consumption figures and decay estimates could be used to complement the inventory work. Moreover a reliable monitoring system will help Member States to support and introduce 'wood-first' policies aimed at increasing the pool of harvested wood products.

The substitution of more energy-intensive, non-renewable materials by wood results in substantially lower carbon emissions. Emission differences are due to the fact that a large portion of the energy used in producing wood products is typically produced from wood residues.

Following the adoption of the European Commission Proposal for a Decision, measures should be taken on a national level to effectively bring about recognition of the energy-efficiency-related carbon benefits of wood as compared with other materials.

THE WOOD SECTOR'S CONTRIBUTION TO EC ROADMAP 2050 GOALS

In March 2011, the Commission published a Communication entitled 'A Roadmap for moving to a competitive low-carbon economy in 2050'. This Roadmap builds on the Europe 2020 flagship initiative for a resource-efficient Europe as part of a series

of long-term policy plans in areas such as transport, energy and climate change. The Communication sets out the key elements that should shape the EU's climate action, helping the EU become a competitive low-carbon economy by 2050.

The aim of Roadmap 2050 is to cut greenhouse gas emissions by 80-95% of 1990 levels by 2050 in order to keep climate change below 2°C.

The EC Roadmap 2050 also points to the role of the built environment in achieving the 80% reduction target. The built environment provides low-cost and short-term opportunities to reduce emissions, first and foremost through improving the energy performance of buildings. The Commission's analysis shows that emissions in this area could be reduced by around 90% by 2050, a larger than average contribution over the long term. This underlines the importance of achieving the objective of the recast Directive on Energy Performance of Buildings which stipulates that new buildings built from 2021 onwards will have to be nearly zero-energy buildings.

Efforts will need to be increased significantly over time. Today, new buildings should be designed as intelligent low- or zero-energy buildings. The extra cost of this can be recovered through fuel savings. A greater challenge, however, is the refurbishment of the existing building stock, and in particular the financing of the necessary investments.

Wood and wood-based products have a specific role to play in this context. There is a strong development potential for wood-based constructions in structural and non-structural applications, both for new buildings and for renovation purposes.

The role of wood and wood-based products in providing solutions to EU policy goals has also been recognised by the European Economic and Social Committee (EESC), in an own-initiative Opinion entitled 'Opportunities and challenges for a more competitive European woodworking and furniture sector' (CCMI/088), approved in October 2011.

Policy initiatives on sustainable buildings

The building sector in Europe accounts for:

- 40% of the final energy demand
- 36% of greenhouse gas emissions
- 40% of material consumption
- 33% of generated waste

Because of these impacts, the European Commission is working on a Communication on sustainable buildings connected with its Roadmap on Resource Efficiency.

Existing policies for promoting energy efficiency and renewable energy use in buildings will need to be further strengthened and complemented with policies for resource efficiency, which look at a wider range of environmental impacts across the life cycle of buildings and infrastructure. Significant improvements in resource and energy use during the life cycle – with improved sustainable materials, higher waste recycling, and improved design – will contribute to a competitive construction sector and the development of a resource-efficient building stock.

In this area in particular, wood and wood-based building products and solutions will provide a wide range of opportunities to support the EU in achieving the targets set.

Milestone: By 2020 the renovation and construction of buildings and infrastructure will be made to high resource-efficiency levels. The Life-Cycle approach will be widely applied; all new buildings will be nearly zero-energy and highly material efficient, and policies for renovating the existing building stock will be in place so that it is cost-efficiently refurbished at a rate of 2% per year. 70% of non- hazardous construction and demolition waste will be recycled.

Building materials and constructions - Wood is part of the solution

Using renewable materials with low-carbon footprints and improvements of energy performance of buildings to reduce emissions provides low-cost and short-term opportunities. As explained before, the main opportunities are the storage of carbon in wood and wood products, the potential offered by the substitution of other (energy or carbon-intensive) materials and the efficient eco-cycle of wood products.

Managed forests are more efficient carbon sinks than forests left to grow unmanaged. The CO_2 of the trees harvested from a managed forest continues to be stored throughout the life of the resulting wood product. The wood products' pool may grow either by expanding the usage of wood or by extending the average life span of the products.

The manufacturing of materials for a wooden building uses 28% less primary energy and emits 45% less carbon than the manufacturing of materials for a similar concrete building. The cost of energy used for material processing is lower for the wood-frame building, and the relative energy cost becomes lower for the wood building as climate-related externalities are more fully reflected in the production cost. (*See* Roger Sathre, Leif Gustavsson. 'Using wood products to mitigate climate change: External costs and structural change' in *Applied Energy* 86, 2009, 251–257.)

The European wood industries already provide workable solutions to limit the emission of greenhouse gases, solutions which contribute to achieving the ambitious policy goals of the EU. Wood and wood-based products are, therefore, a first choice for future EU society.

As a flexible and modern engineering material, combining innovative, engineered wood products with new building techniques, wood offers ample opportunities for:

- New housing (residential and non-residential, single- or multi-family housing), prefabricated modules
- Extensions to existing buildings
- Renovation

It is cost efficient to build with wood. The cost of the wood frame is about 30-35 % lower than that of a concrete frame. The total cost is about 10-15 % lower for wood buildings. Using prefabricated modules the total cost is 20-25 % lower.

The time savings can be up to 80% and during the building phase CO_2 emissions can be reduced up to 85%.

Wood offers great potential for changing and modernising existing, older buildings which are often constructed from concrete. It is primarily a matter of extensions to roofs and storeys. This offers a great potential for big cities to increase the number of dwellings on existing ground.

The simplest method is to fit an old building with a new roof designed in such a way that a number of flats can be built into the attic. As timber structures are light, there are also opportunities for additional storeys, e.g. through the use of prefabricated components.

Wood's naturally good thermal insulation properties make it the material of choice in both cold and hot climates. There are thus significant CO_2 savings to be made by using timber in the construction of housing and other buildings, both in terms of embodied energy and in-use energy efficiency.

At the end of their service life, the wood products can in most cases be recycled, thus extending the carbon storage effect, and/or be used as a carbon-neutral fuel, substituting for fossil fuel sources.

BUILDING WITH WOOD: MODERN SOLUTIONS FOR WOOD CONSTRUCTION

There is nothing new about using wood in building structures. Throughout the ages, in those places where forests grow, wood has commonly been used as a building material. The international trade in timber also means that countries with limited availability of forest resources can nowadays have access to wood for building purposes, wood that comes from sustainable and certified forests.

Building with wood is energy-efficient, cost-effective and environmentally friendly. Wood has many benefits as a building material when compared with other materials. Above all it has a low weight in relation to its strength and load-bearing capacity. The material is 'flexible' and can be worked and crafted with simple tools. On top of this, it is a renewable, biological material that is part of the natural eco-cycle. In this way, the use of wood makes a vital contribution to the reduction of the earth's emissions of carbon dioxide. Wood constructions also have significant advantages in severe seismic zones.

Building techniques

Several common techniques are available for constructing buildings with supporting frameworks made of wood. One way is to use structural wood members to form a frame which is covered with structural wood panels. Foundations are generally concrete. This simple building technology is often used in the construction of single-family houses but also in the construction of multi-storey buildings. Another technique is to use solid timber for the supporting framework. Cross-laminated boards are glued together and used to build walls and joists. The walls may need to be insulated to give the building a high level of energy efficiency. The technique is well suited to the construction of multi-storey buildings.

Yet another technique is the system of columns and beams. In this case cross-laminated timber in different forms is used to a large extent for the load-bearing construction. All the framework systems mentioned satisfy modern criteria for fire safety, noise pollution and energy efficiency. Special consideration must be given to these functional criteria in the case of multi-storey buildings. Well tested technical solutions are now widely available.

Building on site

The oldest method is to construct the building on site. The building materials are freighted to the site and the various elements – walls, joists etc. – are put together on site and then erected.

With the on-site building technique, the wall components are generally assembled resting on the joists or the ground and then erected manually.

Off-site prefabrication

Far more common today is the prefabrication of various components: off-site building. Wall parts, floor components, trusses etc. are all built off site at a factory. The components can come prefabricated with insulation, installations, windows and doors. There is a trend towards a higher degree of prefabrication. The advantage of the technique is that the greater part of the building work takes place in an industrial plant in a well-controlled environment with approved quality

assurance. The actual assembly of the building, before the roof is put on, takes one or two days at the building site. At one extreme, entire units are manufactured at the factory and in these units not only are electricity, water and waste pipes installed but kitchens and wet rooms as well. Floors are also laid and walls papered.

Another advantage of building with prefabricated components in wood is that these are relatively light and can be erected at heights of several storeys using simple lifting equipment such as mobile cranes, in some cases with the cranes fitted on the trucks that deliver the components to the site.

It is cost-effective to build with wood. The cost of the wood frame is about 30-35 % lower than that of a concrete frame. The total cost is about 10-15 % lower for wood buildings. Using prefabricated modules, the total cost is 20-25 % lower. The time saving can be up to 80% and during the building phase CO_2 emissions can be reduced by up to 85%.

Single-Family Houses

Wood frame is the most frequently used system for single-family houses. It is also common for single-family houses to be built using prefabricated components. This construction method allows for major variations in the design of the houses conforming to national and local building traditions while permitting architectural innovation. To a large extent the design determines the cost of the building and there are also variations here, from deluxe homes to extremely cost-effective single-family houses at prices that are acceptable to the average family. The requirements for fire safety and noise pollution are usually lower for single-family houses than for multi-storey buildings. It is, however, harder to satisfy the demands for low-energy consumption in a single-family house.

Multi-storey buildings

In many countries national building regulations have tended to restrict the use of timber frames for the construction of multi-storey buildings. The reason many countries have refrained from using flammable materials is uncertainty about fires in the buildings. However, extensive research and development has shown that material-neutral building regulations are preferable and for over a decade function-based regulations have been common in many countries. Wood as such burns, but it does so in a controlled manner. It is possible to estimate how much of the cross section will remain unaffected by the fire after one hour of burning and choose material dimensions so that the unaffected part of the cross section has the ability to bear the required load. Steel, on the other hand, loses its entire load-bearing capacity at the temperatures that are produced during a fully developed fire. Non-flammable surface materials and/or sprinklers can be used to ensure safety during the early stages of a fire.

Modern building regulations have contributed to the increase, now taking place, in the construction of tall multi-storey timber buildings of between three and eight storeys. The dramatic increase can be attributed to several important factors. One of these is the lower cost of building compared with construction using other materials. Timber has shown to be the perfect material for use with industrial building methods, enabling costs to be reduced.

Another factor is the growing environmental awareness where the choice is motivated by the fact that timber is a renewable material and that its use reduces CO_2 emissions, provided that the timber is harvested in forests where sustainable forestry is practised, with replanting and management plans.

Another factor worth mentioning is the possibility of building on sites that with heavier buildings, e.g. those made of concrete, would demand extensive and expensive pile foundations. Formerly uncertain or impossible sites can thus be used for lighter timber

constructions and therefore with simpler and inexpensive foundations.

The design in terms of horizontal stability is especially important because the construction is relatively light. A common practice for buildings with 6-7 floors is to build the ground floor in concrete and secure the timber structure to the concrete. The load from the wind is transformed via joist elements and shear walls to the ground. Good stability is achieved by utilising diaphragm action. An important consideration when designing multi-storey buildings with a load-bearing wood frame is stability in relation to noise. Effective solutions are now available to prevent sound from spreading between the floors and apartments without putting the stability of the building at risk.

In the same way as with single-family houses, multi-storey buildings made of timber can be given an outer architectural design that suits the location where the building is erected.

Seismic performance

Wood construction has advantages in severe seismic zones. A survey was conducted following the tragic earthquake in China in May 2008. The evidence showed that wood-frame buildings outperformed buildings constructed from other materials. They suffered only minor damage, while many brick-infill walls collapsed and concrete buildings suffered severe damage.

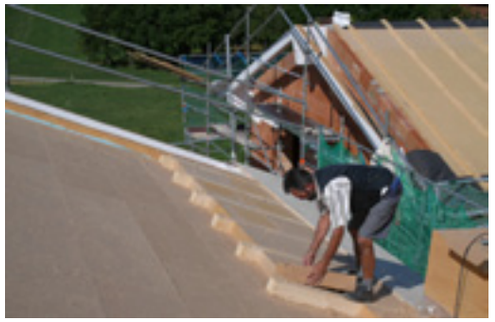
This has also been proved by tests: these show that multi-storey hybrid structures can survive the most severe earthquakes. A full-scale, seven-storey mixed use condominium tower (six wood frame storeys above a one-storey steel structure) was tested in Kobe, Japan. This was the largest full-scale earthquake test in the world. The building was subjected to a quake that was 180% of the Northridge record at Canoga Park. It suffered no significant damage, demonstrating that wood buildings can survive even the strongest earthquakes. Wood construction was also used extensively for the reconstruction of damaged buildings in L'Aquila, Italy, following the devastating earthquake in 2009.

Curtain walls/Infill walls

In many countries infill walls made from timber are becoming an increasingly common solution, together with load-bearing frames made from concrete or steel. External walls of this type are designed only to take the load of the wall component's own weight and the wind loads that directly affect the component.

The component has a low weight and can be prefabricated in a factory, which is a great advantage. Infill walls made of timber have very good insulation characteristics. The increasingly stringent requirements for energy-efficient buildings in various countries are among the main driving forces behind the use of this wall solution.

The component can be clad with an external layer of plaster, brick, wooden panelling or other sheathing material in order to match the building's design and the surrounding buildings. There are two principally different ways of fitting timber frame elements into the steel, concrete or masonry structure. The panels can be fitted either into or partly into the structure, or outside the structure.



Partition walls/Inner walls

Wood frame in combination with board material is a very common solution when it comes to inner walls that will not bear any loads. These walls are used for dividing up rooms but can also be designed so that they can cope with the fire and noise requirements placed on apartment partition walls.

Insulation

Worldwide more energy is used for cooling buildings than for heating them. Based on this, it is reasonable to appraise the efficiency of an insulation product not only for its ability to prevent energy loss in winter months, but also for its protection from heat ingress during the summer months. Wood fibre insulation products provide a low thermal conductivity combined with a high heat storage capacity. In accordance with ISO 10456, wood fibre insulation materials with a value of 2000 J/(kg*K) have by far the best specific heat capacity compared to all commonly used insulation materials. Due to these special features, one can achieve both a comfortable cool environment in summer and a comfortable warm environment in winter.

Extensions

Timber offers great potential for changing and modernising existing older buildings which are often constructed from concrete. It is primarily a matter of extensions to roofs and storeys. The simplest method is to fit the old building with a new roof so designed that a number of flats can be built into the attic space. The space can also be used for placing installations for improving energy efficiency and heat exchangers for ventilation.

As timber structures are light there are often margins for building additional storeys. In such cases, the use of prefabricated components is frequently suitable. Naturally the design must be verified so that there is a margin for absorbing the additional vertical loads and ensuring horizontal stability.

Case-studies

There are both economic and environmental advantages to building with wood. For multi-storey buildings, the construction period can be reduced by up to 80% and the CO_2 emissions by up to 85% using wood.

Comparative research shows that using timber-framed constructions for buildings, instead of concrete or brick ones, is good for the climate. Consider these examples from case studies:

Austria

- Building area with 12 housing units: timber buildings store 300t of carbon while brick buildings produce 54t of carbon emissions.
- Building with 42 housing units: timber buildings store 1205t of carbon while concrete buildings produce 385t of carbon emissions.

Sweden

The carbon balances for two otherwise identical houses, one with a timber frame and the other with a concrete one, have been compared over a 100-year period. The timber-frame house stores 150t of carbon while the concrete frame building has produced 96t of carbon emissions.

United Kingdom

Murray Grove (London), a nine-storey residential building made of cross-laminated timber is currently the world's tallest modern timber residential structure. It took only 24 days with a team of 4 professionals to erect the frame of the structure. The building stores 188t of carbon in its structures. A similar concrete building would have produced 124t of carbon emissions.

Bridport House (Hackney, London), an eight-storey residential building finished in September 2011, constructed entirely from CLT. Had the building had a conventional reinforced concrete frame, the materials required would have resulted in an additional 892t of carbon. This is equivalent to 12 years of operational energy required to heat and light all the dwellings at Bridport House; alternatively it would take 61 years to save the same amount of carbon as the planning requirement of 20% renewables. And when the sequestered carbon locked up in this 1576 m^3 timber structure is added to the carbon avoided through the use of wood, the total figure is 2113t of carbon and this is equivalent to 29 years of operational energy, or in other terms, with 20% renewable energy it would take 144 years to save the same amount of carbon.

Innovation is key to developing the use of wood: an example from IBOIS

Under the leadership of Professor Yves Weinand, interdisciplinary research between the disciplines of civil engineering, architecture, mathematics, and computer science, is providing a breath of fresh air and a surge of new inspiration in the field of timber construction. At the Laboratory for Timber Construction (IBOIS) of the Ecole Polytechnique Fédérale de Lausanne, this research is leading to innovative construction solutions that can be efficiently built and are economically viable – a new architecture of wood.

It is exploring in depth the relationship between engineering sciences and architecture, using wood as the construction material and is seeking to provide construction solutions that can be successfully disseminated throughout the relevant market, meaning that the realisation of non-conventional structures at reasonable cost must be possible. Examining complex geometries from a (timber) construction point of view, not just a morphogenetic one, can signify taking a critical step ahead of blob architecture's 'stylised mode' phenomena. In contrast to the latter, which demonstrate a complete lack of awareness of, or disregard for, sustainability issues, timber construction has a promising future in the face of global sustainable development challenges.

01

02

03

01
This prototype has been constructed with the help of the GEOS software, which was developed at the IBOIS. It permits the generation of geodesic lines on free-form surfaces as well as the data required to cut the timber planks.

02
The Timberfabric research aims to transfer textile principles and qualities to timber construction. This prototype is composed of three interlaced arches that are laterally connected by additional elements.

03
The implementation of fractal principles allows for the generation of free-form surfaces based on quadrangular facets. The collaboration between architects, engineers and computer scientists led to the development of digital tools for the design and production of such constructions.

RESOURCE EFFICIENCY AND THE PRINCIPLE OF CASCADE USE

Producing more value with fewer inputs: the woodworking industries lead the way

The EC Roadmap to a Resource-efficient Europe is one of the main building blocks of the resource efficiency flagship initiative. The Roadmap sets out a framework for the design and implementation of future actions. It proposes ways to increase resource productivity and decouple economic growth from resource use and its environmental impact and illustrates how policies interrelate and build on each other.

Recently the World Wildlife Fund's Living Planet Report has showed that '*humanity currently consumes the natural resources of 1.5 Earths, 50% more than our planet can sustain. In a business-as-usual scenario, by 2030 we will consume resources to the equivalent of 2 Earths and nearly 3 Earths by 2050. In less than 50 years Europe has doubled its demand for resources and today it consumes the equivalent of 2.6 Earths*'.

In order to meet their huge need for resources, Member States are required to develop policies to maintain a balance between supply and demand for natural resources. Moreover they will have to find solutions in order to produce more value with fewer inputs. New policies will have to be designed so as to support the shift towards sustainable growth via a resource-efficient, low-carbon economy.

The simplest way to produce more value with fewer inputs in order to lessen our impact on the environment is exemplified by the principle of the cascade use of wood. Applying this, the woodworking industries clearly contribute to achieving the goals proposed in the European Roadmap to a Resource-efficient Europe and to transforming Europe's economy into a sustainable one by 2050.

Resource efficiency means using the Earth's limited resources in a sustainable manner while minimising impacts on the environment. The cascade use of wood is based on the efficient use of this natural raw material: manufacturing of wood products, reuse, repair and recycling, as well as the final valorisation of energy content.

This concept was emphasised in the Opinion of the European Economic and Social Committee entitled 'Opportunities and challenges for a more competitive European woodworking and furniture sector' (October 2011).

At the same time, the EESC expressed concern over the *'impact that the Commission's Climate Change and Energy Package will have on the development of renewable energy sources and on the overall availability of wood, the industry's raw material. The EESC is disappointed that the use of inappropriate subsidy schemes for renewable energy production, which were set up to achieve the climate commitments, has made it more profitable to burn wood directly than to use it for products*'.

The UNECE (United Nations Economic Committee for Europe)/FAO European 'Forest Sector Outlook Study II' estimates a 3.5% annual growth rate for wood energy such that by 2030 the wood supply required to satisfy corresponding renewable energy demand will have to double from 435 million m^3 in 2010 to 860 million m^3 in 2030. Unfortunately this approach cannot be considered sustainable in the current policy context.

Instead, wood ought to be used for its highest value before being converted into energy, thus observing the value-added and usage chains of wood. Wood can be used, reused and recycled several times but it can only be burned once. The woodworking industry is not opposed to the use of wood as a renewable energy source – in fact it is one of the major users – but this should only be done when no other industrial uses are possible any longer and by preference in highly efficient systems, such as combined heat and power.

In a new study entitled 'Wood Flows in Europe (EU27)', Professor Udo Mantau (Head of the Centre of Wood Science and project coordinator at the University of Hamburg) has examined the importance of the application of the cascade use of wood principle in order to guarantee a sustainable and efficient use of raw wood sources. The study reports that '*in the market process wood is used in cascades. A cascade use is defined as multiple use of the wood resources from trees by using residues, recycling (utilisation in production) resources or recovered (collected after consumption) resources. The more often by-products and recycling products are used, the higher the cascade factor gets. If only wood resources from trees and no other wood resources are used, the cascade factor is 1.00*.' It is important to note that according to the cascade factor defined in this Wood Flow study, '*wood is used 1.57 times (cascade factor including energy use), almost all the cascade uses take place in the wood-based industries' (*1.35).

Wood is a valuable resource and the woodworking industry is committed to using it in the most efficient way. In the last two decades, the sector has developed logistical networks for collecting and recovering recycled wood. However, in several Member States, valuable wood resources are sent to landfill which is counter to the objectives of the European Landfill Directive (1999/31/EC).

Each year, the wood industry produces 169 million m^3 swe (solid wood equivalent) of finished products. One third of this volume is recovered and recycled annually.

The issue of sustainable and efficient use of wood is also at the core of the discussion within the FAO/UNECE Timber Committee. During a Policy Debate on Wood Energy in May 2012 the following recommendations were made:

Recommendations of the UNECE/FAO Timber Committee:

To develop clear definitions of wood for energy along the supply chain that reduce the risk of negative environmental impacts and unfair competition for fibre with other industries.

To embrace the cascade principle for wood utilisation, requiring efficient use of wood for material manufacturing and energy generation, only burning wood in the late part of its cycle once use has been maximised.

To identify and distinguish between various wood energy feedstocks based on full Life-Cycle Analysis. To support the use of wood energy generated only from the most efficient feedstock based on net energy generation and GHG emissions.

To remove financial incentives for low-efficient uses of wood energy and revisit current subventions for wood energy that create ineffective market competition.

Considering the importance of the sustainable and efficient use of wood, the woodworking sector is keen to co-operate with national and European authorities in order to develop guidelines for the most efficient use of renewable solid wood biomass and to guarantee the best use of wood resources. In particular, the woodworking industries welcome the proposal made by the European Economic and Social Committee to set up an inter-institutional expert group on 'wood as a sustainable raw material'.

THE LIFE CYCLE OF WOOD

Wood is a unique material characterised by its ability to store carbon on the one hand and to produce oxygen on the other. The longer wood is used and re-used, the longer it stores carbon.

1. The life cycle of wood starts in the forest, where **young trees** take **CO_2** from the atmosphere. The carbon is stored in the wood through photosynthesis and **oxygen** is **released** into the atmosphere.

2. Once the tree is fully grown, it is harvested and sawn into pieces. The larger parts are transported to the sawmill where they are **processed into planks and beams.** These planks and beams are used in numerous sectors, e.g. construction, furniture production, packaging, transport, etc. As such wood gives **oxygen to the creativity of architects and designers, but to our economy too.**

3. The smaller branches and remainder of the processing in the mill are **ground and compressed into wooden panels** (boards, MDF, OSB) to be used primarily in the construction and furniture sectors.

4. At the end of the life cycle of wooden products, non-recyclable wood residues and clean wood residues are separated. The clean wood residues are ground and recompressed into panels to start a **second life. The cycle is closed.** In many cases, several 'life cycles' are possible.

5. Wood residues that can no longer be re-used or recycled may serve as a **carbon-neutral fuel.** It is only upon burning that wood releases the stored quantity of CO_2. Modern incinerators transform non-recyclable wood into a 'green' kind of **energy production**, as an alternative to fossil fuels.

6. Increasing wood consumption stimulates the forest-based industries to plant new trees and to sustainably manage the forests. In Europe for instance more trees are planted than are harvested.

LIFE-CYCLE ANALYSIS (LCA) AND ENVIRONMENTAL PRODUCT DECLARATION (EPD) - TOOLS FOR TACKLING CLIMATE CHANGE

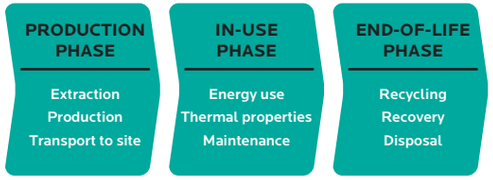
Life-Cycle Analysis

Large distributors who are in direct contact with the end-consumers have recognised the importance of the positive impact of wood products on the environment. It is thus becoming more and more common for them to support implementation of good environmental practices throughout the supply chain, Sustainable Forest Management (SFM), and compliance with all legal requirements including certification and standardisation based on a greater commitment to strict social and environmental criteria.

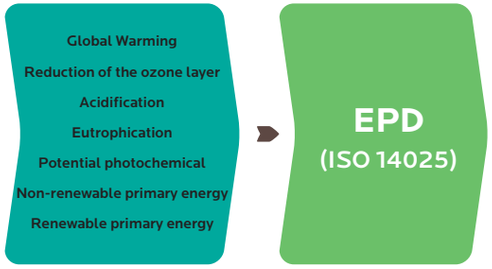
The role of wood-based products in tackling climate change has a special relevance, which is increasingly recognised by governments. There is a need to develop strategies to support positive influences of the wood-based products on the environment. Therefore, understanding the amount of greenhouse gases (GHGs) emitted during a product's life cycle is a key aspect to consider. Life-Cycle Analysis (LCA) is one of the main tools used to assess such GHG emissions and other environmental impacts. The woodworking sector is starting this analysis from a privileged position because wood stores natural carbon during the entire lifetime of wood products.

LCA is a technique that assesses the environmental impacts of a product throughout its life. It is becoming increasingly important as more and more specifiers are required to consider the environmental impacts of the products and materials they select, taking into account where the material comes from, how it is used

or converted into a product and, finally, its use in a building, right through to its disposal or re-use/recycling. It considers the impact of a material or product's use during three specific phases.



This approach cannot always be used to compare materials or products from different countries, many of which have different climates, energy generation sources, ways in which they are designed, building codes, infrastructure, political influences and building methods, some of which will have a bearing on LCA and Whole Life Cost information.



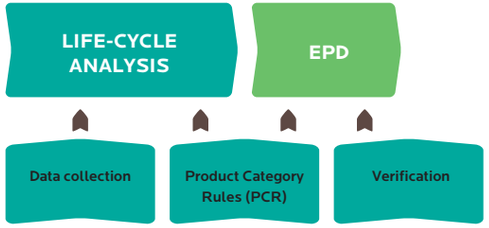
Environmental Product Declaration

Today the global market increasingly demands science-based, verified and comparable information about the environmental performance of products and services. The demand comes from several market places, such as the raw material supply chain, product development and green (public) procurement. Environmental Product Declarations (EPDs) are one of the potential tools to meet this demand. They are intended to help and support organisations to communicate the environmental performance of their products (goods and services) in a credible and understandable way.

An EPD provides relevant, verified and comparable information on a product's environmental impacts throughout its life cycle, taking into account seven parameters:

Environmental Product Declarations (EPDs):

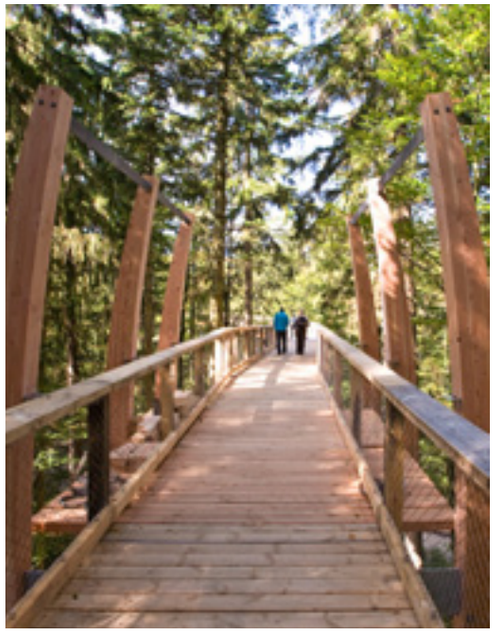
- are based on ISO standards. They are suitable as proof of environmental claims in the public procurement arena.
- offer the relevant basic data on environmental properties of a product for sales and marketing purposes.
- form the basic presentation of data for assessing buildings on an ecological level. This is currently laid down in the new European Standards project 'Sustainability of buildings'. An EPD could be an efficient tool to communicate the positive role that wood products play in tackling climate change. EPDs could also allow the comparison of wood with other (construction) materials.
- give quantitative information about the different environmental impacts.
- synthesise relevant information on the environmental profile of a product.
- are multi-criteria assessments, including carbon footprint.
- are based on LCA and verified by an independent third party. This LCA has to follow the relevant Product Categories Rules (PCRs).



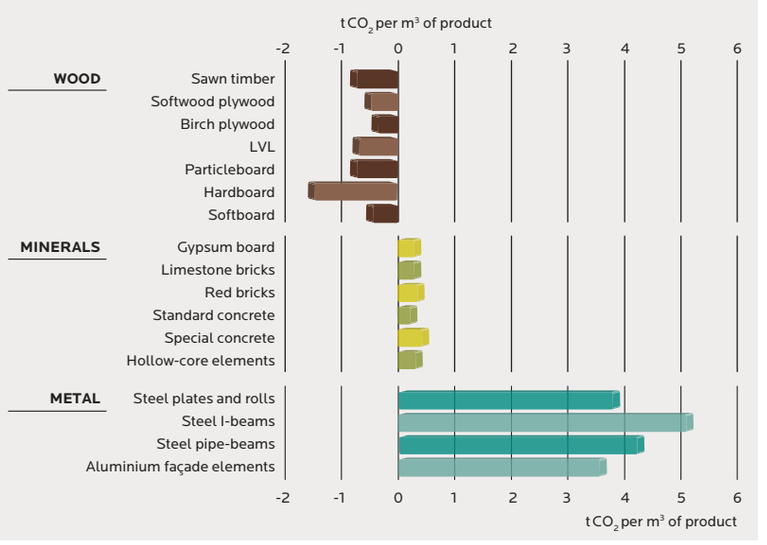
EPDs in Eco-Building Schemes

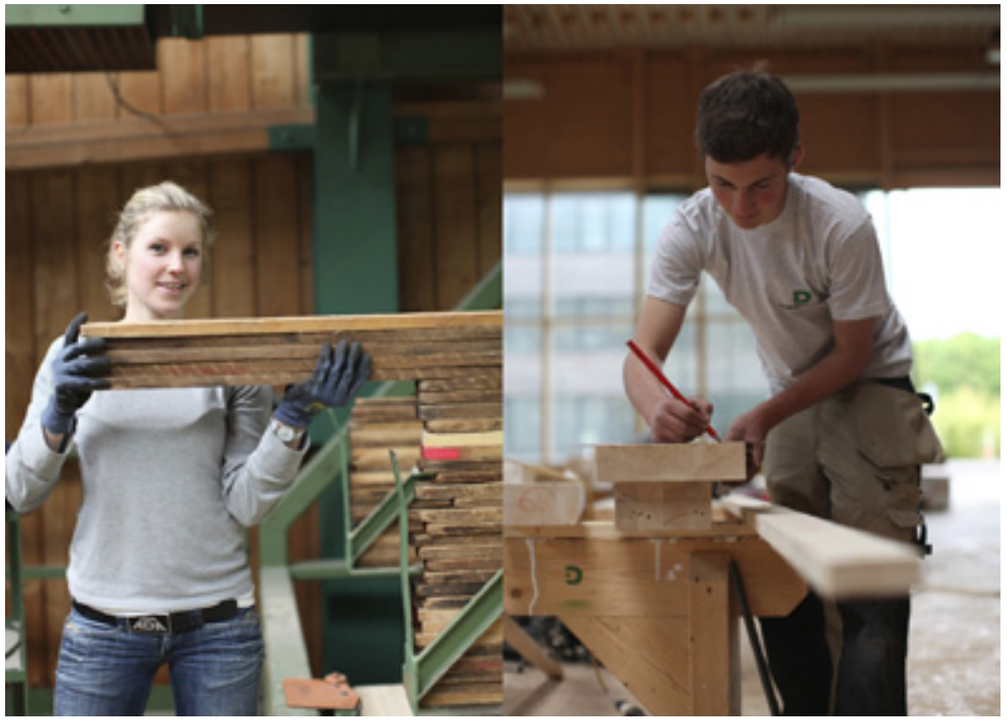
One of the main uses of wood-based products is construction. Their contribution to the global environmental impacts of a building thus has to be assessed. The estimated contribution also has to be comparable to the estimated contributions of other construction materials. ISO 14025 – '*Environmental labels and declarations - Type III environmental declarations - Principles and procedures*' and ISO 21930:2007 '*Principles and requirements - Type III environmental declarations of building products*' provide a framework to state the environmental performance of construction products in a way that helps to assess the entire building.

Resource consumption and environmental emissions are recorded throughout the entire manufacturing process. The resulting contributions to climate change, eutrophication and acidification can be quantified and assessed by LCA methodology. LCA also provides a systematic and standardised tool to make the ecological assessment of a building in the 'modular construction system' on the basis of individual building product declarations (statements). In an LCA, the entire life of a building, the construction phase with possible conversions as well as demolition and disposal stages, are taken into consideration. The contribution of the building products to energy efficiency and other aspects of sustainable management is also evaluated.



Net CO_2 Life-Cycle emissions





THE SOCIAL DIMENSION

The European woodworking industries are a major employer, in particular in rural areas. They play an important role in the social development of people and regions.

At the European level, this social dimension is reflected in the European sectoral social dialogue the woodworking sector has been conducting with the European Federation of Building and Woodworkers (EFBWW) since the mid 1990s.

This dialogue has resulted in a number of joint positions of the social partners and projects aimed among others at improving the wellbeing of workers in the workplace. Recent actions have focused on establishing best-practice guidelines targeted at limiting the exposure of workers in the workplace to wood dust and formaldehyde. These projects were carried out with financial support from the European Commission and will now be continued in a 2nd phase.

A worrying development for both the employers and employees is the growing average age of the workforce in this sector. For several years now it seems it has become most difficult to attract young people to start a career within the sector, or even to take up education that leads to a profession in woodworking.

In its recent own-initiative Opinion on the woodworking and furniture industries, the EESC has also expressed concern about this situation and has called on the sector and public authorities alike to look at measures to remedy it in the future, e.g. through better education and training.

As a first action, the social partners plan a joint study to assess the current situation in the various EU Member States with a view to developing a target action plan.

A unique sculpture
at The Vrouw Moeder Kind Centrum

A unique sculpture has been erected at The Vrouw Moeder Kind Centrum, a hospital health centre for mothers and newborn babies in Veldhoven in The Netherlands. An MDF manufacturer joined forces with The Fiction Factory to build a 6-metre high model kangaroo. It is hoped that the installation will enhance the positive experience for sick children when they visit the centre. The wood material was chosen for its durability, longevity and versatile design features. A novel technology makes it possible to use dry process fibreboard (MDF) in exterior applications.

The 111-piece model takes the shape of a kangaroo with its young sitting in the pouch. The symbolic sculpture portrays the intense bond between parent and child in a safe and soothing environment, and is intended to welcome, inspire and calm visitors. The kangaroo, made from “Extreme Durable MDF”, painted in Netherlands Orange, can be recognised from several levels of the building and from various points on the ground floor. The plan is that it will be in place for at least 5 years.

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The Schweighofer Prize is donated by the Austrian Schweighofer family, who has been engaged in the European woodworking industry for generations. Since 2003 the award is presented every second year, and is endowed with a total prize money of € 300,000, which is divided between one Main Prize and several Innovation Prizes.

The Main Prize pays tribute to people or organisations that play an important role in the European forest-based sector. The Innovation Prizes serve as a catalyst for innovative projects during the early stages of implementation.

The jury of the Schweighofer Prize are particularly looking for nominees with innovative contributions to the European forest-based sector including applied research and development projects. Collaboration between science and industry would also be well regarded.

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