

# Woodnat

Second generation of planted hardwoods forests  
in the European Union

# Woodnat

*The Woodnat project consists of 9 participants from 5 different European countries – Spain, Italy, France, Bulgaria and Romania, covering the Southern arch of Europe. Participants were recruited based on their capabilities, knowledge and complementary skills and how these will be useful to the achievement of the Woodnat objectives. In line with the type of action (IA, Innovation Action) 8 out of 9 are industrial partners, capable of transferring to the market the results of Woodnat project.*



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 728086

## Second generation of european hardwoods plantation optimized for market uptake

Horizon 2020 is the biggest EU Research and Innovation programme ever with nearly €80 billion of funding available over 7 years (2014 to 2020) – in addition to the private investment that this money will attract. It promises more breakthroughs, discoveries and world-firsts by taking great ideas from the lab to the market. It aims to make profitable the plantation of traditional hardwoods in Europe.

The challenge is being competitive in an economic activity characterized for its long term investment return. The way to do it is the improvement of genetics for a fastest growing of European hardwoods.

The work involves field experiments in operational environment. Those experiences will give feedback to the genetic modification of hardwoods.



## Scope

To add value to wood production and enable close-to-market outputs, proposals should aim to develop a series of cutting edge technologies in relation to forestry measures starting from seedling/replanting, through to harvesting. Activities should aim directly at producing plans and arrangements or designs for new, altered or improved products, processes or services. For this purpose they may include prototyping, testing, demonstrating, piloting, large-scale product validation and market replication. SMEs active in the forest-based sector are specifically encouraged to participate in consortia.

## Specific Challenge

Increasing societal demands and emerging policies relating to forest resources present new challenges for the sector and trigger the need to enhance the multi-functional role of forests in the EU. The quantity and the quality of wood yields depend on site conditions, forest management objectives, silvicultural regime and measures taken from the establishment of forest stands to the end of rotation (for even-aged forests) or the selection harvest (for uneven-aged forests). Managing forests' horizontal and vertical structure is crucially important given the long production cycles involved and the demand to adapt, within the production cycle, to the evolving framework of environmental and societal conditions. It is therefore desirable to develop intelligent (i.e. cost-efficient, productive and environment-friendly) and novel solutions and tools to support sustainable wood production from forests managed on a multifunctional basis.

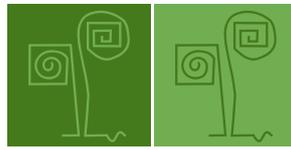
## Expected Impact

With a view to enhancing the multifunctional role of forests, proposals should show how some, or all, of the following impacts will be achieved:

- W Improved tools for sustainable forest management decisions and operations in primary production systems, marketable within a period of up to three years from the approval, entailing higher efficiency in operation;
- W Lower environmental impact of forest management and harvesting operations, in order to preserve forests' capacity to provide for non-wood forest products and essential ecosystem services such as carbon sequestration, biodiversity conservation, water regulation, soil and nutrient regulation, and recreation;
- W Sustainable supply of quality wood for the growth of forestry enterprises in the bioeconomy and the creation of new jobs in SMEs...



# Forest



## BOSQUES NATURALES

### The company

Bosques Naturales, S.A. was created in 1996 and it is a company whose shares are wholly owned by Spanish shareholders. During these years, the company has grown with successive capital increases.

The main activity of Bosques Naturales is the promotion and maintenance of sustainable fine hardwood plantations (mainly walnut and cherry trees), which enable the production of these types of woods with an approach that respects the environment.

The company has professional experts who are working in its production process to apply the most innovative cultivation techniques and an efficient methodology that produces top quality crop trees in production cycles of 20 to 25 years, depending on the species and plantation method.

Bosques Naturales has 1,387 hectares of fine hardwood plantations, with 265,900 trees planted in its estates in Cáceres, La Coruña, Gerona, Toledo, Cuenca and Navarra.

More than 9,000 clients are currently participating in our project and they own 198,808 trees.

### Our Vision

Our planet is suffering the increasing deterioration of its environment and it can only be alleviated with the effort of our society. Therefore, it is vital to increase the awareness and consciousness of our society, something in which Bosques Naturales is heavily committed.

The different social, political and professional agents involved in the protection of the environment mention that trees are an essential source of life for Earth. Within this context, it is important to plant trees and end with the indiscriminate felling of natural forests, driven by the demands of the ever-growing wood market.

The need to stop the alarming deforestation we are facing involves finding alternatives that satisfy the growing consumption of wood with a sustainable and responsible approach, including the following:

- The sustainable exploitation of natural forests.
- Planted forests.
- Reforestation with non-profit private and/or public initiatives

The main activity of Bosques Naturales, S.A., is based on the Plantation of Sustainable forests of wood with a high economic value, focusing on the area of planted forests, which represent 7% of the world surface, approximately 300 million hectares.

In accordance with the FAO (Food and Agriculture Organisation), planted forests supply more than half of the wood destined to the world's industrial use, and both its extension and productivity are still growing. In comparison with the forests regenerated naturally, planted forests require a greater investment by area unit and usually produce a greater value with their products and services.

If we take into account the multiple economic, social, cultural and environmental benefits, the FAO has drafted a series of voluntary guidelines aimed at promoting the sustainable and responsible organisation and development of these plantations.

The purposes of these guidelines are:

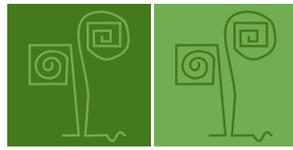
- Increase the population's awareness of the benefits of planted forests.
- Generate the conditions required to invest in planted forests and their classification.
- Contribute towards the better understanding of planted forests, with the purpose of helping elaborate national and international policies and programs.

### Our Mission

The company promotes the development of planted forests and their exploitation with agronomical criteria, under the strictest compliance with the principles of the FAO (Food and Agriculture Organisation of the United Nations) and with the application of ethical and environmental criteria to our activity.

Our activity fulfils a triple function: Sustainability, Productivity and Innovation.





# BOSQUES NATURALES

## Sustainability

Planting trees in our estates will clearly reduce the pressure on natural forests, while we promote the rural development with the creation of direct jobs in our estates and indirect jobs in associated activities (installations, wood market, etc.).

Our activity is sustainable because we start another productive cycle when one ends with the plantation of new trees.

## Productivity

The products on which our main activity is focused – fine hardwood – need a growth cycle of approximately 25/30 years, which greatly reduces the usual growth cycles while ensuring that the quality of wood is not affected.

Fine hardwood is a product in short supply in Spain, which has to be covered by imports. This wood is very popular due to its quality and that is why its price is so high in the market.

Bosques Naturales will provide top quality wood to a market with insufficient supply, offering its clients a very attractive benefit.

## Innovation

We are pioneers in the Spanish market, which means that we invest a fundamental portion of our resources in research. Therefore, we can select the most adequate technologies to optimise the quality of our plantations.

The growth of our company is based on the following pillars:

- Diversification of products, characterised by their high environmental value.
- Expansion of activities:
  - Work or participation in the whole value chain of wood in the medium term.
  - Development of synergies that are respectful with the environment and which can be sustainable.
  - Active participation in public and private reforestation initiatives.

The trust deposited on us by our clients and shareholders is our best form of support. We work to meet their expectations with a demanding business management and socially responsible approach.





## Who we are

Asimov is a young company focused on the introduction of advance automatization and robotization into traditional activities. Company's activity mainly develops on forestry, wood, agriculture and industrial transformation of natural resources.

Asimov assumes design, construction and installation of innovative processes and technologies in order to improve the competitiveness of traditional productive schemas. Main technologies used by the company are: collaborative robots, laser technology, remote controlled systems, expert systems, etc.

The capacities of Asimov have grown throughout the experience of their staff who usually collaborate with European Universities, Spin-offs and most relevant Technological Centres. Considering this, the regional government officially recognized the company as Technology Based Initiative in 2015.

Find more information about the company at [easimov.es](http://easimov.es)

## Why at Woodnat

Woodnat offered Asimov a challenge: handing veneer bundles in a more efficient way than humans do. Handling veneer bundles means handling flexible objects, with different dimensions. Doing it better than humans means no failures and high speed of manipulation.

In order to deal with that challenge, at Woodnat project Asimov will integrate innovative technologies including fast gripping systems, artificial vision and interactive mechatronics. Doing it, the company expects to be one-step further to serve the needs of industry.

The results of Asimov work at Woodnat project will make possible the competitive transformation of small logs. This possibility means more profitable industrial processes and new possibilities for forest owners.

## Where we go

At Woodnat project, Asimov is committed to make possible transforming small logs by means of an ultra-effective handling system. Small logs mean marrow boards and narrow veneers. Moreover, the manipulation of small pieces means higher costs as the volume processed in any iteration is smaller.

Meanwhile, small logs are a great opportunity for both producers and transformers. The first ones see small logs as a short-term economical return; while the second ones look at them as an affordable resource.

Making feasible the use of small logs will push local industry making easier and more competitive both the provisioning and transformation. By means of this, the impact of the technical solution to the challenge will be positive for the local industry as well as for the local producers in rural areas.





CREA (Council for agricultural research and economics) is a National Research Organization which operates under the supervision of the Ministry of Agriculture, with general scientific competence within the fields of agriculture, agro-industry, food, fishery and forestry.

In the Woodnat Project CREA is represented by the Research Centre for Forestry and Wood, mainly working on silviculture in Arezzo and on wood production outside forests in Casale Monferrato. The Centre deals with sustainable forest management and forest tree farming, with main specializations in silviculture, forest genetic resources management and improvement, conservation and improvement of forest biodiversity, multi-functionality, resilience and adaptability to global environmental changes, agroforestry and valorization on wood and nonwood goods production.

In the field of intensive wood production outside forests the CREA Research Centre for Forestry and Wood deals with fast-growing species (poplar, willow, acacia, eucalyptus), noble hardwoods (walnut, cherry, oaks, etc.) and Mediterranean conifers. Main activities: cultivation techniques (in particular for poplar and walnut in pure and mixed polycyclical plantation), breeding, sustainable pest and weed control, phytoremediation, harvesting, wood technology and economic assessment of productions.

## Motivation of the project

CREA is involved in the Woodnat Project because it is interested in developing new plantation models and agroforestry systems more sustainable from the economic, social and environmental point of view but able to meet the needs of the wood industry.

The background information on the first generation planted forests (FGPF) and the results of the experimental trials established in Italy and Spain can help to understand the causes of success/failure of old walnut plantations and to define new mixed and pure plantation models, suitable cultural practices and management systems (from the nursery to the final harvesting). Defining a specific standardized walnut log classification and the production of an APP containing a comprehensive plantation management handbook represent specific tools for both farmers and industry with advantages for all the production chain.



## Who we are

ECM Ingeniería Ambiental S.L. is a Technology Based Company aimed at adding value to mycological resources. Fungi are used for food, medicinal and social purposes and they must manage under sustainable forest management based on scientific knowledge.

### Relevant previous experience

ECM Ingeniería Ambiental S.L. is a company composed of a team with more than 14 years of experience in mycology. Its knowledge has been increased in the last decades through the participation in different European, National and Regional projects. As a result, ECM is currently researching the potentiality of the mushroom resources in Portugal, Italy and France. Their accumulative experience has been transfer thanks to different publications ([www.ecmingenieriaambiental.com](http://www.ecmingenieriaambiental.com)).

## Why at Woodnat

Walnut production starts with the seedlings production were ECM can apply fungi (mycorrhizal fungi) to improve the quality of the plants and their growth in the preliminary stages.

At the end of walnut production, many stumps remains in the field after final cuttings. ECM can also apply fungi to improve the profitability of the plantation growing different strains of edible or medicinal fungi and at the same time make a Stumps Biological Degradation, saving high quantity of energy and CO<sub>2</sub> emissions or chemicals that is needed to remove them.

Through Woodnat project, ECM will try to introduce fungi along the stand age, increasing the value of the wood with this eco friendly product, the mushrooms.

## Where we go

The aim of ECM is to boost the different abilities of fungi resources. Some of them have interesting applications in walnut production, as in other agro forest crops, where is usually used high amount of synthetic chemicals as nutrients (N, P, K). However, this management showed to be very harmful for soil microorganisms and soil sustainability.

ECM believes that many solutions to solve our problems are in the nature, we just need to apply the proper technology.



## Who we are

Losan is an international Spanish group dealing with wood. It was established in 1964 and its activity ranges different fields such as the manufacture of wood products, for the Furniture, Decorative and Equipment Industries. With more than 1800 employees and 10 industrial facilities, Losan is present in 5 countries.

At Woodnat project, Losan is present through Losan Romania, one of its facilities in that European country. The activity of that company started in 2000 and currently produces a wide range of wood veneer products with different formats, species, slicing, etc. The veneer production of Losan is known worldwide. This is possible by means of its commercial brand Channel Veneers. The company is currently the first one by number of references offering special and innovative products.

Find more information about the company at [losan.es](http://losan.es)

## Why at Woodnat

At Woodnat project Losan represents the most valuable wood product that can be made with logs: veneer. Veneer is the result of slicing logs to form wood pieces just 0,6mm thick. The value of the cubic meter of veneer is much higher than the price for solid wood, boards or any other first transformation product.

Although the value of the product is high, the veneer production is expensive. It is intensive in terms of human resources and due to this question, only the transformation of big logs is profitable. Note that big

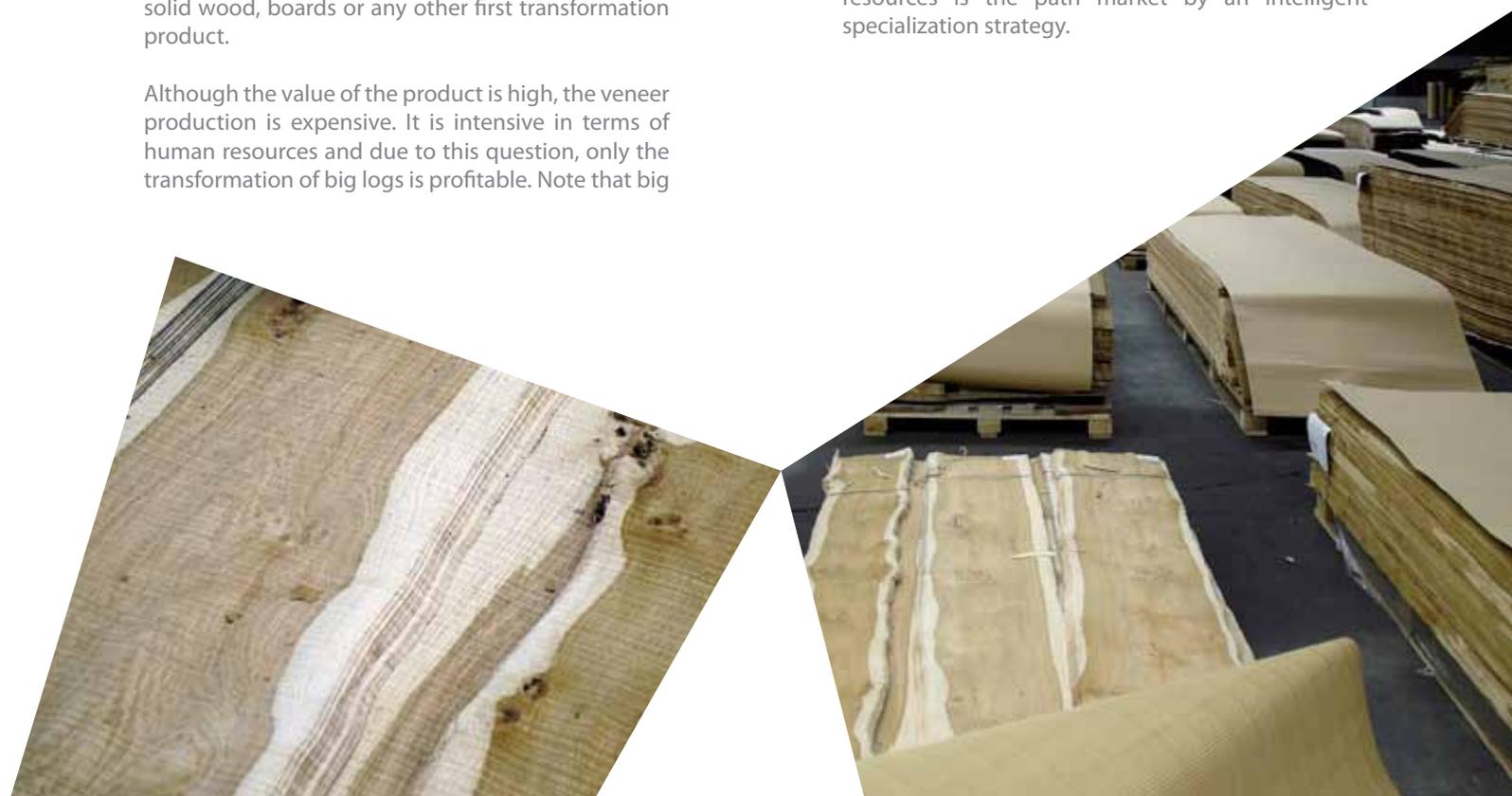
logs mean wide veneers, and wide veneers make possible to manipulate a higher volume of product with the same human resources.

At Woodnat project Losan will validate the feasibility to produce wood veneer using small logs of walnut. Therefore, the company will validate technical solutions for product handling and innovative product designs in order to go across the difficulties of using small logs.

## Where we go

Losan operates in the international market and therefore, it is continuously committed to improve its competitiveness. The use of local resources is a strategical advantage as it makes possible lower costs of provisioning in comparison to other competitors. Walnut is a valuable wood, which is recognised across the world. The current standard look for that specie is the American Walnut. The European production of Walnut has failed to enter market, but it will be very interesting for European producers like Losan being able to use the local resource instead of importing logs from abroad.

Making feasible the use of European Walnut will shift European industry competitiveness' at the same time that will push the hardwood forestry and the plantation of local species. Moreover, the industrial development based on local and sustainable resources is the path market by an intelligent specialization strategy.





Industrial Plants is a company producing high quality plants using tissue-culture technology. We are the biggest producer of fruit-tree rootstocks and small fruit plants in Bulgaria. The company also exports plants to EU countries(Greece, Germany, Romania) and to Turkey. Our production facilities include a tissue-culture laboratory and a 10 dka greenhouse area for acclimatization and hardening of the plants. In the company we have also Research&Development team that constantly introduces new plant varieties to tissue-culture, optimizes the production and improves the quality of our plants.

In the WoodNat project we are involved in the production of walnut young plants using the tissue-culture technology. Our team will develop a cost-effective protocol and produce young walnut plants on a large scale. The plants will be further hardened and grown into our greenhouses. The production of high quality and healthy young walnut plants is a key point of which the further wood production depends on.



## Who we are

Seistag is a young company where technical and market knowledge get together. Company's working field is the cooperation with the existing industry to develop new business lines through R&D and internationalisation.

The activity refers to developing technical projects, improving products and production lines and boosting R&D processes. Main areas of activity are: ultimate technologies, automatization, product development, new wood applications, adhesives, bio-composites and biofuels.

The capacities of Seistag have grown through shared experiences and common feedback with the companies they work with. Today Seistag is a meeting point for specialists and wood companies in the Northwest of Spain. The national government recognized Seistag as an innovative SME; and the regional government placed Seistag on the 13th place in the ranking of companies that transform innovation into business.

Find more information about the company at [seistag.com](http://seistag.com)

## Why at Woodnat

Woodnat project and the company Seistag are brothers. Both seek the market uptake of local resources. Both believe in the international market as an opportunity. And more over, both consider the business competitiveness the only way to sustain the excellence of the societal and ecological European landscape.

Woodnat project and Seistag also share the idea of technology and innovation as the path to success. Therefore, Seistag recognised very soon the opportunity that represents being part of Woodnat Consortium. The compromise of Seistag with the project lead to be the coordinator of a wide range of actions from planting, to thinning, harvesting and first transformation.

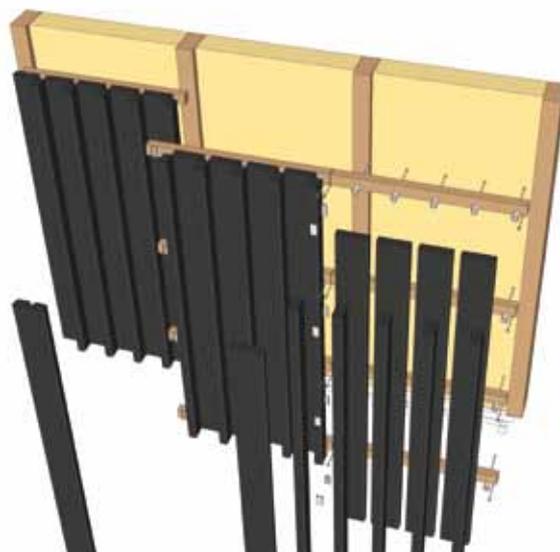
Main activity of Seistag at Woodnat project relates to the development of new products and the improvement of traditional sawing and slicing processes. Both actions relate to walnut wood being possible to apply them for other local species.

## Where we go

At Woodnat project, Seistag is committed to improve industrial yields of the transformation of European hardwood plantations by means of new processes and products. The tasks of the company at the project mean maximizing the value of the logs by making their industrial transformation competitive and defining profitable products.

With that objective in mind, Seistag develops its activity in the field of first transformation. This means being close to the raw resource trying to generate value at the lower level of the industrial value chain. Seistag results should support further industrial transformations and future profitable products.

Every project for Seistag is an opportunity to find new ways of value creation. Therefore, the expected result of Woodnat project is a new and profitable business line. That business line should take advantage of a local resource. Moreover, it should be carried out throughout competitive transformation processes and innovative wood products.



## Company profile who are we

WAF Estructuras Digitales, S.L. is an established company specialised in developing security systems developer combining physical security and smart video surveillance. The company's structure focuses on integrating both vertical and horizontal solutions. At present, our solutions help different institutions, governments and companies of all sizes to protect their employees and facilities, to prevent losses and damages and to improve business efficiency. The options are endless for clients and distributors. We have offices in Spain (Madrid, Barcelona, Logroño, and Calahorra) and Brazil (Sao Paulo).

## Business model

WAF's business model is based on dynamism, product supply and company spirit. The different lines of business have been defined over time, adapting to market tendencies and evolving according to the new technologies. Among the different technologies, the company has selected the most suitable alternatives depending on our clients' plans, whilst considering those that best fit with the personnel skills.

Currently, WAF keeps achieving the objective set at its formation: "Professional Commitment". We establish solid and abiding relationships with our clients based on the quality of our products and services in the area of Technology, Information and Communication.

## Business lines

Waf Estructuras Digitales, S.L. is a consulting and systems integration company specialised in different areas. Amongst others, we are part of the Group Food Defense ([www.fooddefense-soluciones.com](http://www.fooddefense-soluciones.com)), in order to develop solutions to control the food production and supply of food industry companies. We have also developed solutions such as our parking and shopping centres control system or our limited parking area control system based on moving license plate recognition in which we used the latest technologies.

## Our mission

To identify, to analyse and to satisfy the real necessities of our clients by means of innovating and distinguishing solutions, based on Information and Communication Technologies, which generate value for all the interest groups of the company





## Who we are

WALE has extensive knowledge in international timber flow, product legality, market expectations and organization of the sector. This offers the possibility to support companies, institutions and administrations in their reflections on positioning. What strategy for procurement? What are the possible developments in international flows? How to set up devices to fight against illegal products? Which promotion to bring such a product or such from? These are some of the issues addressed by WALE. It is through a quality approach based on continuous improvement, our teams bring you their support here.

## Why Woodnat

Woodnat aims at providing for the first time an integral approach to walnut hardwood supply chain from nurseries to close-to-market wood products. Although many projects and tools have been developed in the past to promote a sustainable management of hardwood plantations, most of them have failed due to lack of a global approach. Woodnat consortium gathers 9 players representing the whole walnut hardwood value chain across Southern Europe willing to collaborate to generate added value. By putting together representatives of every tier in the chain, we will beat the atomization among landowners and discover new profitability paths to all of us.

## Where to go

Woodnat is focused on the walnut hardwood-chain and its overall goal is to increase the use of quality walnut hardwood produced under sustainable management practices in planted forests of southern Europe. The main objective of WALE is helping Woodnat partners on communication and adding value to the whole chain.





# Woodnat

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