

Deliverable N° 2.4

Report on the mapping and characterisation of existing funding programmes and research capacities

Lead participant: Agricultural Research Council (CRA)

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Publishable abstract: The objective of the WP2 is the mapping and characterization of the existing forestry funding programmes and forestry research capacities of the countries participating in the FORESTERRA Consortium, which brought together 12 Mediterranean countries. The mapping survey was performed using two procedures: i) dedicated questionnaires addressed to funding bodies and scientific organizations and ii) ad-hoc poster session aimed at exchanging information and validating the preliminary results, attended by delegates from participating countries.

A Mediterranean forestry research framework database was generated from the information gathered from 81 questionnaires (i.e. 48 from scientific organizations, 13 from funding Bodies and 20 forestry programmes financed by funding Bodies). This database is an open one and it will be progressively updated during the course of the project.

To identify complementarities, overlaps, gaps, strengths and weaknesses in forest research a country matrix analysis was performed; the data from questionnaires were organized in order to select eleven indicators as follows: (i) staff involved in forestry scientific organizations; (ii) ISI papers published by forestry scientific organizations; (iii) top five most utilized forestry journals; (iv) top nine most prestigious journals (with highest IF); (v) overall forestry research budget; (vi) budget financed by funding Bodies for forestry projects; (vii) budget of forestry projects; (viii) number of forestry projects; (ix) inventory of infrastructures dedicated to forestry research; (x) budget of forestry project per topic area; (xi) most promising forestry research lines.

The analysis of funding information shows that the overall budgets provided to forest research, mostly in the three largest countries of the region, are mainly related to scientific organizations committed to broadly defined agricultural research as is the case with INRA (France), INIA (Spain) and CRA (Italy). No relationships were found between overall budget in forest research and number of forestry projects because the countries with more funds for forestry research do not necessarily have a greater number of projects as it is important to consider also the unit average budget per forestry research project.

The analysis of the information about research staff (permanent and non-permanent) showed that the countries with more staff employed in forestry research are: France, Turkey and Italy with 1234, 962 and 873 staff, respectively. Conversely, Morocco, Tunisia and Slovenia have lowest forestry research staff numbers, with 70, 110 and 140 respectively. The ratio of non-permanent / permanent was on the average 75%, with large variation among countries.

The analysis of the dissemination of scientific information showed that the ISI (e.g. Thomson Reuters Web of Knowledge platform) journals used by the FORESTERRA countries to publish forest subjects papers are quite large and diversified (as large as 63), with variable impact factors (IF). The top five most utilized journals where the FORESTERRA countries publish their

forestry scientific papers are: Forest Ecology & Management (IF: 2.744), European Journal of Forest Research (IF: 1.982), International Journal of Wildland Fire (IF: 2.231), New Phytologist (IF: 6.645) and Tree Physiology (IF: 2.88).

The top nine most prestigious journals (with highest IF) where the FORESTERRA countries published papers are: Nature (IF: 36.280), Science (IF: 31.201), Ecology Letters (IF: 17.557), Trends in Ecology & Evolution (IF: 15.748), Trends in Plant Science (IF: 11.047), The Plant Cell (IF: 10.224), PNAS (IF: 9.689), Trends in Biotechnology (IF: 9.487) and Frontiers in Ecology & Environment (IF: 9.113).

The analysis of research lines information showed that the forest topics of major concern, i.e. addressed by more than a half of the FORESTERRA countries, are: (i) effects of global and climate change (ecological and genetic adaptation); (ii) biomass production optimization/bioenergy; (iii) evaluation of forest ecosystem services. Conversely the forest research subjects addressed by fewer countries, are: (i) forest biotechnology; (ii) forest products chemistry; (iii) industrial forest plantation; (iv) land use change detection by remote sensing; (v) long-term disturbance regime; (vi) nursery and plantation techniques; (vii) salinity; (viii) seed dormancy and germination; (ix) social forestry; (x) structural wood modelling; (xi) sustainable use of forest products; (xii) tree breeding; (xiii) tropical ecology; (xiv) urban forestry; (xv) wildlife management and research.

The analysis of the infrastructures showed that the most common research facilities, i.e. owned by more than a half of the FORESTERRA countries: (i) genetic and biotechnology lab; (ii) eco-physiology lab; (iii) forest pathology lab; (iv) soil analysis lab; (v) experimental fields; (vi) experimental trials; (vii) meteorological stations. Conversely the less common facilities, i.e. owned by only one FORESTERRA country, are: (i) forest construction and transportation lab; (ii) landscape lab; (iii) ergonomics lab; (iv) arboretum; (v) botanical garden; (vi) technical drawing room.

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Overview

The Mediterranean forestry research framework includes many researchers and numerous institutions from more than 20 different countries of the region; however, it is highly fragmented while forestry research programmes, competencies and research capacities have often been locally managed. There is a huge diversity of stakeholders, in terms of ways of action, dimension, interaction with forestry, or forestry related skills. This fragmentation is an obstacle for developing a research strategy for a sustainable and competitive forestry sector. This was because Research, Development and Innovation (RDI) challenges and priorities in the Mediterranean Area are often defined in parallel (by regional or national entities). There are, however, several research funding networks in forestry and organizations identifying key research questions and setting up strategic research agendas. These include, for instance, networks (such as the ERANets), the Framework Programme (FP), LIFE+, COST, Technology Platforms; however common funding activities have often remained very small-scaled. In addition, synergies between the different ERANets and other research funding networks dealing with forestry topics have been limited, inhibiting the establishment of a coherent forestry RDI framework within the Mediterranean Research Area. The FORESTERRA-ERANet project should add a new piece in this puzzle promoting coordination and cooperation in Mediterranean forestry RDI.

One of the main objective of the WP2 is the mapping of forestry research activities, characterizing the ongoing funding research programmes and projects carried on in the different FORESTERRA partner countries in terms of funding sources, main topics and institutions involved.

The mapping exercise consisted of four steps: i) a mapping survey utilizing dedicated questionnaires for mapping funding programmes and research capacities; ii) a validation of the mapping survey through a dedicated Poster session and by returned feedbacks on the structure of the questionnaires; iii) the elaboration of country summary reports; and iv) a mapping procedure based on forestry research capacities, development and innovation, funding observations and country indicators.

Mapping Survey

The mapping survey was prepared using dedicated questionnaires which covers quantitative and qualitative information on Bodies that have a funding role for forestry projects and information about the research capacities on scientific forestry organizations of the FORESTERRA participating countries (Figure 1). The questionnaires were generated also by reviewing and amending similar initiatives carried out previously (e.g. ERANET-ARIMNET and JPI-FACCE).



Figure 1. Countries participating in the FORESTERRA Consortium

Guidelines and instructions have accompanied the questionnaires in order to make easier their compilation, and to facilitate the online submission. Therefore scopes, structure, definitions and recipients of the questionnaires were clarified into the guidelines.

The questionnaires were organized in order to obtain two types of information:

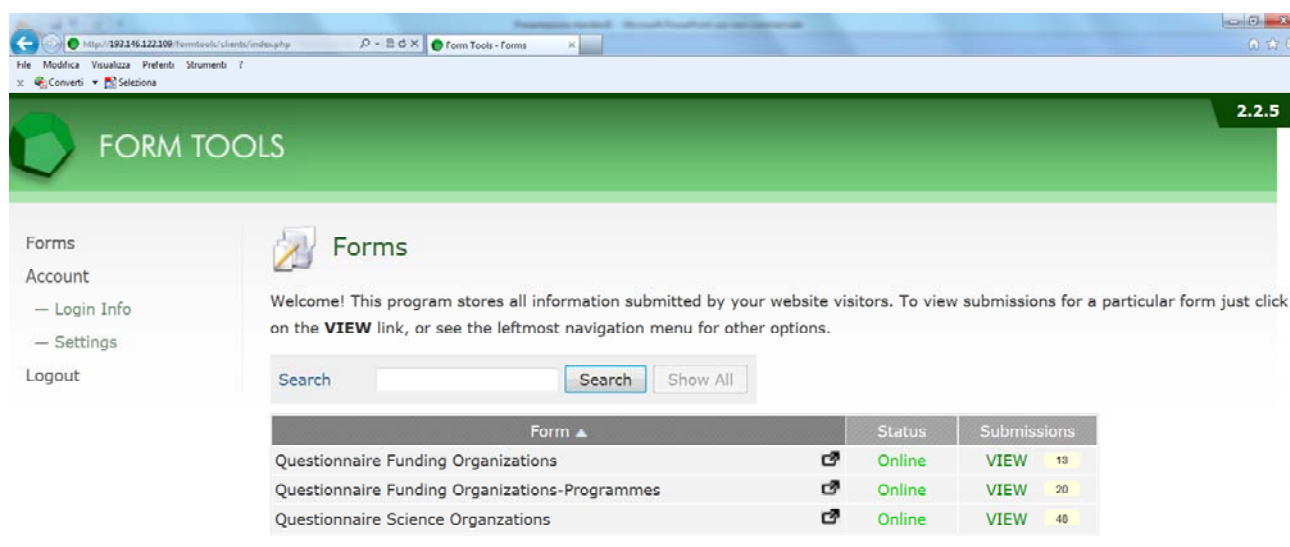
1. Funding information on organizations and public Bodies that finance forestry research projects. This questionnaire included details of funding released by public bodies, funding agencies and private industries/contractors in order to quantify research programmes and programme owners and managers (WP2, deliverable 2.1). No historical track of previous programmes in the country was requested because we focused only on the programmes of the last two years (i.e. 2010 – 2011). It is worth noting that the programmes had a different lifespan (i.e. different start and end dates). However for most surveys, the total budget (expressed as Million euros of the last two years) was estimated taking into account the duration of the programme;
2. Information on scientific research capacities of the forestry organizations. This questionnaire included details about an inventory of total budgets, competencies, infrastructures, scientific products, staff, research lines adopted and most promising research lines of the scientific organizations involved in forestry research of the Mediterranean area (WP2, deliverable 2.2).

After receiving the feedbacks about the structure of the proposed questionnaires from the countries participating to the FORESTERRA Consortium, the mapping survey was implemented online on the FORESTERRA website (<http://www.foresterra.eu>), with the technical help of the CIHEAM partner, and both link and passwords were disseminated to all partners and observers. Afterwards, the survey was sent by each FORESTERRA partner to most of the forestry organizations/institutions of his/her respective country.

Generating a Mediterranean Forestry Research Framework Database

A total of 81 questionnaires (48 from scientific organizations, 13 from funding Bodies and 20 forestry programmes financed by funding Bodies) were received from 10 countries (Figure 2). This was judged sufficient, since 12 countries currently fall into the categories of FORESTERRA Consortium.

In the case of those countries that did not provide information through the questionnaire, the data for the compilation of this report were collected by means of surveys with informed scientists and colleagues and by analyzing the documentation directly provided by the main research institutions of those countries. For some countries the survey coverage was incomplete (i.e. only a limited number of the existing funding information were represented); for instance, for almost all of the participant countries, many funding Bodies did not submit their contribution causing a mismatch between the budget information provided by the scientific organizations and those provided by the funding bodies (Figure 3).



The screenshot shows the 'FORM TOOLS' web application. The header is green with the text 'FORM TOOLS' and a version number '2.2.5' in the top right corner. On the left, there is a navigation menu with links: 'Forms', 'Account' (with sub-links 'Login Info' and 'Settings'), and 'Logout'. The main content area is titled 'Forms' and includes a welcome message: 'Welcome! This program stores all information submitted by your website visitors. To view submissions for a particular form just click on the **VIEW** link, or see the leftmost navigation menu for other options.' Below this is a search bar with a 'Search' button and a 'Show All' button. A table lists the forms and their submission counts:

Form	Status	Submissions
Questionnaire Funding Organizations	Online	VIEW 13
Questionnaire Funding Organizations-Programmes	Online	VIEW 20
Questionnaire Science Organizations	Online	VIEW 48

Figure 2. Total number of dedicated questionnaires submitted to the FORESTERRA database.

Questionnaires were analysed in order to illustrate and map the status of Mediterranean forestry research framework in each country. Where required, clarifications and further invitation to fill in the questionnaires were sought.

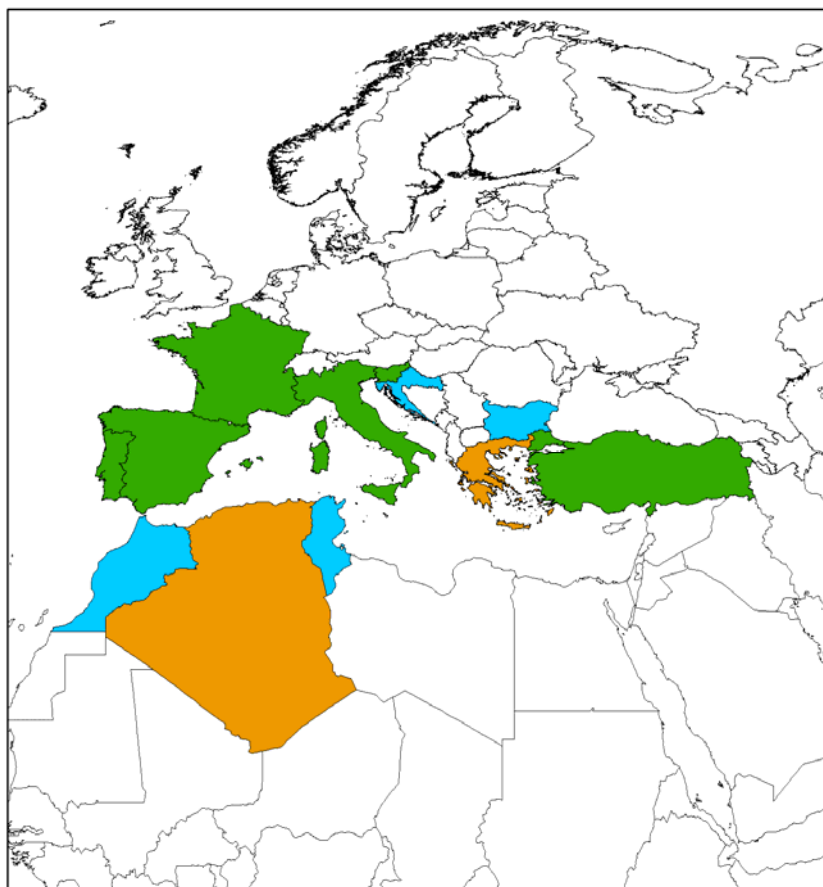


Figure 3. Overall picture of the countries that submitting questionnaires for FORESTERRA mapping. Green countries: complete survey coverage; Blue countries: partial survey coverage (i.e. there was a lacking of returned questionnaires dedicated to funding Bodies or vice versa). Orange countries: information collected directly through documentation from main scientific organizations.

After these steps, a “forestry research framework database” was generated. This helped to establish an improvement of the survey process identifying missing and incomplete information or editing details. In fact, many questionnaires have been received, but in some cases they had to be revised and completed in order to fill the gaps or to improve the consistency of the information provided by different institutions and countries. However, in order to make a first round of validation of the collected information, a dedicated Poster session (WP2, deliverable 2.3) was organized during the Steering Committee Meeting held in Rome in October 2012, where a preliminary analysis of the information provided on funding, projects and capacities were reported.

In this session, a series of posters were prepared, one for each FORESTERRA country, with the scope of discussing with the country representatives and asking them to validate the results and, where necessary, to complete the information listed on the relevant poster (see a summary of the results in Annexe 1). Most of the observations raised by FORESTERRA partners confirmed the need to obtain more funding information from public Bodies in order to better complement/integrate with those reported by scientific organization. Therefore their commitment after the Rome Meeting was to identify further funding Bodies and to invite them to compile the questionnaires and/or to renew the invitation to the funding Bodies previously contacted.

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Overall Summary Report

Funding

The overall budget declared by FORESTERRA countries identifies the yearly full budget dedicated to forest research in those countries, including contributions from State, public Agencies and private institutions as well as funds raised by competitive grants for research projects; reported budgets are annual means of the years 2010 and 2011. These figures include salaries for permanent staff, functioning expenses and actual costs for research projects, considering also the salaries of non-permanent staff (Figure 4). The total, full budget for the FORESTERRA countries amounts at 255.3 M€ per year. Highest overall budgets are spent by France (87.4 M€), Spain (54.1 M€) and Italy (50.8 M€) respectively, whereas lowest overall budgets are declared by Morocco (0.60 M€), Tunisia (0.80 M€) and Bulgaria (1.8 M€). It is worth highlighting that the very high overall budget observed for France, is mainly caused by the large contribution made by INRA, with its two departments (i.e. INRA-EFPA and INRA-EA) where most of the forest research is carried on; however, also two other research organizations were considered, as FCBA and IRSTEA and an academic institution as AgroParisTech. It should also be considered that only part of the research activities and research staff in France is dedicated to Mediterranean forestry while a large part of them is devoted to research issues linked to continental and oceanic forest environments. Overall budget raised by Spain to finance forest research is related mainly to three scientific organizations as INIA, CREAM and CTFC and to the UCLM University. Overall budget for Italy consist mainly of the budget declared by CRA, a scientific organization where agricultural sector prevails, in which his forestry department represent a *quota* of 16% of the overall budget. Other relevant research institutions in forestry are CNR, with two departments partly dedicated to forestry and environment, FEM, a regional research Institute and several Universities all over Italy.

However, it should be highlighted that the investments on forest research in the different Mediterranean countries, as reported in this FORESTERRA survey, are referring to the actual, overall costs of research activities using the official exchange rates of the different currencies used in extra-EU countries to the Euro, without adjusting the budget figures for the different costs of living. This obviously implies that we are underestimating the role of forest research in many extra-EU countries.

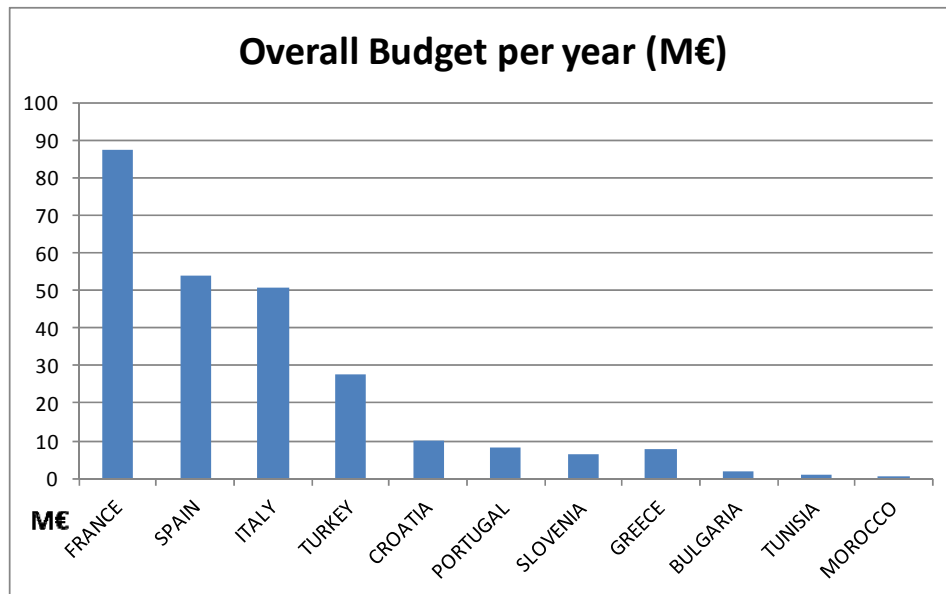


Figure 4. Mean yearly full budget declared by forestry scientific organizations.

A similar rank was observed for the budget dedicated to forestry projects, with the highest budget related to France (21.2 M€), Spain (17.0 M€) and Italy (16.4 M€) whereas the lowest budget are observed for Tunisia (0.2 M€), Bulgaria (0.7 M€) and Portugal (2.2 M€) (Figure 5). The total budget allocated in forestry projects was 69.0 M€.

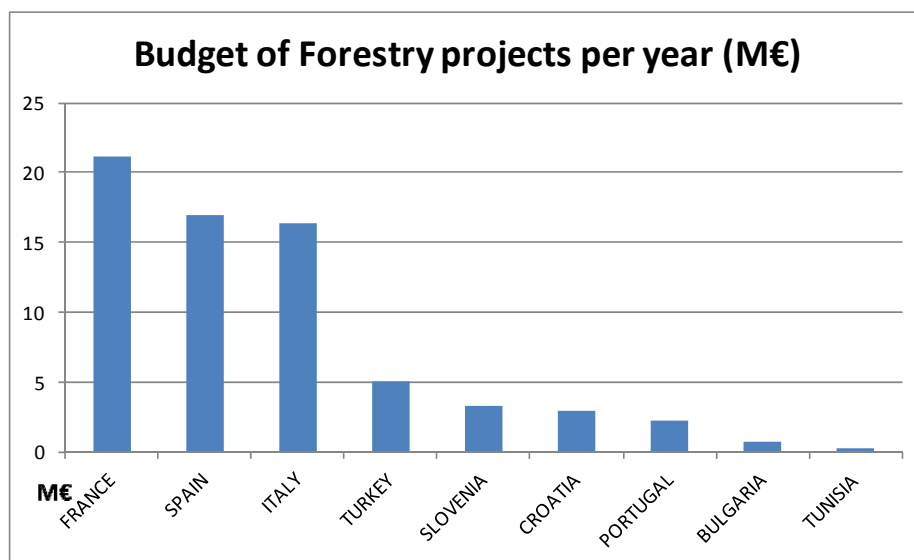


Figure 5. Mean yearly budget dedicated to forestry projects. No data available for Greece and Morocco.

Total number of forestry projects per year is 484 in all the FORESTERRA countries, with Turkey (128), Spain (111) and Italy (87) showing the highest number of forestry research projects. However, no clear relation existed between the overall budget dedicated to forest research in the different countries and the total number of forestry projects per country (Figure 6). This is because the mean financial size of forest research projects is quite variable from country to country.

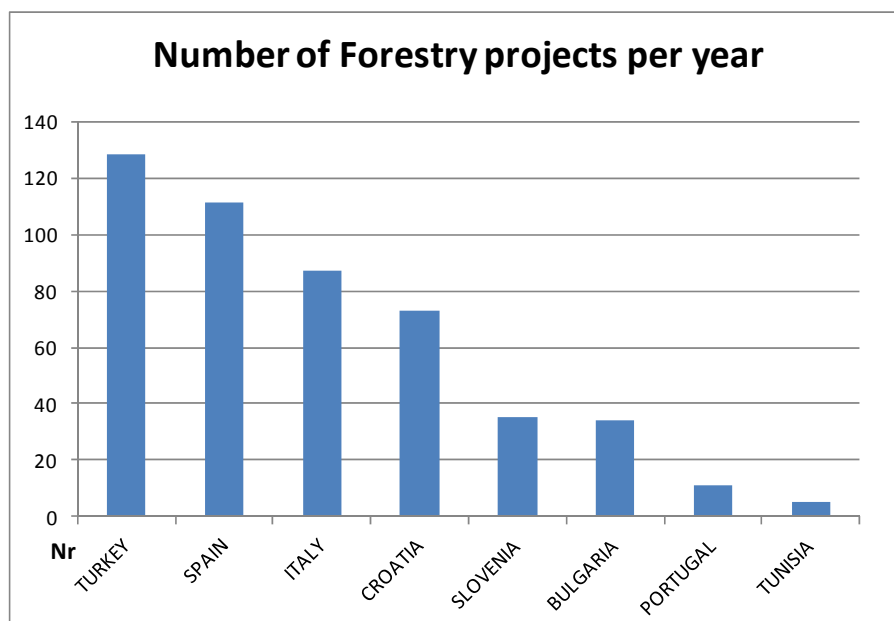


Figure 6. Mean yearly number of the funded forestry projects. No data available for France, Greece and Morocco.

The mean budget per forestry project in FORESTERRA countries was 0.10 M€. Portugal (0.20 M€), showed highest budget/forestry project ratio compared to others FORESTERRA countries, followed by Italy (0.19 M€) and Spain (0.15 M€) (Figure 7).

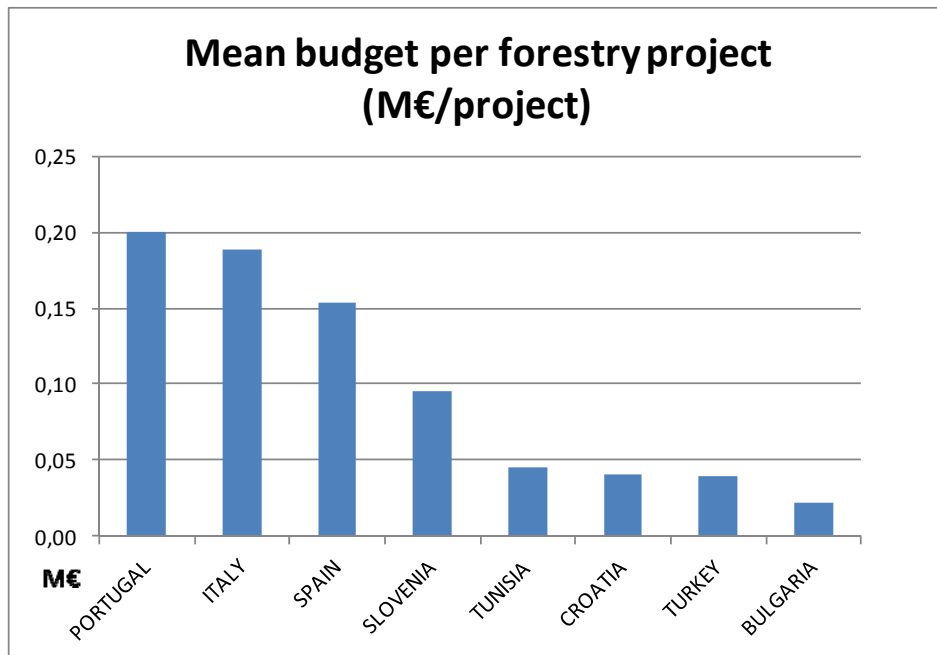


Figure 7. Mean budget per forestry project. No data available for France, Greece and Morocco.

Staff

The staff rank (Figure 8) illustrates the FORESTERRA countries with more staff employed in forestry research. The first three ranked countries are France, Turkey and Italy with 1234, 962 and 873 staff devoted to the forestry research respectively. Conversely, Morocco, Tunisia and Slovenia are the last three ranked countries in forestry staff, with 70, 110 and 130 respectively. The ratio of non-permanent/permanent resulted to be the 75%.

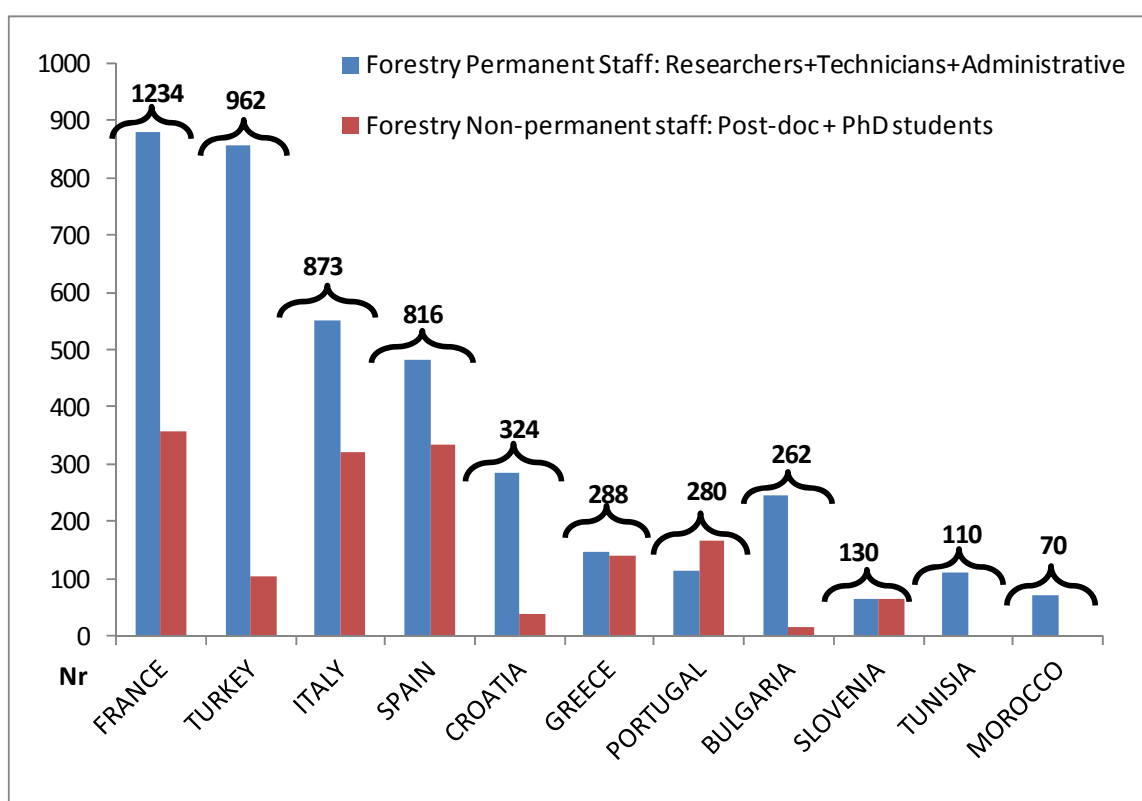


Figure 8. Total staff employed in forestry scientific organizations. For Tunisia and Morocco data on non-permanent staff are lacking.

Dissemination

Figure 9 shows the country's ranking for ISI papers (e.g. Thomson Reuters Web of Knowledge platform) published yearly on forest subject journals by FORESTERRA countries. There was a strong difference between the country ranked in top positions with respect to the other ones. In fact, France, ranked 1st, has produced 261 ISI papers, e.g. the 24.2% of the papers published by

FORESTERRA countries. Similar figures were observed for Italy and Spain with 226 and 221 ISI papers published per year, respectively.

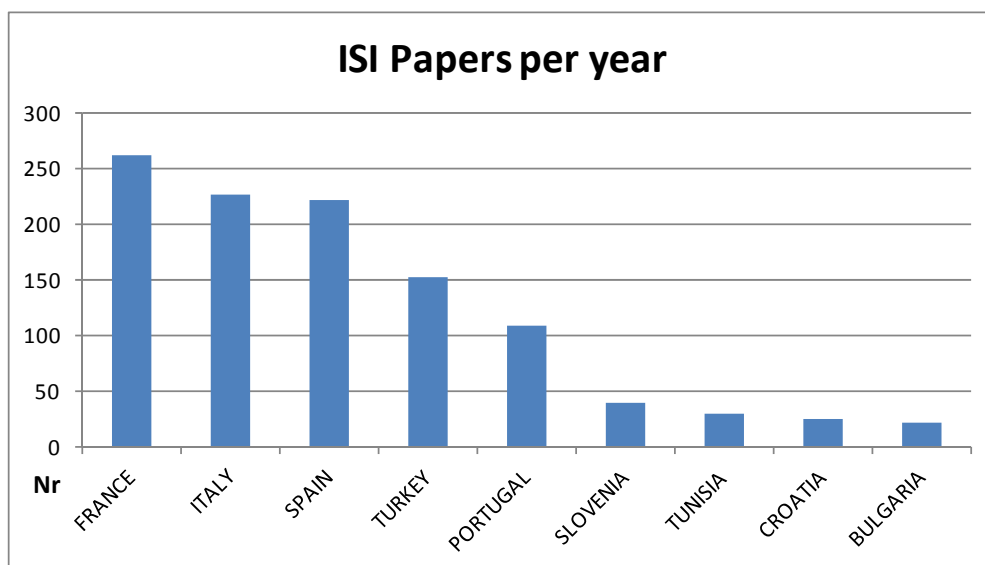


Figure 9. Mean yearly number of ISI papers published on forest subject by the FORESTERRA countries. No data available for Greece and Morocco.

Country ranking analysis

The analysis of funding information shows that the **overall budgets** provided to forest research, mostly in the first three ranking countries, are mainly related to scientific organizations committed to broadly defined agricultural research as is the case with INRA (France), INIA (Spain) and CRA (Italy). However, whereas in France (1st ranking) three more organizations cover the whole budget dedicated to forest research, in Spain and Italy (2nd and 3rd ranking respectively) there are many other large research organizations dealing with forest subjects as Universities (UCLM and IUFGS in Spain; UNIFI and UNITUS in Italy), national institutions (CNR in Italy), and regional organizations (CREAF and CFTC in Spain, FEM in Italy). Therefore, ranking for overall budget is not directly related with consolidating or fragmenting the research structures.

However, countries ranking for overall budget are well related to ranking for **total number of researchers** employed in forest research organizations and also, but at a lesser degree, with **total permanent staff** involved. However, it is also important to consider that many countries with a

lower ranking for the overall budget dedicated to forest research may have also a relatively high number of permanent staff in research because of the lower level of their salaries and stipends.

Moreover, no relationships were found between overall budget in forest research and number of forestry projects because Turkey and Italy ranked 1st and 3rd respectively for **forestry projects number**. This would mean that countries with more funds for forestry research do not necessarily have a greater number of projects as it is important to consider also the **unit average budget per forestry research project**. For example, Turkey is ranked 1st for **forestry projects number** because of its many research projects with low individual budgets.

France and Italy are ranked 1st and 3rd respectively for **total permanent forestry research staff** and 1st and 2nd for **dissemination in ISI forest subject** according to their overall and forestry ranks. Note that Portugal, ranked 1st in term of the budget per project, highlighting a very high budget dedicated to each single project despite of its lower overall budget ranking.

	1 st ranked	2 nd ranked	3 rd ranked
Overall budget	FRANCE	SPAIN	ITALY
Budget of forestry projects	FRANCE	SPAIN	ITALY
Forestry project number	TURKEY	SPAIN	ITALY
Budget per forestry project	PORTUGAL	ITALY	SPAIN
Staff dedicated to forestry	FRANCE	TURKEY	ITALY
Dissemination in ISI journals	FRANCE	ITALY	SPAIN

Table 1. Highest ranking of the countries participating to the FORESTERRA Consortium.

Country Summary Statistics

The last step before the mapping procedure based on forestry research capacities, and funding programmes, consisted on the preparation of a country summary report (see the country summary results in Annexe 2). To prepare it, a set of information and indicators were identified after FORESTERRA countries feedbacks resulting from the poster session in Rome. These information and indicators are:

1. Staff involved in forestry scientific organizations;
2. ISI papers published by forestry organizations in the last five years;

3. Top five most utilized forestry journals;
4. Top nine most prestigious journals (with highest IF);
5. Overall forestry budget declared by scientific organizations in the last two years;
6. Budget financed by funding Bodies for forestry projects in the last two years;
7. Budget dedicated to forestry projects in the last two years by forestry scientific organizations;
8. Total number of forestry projects funded in the last two years;
9. Inventory of infrastructures dedicated to forestry research;
10. Budget of forestry project per topic area;
11. Most promising research lines.

Mapping results: complementarities, overlaps and gaps

The main aim of the mapping exercise was identifying complementarities, overlaps, gaps, strengths and weaknesses in forest research for providing strategic guidance to the project for future cooperation and forest research coordination activities.

The work package results allowed to identify the relevant information on existing FORESTERRA countries research institutions, structures and infrastructures (in terms of facilities, capacities, competencies, and constraints), and ongoing research programmes. Such activity will also allow to define the knowledge gaps and research needs common to the different FORESTERRA countries involved, as well as the barriers, duplications, strengths and weaknesses of existing research activities and capacities, all of which information constitutes the basis for WP3. Furthermore the information exchange for capacity building and innovation will allow to address the gaps in strategic research capacities and scientific updating between the FORESTERRA countries as basis for a coordinated and integrated process that will lead to the launching of joint activities and transnational research (see WP4 and WP5).

Dissemination

The questionnaires results about dissemination showed that the ISI (e.g. Thomson Reuters Web of Knowledge platform) journals used by the FORESTERRA countries to publish forest subjects papers are 63 with variable impact factor (IF) (see Figure 9).

The top five most utilized journals where the FORESTERRA countries publish their forestry scientific papers are (Figure 10): Forest Ecology & Management (IF: 2.744), European Journal of Forest Research (IF: 1.982), International Journal of Wildland Fire (IF: 2.231), New Phytologist (IF: 6.645) and Tree Physiology (IF: 2.88).

The top nine most prestigious journals (with highest IF) where the FORESTERRA countries published papers are (Figure 11): Nature (IF: 36.280), Science (IF: 31.201), Ecology Letters (IF: 17.557), Trends in Ecology & Evolution (IF: 15.748), Trends in Plant Science (IF: 11.047), The Plant Cell (IF: 10.224), PNAS (IF: 9.689), Trends in Biotechnology (IF: 9.487) and Frontiers in Ecology & Environment (IF: 9.113).

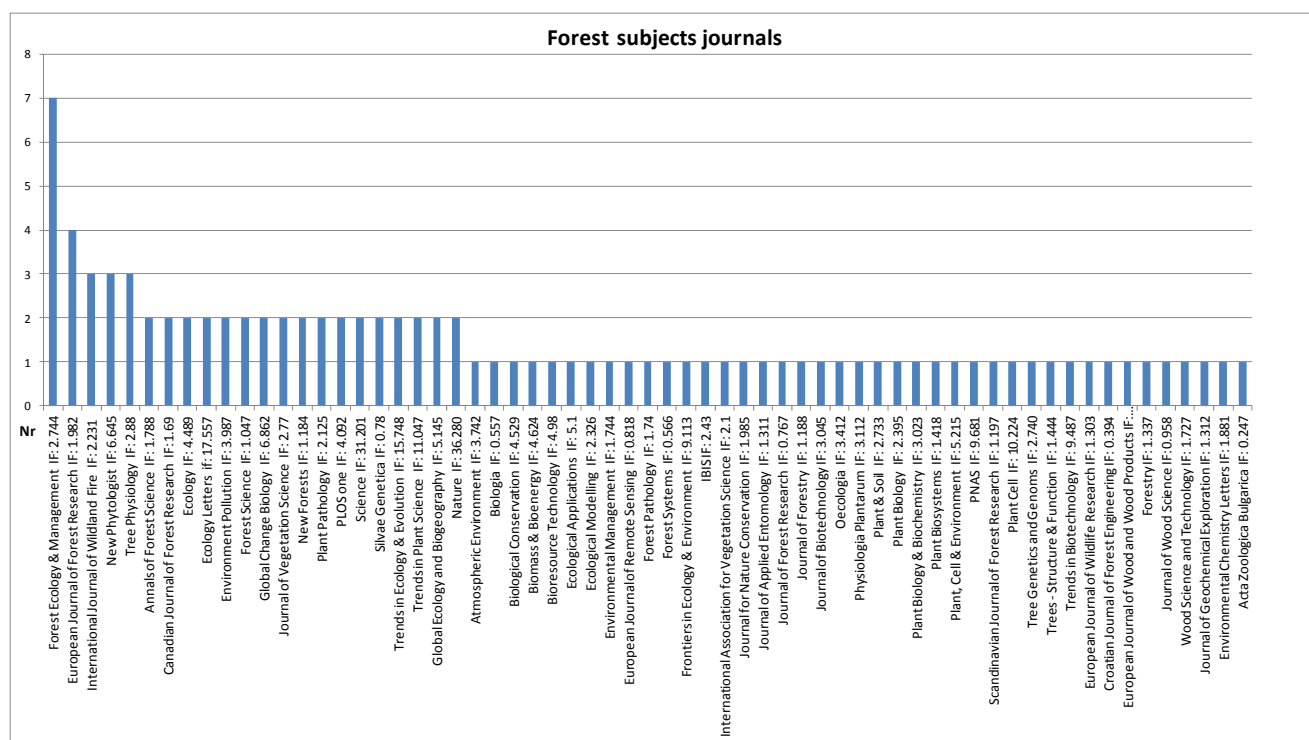


Figure 9. Frequency graph of the ISI journals used by the FORESTERRA countries.

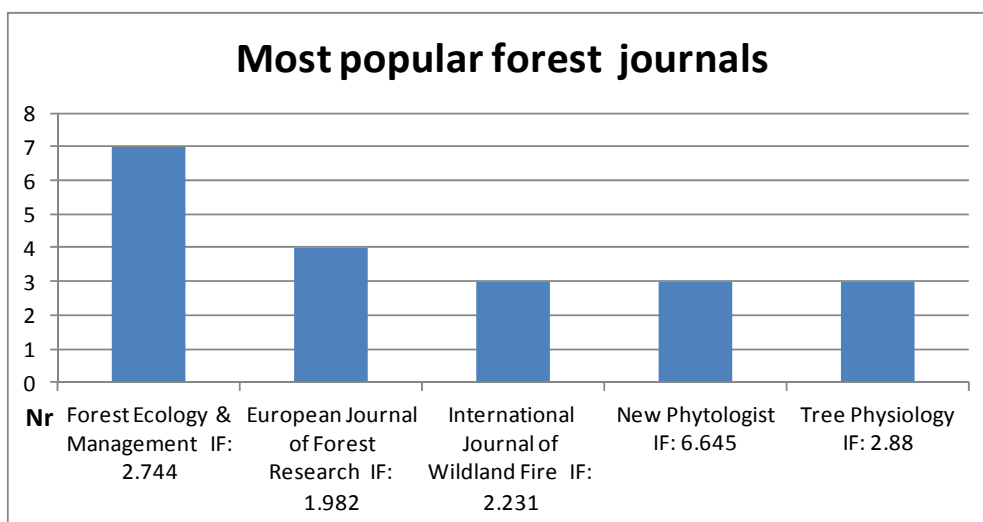


Figure 10. Frequency graph of the top five most popular ISI journals used by the FORESTERRA countries.

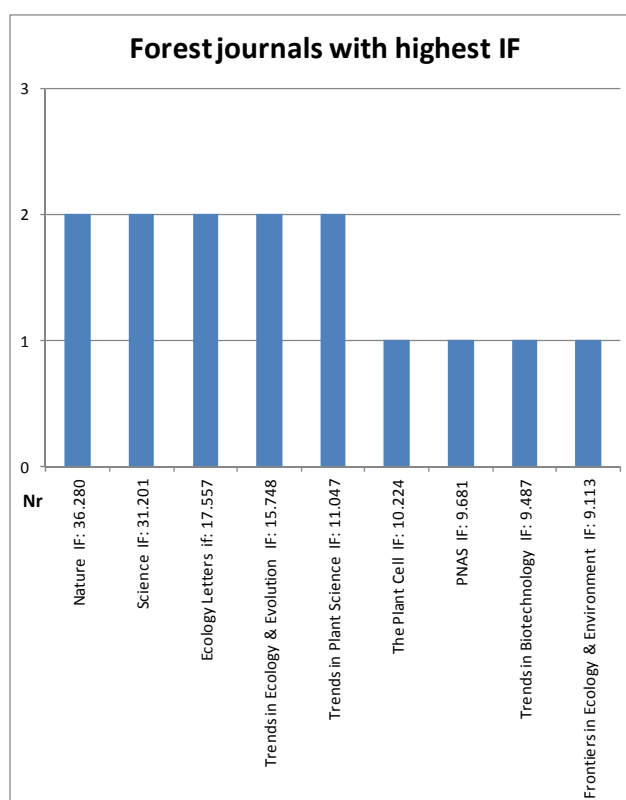


Figure 11. Frequency graph of the top nine most prestigious IF journals (with highest IF) used by the FORESTERRA countries.

Research lines

The questionnaires results about the research lines developed by the scientific organizations of the FORESTERRA countries showed that the forest topics of major concern, i.e. addressed by more than a half of the FORESTERRA countries, are (see Figure 12):

- Effects of global and climate change (ecological and genetic adaptation)
- Biomass production optimization/bioenergy
- Evaluation of forest ecosystem services

While the forest research subjects addressed by fewer countries, are (see Figure 12):

- Forest Biotechnology
- Forest products chemistry
- Industrial forest plantation
- Land use change detection by remote sensing
- Long-term disturbance regime
- Nursery and plantation techniques
- Salinity
- Seed dormancy and germination
- Social forestry
- Structural wood modelling
- Sustainable use of forest products
- Tree breeding
- Tropical ecology
- Urban Forestry
- Wildlife management and research

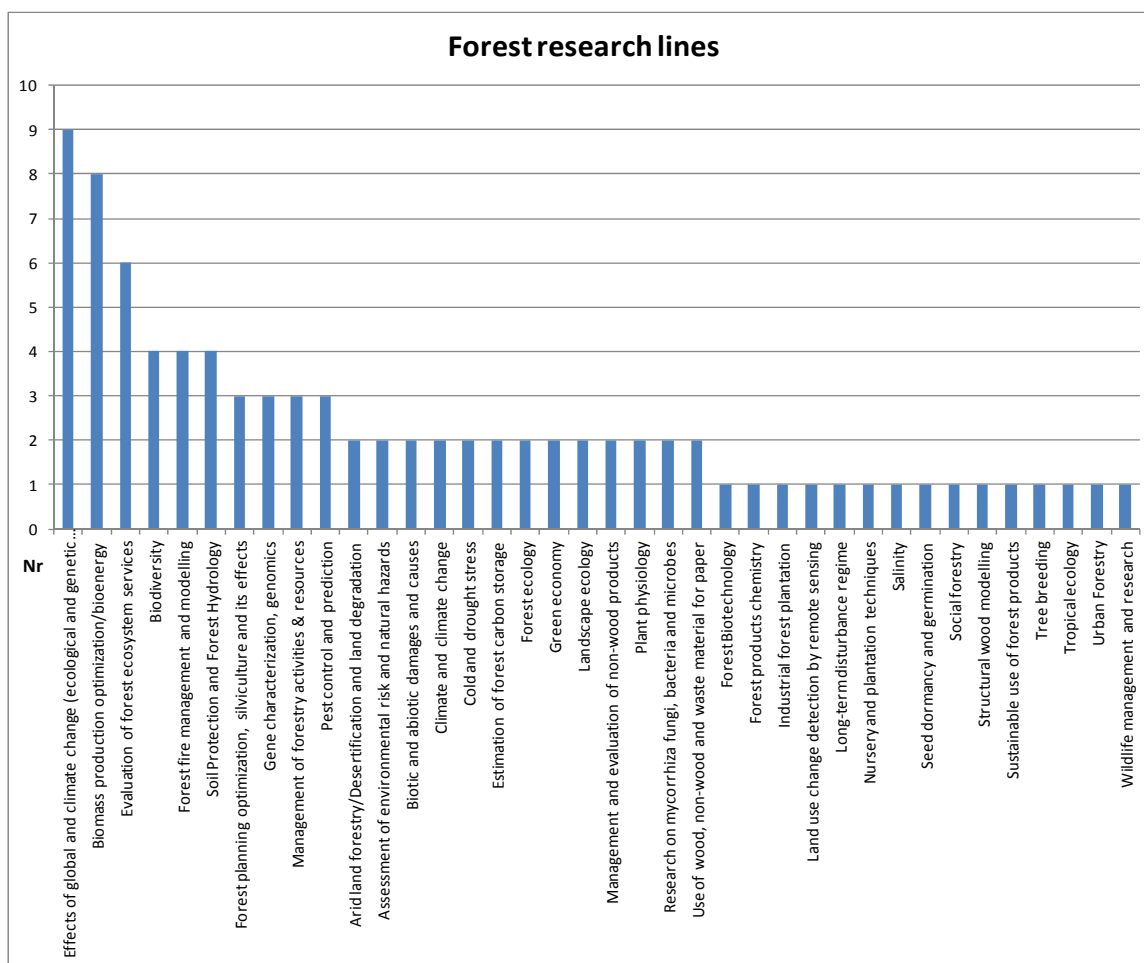


Figure 12. Frequency graph of the research lines faced by the scientific organizations of the FORESTERRA countries.

Infrastructures

The questionnaires results about the infrastructures belonging to the scientific organizations of the FORESTERRA countries showed that the most common research facilities, i.e. owned by more than a half of the FORESTERRA countries, are (see Figure 13):

- Genetic and Biotechnology lab
- Eco-Physiology lab
- Forest Pathology lab
- Soil analysis lab

- Experimental fields
- Experimental trials
- Meteorological stations

While the less common facilities, i.e. owned by only one FORESTERRA country, are (see Figure 13):

- Forest Construction and Transportation lab
- Landscape lab
- Ergonomics lab
- Arboretum
- Botanical garden
- Technical Drawing room

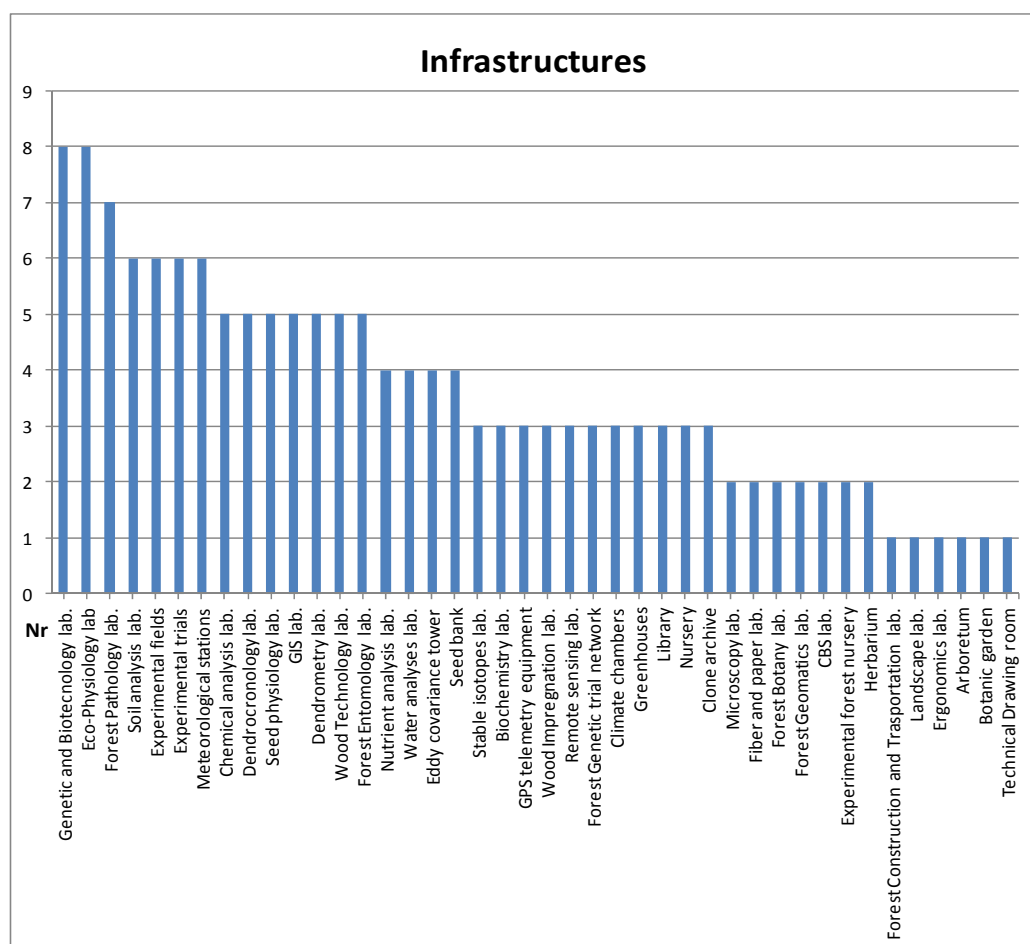


Figure 13. Frequency graph of the infrastructures belonging to the scientific organizations of the FORESTERRA countries.

ANNEXES

Annexe 1. Table with main results of the mapping of forest research in Mediterranean countries.

	FRANCE	SPAIN	ITALY	TURKEY	CROATIA	PORTUGAL	SLOVENIA	GREECE	BULGARIA	TUNISIA	MOROCCO	TOT
Overall Budget per year (M€)	87.4	54.1	50.8	27.7	10.1	8.0	6.6	7.6	1.8	0.8	0.6	255.3
	TURKEY	ITALY	SPAIN	FRANCE	PORTUGAL	CROATIA	SLOVENIA	GREECE	BULGARIA	MOROCCO	TUNISIA	TOT
Forestry Scientific Structures (Nr)	17	10	9	4	4	3	3	3	2	2	1	58
	FRANCE	TURKEY	ITALY	SPAIN	CROATIA	BULGARIA	GREECE	PORTUGAL	TUNISIA	MOROCCO	SLOVENIA	TOT
Forestry Permanent Staff (Res.+Tech.+Adm.)	878	858	551	481	286	245	148	114	110	70	64	3805
	FRANCE	SPAIN	ITALY	PORTUGAL	GREECE	TURKEY	SLOVENIA	CROATIA	BULGARIA	MOROCCO	TUNISIA	TOT
Forestry Non-permanent staff (Post-doc+PhD students)	356	335	322	166	140	104	66	38	17	na	na	1544
	PORTUGAL	SLOVENIA	GREECE	SPAIN	FRANCE	ITALY	CROATIA	TURKEY	BULGARIA	MOROCCO	TUNISIA	AVERAGE
Non-permanent/Permanent %	188%	100%	99%	73%	71%	65%	33%	32%	13%	na	na	75%
	FRANCE	ITALY	SPAIN	TURKEY	PORTUGAL	GREECE	CROATIA	BULGARIA	SLOVENIA	MOROCCO	TUNISIA	TOT
Total Researchers (permanent + non-permanent)	777	652	566	548	217	204	192	145	100	70	42	3513
	FRANCE	ITALY	SPAIN	TURKEY	PORTUGAL	SLOVENIA	TUNISIA	CROATIA	BULGARIA	GREECE	MOROCCO	TOT
ISI Papers per year	261	226	221	151	108	38	29	24	21	na	na	1079
	TURKEY	SPAIN	ITALY	CROATIA	SLOVENIA	BULGARIA	PORTUGAL	TUNISIA	FRANCE	GREECE	MOROCCO	TOT
Number of Forestry projects per year	128	111	87	73	35	34	11	5	na	na	na	484
	FRANCE	SPAIN	ITALY	TURKEY	SLOVENIA	CROATIA	PORTUGAL	BULGARIA	TUNISIA	GREECE	MOROCCO	TOT
Budget of Forestry projects per year (M€)	21.2	17.0	16.4	5.1	3.3	3.0	2.2	0.7	0.2	na	na	69.0
	PORTUGAL	ITALY	SPAIN	SLOVENIA	TUNISIA	CROATIA	TURKEY	BULGARIA	FRANCE	GREECE	MOROCCO	AVERAGE
Mean budget per forestry project (M€/project)	0.20	0.19	0.15	0.09	0.05	0.04	0.04	0.02	na	na	na	0.10

na: not available

BULGARIA

Scientific Organizations: research capacities

- **Total staff (Permanent + Non-permanent):** 262
- **Total number of ISI papers per year:** 21

Journal with highest IF: *Environmental Chemistry Letters* (IF 2011: 1.88)

- **Most promising research lines:**

-Survey of the diversity of forest flora and fauna species, formed (genetic), population and ecosystem level
-Structure and functioning, development and adaptation of forest ecosystems to climate change (hydrology, regeneration processes, succession and management solutions)
-Healthy forest assessment and monitoring, protection and restoration
-Forest fires
-Multifunctional forestry method and environmental management of timber and non-timber forest resources and their socio-economic importance

Funding: existing programmes

- **Overall yearly budget:** 1.8 M€
 - **Budget dedicated to Forestry projects:**
- Budget of forestry project per year: 0.7 M€
-Budget declared by EFA (2010-2011): 19.67 M€
- **Number of Forestry projects per year:** 34
 - **Budget per project:** 0.02 M€/project
 - **Budget of Forestry project per subject area:**

-Silviculture: 20%
-Ecology: 20%
-Forest Planning: 20%
-Natural Hazard: 20%
-Climate Change: 20%

CROATIA

Scientific Organizations: research capacities

- **Total Researcher staff (Permanent + Non-permanent):** 324
- **Total number of ISI papers per year:** 24

Journal with highest IF: *Global Ecology and Biogeography* (IF 2011: 5.14)

- **Most promising research lines:**

-Pest control and prediction
-Genetic adaptation to climate change
-Ecological adaptation to climate change
-Biomass production
-Recovery of degraded forest soils
-Wood technology aspects relevant to future trends development

Funding: existing programmes

- **Overall yearly budget:** 10.1 M€
- **Budget dedicated to Forestry projects:**

-Budget of forestry projects per year : 3.0 M€
-Budget declared by funding Bodies (2010-2011): *no data available*

- **Number of Forestry projects per year:** 73
- **Budget per project:** 0.04 M€/project
- **Budget of Forestry project per subject area:**

-Silviculture: 48%
-Ecophysiology: 10%
-Forest Genetics: 10%
-Natural Hazard: 6%
-Forest Policy: 7.5%
-Forest Health: 10%
-Others: 2.5%

FRANCE

Scientific Organizations: research capacities

- **Total staff (Permanent + Non-permanent):** 1234
- **Total number of ISI papers per year:** 261

Journal with highest IF: *Nature* (IF 2011: 36.280)

- **Most promising research lines:**

-Forest ecosystem services
-Assessment of environmental risk
-Ecological adaptation to climate change
-Genetic adaptation to climate change
-Closing of N and P cycle and carbon storage
-Management of lands and wildlands
-Metagenomics of microbial ecosystems
-Animal and plant genomic selection
-Biodiversity

Funding: existing programmes

- **Overall yearly budget:** 87.4 M€
 - **Budget dedicated to Forestry projects:**
- Budget of forestry project per year: 21.2 M€
-Budget declared by MAAF + FRB (2010-2011): 16.58 M€
- **Number of Forestry projects per year:** *not available*
 - **Budget per project:** *not available*
 - **Budget of Forestry project per subject area:**

-Ecophysiology: 34%
-Forest Genetics: 35%
-Ecology: 3%
-Forest Planning: 3%
-Silviculture: 10%
-Wood Harvesting: 5%
-Natural Hazards: 5%
-Forest Protection: 5%

ITALY

Scientific Organizations: research capacities

- **Total staff (Permanent + Non-permanent):** 873
- **Total number of ISI papers per year:** 226

Journal with highest IF: *Nature* (IF 2011: 36.280)

- **Most promising research lines:**

- Sustainable management of forestry and agro-forestry systems
- Plant protection against biological invasions
- Biomass productions and bioenergy
- Desertification and land degradation in arid zone of Italy
- Biodiversity as conserving ecosystems
- Climate change mitigation
- Ecological adaptation to global and climate change
- Forest inventory
- Wood technology for safe and energy saving buildings
- Environmental services evaluation
- Landscape Ecology
- Urban Forestry
- Soil protection and Forest Hydrology
- Forest Biotechnology

Funding: existing programmes

- **Overall yearly budget:** 50.8 M€
 - **Budget dedicated to Forestry projects:**
- Budget of forestry project per year: 16.4 M€
 - Budget declared by MIPAAF + REG (2010-2011): 3.4 M€
 - **Number of Forestry projects per year:** 87
 - **Budget per project:** 0.19 M€/project
 - **Budget of Forestry project per subject area:**

- Silviculture: 14.7%
- Forest Planning & Inventory: 11.7%
- Ecology: 14.5%
- Forest Hydrology: 0.7%
- Biomass for bioenergy production: 4.7%
- Remote Sensing: 2.3%
- Plant Protection: 13.3%
- Forest Genetics: 3.3%
- Ecophysiology: 5.7%
- Climate Change & Carbon foot print: 20.0%
- Agronomy: 3.3%
- Proteomics: 1.3%
- Biodiversity: 2.7%
- Soil: 1.8%

MOROCCO

Scientific Organizations: research capacities

- **Total staff (Permanent):** 70
- **Total number of ISI papers per year:** *no data available*

Journal with highest IF: *no data available*

- **Most promising research lines:**

-Biodiversity and Forest Genetics: conservation and improvement of the Phylogenetic resources

-Ecology: relationship between Biodiversity and Climate Change

-Forest Health: developing Indicators for Desertification and erosion monitoring models

-Valorization of the forestry products (wood and non wood)

-Silviculture: afforestation plans, adaptation to water stress and evaluation of the potential of forests for carbon sequestration

Funding: existing programmes

- **Overall yearly budget:** 0.6 M€
- **Budget dedicated to Forestry projects:**

-Budget of forestry project per year: *no data available*

-Budget declared by CRF (2010-2011): 0.40 M€

- **Number of Forestry projects funded (2010-2011):** *no data available*
- **Budget per project:** *no data available*
- **Budget of Forestry project per subject area:**

-Forest protection: 20%

-Silviculture: 20%

-Ecology, Biodiversity and Soil conservation: 40%

-Valorization of forest products (wood and non-wood): 10%

-Forest Genetics: 10%

PORTUGAL

Scientific Organizations: research capacities

- **Total staff (Permanent + Non-permanent):** 280
- **Total number of ISI papers per year:** 108

Journal with highest IF: *Ecology Letters* (IF 2011: 17.557)

- **Most promising research lines:**

- Sustainable forest management under global change
- Protection against nematodes of Pine forests
- Biomass production for energy purposes and Bioeconomy
- Sustainable use of forest products
- Tropical ecology
- Post-fire restoration
- Evaluation of forest ecosystem services
- Climate
- Use of mycorrhiza fungi and bacteria
- Genomics
- Systemic acquired resistance in forest species
- Phytochemicals against pine pests

Funding: existing programmes

- **Overall yearly budget:** 8.0 M€
- **Budget dedicated to Forestry projects:**

- Budget of forestry project per year: 2.2 M€
- Budget declared by FCT (2010-2011): 4.0 M€

- **Number of Forestry projects per year:** 11
- **Budget per project:** 0.20 M€
- **Budget of Forestry project per subject area:**

- Ecology: 24.7%
- Food Science: 19%
- Forest fire: 19.2%
- Forestry: 17.4%
- Natural Resources Chemistry: 0.6%
- Plant & Animal Sciences: 4.9%
- Biodiversity: 14.4%

SLOVENIA

Scientific Organizations: research capacities

- **Total staff (Permanent + Non-permanent):** 130
- Total number of ISI papers per year:** 38
- Journal with highest IF:** *New Phytologist* (IF 2011: 6.645)
- **Most promising research lines:**
 - Biomass production
 - Ecological adaptation to climate change
 - Ecophysiology
 - Large predators habitat research
 - Wildlife management
 - Effect of Silviculture on wood quality
 - Forest planning optimization
 - Long-term disturbance regime
 - Influence of drought on the forest ecosystem
 - Protection forest silviculture
 - Ecosystem services surveys

Funding: existing programmes

- **Overall yearly budget:** 6.6 M€
- **Budget dedicated to Forestry projects:**
 - Budget of forestry project per year: 3.3 M€
 - Budget declared by MAE (2010-2011): 1.32 M€
 - **Number of Forestry projects per year:** 35
 - **Budget per project:** 0.09 M€
 - **Budget of Forestry project per subject area:**
 - Silviculture: 25%
 - Forest Planning: 10%
 - Forest Operations: 10%
 - Forest Inventory: 5%
 - Ecology & Biomonitoring: 35%
 - Populations Management: 10%
 - Others: 5%

SPAIN

Scientific Organizations: research capacities

- **Total staff (Permanent + Non-permanent):** 816
- **Total number of ISI papers per year:** 221

Journal with highest IF: *Science* (IF 2011: 31.201)

- **Most promising research lines:**

- Adaptation and evolution of forest species and systems in view of the global change
- Carbon and nutrient stocks and fluxes at large regional scales
- Patterns and processes of forest decline and regeneration
- Enhancing the role of forest sector and governance in promoting a Green Economy
- Full evaluation and marketing on non-wood forest goods and services
- Forest ecosystem dynamics and processes (subtropics: uneven-aged, mixed and naturally regenerated stands)
- Integrating research and development on forest fires
- Short Rotation Forestry for biomass in the Mediterranean area
- Biodiversity and Forest genetics
- Multifunctional forest management
- Forest logistics and operations
- New ligno-cellulosic products and bioproducts
- Structural wood modeling

Funding: existing programmes

- **Overall yearly budget:** 54.1 M€
 - **Budget dedicated to Forestry projects:**
- Budget of forestry project per year: 17.0 M€
 - Budget declared by MINECO (2010-2011): 2.9 M€
 - **Number of Forestry projects per year:** 111
 - **Budget per project:** 0.15 M€
 - **Budget of Forestry project per subject area:**

- Silviculture: 5.7%
- Forest Pathology: 4.1%
- Forest Planning: 9.2%
- Ecology: 7.2%
- Forest Hydrology: 2%
- Wood Technology: 10.2%
- Non-wood forest products: 8.2%
- Forest Policy: 5.6%
- Forest Genetics & Biotechnology: 37.6%
- Ecophysiology: 3.1%
- Climate Change & Carbon foot print: 1.0%
- AgroForestry: 1.9%
- Wood products: 4.1%
- Remote sensing: 2.3%

TUNISIA

Scientific Organizations: research capacities

- **Total staff (Permanent):** 110
- **Total number of ISI papers per year:** 29

Journal with highest IF: *Forest Science* (IF 2011): 1.047

- **Most promising research lines:**

-Ecological adaptation to climate change
-Genetic adaptation to climate change
-Biomass production optimization
-Forestry services

Funding: existing programmes

- **Overall yearly budget:** 0.80 M€
- **Budget dedicated to Forestry projects:**

-Budget of forestry project per year: 0.20 M€
-Budget declared by Funding Bodies (2010-2011): *no data available*

- **Number of Forestry projects per year:** 5
- **Budget per project:** 0.05 M€
- **Budget of Forestry project per subject area:**

-Silviculture: 50%
-Forest Ecology and Forest Grazing improvement: 50%

TURKEY

Scientific Organizations: research capacities

- **Total staff (Permanent + Non-Permanent):** 962
- **Total number of ISI papers per year:** 151

Journal with highest IF: *Ecology* (IF 2011: 4.489)

- **Most promising research lines:**

- Effects of global change
- Biotic and abiotic damages and causes
- Management of non-wood products
- Estimation of forest carbon storage
- Gene characterization of endemic species
- Management of forestry activities and resources
- Arid land forestry
- Biomass production for energy purposes
- Industrial forest plantation
- Tree breeding
- Cold and drought stress
- Evaluation of forest ecosystem services
- Biodiversity inventory
- Land use change detection by remote sensing
- Mapping of the site units
- Seed dormancy and germination
- Forest Ecology
- Forest fire management
- Afforestation
- Use of wood, non-wood and waste material for paper
- Plant Physiology
- Green Economy
- Erosion Control
- Nursery and plantation techniques
- Salinity
- Social Forestry
- Forest and fire management modeling
- Forest products chemistry
- Landscape Ecology

Funding: existing programmes

- **Overall yearly budget:** 27.7 M€
 - **Budget dedicated to Forestry projects:**
- Budget of forestry project per year: 5.1 M€
- Budget declared by OGM+SDU+IU+CNUOF+TUBITAK (2010-2011): 20.202 M€
- **Number of Forestry projects per year:** 128
 - **Budget per project:** 0.04 M€

- **Budget of Forestry project per subject area:**

- Silviculture: 13%
- Forest Planning: 9.5%
- Seed and Tree Breeding: 15.4%
- Forest Protection: 11.5%
- Soil and Ecology: 16.9%
- Social Forestry: 7%
- Yield and Economics: 6.6%
- Biotechnology: 3.9%
- Wood Technology: 8.3%
- Forest Hydrology: 0.8%
- Non-wood forest products: 7.1%