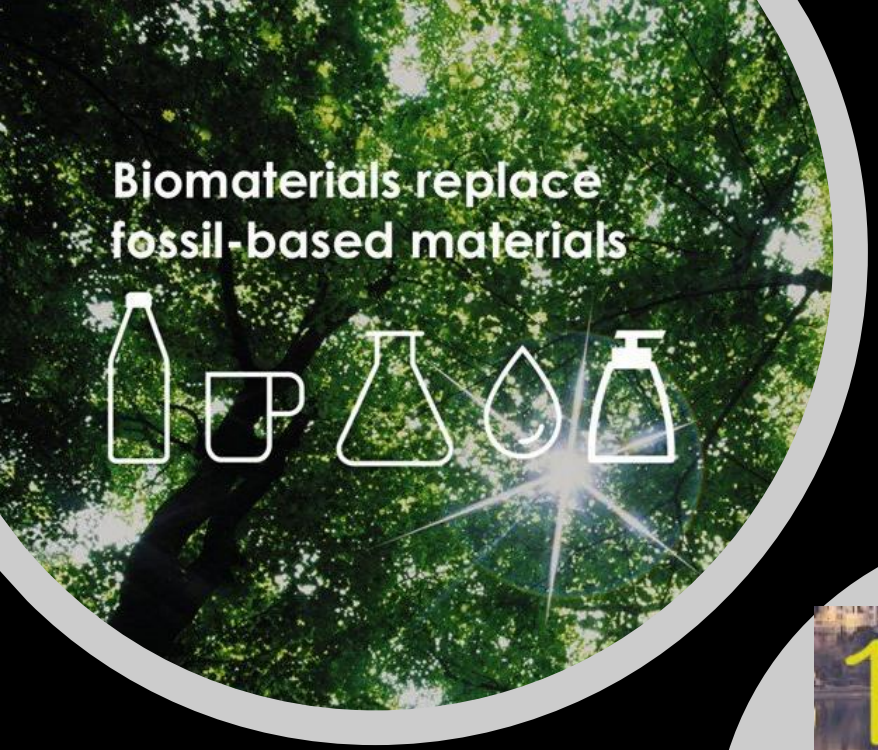

Forestry, wood and the bioeconomy sector in Greece

Dr. Ntalos Georgios, Professor University of Thessaly

Head of Forestry, Wood Science and Design Department

13-15 May 2025
Kastoria, Greece

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Greek forests

- Greece is the **fourth largest country in Europe** with respect to forest resources, with **3.84 Mha** of forest, accounting for **29% of the total area.**
- Natural forests are around 96% of the total and therefore, **25% of Greece is covered in natural forested areas** (3.73 Mha) (Global Forest Watch 2018).
- **80% of the forests are public** with the remainder being owned by private individuals and institutions.

Forestry in Greece

- In Greece, the forest and logging industry generated a **gross value added of 65,5 million euros** in 2017 (Statistcal Research Department, Sep 8, 2020).

- The low contribution of the Forest Sector to the GDP is due firstly to the fact that the forests of the country are of low productivity as **their role is protective in general.**

Forestry in Greece

Species most found are:

- **Coniferous** like Aleppo Pine, Black pine, Scots pine, Pinus leucodermis, Cedar and Spruce. There are about 25 indigenous species and about 44 introduced ones.
- Broadleaved such as Fagus, Beech, Chestnut, Oak, Olive-tree, birch, pseudo-plane, Laurel, Tilia tomentosa and Plane tree. There are about 259 indigenous and 72 introduces species.
- Most Greek forest species can be used for wood, such as: Beech (Fagus sylvatica), spruce (Picea abies), birch (Betula pendula), forest pine (Pinus sylvestris), anchovy (Carpinus betulus), oak (Quercus petraea), pseudo-plane (Acer pseudoplatanus) and the maple tannoid (Acer platanoides).

Forestry in Greece

- Using the softwood/hardwood categorization:
- SOFTWOODS are provided mainly by: Fir, Abies cephalonica 8.5% (% of total area), Aleppo pine, Pinus brutia, 9.1%, and Black pine 4.4%.
- Their annual production is around 200.000 m3 of which 48.000m3 goes for industrial wood and 60.000 for fuelwood
- HARDWOODS are provided mainly by: Beech 5.2%, Oaks Quercus 22.6%, and Coppice 48.4%.
- Their annual production is around 120.000m3 of which 30.000 goes for industrial wood and 60.000 for fuelwood.

Forestry in Greece

- **Forest Authorities and Structure of the Greek Forest Service**
- The main institution for the development, protection and management of the public forests in Greece, forest policy and technical works supervision, is the **Greek Forestry Service (GFS).**
- It constitutes administrative part of the **Ministry of Environment and Energy** and from 2010 onwards it operates as a **Special Secretariat of Forests** (FEK 855 τ.Β 2010).
- Forest service in Greece is formed by
- 7 General Administrations of Forests and Agricultural Matters
- 7 Administrations for Coordination and Supervision of Forests,
- 32 Regional Forest Administrations with
- **80 Local Forest Services and**
- 22 Regional Forests Administrations without Local Forest Services under their supervision.

Forestry in Greece

- The forest sector employs **0,1% of the total workforce** of Greece.

- Calculating in FTE , workforce in the forest sectors in Greece in 2016 accounted for 20.000 FTE and more specifically, **3.000 in forestry, 11.000 in wood manufacture and 6000 in paper industry** (Source: Eurostat, 2016).

Forestry in Greece

Forest education and research

- There are **four Forestry Schools at University** level in Greece. Scientific and technological developments in silviculture, forest management, harvesting, transport and processing of wood products, and information technology, are the most relevant for forest-product markets.
- Forest research in the country, besides Forestry Schools at the university level, is carried out by **two Research Institutes**. The Institute of Mediterranean Forest Ecosystems and Forest Products Technology in Athens and the Forest Research Institute of Thessaloniki, which belong to the National Agricultural Research Foundation (N.AG.RE.F).

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Forestry in Greece

- <u>Greek forests management and main priorities</u>
- The management of the Greek forests addresses the **multifunctional role of forests under the economic principle and the principles of sustainability, multifunctionality and integrated management**.
- The utilization of the Greek public forests is implemented by the forest cooperatives under the supervision of the Forestry Service.

Forestry in Greece

- Primary wood production of Greek Forests

Primary production of Greek forests by main timber categories for the period 2009-2018 in m3 (source: Greek Ministry of Environment and Energy – processed data).

Timber Products	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	TOTAL
Technical	186.845,34	198.949,07	225.536,08	235.994,74	258.093,77	237.257,01	281.152,27	n.a.	n.a.	275.119,96	**1.898.948,24**
Industrial	42.982,49	71.363,23	50.711,60	176.535,65	66.995,32	51.873,21	96.338,16	n.a.	n.a.	51.568,98	**608.368,64**
Fuelwood	480.626,98	468.494,18	494.168,77	482.363,38	480.791,93	441.491,79	527.756,15	n.a.	n.a.	452.805,77	**3.828.498,95**
TOTAL	**710.454,81**	**738.806,48**	**770.416,45**	**894.893,77**	**805.881,02**	**730.622,01**	**905.246,58**	**n.a.**	**n.a.**	**779.494,71**	**6.335.815,83**

Forestry in Greece

- **Non-Wood Forest products of Greece**
- While wood dominates the forestry industry, Greece also has a thriving **non-wood forestry sector.** The most important are:
- resins and gums - nuts (pine nuts, chestnut) - fruits and berries - mushrooms and truffles - foliage, medicinal and aromatic plants - honey and beewax - oils, essential oils - plant soils - other edible and non-edible animal products

- The main non-wood forest products that we can mention are
- resine with a production of **6.042.600 kgr for 2019** and an **average of 5.800.000 kgr per year,**
- charcoal with only around **200.000kgr for 2019**
- However, there is a small as mentioned production in a significant number of aromatic - pharmaceutical plants of high added value and unicity of the Greek wild vegetation, with **origanum to play the most significant role with an annual production around 700.000 kgr** for 2018 and 2019.

Forestry in Greece

- **Christmas trees** are also categorized as non-wood forest products. Their production was about 500.000 before 2000; roughly 70% of them came from private plantations, 30% of chestnut orchards and the remaining from state and non-state forests. Today, the production is around **100.000 Christmas trees**.
- Regarding the **share of biomass and wastes in the Gross Inland Energy Consumption, that was around 8% in 2008 (Eurostat) we manage to have 18% in 2020** and 60% of the total renewable energy. Forest biomass reached **176million metric tones** (over-dry weight) in 2015.

Forestry in Greece

Status of wood industry development

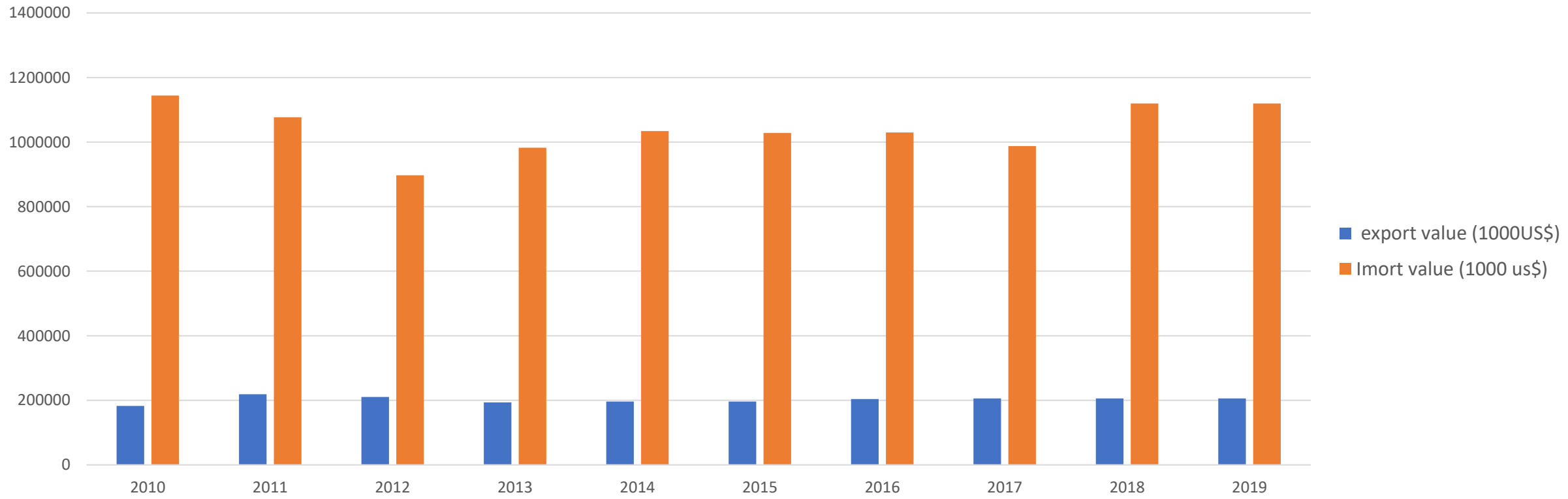
Number of enterprises and total value of sales of the Greek wood, furniture and paper industry 2015-2019. (source: National Statistic Service processed data)

Activity Code (NACE rev.2)	Description of code	Number of Enterprises	Total value of sales (€)
2019			
16	Wood industry and production of wooden products and cork, except furniture	170	209.153.991
31	Furniture manufacturing *	299	279.995.206
17	Paper industry and manufacturing of paper products	209	1.263.330.012
2018			
16	Wood industry and production of wooden products and cork, except furniture	172	204.666.091
31	Furniture manufacturing *	305	276.645.629
17	Paper industry and manufacturing of paper products	210	1.219.316.308
2017			
16	Wood industry and production of wooden products and cork, except furniture	173	197.603.769
31	Furniture manufacturing *	306	242.858.050
17	Paper industry and manufacturing of paper products	206	1.105.827.008
2016			
16	Wood industry and production of wooden products and cork, except furniture	160	167.417.769
31	Furniture manufacturing *	295	229.964.882
17	Paper industry and manufacturing of paper products	187	1.053.696.346
2015			
16	Wood industry and production of wooden products and cork, except furniture	168	158.458.420
31	Furniture manufacturing *	312	213.074.814
17	Paper industry and manufacturing of paper products	191	1.021.716.109

Forestry in Greece

Timber import and export

- According to FAO official data, Greece is showing a **quite significant deficit** in forest-based products with imports during the last decade to be near/or above 1 billion US$, while exports just reach 200 million US$.



Wood industry

- In Greece, we have about **80 sawmills** which are mainly medium-small enterprises, **with only 5 sawmills**, **with an annual production more than 20,000 m3** roundwood/each.
- About half of the industries are equipped with kiln dryers in order to provide with sawnwood with MC less than 12%. Even then, **the wood has to be graded to classes according to EN 338;** only two of the industries are trained for optical grading.
- Machine grading is not yet well known in Greece.

Wood-based panel

- For particleboard production **the only company** is **AKRITAS.** Exports from this company **represented 5%** of the total sales. The company produces particle boards with melamine or veneer and semi-finished furniture pieces. Today, the Akritas Company employs 300 people. The company has four production units: (i) particle board production unit, (ii) Melamine Production Unit, (iii) veneer sheet-paper pro¬duction unit, (iv) kitchen bench and doors production unit.

- **Wood-based panel**
- For Medium Density Fiberboard **the only industry** is **Alfawood Pindos**. ALFA WOOD GROUP AEVE **is the largest Wood Processing Industry in Greece** and one of the most significant in the Balkans.
- Production of pellet: 60.000 t
- Briquettes: 7.000 t
- Bare fibreboard: 100.000 m³
- Melamine: 122.000 m³
- Veneered Panels: 17.000 m³
- Kitchen Counters: 7.000 m³
- Lacquered fibreboard: 10.000 m³
- Acrylic panels: 4.300 m³
- Door casing: 300.000 l.m
- Profiles: 730.000 l.m
- Frames for casing: 730.000 l.m
- Interior doors: 12.000 pcs

- For **Plywood** there is **more than 10 industries but the only one with big production** is Mourikis Industry.
- **MOURIKIS SA** is based in its own 125.000 m2 facility in Kalamaki, Corinth, **with a private port (150m long pier**), where it produces and distributes a wide range of products, with the main products being plywood, **wooden flooring and veneer.**
- MOURIKIS SA **annually processes 9.000 m3 of log and 12.000 m3 of veneer for the production of 16.000m3 of plywood.** Annual production can reach up to 20.000 m3.

- **Wood floor**

In Greece **30 small and 3 big enterprises are producing solid wood parquets**. They use mainly oak wood. Also import tropical species, mostly from South East Asia and Africa. One company only produce Laminate flooring: 5.300 m^3 (ALFAWOOD)

- **Wood doors and Windows**

There are **30 industries producing solid wood doors and windows** but only 10 of them have employs more than 20 people.

- **Wooden houses**

Only 4 companies producing wooden houses. The rest of the houses are prefabricated and imported from Scandinavian countries mainly.

- **Furniture**

Greece imports almost **1000 Milion euros in furniture every year and the 22% of them are form china**. The main countries that Greece is importing furniture products from are:

- Italy 35.2%
- China 21.3%
- Turkey 6.7%
- Germany 5.9%

- **<u>Others</u>**
- Pallets – Boxes enterprises

- • 60 small enterprises. • Use mainly poplar & pine wood. • 7 medium-size enterprises producing more than 100,000 pieces annually. • 19 companies carry out heat treatment process. • Level of automation: Low - except 2 companies with automated lines.

- Glued-laminated Lumber (Glulam) - As far as engineered wood products are concerned, glued-laminated timber (Glulam) is one of the earliest technologies. In Greece **three industries exist** producing Glulam located in Thessaloniki, Patra and Grevena.

- **Exportable products and services**

Greece mainly imports wood and wood products. The **only exportable products are the wood-based panels** as well as the Glulam. The quantities that are exported are 10.000 m3 of MDF, 5.000m3 plywood.

- **Products and services imported**

The products that Greece needs, are mainly **engineered wood products** (EWP's). **All of the products have to be CE certified**.

Services to be imported, have to be related with tall building with wood experienced companies as well as testing and quality assurance companies.

National forest strategy

- In Greece a **National Forest Strategy** (NFS) has been legislated with Ministerial Decision No. 170195/758 of 28 November 2018.
- The NFS determines the principles of forest policy in Greece for the next twenty years, emphasizing on the model of Mediterranean forestry and on sustainable forest management.
- The National Forest Strategy of Greece includes seven axes, three horizontal (**forestry governance, inventory-monitoring, research-innovation**)
- and four vertical (**forest economy, climate change, forest ecosystems protection and ecosystems services optimization, international and European policies**).
- No bioeconomy strategy
- Circular economy strategy

Challenges faced

- **Resource constraints**
- 1. The lack of official data on forestry and forest production. However, the Ministry of Environment and Energy has initiated the procedure for the development of a new National Inventory in forestry.
- 2. The productivity level of Greek forests is low.
- 3. Greece is showing a continuous and significant deficit in timber and wood products. The domestic production covers only the 1/3 of the national needs.
- 4. The loss of forest areas due to several reasons that exist for Greek forests and Mediterranean forest ecosystems in general
- 5. Demographic characteristics of the forest areas. They are dominated by elder people who live in the mountainous areas and are not able to deal with forest production.

Challenges faced

Financial constraints

1. The investments that take place in Greek forestry primary as well secondary production remain extremely limited.

2. The global economic crisis had a negative impact on the Greek forestry sector, due to the collapse of the construction industry, while the COVID-19 pandemic hit severely the forest-tourism sector.

3. The lack of focusing public and private funding for forestry on the agreed research & innovation priorities at EU level.

4. The lack of the ability for investors to use combinational funding support from several funding projects, programs and policies and to use alternative forms of funding.

Challenges faced

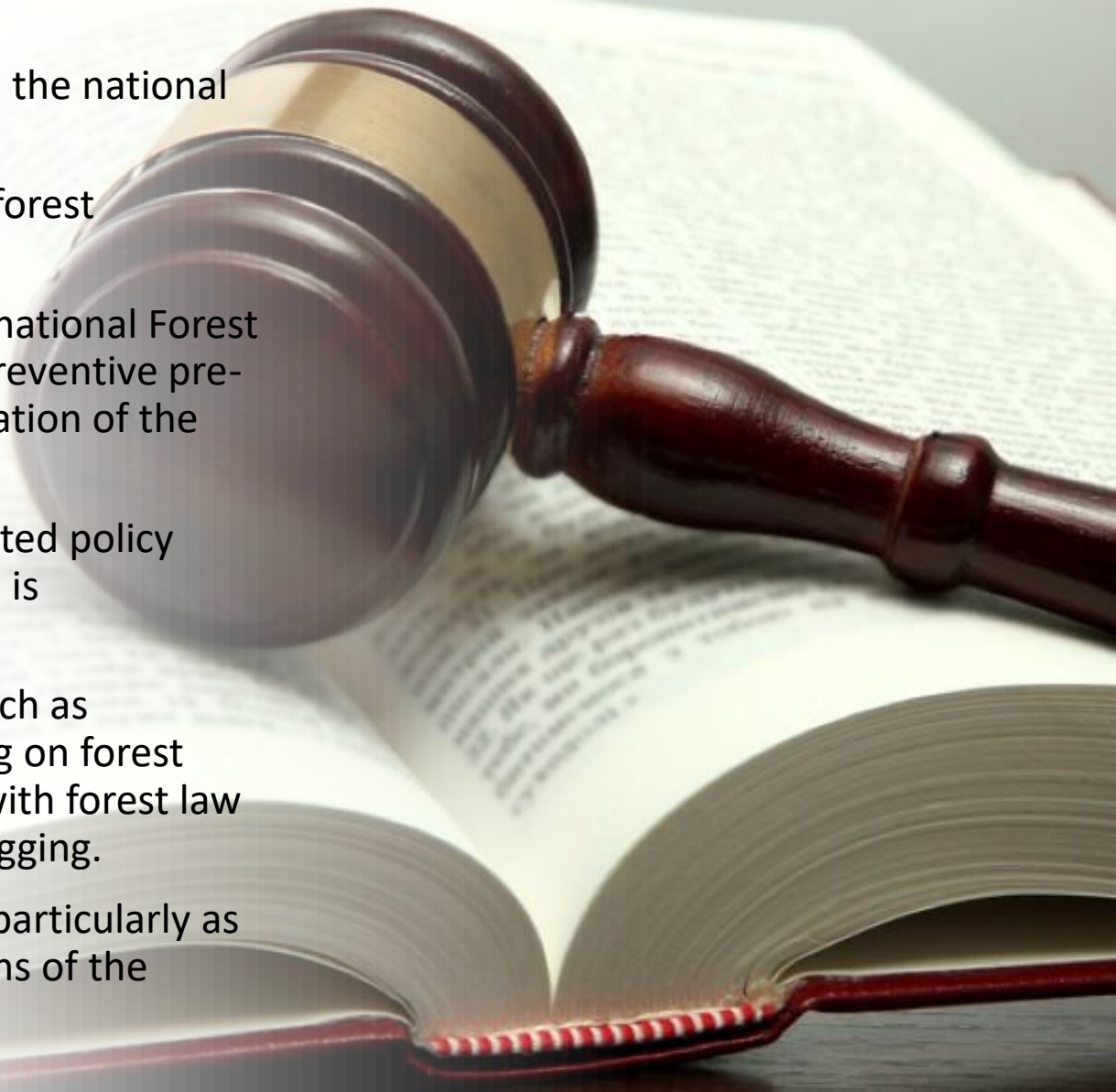
- **Market constraints**
- 1. Forest ecosystem services do not receive adequate recognition in national economic decision-making.
- 2. In Greece, the total forest area under certification is practically zero.
- 3. Markets for non-wood forest niche products are growing. However, complex rules and regulations, precise measurements, and rigorous verification requirements at different stages bar mountain communities managing small entrepreneurial schemes in the mountainous areas.
- 5. Unfair trade practices from third countries aiming to restrict market access for Greek companies.
- 6. Insufficient recognition of the environmental and climate performance of forest-based products.

Challenges faced

- **Technology constraints**
- 1. There is **little corporate involvement in Greek forestry** because most forests are public. Thus, Greek **forestry has operations characterized by a lack of economic scale and expertise** required to adopt the latest technologies.
- 2. **Very weak investments in research and technology** in the Greek forestry sector. Greek forest-based sectors are closely linked to technology supplies from abroad and this also creates further **constraints regarding access to the state-of-the-art technology**. Greek **forest cooperatives still remain far away for an innovative entrepreneurial culture.**
- 3**. Lack of feasibility and technoeconomic studies** regarding the alternative use of forest biomass **under the circular bioeconomy concept**
- 4. **Low level of technology transfer** especially in the primary forest sector and production. Furthermore, there is no cross-industry cooperation which could lead to entrance of new technologies in the forest-based industries sector, especially under the concept of a circular bioeconomy.
- 5. **Regulatory obstacles** such as a lack of harmonized standards with the rest of the EU and legislation for forest-based products
- 6. The **increase of part time-employment** and the decrease in competitiveness of locally produced goods and services.

Challenges faced

- **Legislative constraints**
- 1. Sustainable mountain development has remained marginal in the national development agenda.
- 2. National Forest Strategy of Greece aspires to face the lack of forest management, one the greatest inefficiencies for Greek forests.
- 3. Greece is under an obligation under EU law to implement its national Forest Policy until the end of 2021 in the context of enhancement of preventive pre-fire planning and forest fire fighting, while ensuring the preservation of the biodiversity and compliance with climate change principle
- 4. The political and institutional framework for developing targeted policy instruments to regulate non-wood forest products and their use is underdeveloped.
- 5. Wood removals are influenced by a number of parameters such as organizational issues (i.e. harvesting procedures), lack of funding on forest management plans, vague ownership of forest land, problems with forest law compliance, governance issues, bureaucracy, extended illegal logging.
- 6. Forest recreation is not satisfactorily regulated by forest law, particularly as its significance is continuously growing and tends in many regions of the country to become a primary forest use.



Key areas to be addressed

- **Forest resources and yields**
- **Trade**
- **Resources for local forest bioeconomy schemes**
- **Improvement of the knowledge base on forest bioeconomy**
- **Technology development and competitiveness of forest-based industries**
- **Investment**
- **Information**
- **Legal aspects**
- **Tax burden and regulation**

Policy Suggestions

Greece is a crucial country in the Balkan and CEEC region. In general, it is an interconnection, trade and financial transactions hub, and a state that is emerging as «a pillar of economic stability and security.”

Furthermore, Greece’s investment policies are considered very attractive. European countries can be involved mainly on exporting to Greece high added value wood products like but also on technology for biochar production.

Regional and local conditions, including forest and other wood resources, markets, infrastructures, equipment availability, etc. need to be taken into account and relevant adaptations made as appropriate.

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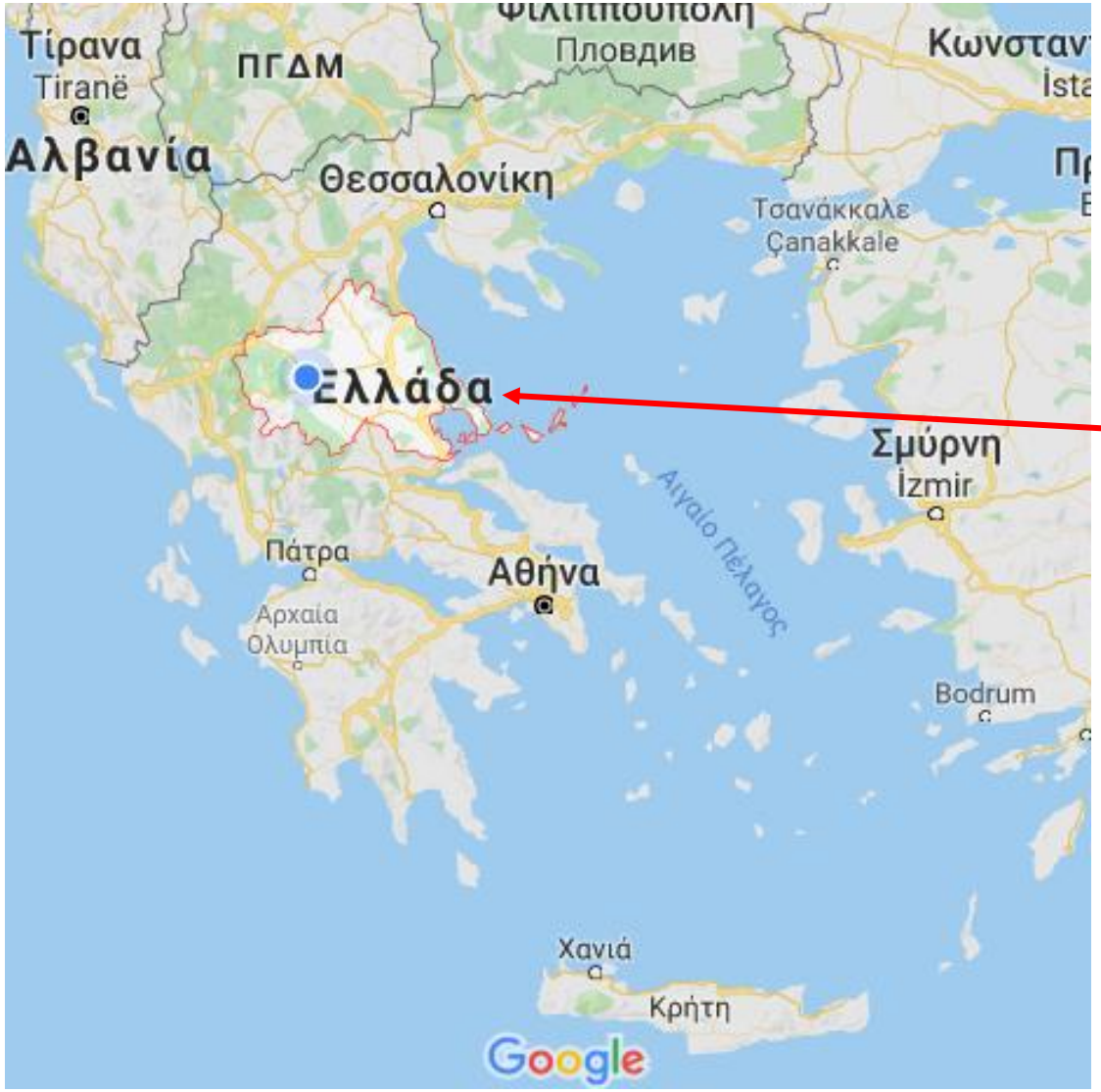


University of Thessaly

is a non-profit public higher education institution located in all four cities of Thessaly region (Volos, Larissa, Trikala, Karditsa) as well as in Lamia (Sterea Ellada region).

www.uth.gr/en

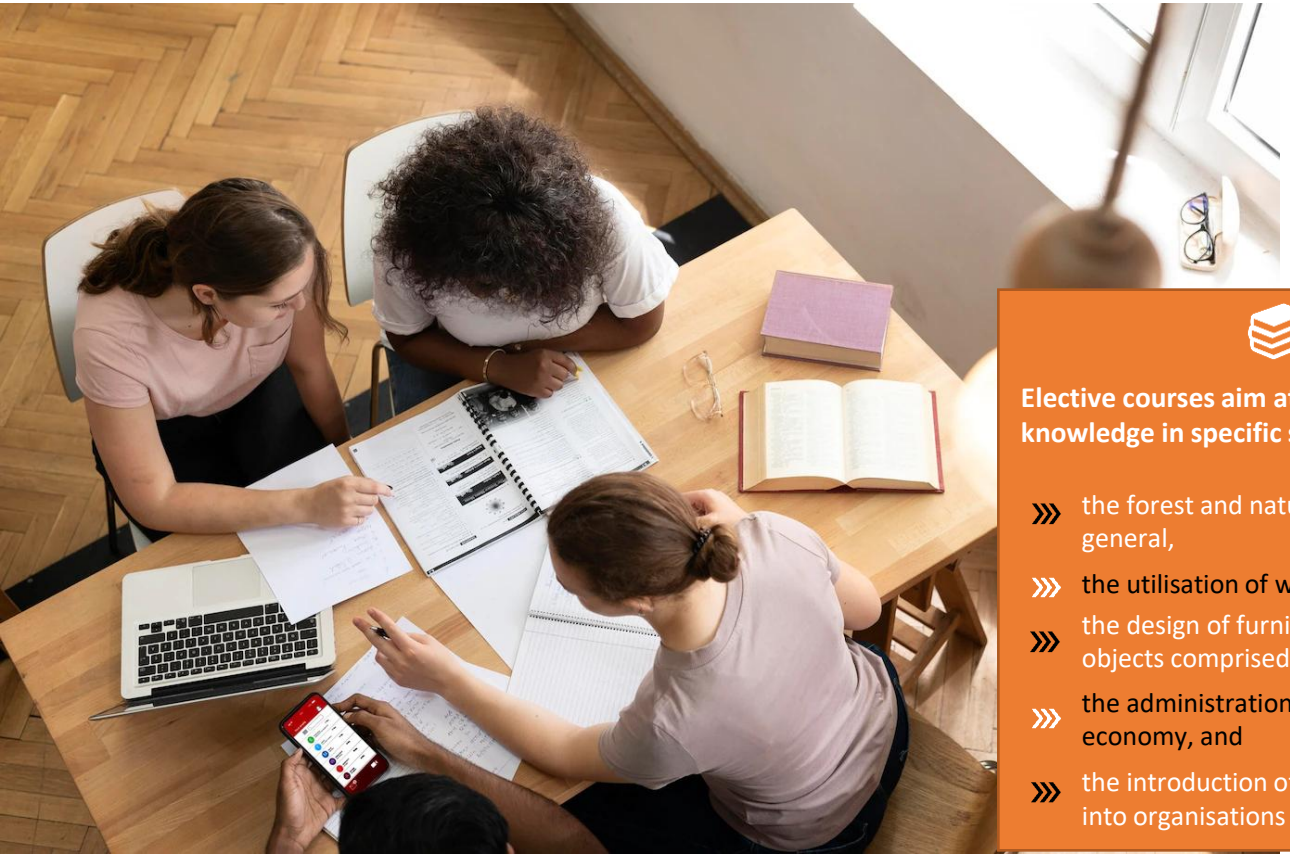
University Overview

University of Thessaly (UTH) was founded in 1984. UTH is a prominent institution of Higher Education aiming to promote scientific knowledge through teaching and research, and to contribute to the cultural and economic development of the local community, and the society at large. It promotes scientific and academic excellence in all fields of expertise and rewards outstanding individual performances, establishing new scientific research units and fostering an environment that supports innovative actions.

Today, University of Thessaly, with 37 Departments and 8 schools, is the third biggest University in Greece, with its own identity and with a prominent position in our national educational system. University of Thessaly provides 105 undergraduate and postgraduate programs, and extra-curricular modules in specific research and business fields. It has more than 42.000 undergraduate students, about 4300 postgraduate students and about 1500 PhD students. It also has 1000 members of teaching and research staff and 450 members of administrative personnel. It is known for its excellent research performance and outstanding scientific achievements, in accordance with the international standards. The excellent equipped Laboratories of the different Departments and Research Units have a number of well-trained researchers to support them.

As part of its future goals, University of Thessaly intends to strengthen its cooperation’s abroad, increase its human resources, upgrade and utilize existing human resources, attract young scientists and encourage research through the creation of modern research structures, increase infrastructure and utilize its assets and funds from the EU with the research programmes Horizon 2020, RFSR, FP6, FP7, Erasmus+, INTERREG, and LIFE. The members of the academic and research staff participate in European research networks and numerous innovative research projects in the EC. Currently, UTH has more than 600 Erasmus Bilateral Agreements with more than 40 different countries, and works in partnership with European and overseas institutions to facilitate academic exchanges, research collaborations and jointly organized academic programs (intensive courses, summer schools etc.) with other higher education institutions.

Undergraduate Program



Elective courses aim at providing advanced knowledge in specific subjects such as:

- the forest and natural environment in general,
- the utilisation of wood,
- the design of furniture and other objects comprised of wood
- the administration, organisation, and economy, and
- the introduction of modern technology into organisations and businesses

Certified Undergraduate Program

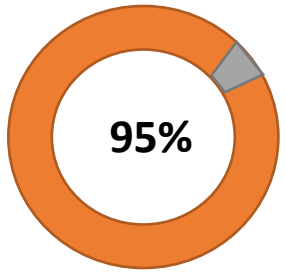
The basic purpose of the Undergraduate Program is to adequately cover all the knowledge fields of the two pillars of the new department, that is: **Forestry** and **Wood Sciences & Design**.

- The Undergraduate Program has a duration of 10 semesters. Upon its completion, it leads to the awarding of a single and indivisible master's degree (integrated master).
- The first 6 semesters include 6 compulsory courses per each semester, common to all the students.
- It operates with 2 study directions from the 7th semester onwards:
  - Natural Environment Management &
  - Wood Sciences & Design

  (Each of the 2 directions includes 3 or 4 compulsory courses and 1-2 electives)
- In the 9th and 10th semesters, students carry out their diploma thesis and the 2-month internship (mandatory)
- Certificate of acquisition of digital skills

See the Study Program

Practical Exercise - Internship



of the students declared themselves satisfied with their Internship

The compulsory internship takes place at:

- 6th and 8th semesters in University Forests (1 month each time)
- 10th semester in organisations or enterprises (2 months)

Postgraduate studies

Unique Master's Programs, which aim to create specialized and competent business and service executives, as well as entrepreneurs.

- MSc in “Advanced Design, Technology & Management of Wooden Products” with 3 specialisations

  - Product Design
  - Technology & Construction
  - Management & Marketing

- MSc in “Multifunctional Management of Natural Ecosystems and Bio-economy”

- Interdepartmental Master's Program in “Advanced Technologies for Environmental Risk Management”

Doctoral studies

- The Doctoral Program of the Department has as its primary purpose the development of new researchers for the advancement of sciences.
- PhD Candidates focus on the production of original and innovative interdisciplinary research in all fields and subjects of the Department, so that they are able to staff universities, research centers, businesses and private or public sector organisations in Greece and internationally.
- The possibility of conducting postdoctoral research is provided to scientists holding a doctoral degree.

More information

Laboratories & Equipment

Nine research laboratories

Laboratory of Wood Science & Technology

Laboratory of Technology & Quality Control of Furniture & Wood

Product Design Laboratory & Industrial Production

Laboratory of Forest Economics, Marketing, Innovation & Entrepreneurship

Laboratory of Applied Informatics & Digital Technologies

Laboratory and Management Laboratory of Protected Areas

Wildlife Management Laboratory

Forest Botany & Silviculture

Forest Road Laboratory & Forestry Workshop

Laboratories

Equipment

Facilities & Infrastructure

Excellent Facilities

- 6000 m^2
- 3 Auditoriums
- 45 Offices
- 20 Classrooms & Laboratories

Disabled access to all facilities

Modern Campus

- Dormitories for 100 students
- Modern Library
- Student Restaurant for 500 students
- Internship Office
- ELKE office for research projects
- Institute of Wood - Furniture & Wooden Packaging

Contact

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Thank you!

Department of Forestry, Wood Sciences & Design

“Knowledge of the Nature is power”

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WOOD SCIENCES & DESIGN