

# GreenJoist

## project



Production of recycled high quality joists from wood waste

# LIFE13 ENV/IT/000996

**Project title:** Production of recycled high quality joists from wood waste

**Project acronym:** LIFE GREENJOIST

**PROJECT POLICY AREA:** Waste and Natural Resources

**CONSORTIUM:** 4 Partners from 3 countries

**The project will be implemented in the following Member States:**

Italy: Emilia-Romagna / Ireland: South West / Spain: Cataluña / Greece: Kentriki Makedonia

**Start date:** 01/07/2014 - **Expected end date:** 30/06/2017

**Project Web Site:** [www.greenjoistproject.eu](http://www.greenjoistproject.eu)

**Total cost:** 1.706.456 Euro

**EU financial contribution:** 818.333 Euro



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# THE PROJECT

**LIFE+ GREENJOIST** aims at demonstrating the value and feasibility of an eco-innovative recycling process, able to reuse and valorize wood waste to produce green, high quality and cost-effective joists to be used in different sectors such as manufacturing, transportation, logistics and construction. This will contribute to the consolidation of sustainable eco-innovative businesses in the EU woodworking industry contributing to the achievement of EU 2020 goals of Resource efficiency, avoiding dangerous impacts on human health and the environment. With a potential to substantially cut the currently landfilled wood waste, amounting to 15 million tons per year, the LIFE+ GREENJOIST project has set out a well-structured plan with the following key objectives:

- Showcase an innovative process for the production of high-quality, cost-effective joists from recycled wood waste through the realization of a pilot plant at a pre-industrial, non-commercial scale demonstrating the feasibility and effectiveness of this novel recycling process
- Foster a sustainable society and economy where waste, which is both harmful and costly, is used as a valuable resource and manufacturing is committed to the environment
- Increase awareness of eco-innovative solutions in both the general public, policy makers and the woodworking industry, focusing on the environmental and economic advantages as well as on their technical feasibility
- Avoid the use of virgin wood in the construction of new joists and pallets, saving trees while cutting the generated CO2 emissions for the transportation and processing
- Promoting the shift from using potentially harmful chemicals to natural components in the woodworking industry.

The Consortium has already completed extensive R&D activities and validated the solution at laboratory level. Therefore, at the beginning of the LIFE+ GREENJOIST project most of the risks related to research activities will have been overcome and the technology will be ready to be tested and showcased in a production environment.



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# EXPECTED RESULTS

By demonstrating a high-quality eco-friendly recycled product, LIFE+ GREENJOIST will show an innovative way of fostering a sustainable and greener society, where waste is used as a resource. To this end, the expected key results of the LIFE+ GREENJOIST projects will be:

- Design, realization and operation of a Pilot Plant for the construction of high quality joists made from 100% recycled wood waste and using innovative eco-friendly glue based on lignin, tannin or starch.
- Reach an operational scale capacity for a pre-industrial, non-commercial Pilot Plant producing green joists of approximately 18.4 m<sup>3</sup>/day, assuming a section of 80 x 80 mm and a linear speed of 2 m/minute over a 24 hour production period. Clearly during the Life+ demonstration assessment of parameters and study the optimal process conditions will be carried out.
- Utilization, once at operation scale, of a total of 10 ton/day of recycled wood waste.
- Substitution of petrochemicals in glues with raw materials from renewable resources, namely lignin, tannin or starch.
- Monitoring and evaluation reports about the production system and its impacts, with a lifecycle approach as well as tests on the final product.
- A set of broad demonstration and dissemination activities aimed at reaching a large and diversified number of project stakeholders, local communities, policy makers and industry operators resulting in an increased awareness with regard to eco-innovative solutions and virtuous waste management processes.

## BENEFITS

By demonstrating a new eco-innovative product - 100% recycled wood joists - the LIFE+ GREENJOIST project will target three fundamental environmental problems, strongly in line with Europe's environmental and climate change policies and priorities as well as the recent Environment Action Programme for 2020

1. Waste management and recycling
2. Reduction and substitution of dangerous chemicals
3. Reduction of GHG emissions



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15 million tons per year of wood waste in Europe still go to the dump.

The number excludes illegal dumping which is still a widespread practice in most countries

Some examples of how timber skids are used. These could all be replaced by GREENJOIST



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## PROJECT PARTNERS

	IMAL SRL	IT
	CEPRA – Centro Promozionale Acimall S.p.A.	IT
	Chimar Hellas S.A.	GR
	J.M. Colomer S.A.	SP
	Eirebloc Limited	IR



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## Project Coordinator

Since its foundation in 1970, IMAL has steadily expanded over the decades to become a world leader in the manufacture and supply of plants and machinery for wood based products.

The company specialises in a wide range of high-tech instruments and equipment; IMAL's production covers the entire wood working machinery category, focusing in particular on the production of engineered wood products as well as packaging systems, such as pallet blocks. Its activities also include the manufacture and supply of glue blending systems and quality control equipment, as well as complete part new/part reconditioned plants, accompanied by full guarantee.

The engineering division, at IMAL industrial unit, houses 20 CAD latest generation dual processor stations all equipped with 3D plant and machinery engineering systems and virtual simulation of the production process and operation. The electronics department is constantly seeking new ideas to create innovative products and alternatives to standard supplies, which are vital to remain competitive on the market and to produce original products and equipment.

The activities of the Software department mainly involve the development of the management software for the single machines, as well as the PLC automation and visualization of complete lines. The investments made in R&D, combined with the use of the most advanced technology available today, have undoubtedly contributed much to IMAL's success. The company is fully computerized and PC network linked to provide fully integrated solutions. As well as being certified ISO 9001, various products of IMAL's range have also been TUV certified by the prestigious Munich Institute in Germany.

Imal has designed and patented machines and technical solutions to improve the production process of wood-based panels and other innovative products (such as pallet blocks). Innovations designed for quality control equipment and testing have expanded and extended Imal's knowledge and have enabled the company to convey this knowhow to the market.



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Acimall is the Italian Woodworking Machinery and Tool Manufacturers Association.

Its main mission is to promote the Italian industry abroad. It was established in Milan in 1966

and has about 180 member companies, representing more over 85% of the national personnel and

turnover, that is about 10k employees and 1 billion euro, 80% of which comes from exports. CEP, the Acimall promotion centre, is the operating arm of the association: it organizes Xylexpo, an international exhibition that is the world's most important industry fair, held every two years, and publishes the bimonthly magazines Xylon (in Italian) and ItalianWoodTech (in English).

As the representative of such a large portion of the industry, Acimall-Cepra has earned the respect of all the national and international bodies that the woodworking machinery industry has occasion to deal with. It actively participates in the work of Federmacchine, the Italian federation that groups together 11 national associations representing the same number of sectors in the machine tool industry. As a national trade association, it is a member of the CFI (Industrial Tradeshow Committee), Confindustria (Italian Manufacturers Association), and UNI (Italian National Standards Association).

CEP is active in Italy and abroad in advocacy groups for the establishment of technical and safety standards. It conducts industry studies and analyses that provide members with essential information for mapping out their strategies. Both independently and in collaboration with the Italian Trade Commission, it coordinates the participation of Italian businesses in the most important trade fairs around the world. CEP promotes Italian manufacturers in all markets with a woodworking industry. It organizes the attendance of delegations of business people and technical experts in Italy to show what Italian know-how has to offer.

In addition, CEP coordinates training activities, including setting up training centres in countries of particular interest to Italian manufacturers.



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CHIMAR HELLAS is a small industrial enterprise established in Thessaloniki, Greece. It develops and provides technology and R&D services to the resin and wood-based panel industries, specifically technology for the industrial production of adhesive resins, the production of resin additives as well as technology for the

application of said products in the industrial manufacture of wood panels. It also undertakes the engineering and construction of chemical plants producing formaldehyde, resins and resin additives. It has a focus on providing safe and environmentally friendly products and technologies, following the most stringent requirements worldwide and promoting the sustainability of its industry field. It is also a pioneer in the reduction of formaldehyde emission from wood-based products having developed adhesive systems for emission at the level of natural wood. CHIMAR counts an international experience of more than 36 years and its technology has been applied via licensing agreements in numerous industrial plants in more than 37 countries. The wood panels produced each year using the chemicals of CHIMAR technology account for over 5% of the global wood panel production. Facilities: CHIMAR has offices, laboratory and pilot plant facilities in Thessaloniki, northern Greece, from which it serves the resin and panel manufacturers in many parts of the world.

CHIMAR lab is accredited according to EN ISO/IEC 17025 for formaldehyde testing as per EN120 and EN717-2.

It also operates a manufacturing unit producing chemical additives on demand. The lab and pilot facilities of CHIMAR include:

- a well-equipped chemical laboratory for advanced synthesis, testing and analysis of adhesive resins and chemicals
- a technical laboratory for testing the performance of wood panels,
- pilot scale installation for producing adhesive resins (nominal capacity 50L) and
- pilot scale installation for producing wood panels.

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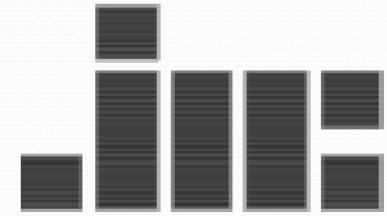
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Founded in 1968, the company dedicated itself to the sale of machinery to three large interrelated sectors:

- Machinery and facilities for the production of agglomerate wood boards, MDF, OSB
- Machinery and facilities for the production of plywood and fine plates of European and exotic woods.
- Machinery for the treatment of decorative papers for the furniture and decoration industry.



The company works as a dealer/consultant for different machine manufacturers in Europe (e.g. Italy, Germany, Austria etc.). COL has always invested in technical expertise and innovation. For example In 2008 it developed a kit in order to modify any Ruckle splicer Mod FZS. In 2009 a system (again as a kit) for feeding a Ruckle splicer FZS with veneer of 0,3mm thick instead of the former 0,5mm, a very important improvement since it allows to splice veneer according with the thickness given by the slicers and therefore having a much more economical result as well as less waste.

For Fisher Omnimaster in 2005 it developed a system with a foot pedal which allows to work manually and splice veneers with a weak or damaged edges, while in 2006 COL modified the glue dosing system of the Omnimaster by adding a decanter. Additionally COL works on many on field solutions.

For example they have transformed a regular veneer dryer into a press dryer. They regularly restore, and actualise older machinery for the woodworking industry, both mechanically and electronically for leading companies such as:

Pal / Imal s.r.l., Fisher&Ruckle, Dieffenbacher gmbh, Imeas s.r.l., Vits gmbh, Trasmec s.r.l., Grenzebach gmbh etc.



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**IMAL  
PAL**



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EIR is the newest entrant to the composite block manufacturing business in Europe. In the period leading up to commencement, they conducted in-depth research into new ways of cleansing waste wood in preparation for use as a recycled raw material. EIR was formed in 2007 and began manufacturing in 2008.



The plant is state of the art and the first of its kind to produce extruded pallet blocks from recycled wood (recycled dies). The recycled wood is shredded, cleaned of all contaminants, dried and mixed with resins. It is then extruded and cut to size. They bring an incisive appreciation of the vital importance of adherence to the fine tolerances (dimensional accuracy, moisture content, block density etc) that collectively determine the class of the finished product. The Company future expansion in the business lies squarely on the ability to reach buyers who expect quality as a given by disseminating the key message that theirs is a constant search for perfection.

The plant currently produces about 70,000 m<sup>3</sup> per annum and the product is sold in Ireland, UK and mainland Europe. The current turnover is in the region €10 m and the export level is about 85%. Eirebloc is strongly committed to a role of environmental leadership in all facets of the business by understanding environmental issues, recognizing that with business activity comes environmental responsibility, developing innovative and flexible solutions to bring about change, striving to buy and sell environmentally friendly products, encourage all customers and suppliers to share in our mission.

In March 2011, EIR achieved FSC certification as further evidence of its commitment to the environment.

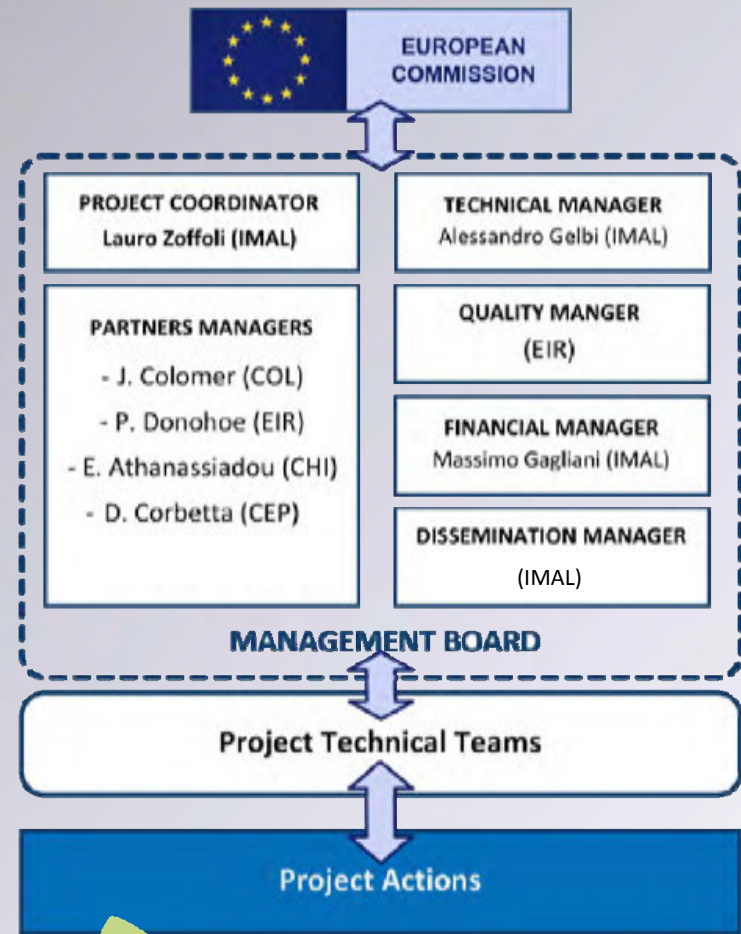
Finally EIR has been involved in twoLIFE-Environment projects: Tyre-Wood Block and CleanWood. Both of these projects (now completed) have had a significant impact on the processes and systems used in Eirebloc.



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# PROJECT MANAGEMENT



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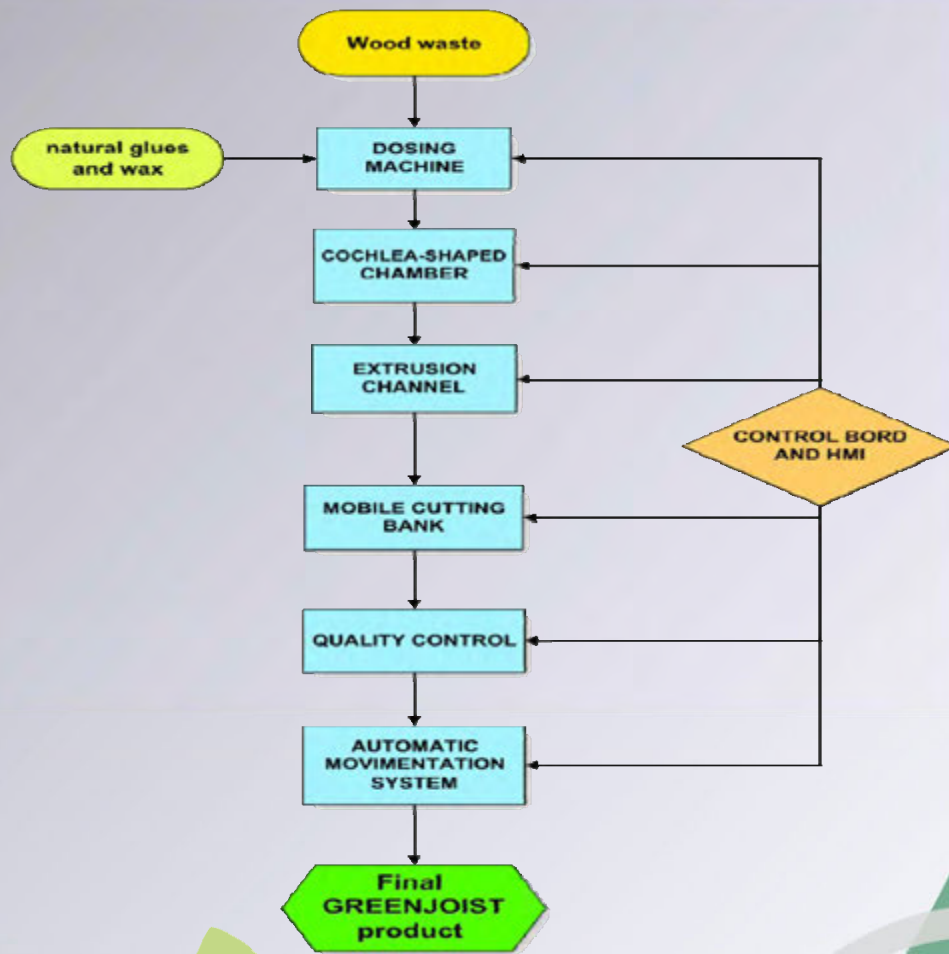


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# LAYOUT OF THE COMPLETE GREENJOIST SYSTEM



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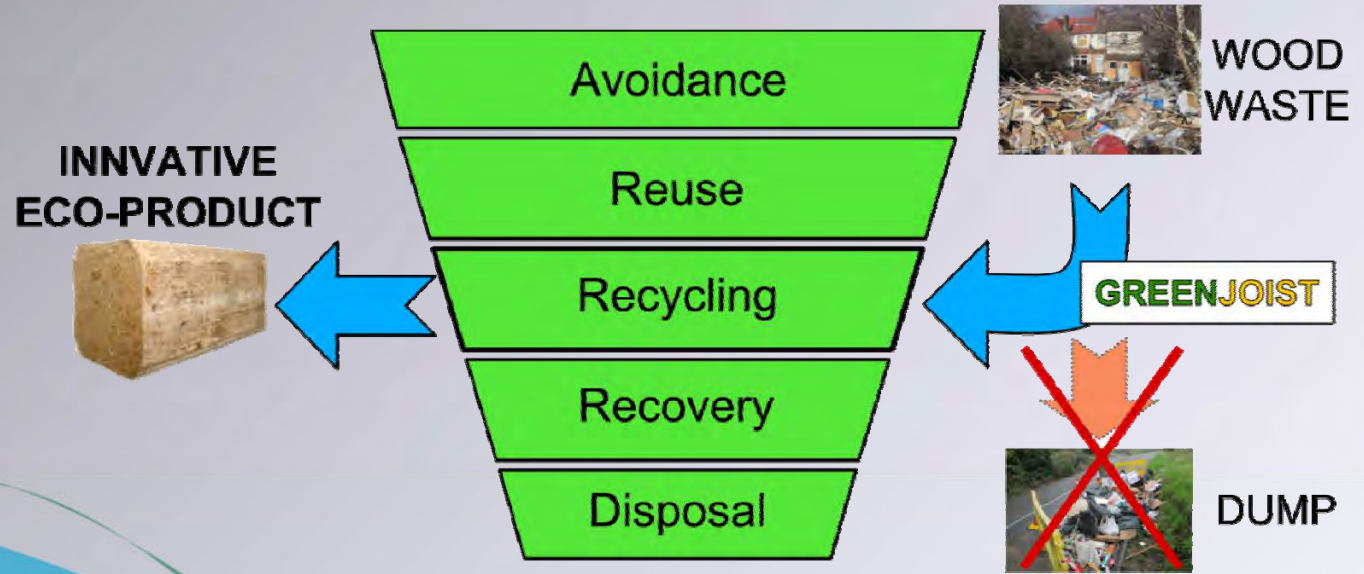
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# LIFE+ GREENJOIST AND THE WASTE HIERARCHY.

THE SYSTEM WILL RECYCLE 10 TONS PER DAY SAVING THEM FROM DISPOSAL

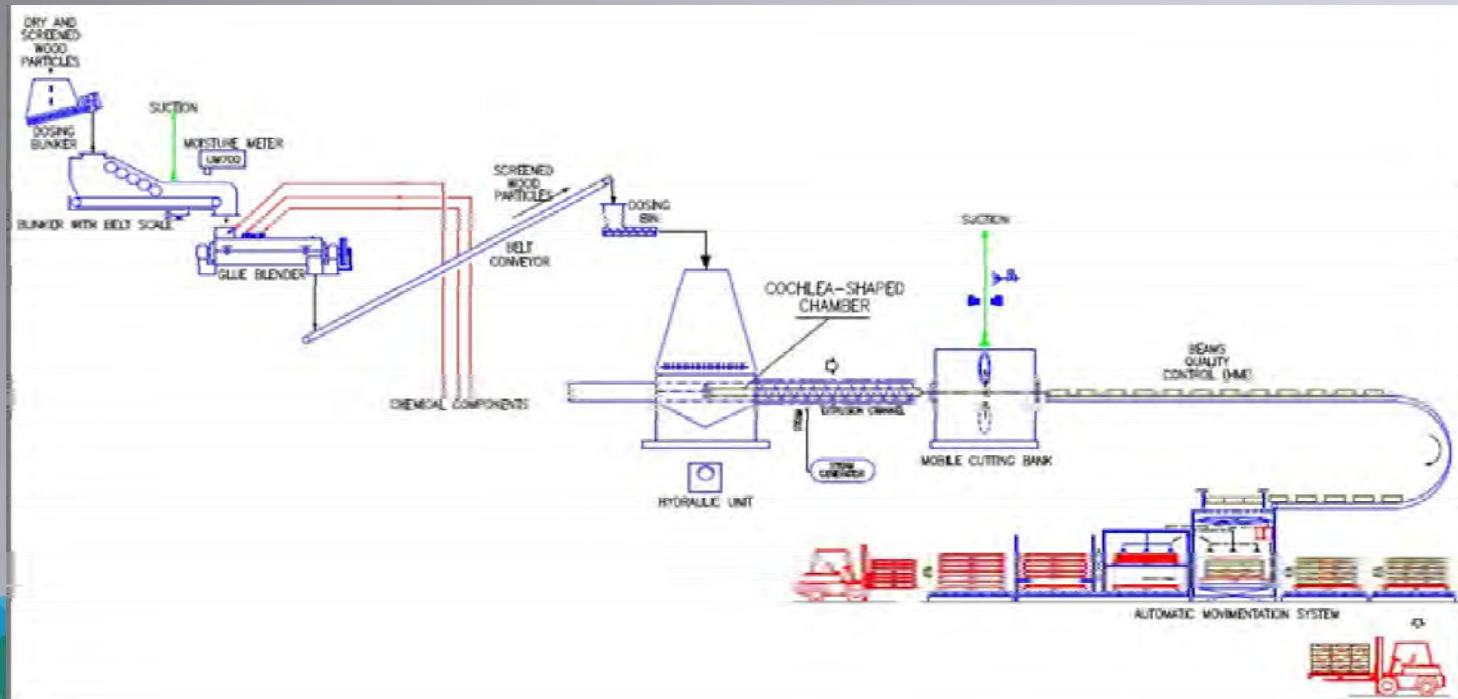


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# TECHNICAL DETAILS OF GREENJOIST SYSTEM PROCESS



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# TIMETABLE

Action		2014				2015				2016				2017				2018				2019			
Action number	Name of the action	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
<b>A. Preparatory actions:</b>																									
A.1	Design and Preparation of the Pilot Plant			■	■	■																			
A.2	Procurement and Selection of equipment, materials and subcontractors				■	■	■	■																	
<b>B. Implementation actions:</b>																									
B.1	Construction and set-up of the Pilot Plant					■	■																		
B.2	Plant Operation							■	■	■	■	■													
B.3	Optimisation and Tests							■	■																
<b>C. Monitoring of the impact of the project actions:</b>																									
C.1	Environmental Impact Assessment and LCA					■				■	■														
C.2	Socioeconomic impact assessment											■	■												
<b>D. Communication and dissemination actions:</b>																									
D.1	Creation and maintenance of dissemination material			■	■	■	■	■	■	■	■	■													
D.2	Project website			■	■	■	■	■	■	■	■	■													
D.3	International Events, Conferences, Workshops and Papers			■	■	■	■	■	■	■	■	■													
D.4	Notice Boards			■	■		■					■													
D.5	Layman's Report																								
D.6	Stakeholder Consultation			■	■	■	■	■	■	■	■	■													
<b>E. Project management and monitoring of the project progress:</b>																									
E.1	Project Management by IMAL			■	■	■	■	■	■	■	■	■	■	■	■	■									
E.2	Progress Monitoring			■	■	■	■	■	■	■	■	■	■	■	■	■									
E.3	Networking Activities			■	■	■	■	■	■	■	■	■													
E.4	After Life+ Communication Plan																								



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# TECHNICAL ASPECTS

- ENGINEERING, CONSTRUCTING AND PRELIMINARY TESTS

1. ADAPTING THE STANDARDS ON THE NEW EXTRUSION SCREW
2. TECHNICAL VERIFICATIONS AND TESTS ON MATERIAL [RESINS AND FRESH & RECYCLED WOOD
3. TESTS ON JOISTS
4. ANY MECHANICAL OR PLANT MODIFICATIONS AND TESTS
5. ANALYSIS OF EIREBLOC LINE FOR THE NEXT STAGE

- ASSEMBLY AND COMMISSIONING OF PILOT LINE

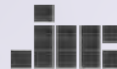
1. ASSEMBLY
2. TEST RUN WITHOUT MATERIAL
3. TEST RUN WITH MATERIAL AND VALIDATION OF THE PILOT LINE



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an ECOinnovative recycling process

[www.greenjoistproject.eu](http://www.greenjoistproject.eu)

THANKS FOR YOU ATTENTION

A stylized green tree logo with several leaves, positioned on the left side of the slide.

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