

**MEDFOR: THE EXPERIENCE OF AN ERASMUS
MUNDUS MASTER PROGRAMME IN FORESTRY AND
NATURAL RESOURCES**

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MEDFOR: THE EXPERIENCE OF AN ERASMUS MUNDUS MASTER PROGRAMME IN FORESTRY AND NATURAL RESOURCES

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Abstract

The Master Programme Mediterranean Forestry and Natural Resources Management (MEDfOR) brought together the best expertise, human resources and facilities to educate the next generation of leaders in forestry, natural resources and land management throughout the Mediterranean region. The two-year programme started in 2012 and is implemented by a consortium of seven Mediterranean Universities located in Portugal, Spain, Italy and Turkey. It offers a mobility path in which students can study in two or three different universities. It takes advantage of internships offered by associated partners and stakeholders from all around the Mediterranean basin, America, Africa, Asia and Oceania organized in a consultation panel.

The number of applicants has steadily increased since 2012. It was greater than 200 in 2019 which highlights the quality and attractiveness of the programme. The contribution of the programme to graduate-level education and to address the challenges faced by Mediterranean countries is acknowledged by the EU Erasmus programme that twice selected this programme for funding in 2011 and 2017 in competitive calls. Since 2012, 98 students have graduated successfully. Most have already found jobs or are pursuing PhD degrees, thus fulfilling the ambition of the programme of contributing to address current forestry and natural resources challenges, namely in the Mediterranean region.

Keywords: Bioeconomy, Climate change, Forestry, Graduate-level education, Natural resources, Mediterranean.

The start of MEDfOR

The beginning

The Mediterranean Forestry and Natural Resources Management Master Programme - MEDfOR - was outlined in 2009 by a group of internationally recognized specialists in the scientific field of Mediterranean forestry. That group worked together to develop the Mediterranean Forest Research Agenda (MFRA) (Palahí *et al.*, 2009) and collaborated also in several capacity building projects targeting the Mediterranean Southern Rim, e.g. AGORA (Palahi *et al.* 2012).

At the time, the MFRA and the Strategic Research Agenda of the European Forest Based Sector Technology Platform (FTP, s.a.) (<http://www.forestplatform.org/#!/>) underlined the need for a Master course that might bring together expertise to build the knowledge base needed to address the specificity of the Mediterranean forestry.

MEDfOR was built by a consortium of the following seven universities:

- University of Lisbon (UL), Portugal.
- University of Padua (UNIPD), Italy.
- University of Lleida (UdL), Spain.
- University of Valladolid (UVa), Spain.
- University of Tuscia (UNITUS), Italy.
- Catholic Portuguese University (UCP), Portugal.
- University of Karadeniz (KTU), Turkey.

It is also supported by a consultation panel involving several organizations, such as NGOs and research centers, enterprises, associations and other universities. Most are located on the Mediterranean Basin. Nevertheless, for a broader perspective the panel also includes members from other countries in Africa, America, Asia and Oceania, thus highlighting the international perspective of the programme. The consultation panel offers advice, provides internships to the students, and sends invited scholars to teach at the partner universities. It has expanded to include 31 members by 2019.

Course structure

MEDfOR provides a relevant scientific anchor for students to pursue their academic interests in the four disciplines and areas listed in the MFRA (2009) as critical to address effectively the challenges of Mediterranean forestry and natural resources management. These include:

- The impact of climate and land-use changes on Mediterranean forest ecosystems functioning: assessing and monitoring main physical and biological processes including biodiversity.
- Integration of the risk of forest fires and other hazards in land-use and landscape planning and natural resources management.
- Policy, economic and institutional aspects for sustainable provision of forest goods and services.
- Forest and woodlands in the context of integrated management of land resources: models and decision systems for optimizing multi-objective and multi-actor problems

The programme is structured into four semesters (Table 1).

The first year of studies – 60 ECTS credits – prepares the students on the full range of disciplines essential to the use and management of Mediterranean forests (ecology, mathematics, social sciences and forestry). Each partner institution (UdL, UP and UL), where students do their 1st year of studies (Table 1), offers 42 ECTS credits. An

e-learning course on Introduction to forestry and natural resources management is offered by University of Valladolid (Uva) in the beginning of the 1st semester (Table 1). Further, at the end of the 1st semester, all students attend the Winter school at UVa. The underlying theme is Mediterranean Forestry: the asymmetric impact of global change on Mediterranean forests. The Winter school takes three weeks, and it encompasses two seminars and a final research meeting.

During the 2nd semester, the University of Padua provides to all students a 3 ECTS credits e-learning course Research and project development methodology – applications (e-learning mode) to provide them with competences to the development of their future Master thesis. (Secco *et al.*, 2020).

Between the 1st and the 2nd year, students can take an optional internship at an associated partner institution (Table 1).

In the 1st semester of the second year, students acquire advanced knowledge in the framework of specialized coursework in any partner university under the supervision of researchers in the respective scientific areas (Table 1). Students may choose one of the listed specializations according to their interests:

- Multiple criteria decision support systems for Mediterranean forest management planning (UL).
- Social and environmental responsibility in Mediterranean forestry (UNIPD).
- Addressing risks in Mediterranean forest management planning-the case of fire (UdL).
- Adaptive forestry strategies to provide good and services while coping with global change challenge (UVa).
- Advanced tools for sustainable management of Mediterranean forests (UNITUS).
- Ecosystem based multi-use forest management planning in Mediterranean forests (KTU).
- Mediterranean sustainable forest management - An institutional economics approach (UCP).

In the fourth semester students develop their MSc thesis at any of the seven universities (Table 1). They can also develop internships provided by associated partners and stakeholders. They are encouraged to develop an important field/laboratory work component, taking advantage of on-going projects being carried out by lecturers and researchers at MEDfOR partner universities.

The last event of the programme, the joint Summer Event is hosted each year by the University of Tuscia, in a forest host center in the Alps. It provides students with the opportunity to exchange experiences, to present and discuss their dissertations with the Mediterranean forestry community and to check for further internships and employment opportunities.

Table 1: Structure and mobility of the programme. See text for abbreviations.

Year 1					Year 2		
1st semester		2nd semester			Summer break	3rd semester	4th semester
24 ECTs	6 ECTs	9 ECTs	18 ECTs	3 ECTs	0	30 ECTs	30 ECTs
Coursework at UL	E-learning class by UVa	Winter school at UVa	Coursework at UL	E-learning class by UNIPD	Optional internship at an associated partner institution	Specialization coursework at UL, UdL, UNIPD, UVa, UNITUS, KTU or UCP	Thesis work and summer event
Coursework at UdL			Coursework at UdL				
Coursework at UNIPD			Coursework at UNIPD				

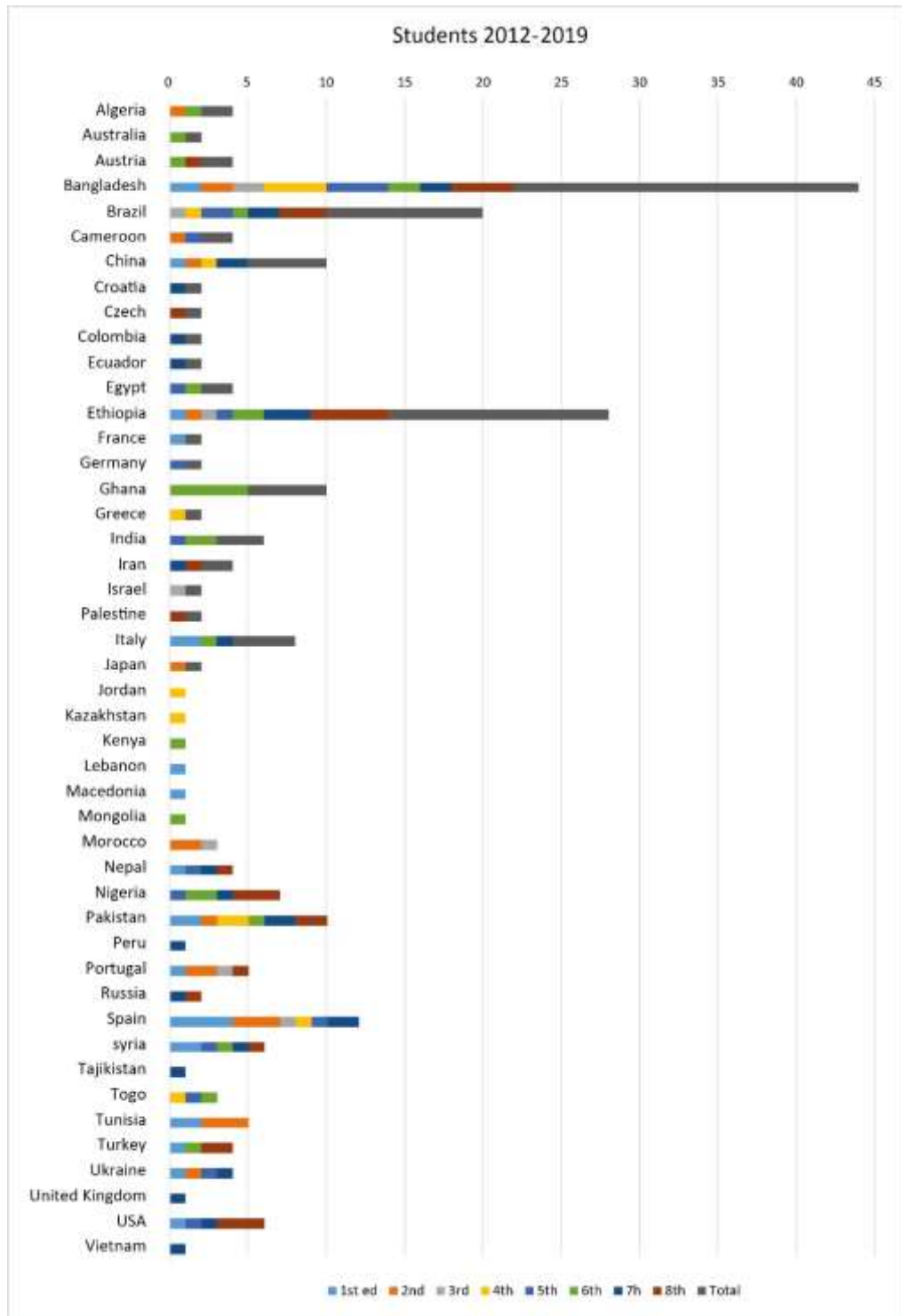


Figure 1: Students' and alumni country of origin for the eight MEDfOR editions

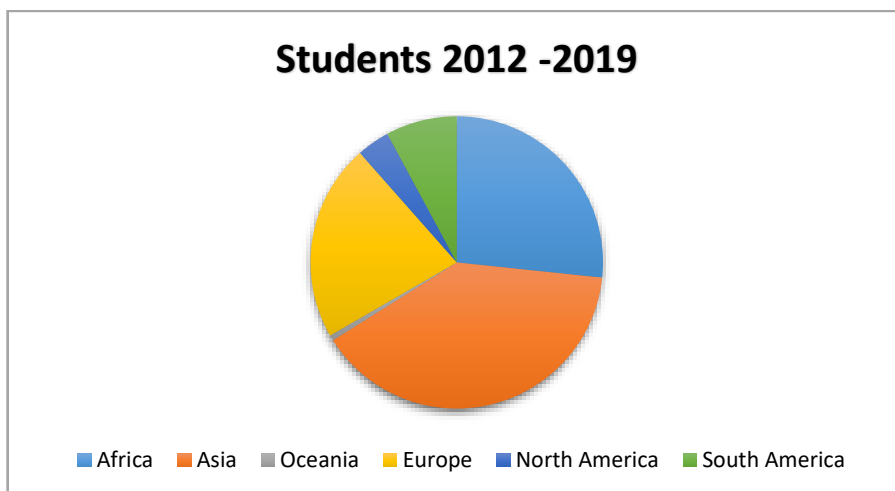


Figure 2: Students' and alumni's' continent of origin for the eight MEDfOR editions.

Scientific publications

After the thesis defence, students are encouraged to publish the results of their thesis in a scientific journal. So far, the programme has been successful in this regard. Several students have presented their thesis results in peer-review papers and in different conferences. So far, 24 scientific papers have been published and we anticipate more publications to be released from ongoing work.

The Students

Who can participate?

Students of our Master Programme have different backgrounds, with Bachelor degrees in the fields of Sciences, Natural Sciences, Economics, Engineering, and Management. In any case, proficiency in English is mandatory.

Who are our students and alumni?

Since 2012, we attracted more than 750 applicants. MEDfOR students come from all over the world (Figure 1, Figure 2). Since most scholarships are attributed to partner countries and some scholarships are allocated to specific regions, the programme receives more applicants from some countries, and consequently we have more students from certain regions

MEDfOR has run eight editions, with the seventh and the eighth edition ongoing. So far we have graduated 98 students.

Addressing challenges to the implementation of the international programme

Students have different culture, educational and language backgrounds. This creates differences in the ways students learn, address different issues, intervene in the class, study, attend exams, etc. The success of the programme requires a flexible and

adaptive approach that may address the full range of students' backgrounds. Addressing this challenge had thus required the adaptation of some of the courses and programme practices, e.g., the implementation of a new e-learning course addressing the basics of Mediterranean forestry in the beginning of the master programme, so that all students could fill in the gaps they had.

Students also face several administrative problems; related with the release of visas, residence permits, travels, search for accommodation, opening of bank accounts etc. In order to support students, all universities of the consortium allocated staff of their International offices, to support the students with these issues. Over the years we were able to improve some of the processes, although some – which don't depend solely on the work done by the universities, remain difficult, such as the issue of visas. One of the processes we manage to improve was the release of the diplomas in each university¹, which was extremely complicated at the beginning, due to the fact that the transference of transcripts between partners was a very bureaucratic process which was facilitated by the consortium. The process is much smoother now, and although the release of diplomas still takes time, the students can receive their final certificates timely, after defending their thesis. This results too from the fact that partner universities are now recognizing the transcripts of records of the students in a digital format. Moreover, the consortium has decided to move to a joint accreditation process; a task which is beginning to take form.

During the implementation of the programme and its development, the consortium decided to add joint courses and events to promote students' integration. Currently, the programme offers a Winter School and a final Summer Event as well as two different e-learning courses in the first year, where the students have to interact. We found, that, since students start the programme in different universities, it was important to find gatherings and platforms of common learning and sharing. The UvA e-learning course underlies the beginning of their shared identity as a MEDfOR group, the Winter School strengthens it, and the Summer Event marks the end of the programme and of their shared experiences. In the middle, they mingle in small groups while studying at the different universities. But this sense of belonging remains, and they keep contact, after studies, through social media.

Success Stories

The experiences of the six MEDfOR editions already completed highlights the success of the programme (Figure 3) in addressing the concern with students' employability. Our tracer study including information from graduates from the first five editions (72 graduated students) shows that two years after defending the thesis, most of them were: working in the field of forestry as professionals (40%), conducting research in the field forestry either as PhD students or as researchers (47%), working in top-level

¹ Diploma is issued by each university, since we don't have a joint diploma yet.

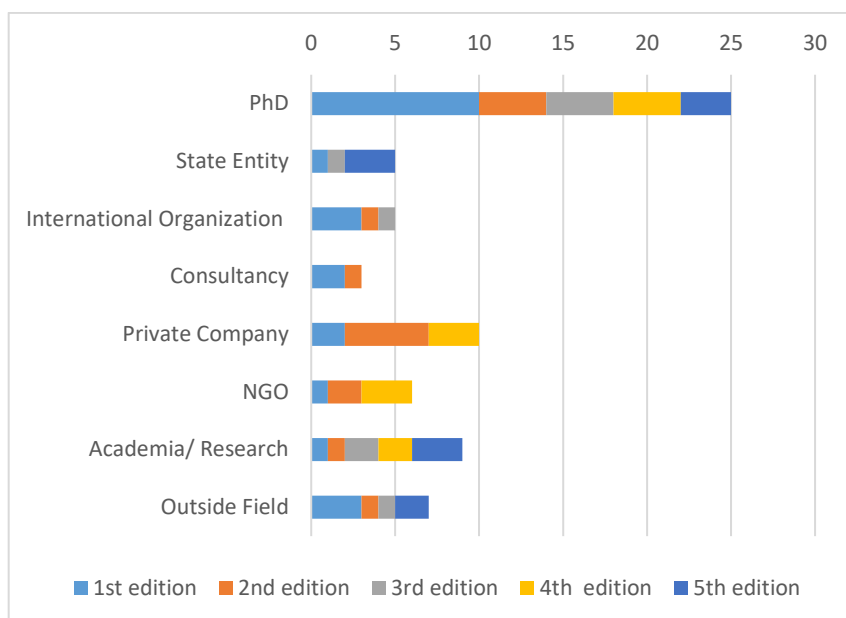


Figure 3: Students employment (2014 - 2019) from the first (2012-2014) to the fifth edition (2016-2018), up to three years after graduation.

Table 2: Ten examples of success stories, two from each of the first five editions.

Edition	Students' Name	Nationality	Employment
1st edition (2012-2014)	Hala Shahin	Syrian	PhD at University of Lisbon, Portugal.
	Ilaria Dalla Vecchia	Italian	Management Technical advisor at FSC Forest, Italy.
2nd edition (2013-2015)	Ghemina Ghemouri	Algerian	Chief desk on Environment Control at the National Agency of mines activity in Algeria.
	Luis Acevedo Muñoz	Spanish	Researcher in the Forest and Paper Research Institute (RAIZ) of The Navigator Company, Portugal.
3rd edition (2014-2016)	Nathalia Fomenton Cardoso	Brazilian	Forest Governance and Economics Consultant at FAO, Italy.
	Asaf Karavani	Israeli	Director of the Forest Management Department and Coordinator for Research and Foreign Relations in the Forest Service, Israel.
4th edition (2016-2018)	Bawinabadi Bagaram	Togolese	PhD student at the University of Washington, USA.
	Sidra Khan	Pakistani	PhD Student at University of Lisbon, Portugal.
5th edition (2017-2019)	Noélia Lopez	Spanish	PhD student at SLU - Swedish University of Agricultural Sciences in Sweden.
	Koffi Dodji Noumonvi	Togolese	Researcher at the Slovenian Forest Institute in Slovenia.

universities in Europe, North America and Oceania or in their home countries in Africa and Asia. Seven percent are working in international companies and the remaining graduates (33%) are working in private companies, as independent consultants or in government agencies in their home country. We present the case of ten alumni, who represent cases of successful stories (Table 2).

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