

Mapping the distribution of forest ownership in Europe

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Preface

The European Forest Institute jointly with University of Molise has implemented a scoping study on the spatial distribution of forest ownership in Europe. Knowledge on this topic is of high relevance for the forestry sector but also related sectors and supplements other ongoing activities related to forest ownership. The main aim of the study is to contribute to a better knowledge of forest ownership distribution in the 47 European countries through a thorough data collection, analysis and visual presentation.

Public forests, but increasingly also forests in private ownership, play a key role in sustaining forest ecosystems, ensuring biodiversity protection, mitigating climate change, enhancing rural development and supplying timber and non-wood goods and services.

This study has laid out the following objectives: (1) to quantify the spatial distribution of forest ownership at the sub-national level (regional, counties, departments, districts, etc.), and (2) to collect information on the existence and the availability of georeferenced maps showing the spatial distribution of private and public forests in Europe countries.

It presents a foundation for investigating in a following step on the technical implementation of a harmonized European forest ownership map in a GIS environment. The outputs including the extensive data set produced can serve for other potential research and information applications.

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1. Introduction

1.1 Overview of forest ownership in Europe

Recent studies in the forestry sector show that nearly half of Europe's forests are privately owned – not including the Russian Federation and a number of other Eastern European countries, where the forest lands are mainly federal or state owned (EUROSTAT 2011; Schmithüsen and Hirsch 2010). With this study we aim to provide an overview of the patterns of forest ownership, and to examine differences in the location within countries and between different parts of Europe. Private forestry owners play a key role in sustaining forest ecosystems, biodiversity protection, climate change mitigation, policies in enhancing rural development (e.g. for the EU: Common Agricultural Policy of the European Union – CAP; European Agricultural Fund for Rural Development – EAFRD) and for supplying timber resources as well as other goods and services to markets. There is a notable lack of an overview of the patterns of forest ownership in European countries and for Europe as a whole. With the objective of contributing to closing this knowledge gap, we initiated the implementation of a 'Forest Ownership Map of Europe'.

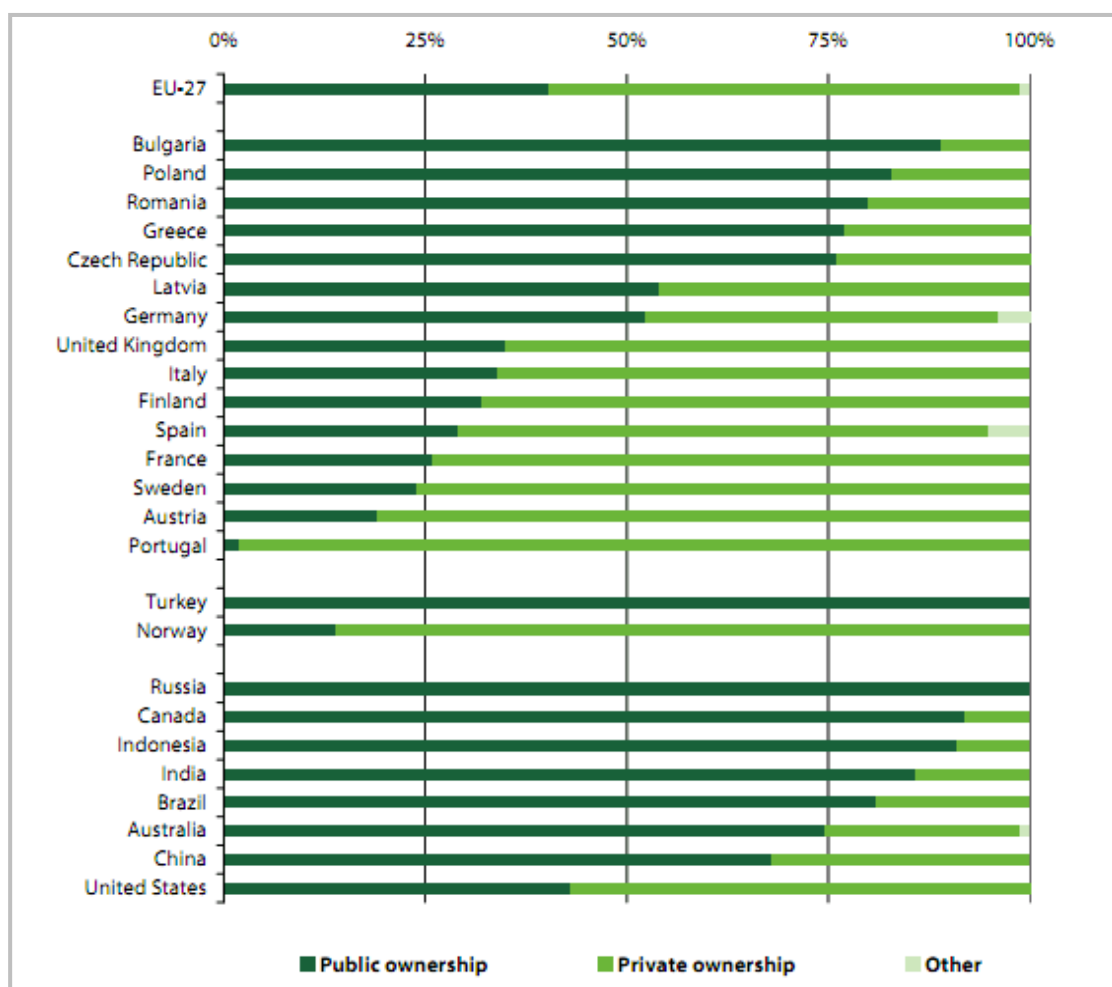
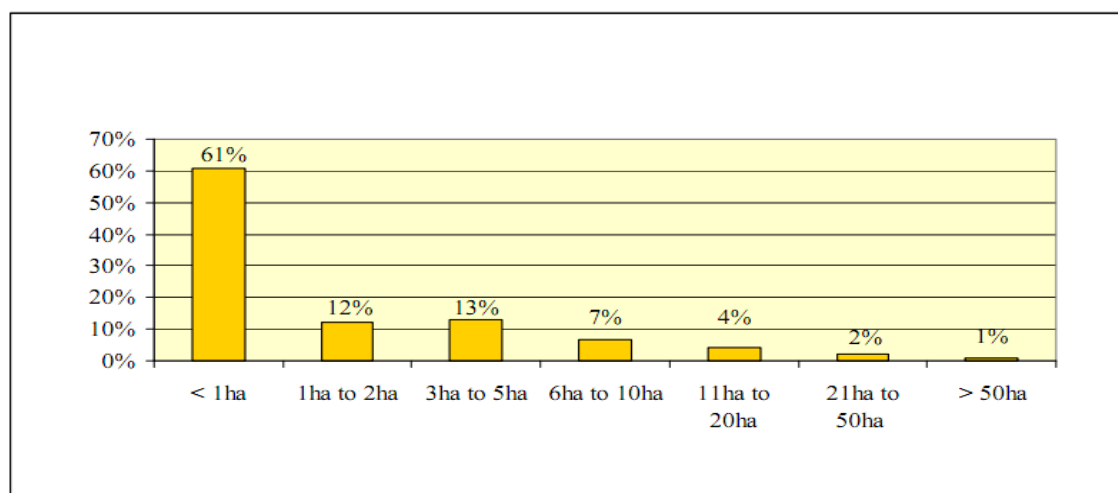


Figure 1. Forest ownership in the world 2005 (in %). Source: EUROSTAT 2011.

Historical developments have strongly influenced forest ownership distribution across European countries which are not being addressed in this study. It is observed that for example, in Western, Central and Northern Europe the share of publicly owned forest is smaller than the share of privately owned forest, while this situation is reversed in the Eastern European countries where the forests are mainly the property of the state or federations. Figure 1 shows that the share of private and public forests varies considerably across different countries across Europe and also across the world (EUROSTAT 2011).

Figure 2 illustrates another important aspect which is the distribution of property sizes (Schmithüsen and Hirsch, 2010). Schmithüsen and Hirsch show that within the nine European countries investigated more than half of private forests (61%) are below 1 ha in size.



Note: Nine Countries: Austria, Belgium, Bulgaria, France, Hungary, Latvia, Lithuania, Slovakia and United Kingdom

Figure 2. Size structure by the share of private holdings to the total number of holdings in 9 European countries (in %). Source: Schmithüsen and Hirsch 2010.

There has been a trend for forest ownership to transfer from public to private; in fact in many countries of Eastern Europe privatization and restitution processes are ongoing, in the course of completion or completed. Examples are the Czech Republic, Serbia, Slovenia and Germany (Treuhand Wald: forests which had been expropriated during the land reform in the former German Democratic Republic, then transferred into public ownership and are now being returned to private ownership; see Schmithüsen and Hirsch 2010).

Owner demographics and the socioeconomic situation can vary between countries across Europe. For example, the age structure of private forests owners can be quite varied between countries (Figure 3). More generally speaking it can be stated that for all countries most private forest owners are aged between 30 and 60-years or are more than 60 years with only a relatively small proportion of owners being younger than 30 years.

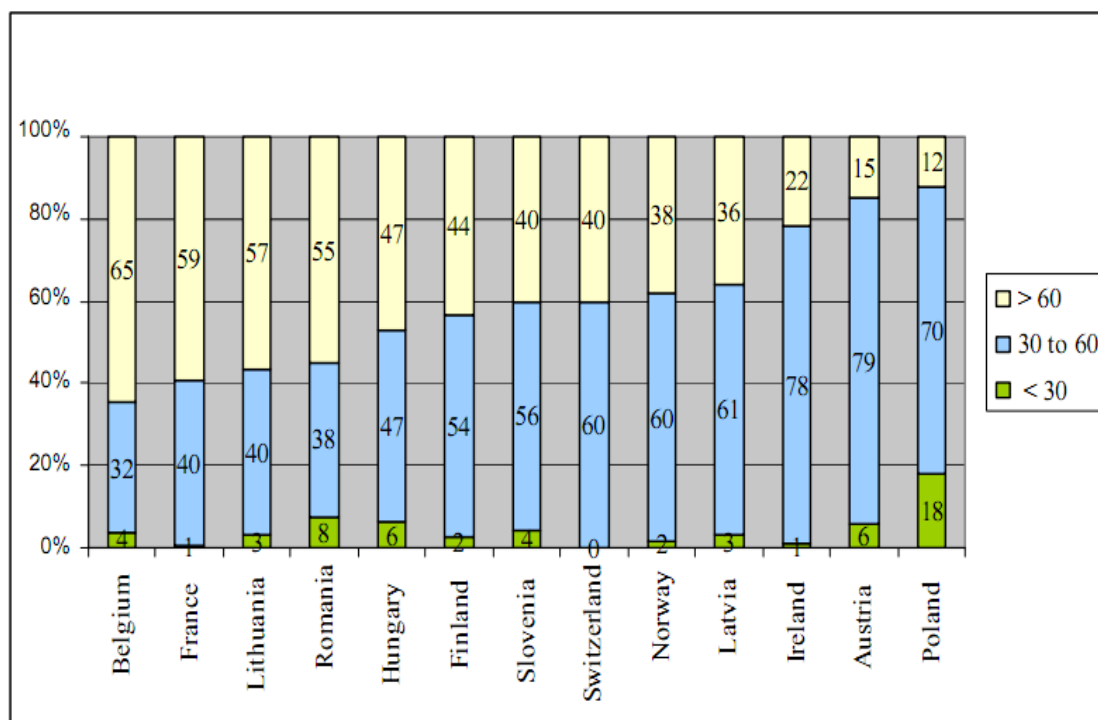


Figure 3. Private forest ownership by owners' age classes (in %). Source: Schmithüsen and Hirsch 2010.

1.2 Information availability

This study aimed to collect information on forest holdings classified by ownership categories and give information on the location of different forest ownership types (public, private and other ownership) while investigating the availability of georeferenced maps on forest properties at different scales throughout Europe. Reference is given here to the pan-European policy process 'FOREST EUROPE' (Ministerial Conference on the Protection of Forests in Europe¹), which has developed a catalogue of 35 quantitative criteria and indicators including one addressing 'forest holdings' (see: FOREST EUROPE, UNECE and FAO 2011.)

We investigated the situation for the 46 European signatory countries to FOREST EUROPE spanning from Portugal to the Russian Federation and from the Norway to Turkey. In addition good quality data was identified for Kosovo. It should be noted that we have included only the European part of the Russia in our assessment. The list of countries addressed in this study can be found in Annex 1. We have classified the investigated countries on the basis of the European MCPFE Warsaw country group sub-regional classification (Russian Federation, North Europe, Central-West Europe, Central-East Europe, South-West Europe, South-East Europe) which was also the country grouping used for the 'State of Europe's Forest Report 2011' (FOREST EUROPE, UNECE and FAO 2011).

¹ <http://www.foresteurope.org/>

Statistical data on forest ownership and its distribution to different ownership classes (private, public and other owners) are traditionally available through National Forest Inventories (NFI) statistics as for example the ‘Inventario Nazionale delle Foreste e dei Serbatoi Forestali di Carbonio, 2003–2007’ (Italy), ‘Inventaire Forestier National’ (France), ‘Bundeswaldinventur’ (Germany), ‘Landeswaldinventar’ (Switzerland), or made available through national statistical yearbooks (e.g. Finnish Statistical Yearbook of Forestry). Further sources can be found at international level including e.g. the main reports and country assessments of the FAO Global Forest Resources Assessments (FAO 2010a, b; FAO 2006a, b; UNECE/FAO 2000 ‘State of Europe’s Forests’ reports in the context of FOREST EUROPE (MCPFE 2003, MCPFE 2007, FOREST EUROPE, UNECE and FAO 2011).

In most cases data giving the total share of ownership showed to be easily available on an aggregate national level. However many countries also provide data on the amount of forest ownership at a sub-national level (region, state, province, county; see e.g. Figure 5). Forest ownership information is available in more detail e.g. in Italy, Ireland, Hungary, Germany, Finland and Austria. In other countries only national level information could be identified (e.g. Greece, Romania, Turkey, Ukraine). Data on forest ownership for the investigated countries was not available for one particular reference year but in fact they vary considerably (1989 to 2010). The reference periods are indicated for each country in Annex 2.

Besides identifying data on forest ownership based on official statistics we investigated the availability of geo-referenced maps on forest ownership. Besides searching the internet and literature gaps were filled through distributing a questionnaire to experts in countries where no information could be found otherwise. This resulted in identifying quite a number of countries where such maps exist but may show to have limited accessibility. In other countries geo-referenced forest ownership maps do not exist to date. More details on the inquiry are found in Section 3.2.4.

1.3 Compiling a European forest ownership map

Data presented in the form of maps represent powerful sources of information which can support international processes, policy making and decision making, research as well as forest planning at various levels. Thematic maps based on various sources of information (e.g. NFIs, forest products and trade, biodiversity), have a wide range of applications. They may include the visualisation of biodiversity protection and conservation, species distribution, forest resource development, options for wood mobilization, carbon storage climate change impacts, fragmentation of the landscape and the like.

The compilation of a forest ownership map of Europe can be seen in itself as a novelty as such a thematic map has so far not been compiled. The approach we took was to elaborate individual country maps with different level of detail based on available data. The basis was administrative regions which were then used to compile a full scale European map. Combining information sources and producing such a value added product can be seen as

useful tool to support research activities and support policy with an informative thematic map layer. It can be combined with other maps such as protected forest area maps, road maps, tree species maps, resource projections etc. where the question of ownership may influence or affect a situation or action.

Mapping forest ownership at the scale of individual ownership boundaries was at this point not seen as feasible. It would require more detailed inquiries on the legal frameworks at country/regional but also at EU level. We did investigate the availability of accessible georeferenced forest ownership maps in a questionnaire to countries. A follow-up project is thus planned where we will test the feasibility of a georeferenced map based on a set of case studies.

2. Methodology

This study was implemented during 2011–2012. We investigated the ownership situation in 47 European countries (the 46 country signatories to FOREST EUROPE the Ministerial Conference for the Protection of Forests in Europe and Kosovo). The variables on the amount of private and public owned forests were collected in the period from April to December 2011 from information available via the Internet from National Forest Inventories and National and International statistics.

The data were imported into Microsoft Excel sheets. A database was constructed structured by the different ownership categories. We have classified the data by country name, level of detail, ownership type as expressed in the original data source: (1) Private forest, (2) Church forest, (3) Communal forest, (4) Municipal forest, (5) Regional forest, (6) Community forest, (7) Foundations or companies, (8) State or public or federal forest, and (9) Other or unknown. The number of ownership types varied from country to country, and also between entities at the sub-national level (see Annex 7).

The data from the database has been subject to a statistical analysis. All calculations have been performed using MS Excel 2007. There are Microsoft Excel spreadsheets for each of the FOREST EUROPE sub-regional country groups classifying the data by country name, level of detail, ownership type as used for the FOREST EUROPE Indicator 6.1 ‘Forest holdings’, under Criterion 6 ‘Maintenance of other socio-economic functions and conditions’ (FOREST EUROPE, UNECE and FAO, 2011): (1) private forests, (2) public forests, and (3) other kind of forest ownership. The area is expressed in hectares and as a percentage of the total forest area (see Annex 6). The definitions for private, public and other ownership are given in Section 3.2.

The second part of the report is based on the responses to a questionnaire that was sent to national correspondents with the aim of identifying the existence and availability of geo-referenced maps on forest ownership (public and private forests) in the FOREST EUROPE countries. We created a list of contacts based on the participants of the COST Action E43 (Harmonisation of National Forest Inventories in Europe: Techniques for Common Reporting) as well as other networks of relevance. In November 2011 we sent a draft questionnaire to the experts together with an information package describing the project and a reference that respondents will receive the outputs of the project.

In summary the questions asked were:

- Does your country have one or more geo-referenced maps providing information on “forest ownership”?
- Are the maps freely available?
- Where can the maps be acquired? Please provide contact information (organization and/or administrations, contact persons, web links, etc.).
- In which data format are the map/maps available (e.g. .pdf, .shp, paper copy, etc.), please specify.

The questionnaire was sent to 110 contacts in 44 countries throughout Europe: these were 43 of the 46 signatory countries to FOREST EUROPE (excluding Andorra, Monaco, the Holy See and Belarus) plus Kosovo. The questionnaire return was about 45% with 50 responses received from 24 countries. All analysis of the questionnaire responses is presented in Section 3.2.4.

3. Literature review and Internet web searches

3.1 Existing data/literature on forest ownership at European level

To understand the background, aims and challenges of this project it was essential to do a thorough literature review for the European countries in question. That included literature relating to forest ownership at the national and supranational level. The core information sources were the following:

- FAO, 2010. Country Reports. <http://www.fao.org/forestry/fra/67090/en/>. Country reports have been compiled by officially nominated country correspondents in collaboration with FAO staff. These country reports form part of the Global Forest Resources Assessment 2010 that regularly monitors the world's forests and their management and uses through the Forest Resources Assessment Program. These reports were very helpful in the case where information could not be identified via national sources.
- FOREST EUROPE, UNECE and FAO, 2011. State of Europe's Forests 2011. Status and Trends in Sustainable Forest Management in Europe. The State of Europe's Forest is a report compiled at regular intervals by FOREST EUROPE (previously MCPFE) describing the status and trends of the forests and sustainable forest management in Europe.
- Schmithüsen F., Hirsch F., 2010. Private Forest Ownership in Europe. Geneva Timber and Forest Study Paper 26. Geneva, Switzerland. UNECE/FAO. It is a recent publication that presents the main findings based on national country reports and draws conclusions on the state of private forestry in Europe in terms of ownership distribution, holding structure, socio-economic findings and trends, with regard to restitution/privatization, changes of ownership patterns and association of private forest owners;
- EUROSTAT, 2011. Forestry in the EU and the world, 2011. The data presented in this publication cover various aspects of forests, including the activities of forestry, logging and wood-based manufacturing, as well as trade in wood and wood products, and the use of wood as a renewable source of energy.
- National Forest Inventory Reports (see Chapter 5): These reports result from NFI assessments. Such reports are available for many European countries but not all.

3.2 Existing forest ownership data identified via Internet searches at national and regional level

The data about forest ownership do not necessarily follow a common classification at national level thus they are not directly comparable. Also the definition of forest can vary between countries (Schuck et al. 2002). Most of the investigated countries base their forestry

information on national definitions. The national definitions of ‘forest’ are listed in Annex 1. Some countries use both national definitions and the internationally agreed definition of ‘Forest²’ provided by the FAO for the ‘Global Forest Resources Assessments’ (FAO 2001; UNECE/FAO 2000). In summary, we found that 29 countries utilize solely their national forest definitions, 8 countries have adopted the FRA 2000 forest definition, and 7 countries apply both definitions in parallel to their forest statistics. Montenegro is currently developing their national forest inventory and also the definition of forest (Figure 4).

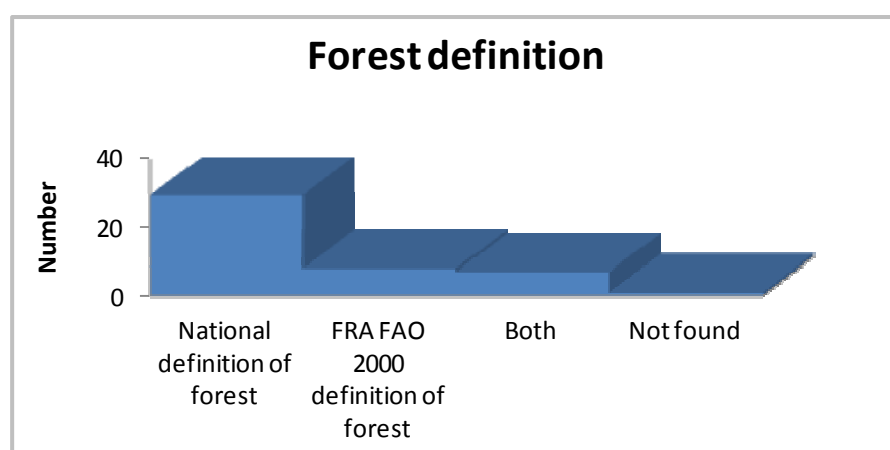


Figure 4. Number of countries that base their forest information on national forest definitions, solely on the internationally agreed forest definition provided by FAO (FAO, 2001; UNECE/FAO, 2000) or both.

Further observations and challenges identified when compiling the data for the ownership map were related to the following (see Annex 2):

Reference year

Many countries have a very recent NFI. Those include amongst other Italy, Finland, Germany, Denmark, Poland, Portugal, Spain and Sweden); in other countries new NFI assessments are in progress and not yet published. In a number of countries no NFI has been implemented to date. Also in cases data on ownership was absent within the statistical publications. Where national data are missing, other sources including international forestry

² Land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach these thresholds in situ. It does not include land that is predominantly under agricultural or urban land use (FAO, 2001; UNECE/FAO, 2000).

statistics (EUROSTAT 2011; FAO 2010) and secondary literature were consulted (Hofer et al. 2006; Pärt et al. 2010).

Data accessibility

Most of the data are freely accessible. In the case of data available only under payment we identified other sources even if those data were then less detailed than the original source.

Language

All countries use the national language in their reports national language; very few of the reports have English translations.

Level of detail

The level of detail of the data varies among the investigated countries and is in parts linked to data accessibility. For our data set the level of detail was the following: For 17 countries information was only found at national level while 27 gave more detail. Out of the 27 countries 11 countries correspond roughly to the term “region” (in the Russian Federation the term used is ‘oblast’) 7 countries relate to ‘counties’, 1 to provinces, and 8 to other divisions (see Figures 5).

The NUTS classification³ (nomenclature of territorial units for statistics) is a hierarchical system for dividing up the economic territory of the EU for the purpose of the collection, development and harmonisation of EU regional statistics, socio-economic analyses of the regions and the framing of EU regional policies. It subdivides the EU economic territory into six administrative levels, from country (level 0), through regional (level 1, 2, 3) to local (level 4, 5). In the forest ownership map the national and sub-national boundaries relate to the NUTS classification were used for the EU countries. For other countries sub-national boundaries were taken from the EFISCEN map directory (Bulgaria, Russian Federation and Finland; Schelhaas et al., 2007), ESRI (Estonia), and the GADM - Shapefile database (Ireland, Kosovo and Serbia). The result is shown in Figure 5.

³ http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/introduction

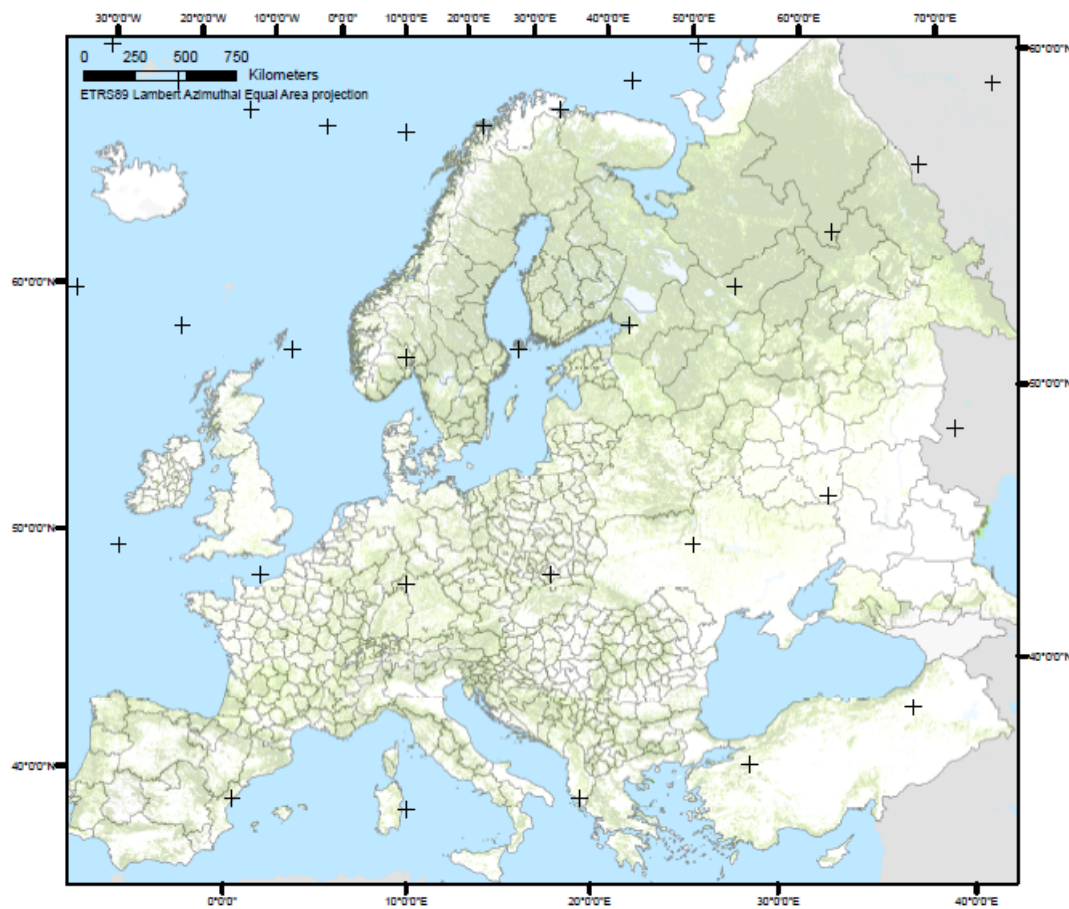


Figure 5. Polygon levels applied for the individual European countries represented in the study.

Ownership classes

Each country uses own specific classifications of public and private forest which can further vary in level of detail (Table 1). For the purpose of this project the national ownership categories were not suitable for compiling a European forest ownership map. For harmonizing the national data, the classification for ownership categories in the FRA 2010 were used (FAO 2010a, b; FOREST EUROPE, UNECE and FAO 2011):

Public ownership: Forest owned by the State; or administrative units of the public administration; or by institutions or corporations owned by the public administration.

Explanatory notes:

1. Includes all the hierarchical levels of public administration within a country, e.g. state, province and municipality.
2. Shareholder corporations that are partially state-owned, are considered as under public ownership when the state holds a majority of the shares.
3. Public ownership may exclude the possibility to transfer.

Private ownership: Forest owned by individuals, families, communities, private co-operatives, corporations and other business entities, private religious and educational institutions, pension or investment funds, NGOs, nature conservation associations and other private institutions.

Other types of ownership: Other kinds of ownership not classified either as ‘public ownership’ or as ‘Private ownership’.

Explanatory note: This also includes areas where ownership is unclear or disputed.

Table 1. National ownership categories in the investigated countries.

Country	National ownership categories
Albania	Private forest; Public forest
Andorra	-----
Austria	Private - Klein forest (200 ha); Public holding, OBF-AG (Austrian Federal Forest)
Belarus	All forests in the country are the exclusive property of the state
Belgium - Wallonia	Private - Propriétaires particuliers; Public - Région Wallonne, communes, provinces; Other - autres soumis
Belgium - Flanders	Private forest; Public - Forest property of Flemish Region, other public forest.
Bosnia and Herzegovina	Private forest; State forest.
Bulgaria	Private forests (private natural and legal persons, religious communities); Public - State forests, municipal.
Croatia	Private forests; Public forests.
Cyprus	Private forests; Public - State forests and Hali land forests.
Czech Republic	Private - church forests, individual person and groups; Public - regional forests, military forests, national forests in National Park, other state forest, municipal and urban forests; Other (owner unknown).
Denmark	Private ownership - Privately owned forests, foundations, organizations etc., joint stock companies, partnerships, cooperative societies, and other societies; Public ownership (National Forest and Nature Agency, other state-owned forests, counties and municipalities); Other.
Estonia	Private - Private physical person, Private juridical person, Private shared ownership; Public - Municipal ownership, Other persons in public law, Temporarily in state ownership, State forest, other State Forest Management Centre (ministry of defense, ministry of agriculture, ministry the environment, ministry of education and research).
Finland	Private - Private persons or families, companies and corporations subject to taxation, undistributed estates, limited companies; Public - state, municipalities, parishes and the other public corporations; Other.
France	Private - Private owners; Public - public owners (divided into state owned forests and forests owned by local authorities); Other.
Georgia	Public - State ownership.
Germany	Private forest; Public - State forest (national property), state forest (property of the Länder), communal forest; Other - Treuhand forest.
Greece	Privately owned; Public - State owned, communal; Other.
Holy See	-----
Hungary	Private - private forest, community forest; Public - State forest; Other.

Iceland	Private - Private ownership of native forests and woodlands; Public - Municipal ownership of native forests and woodlands, State ownership of native forests and woodlands, State Forest Service (Service ownership of native forests and woodlands); Other - undefined ownership of native forests and woodlands.
Ireland	Private - private (grant aid), private afforested land which was either in receipt of grant and/or premium since 1980, Private (other) private non grant aided plantations or naturally regenerated forests; Public - all state owned forests.
Italy	Private; Public; Other (not classified ownership).
Kosovo	Private; Public.
Latvia	Private; Public - State-owned forests, i.e. forest land managed by state forestry institutions; Other - other forests (other forests and agricultural forests which were managed by collective or state agricultural farms).
Liechtenstein	Private; Public - Municipalities and Alpengenossenschaft.
Lithuania	Private; Public - State forest.
Luxembourg	Private; Public - Public forests (including State forests), communal forests, establishment of public forests.
Macedonia	Private; Public - State forest.
Malta	Private; Public; Other.
Moldova	Private; Public - Agency "Moldsilva", Forest fund of Transnistria, Local authorities.
Monaco	-----
Montenegro	Private; Public - State forests.
The Netherlands	Private – individuals, Natuurmonumenten, other natuurbeheers organisaties and Provinciale Landschappen; Public - State forest (owned by ministries, Other State forest, Provinces, Municipalities), public forest (Ov. Public organizations);); Other - unknown.
Norway	Private - Individual ownership, industry-companies; Public - state and other municipalities; Other.
Poland	Private; Public - state owned property, municipal forests, state national parks forests; Other.
Portugal	Private; Public.
Romania	Private forests - Individual, Associations, Church / Monasteries, Communities; Public - state forests and commons forests.
Russia (European Part)	Public - Federal forest.
Serbia	Private; Public - State forest.
Slovak Republic	Private - private forest ownership, church, agricultural cooperatives; Public - State Forests, municipal; Other - unknown owners.
Slovenia	Private; Public - owned by the state and communes forests.
Spain	Private - individual owners, associations; Public - Public (forests owned by state, autonomous regions or municipalities); Other - properties unknown or unclear.
Sweden	Private - Companies, other private owners; Public - public bodies.
Switzerland	Private; Public.
Turkey	Private; Public - State.
Ukraine	Private forest; Public forest.
United Kingdom	Private - Personal, Private forestry or timber business, Other private business, Community, Charitable organizations; Public - Forestry Commission (Land owned by or land leased to the Forestry Commission), Other public bodies, Local authority, Other public bodies.

3.2.1 Results on existing information on forest ownership by national or sub- national level

Results of the availability of data on forest ownership are grouped along the MCPFE country classification (Figure 6). The outcomes are presented in the following pages aided by graphs showing the share (%) of private, public and other ownership categories for each country at national or sub- national level. For all the countries maps are presented showing the total forest area by ownership types based on the FAO definition. The figures are scaled to match the forest area reported in the ‘*State of Europe’s Forests. 2011*’ (FOREST EUROPE, UNECE and FAO 2011). Secondly maps are presented based on the national classification schemes for ownership. These maps are based on national definitions of forests. However this affects only the size of the pie chart, and not the share of different ownership types.

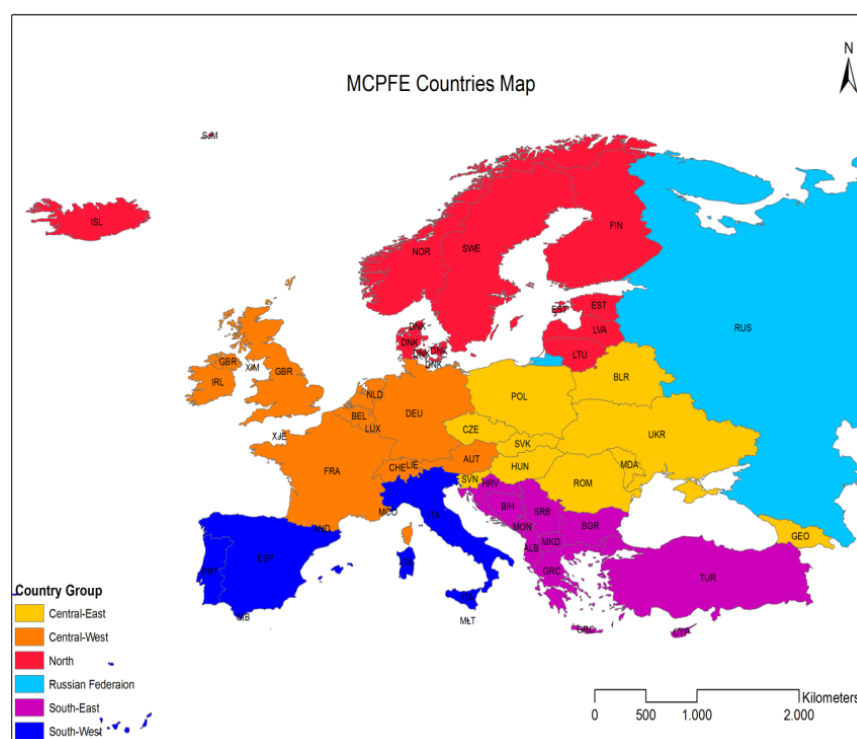


Figure 6. Map of Europe divided to the classification of the European MCPFE country grouping as adopted by the “SoEF 2011”. Source: Forest Ownership Map of Europe database; FOREST EUROPE, UNECE and FAO 2011.

3.2.1.1. Results on existing information on forest ownership in North Europe (Denmark, Estonia, Finland, Iceland, Latvia, Lithuania, Norway and Sweden)

All countries in the North Europe country group have implemented NFIs while recent results on forest ownership are available only for Denmark, Estonia, Finland, Lithuania and Sweden. For Norway the data are not very recent, due to the last Census on Agriculture and Forestry being from 1989. In general the data on ownership are quite detailed for Denmark, Estonia, Finland, Norway and Sweden.

Denmark

In Denmark data on forest ownership is available for 5 regions (Nord-Larsen et al. 2009). The share of private forest is the lowest in the Hovedstaden region where it amounts to 13 690 ha (31%) against 29 721 ha (67%) of public forest. The share of private forest is the highest in the Sjælland region with 73 971 ha (88%) as compared to 7675 ha (9%) of state forests. In Denmark private ownership is represented by privately owned forests, foundations, private organizations, joint stock companies, partnerships, cooperative and other societies while the public ownership is represented by National Forest and Nature Agency, other state-owned forests, counties and municipalities (Figure 7).

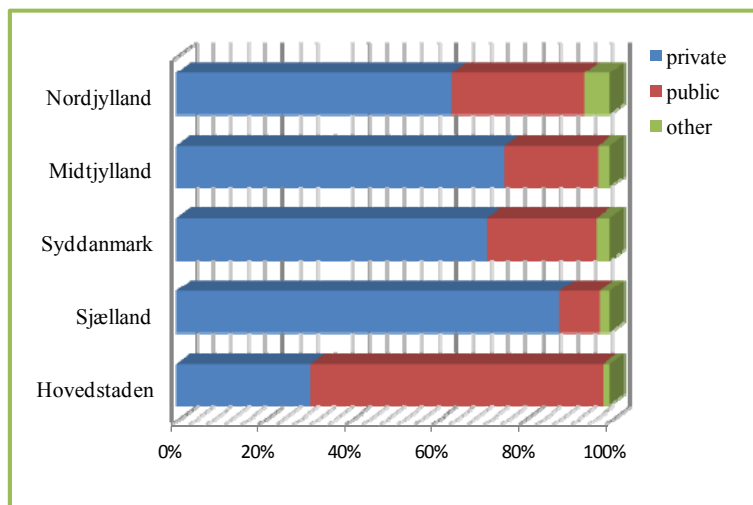


Figure 7. Forest ownership shares in the 5 regions of Denmark. Note: the legend is to be read as follows for all figures. Blue: total private forest available from statistics in %; Red: total public forest available from statistics in %; Green: total forest under ‘other types of ownership’ available from statistics in %.

Estonia

In Estonia the trend is evident towards a higher share of private forests. At national level, the share of private forest amounts to 1 411 973 ha (64%) against 785 627 ha public forest (36%) (Pärt et al., 2010). In the Saare county there is the highest amount of private forests with 142 321 ha (89.8%) against 16 179 ha (10%) of public forests. In the Tartu county there is the lowest value of private forest with only 59 068 ha (50%). In Estonia the private ownership is represented by private physical persons, private juridical persons, private shared ownership; while the public ownership is represented by municipal ownership, other persons in public law, forest temporarily in state ownership, state forest and the State Forest Management Centre (Ministry of Defence, Ministry of Agriculture, Ministry of the Environment, Ministry of Education and Research) (Figure 8).

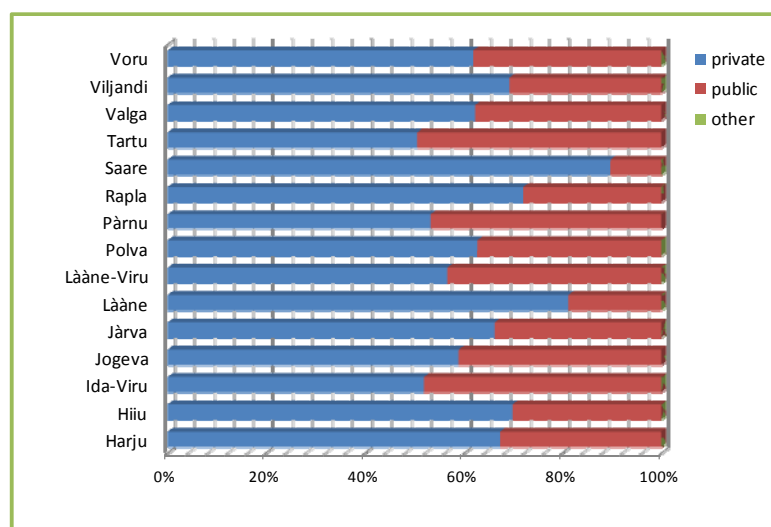


Figure 8. Forest ownership shares in the 15 counties of Estonia.

Finland

In Finland the data are detailed at the forestry districts level (METLA 2011). The data shows that the amount of the private forests vary from 34% (1 656 000 ha) in the Lappi forestry district against 62% (3 022 000 ha) of public forests, to 93% of private forests (62 000 ha) in Ahvenanmaa forestry district and in the Kaakkois-Suomi forestry district (725 000 ha). In general it can be observed that the share of private forests is higher in the southern and central forestry districts as compared to Northern Finland (Figure 9).

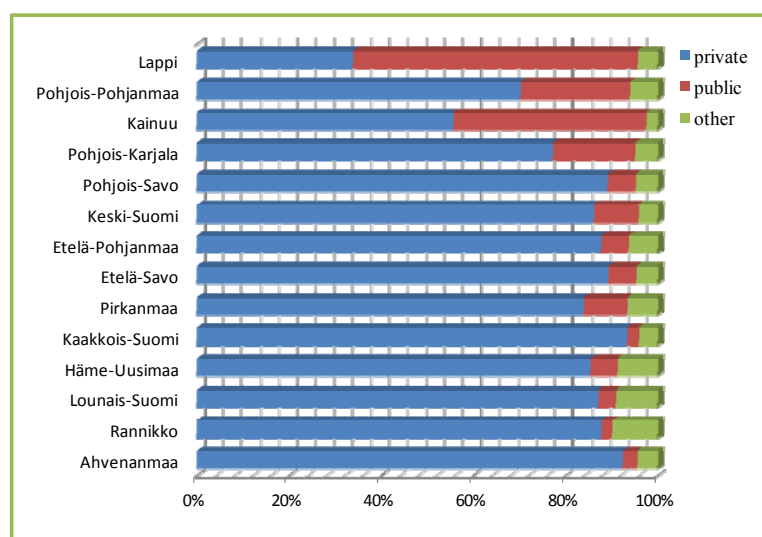


Figure 9. Forest ownership shares in the forestry districts of Finland.

Iceland

In Iceland 73% of the forests are private (Figure 10) and amount to 22 000 ha against the 8000 ha of public forests (FOREST EUROPE, UNECE and FAO 2011).

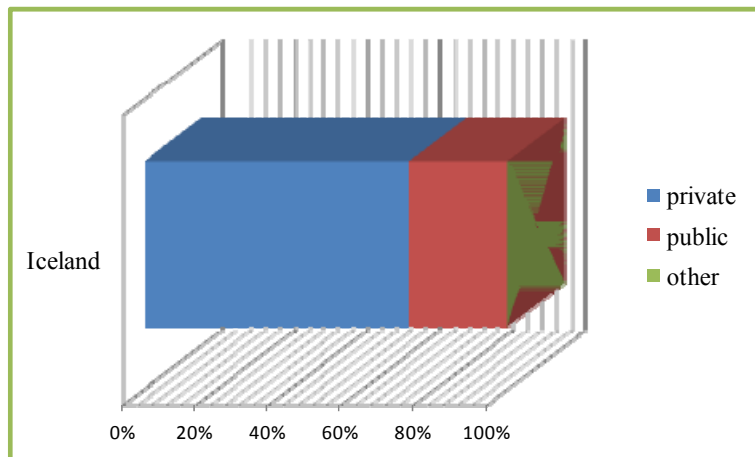


Figure 10. Forest ownership shares in Iceland.

Latvia

In Latvia the area of private forests (1 635 000 ha) and of public forests (1 655 000 ha) was only available at country level are divided to about equal shares (Figure 11; YPEF 2011).

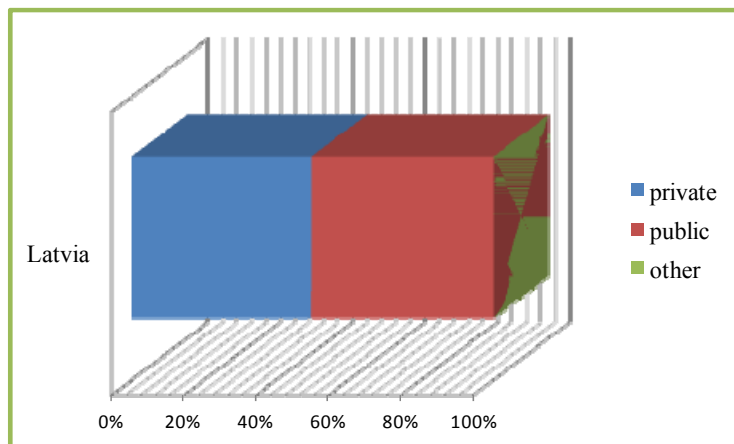


Figure 11. Forest ownership shares in Latvia.

Lithuania

The Department of Statistics (2010) reports that in Lithuania the main share of public forests is in Marijampolės apskritis county with 82% (79 276 ha) against the 18% (17 450 ha) of private forests, while the highest amount of private forests is in Utenos apskritis county with 48% (114 661 ha) (Figure 12).

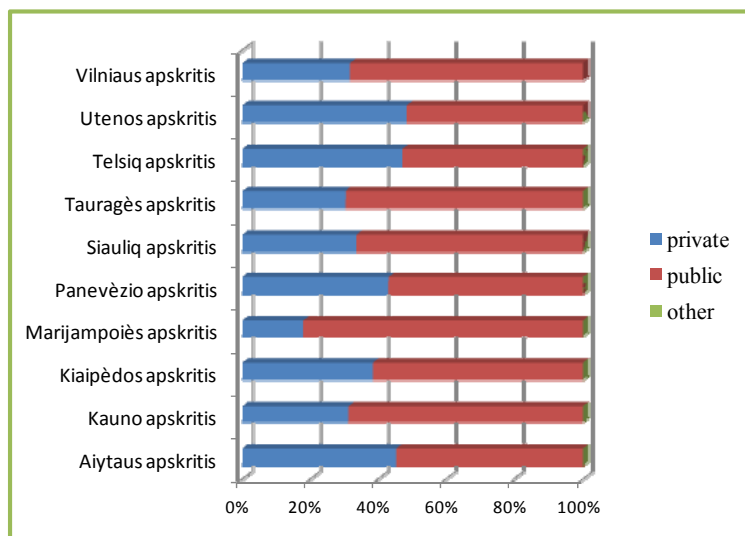


Figure 12. Forest ownership shares in the 10 counties in Lithuania.

Norway

In Norway the data on forest ownership are not very recent (Noregs Offisielle Statistikk, 1992). The amount of private forests is high nearly in all counties, due to the fact that forests owned by foundation and companies are included (Figure 14). The highest value of private forests is in country Sogn of Fjordane with 98% (248 000 ha) against 5400 ha of public forests. The lowest amount of private forests is in Finnmark with 3900 ha (5%) against 79 000 ha of public forests (Figure 13). Private forests in Norway are represented by properties of persons, co-operative companies and other such as e.g. foundations, while the public forests ownership is represented by central government and by the Educational Fund.

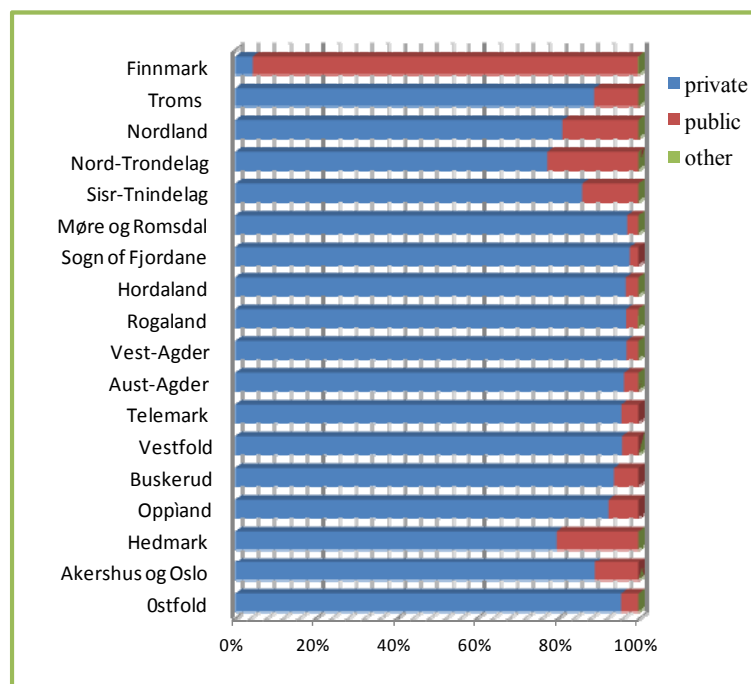


Figure 13. Forest ownership shares in the 18 counties of Norway.

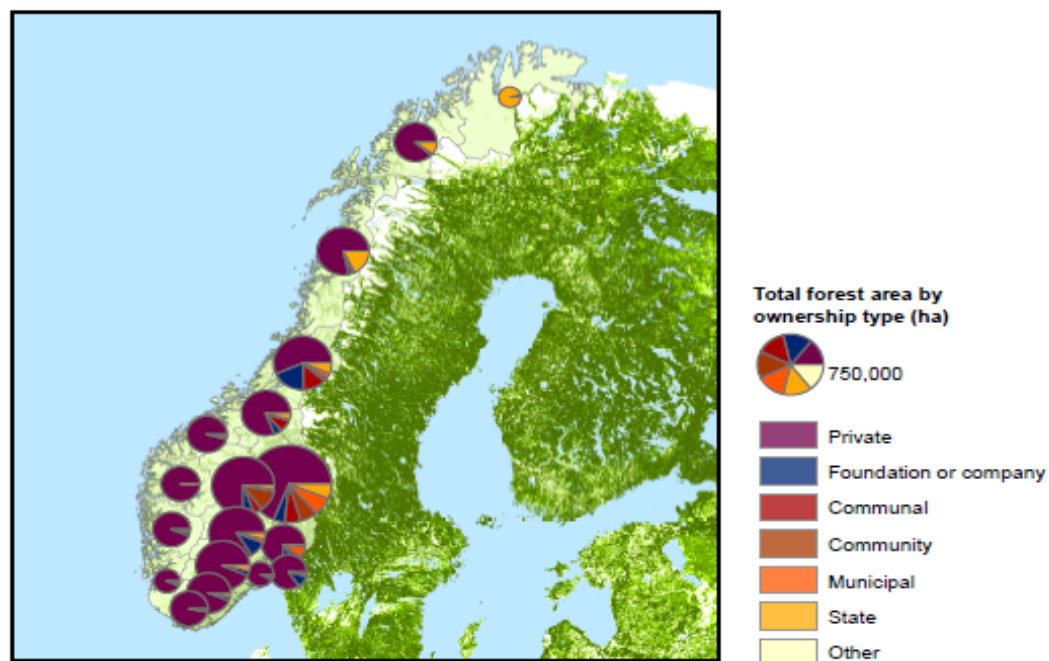


Figure 14. Map of the forest ownership distribution in Norway based on national classifications.
Source: Forest Ownership Map of Europe database.

Sweden

In Sweden the Sveriges Lantbruksuniversitet (2009) reports that the share of private and public forests differs considerably among the 21 counties (Figure 15). The lowest amount of private forest is 2 333 000 ha (45%) in Norrbottens county, while 2 903 000 ha (55%) are public forests (

Figure 16). The highest proportion of private forests is 95% in Värmlands county (1 458 000 ha) and in Västernorrlands county respectively (1 860 000 ha) (Figure 17). In Sweden in contrast to many other countries, forest companies play a considerable role as forest owners.

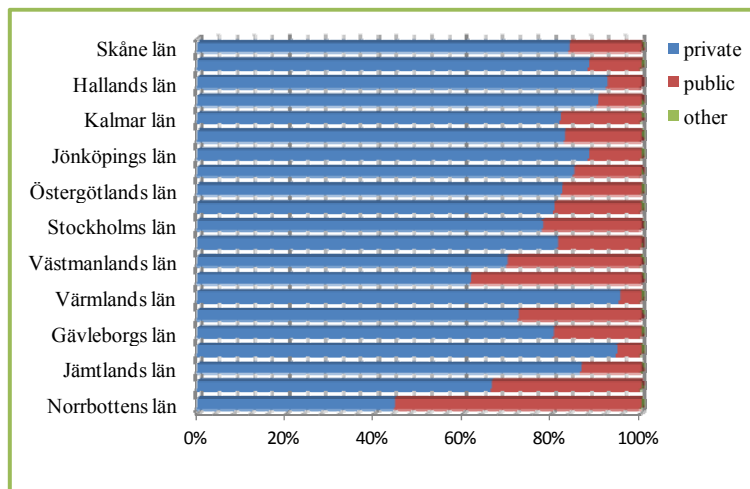


Figure 15. Forest ownership shares in the 21 counties of Sweden.

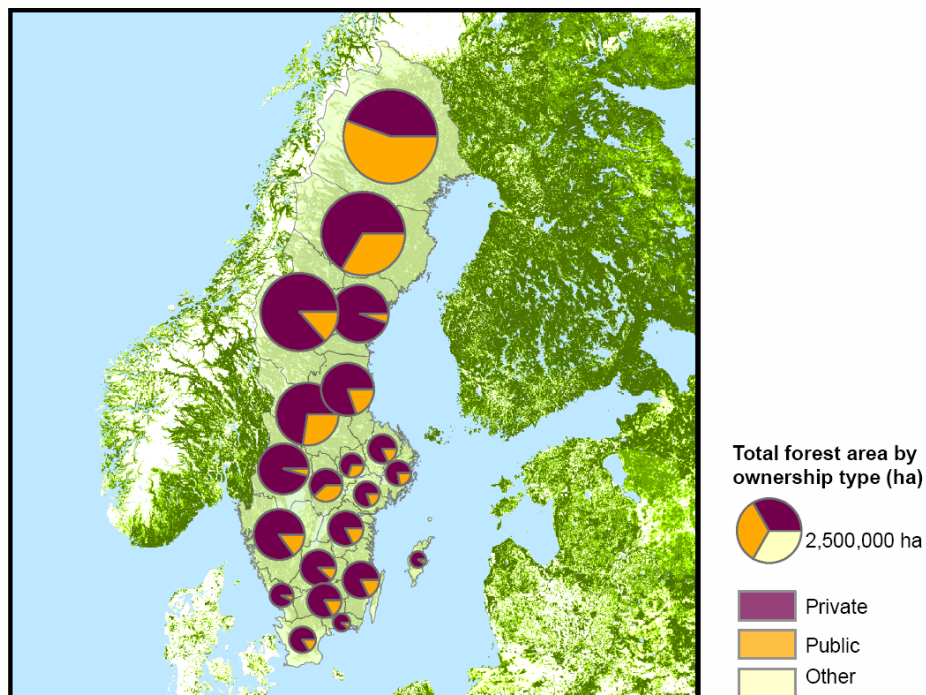


Figure 16. Map of the forest ownership distribution in Sweden. **Source:** Forest Ownership Map of Europe database.

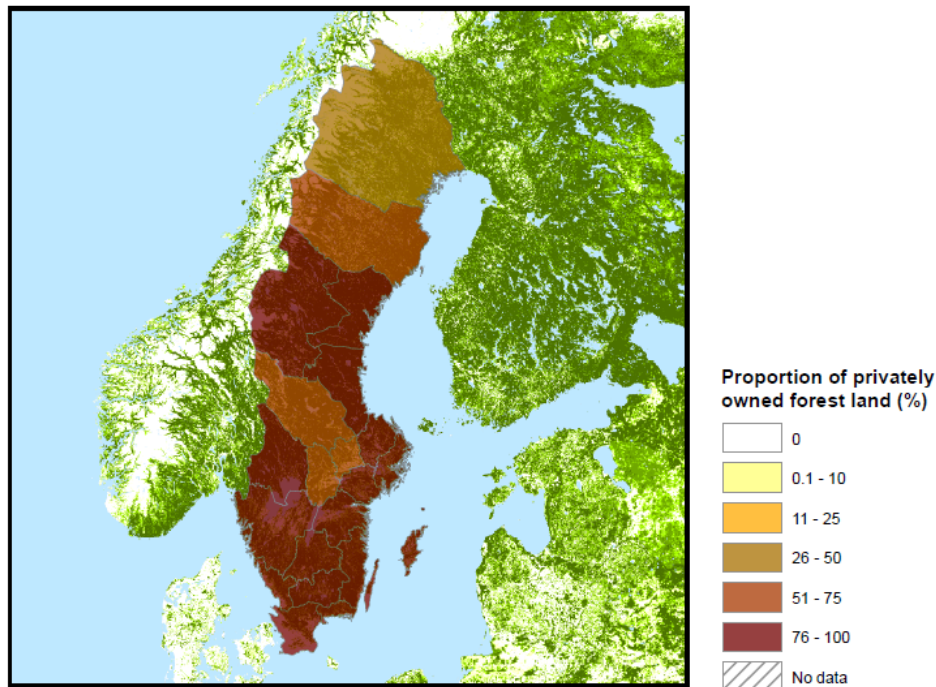


Figure 17. Map of the private forest ownership proportions in Sweden. **Source:** Forest Ownership Map of Europe database.

3.2.1.2 Results on existing information on forest ownership in Central West Europe (Austria, Belgium, France, Germany, Ireland, Liechtenstein, Luxembourg, The Netherlands, Switzerland and United Kingdom)

All countries have a recent NFI and the results on ownership are available except for Wallonia region in Belgium. This is due to the fact that the results of the recent NFI are not yet published. For Luxembourg the NFI results were not freely available. In those cases data were used from old NFIs and other available national statistics.

Austria

In Austria the National Forest Inventory shows that the share of private forests is very high with the exception of the region of Wien with only 11% (1000 ha). In the other regions the share of private forests varies with the lowest value of 59% (221 000 ha) in Salzburg to the Burgenland with 97% or 130 000 ha (Österreichische Bundesforste 2002a) (Figure 18). In Austria the public forests belongs to Austrian Federal Forest (OBF-AG) and public forests

holdings (Gebietskörperschaften) while private forests are divided to different size classes (< 200 ha; 200 - < 1000 ha; > 1000 ha) and designated as ‘Kleinwald’ (small forest holdings in private ownership; see also Annex 3).

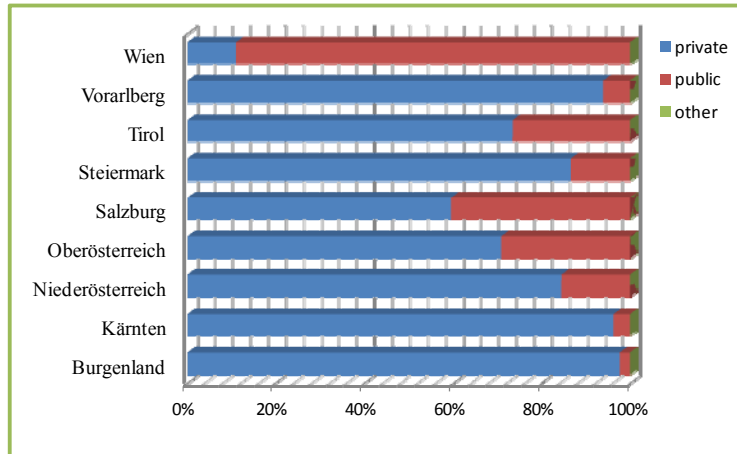


Figure 18. Forest ownership shares in the 9 regions of Austria.

Belgium

In Belgium two different National Forest Inventories are available: (1) IPRFW- Walloon Permanent Forest Resources Inventory, 1994-2006 and the CAC inventory of the forest 1990-2000; (2) IPRFW- Walloon Permanent Forest Resources Inventory, 1994-2006; Agentschap voor Geografische Informatie Vlaanderen, 2012). For this reason the data for Belgium are at different levels of detail, regional for Wallonia and provincial for Flanders. In Wallonia there are 290 000 ha of private forests (about 53% of the forest area) against 244 700 ha (45%) of public forests. In the provinces of Flanders the share of private forests varies from the lowest value of 3477 ha (47.5%) in West-Vlaanderen to the highest value of 11 248 ha (~76%) in Antwerpen, respectively against 3845 ha (52.5%) and 11 248 ha (24%) of public forests (Figure 19). In Wallonia the public forests belong to Region Wallonne, communes, provinces, and Centre Public d'Aide Sociale. In Flanders the public forests belong to regions and other public bodies.

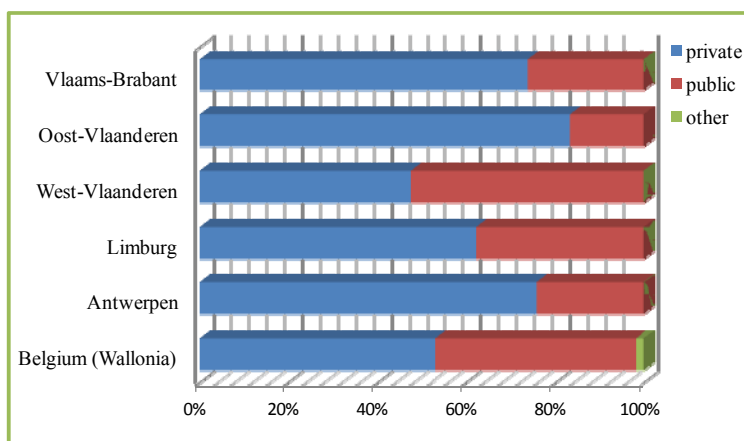


Figure 19. Forest ownership shares in Belgium. (Data for the entire Wallonia region and for the provinces of the Flanders region).

France

Private forest ownership is the predominant form of ownership in France (IGN 2010) (Figure 20). The lowest value of private forests is in the department of Bas-Rhin (47 000 ha or 26% of the forest area) against 131 000 ha (74% of the forest area) of public forests while the highest value of private forests is in the departments of Dordogne and in Lot where nearly 100% of the forest is private (Figure 22). It is worth noting that in France the public forests are divided in state owned forests and forests owned by local authorities (Figure 21).

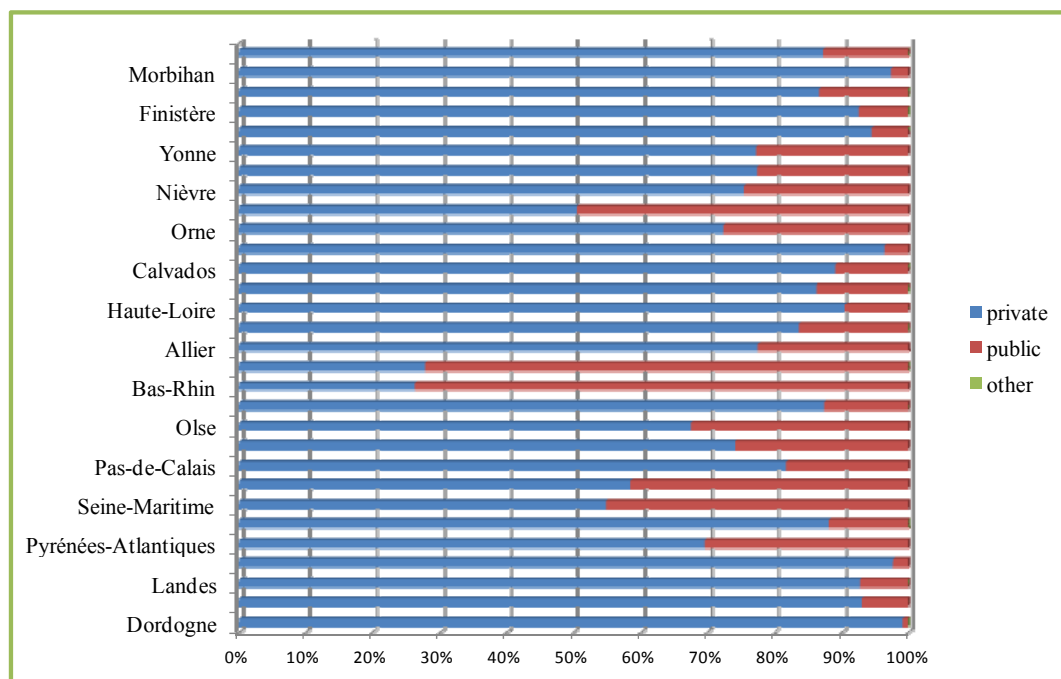


Figure 20. Excerpt (15 out of 90 departments are shown for illustration) of the forest ownership distribution in France. (The full table is found in Annex 7).

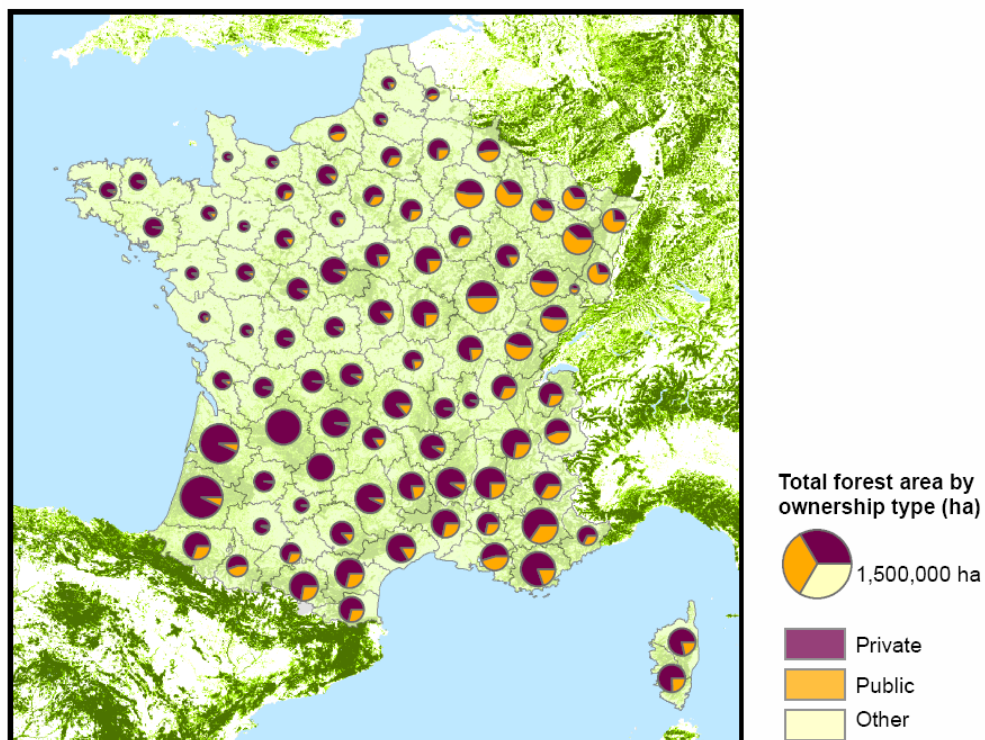


Figure 21. Map of the forest ownership distribution in France. **Source:** Forest Ownership Map of Europe database.

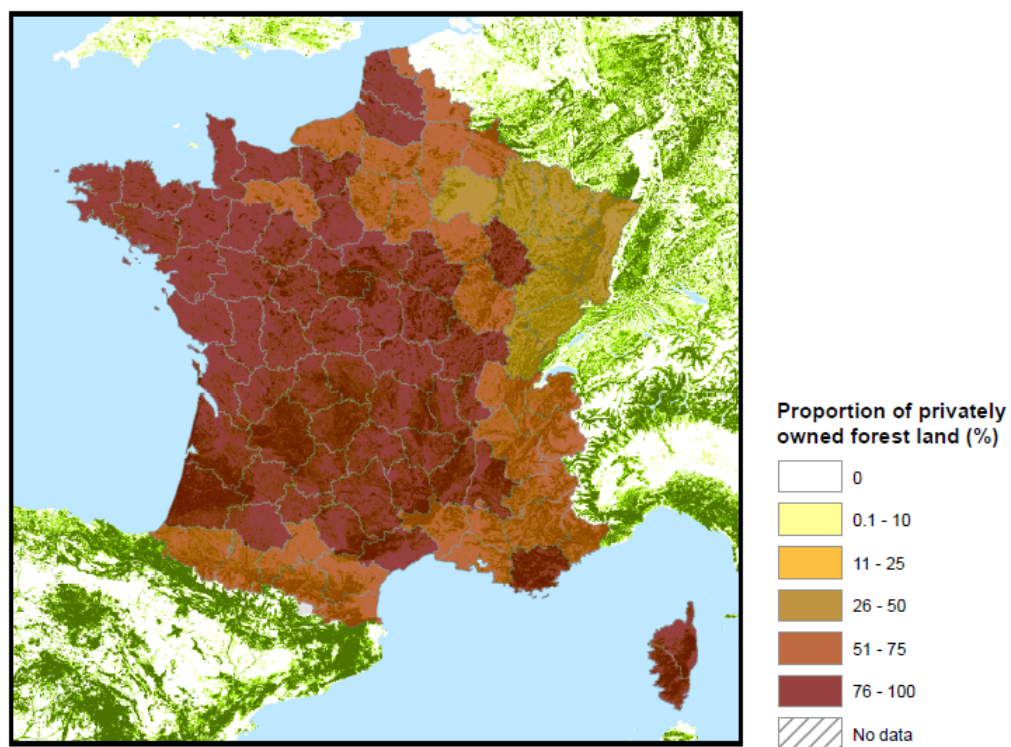


Figure 22. Map of the private forest ownership proportions in France. **Source:** Forest Ownership Map of Europe database.

Germany

The ‘Bundeswaldinventur 2’ (The 2nd German National Forest Inventory, 2001–2002 (BMELV 2002a,b) shows that the lowest value of private forests is found in Mecklenburg-Vorpommern (125 486 ha or about 24%) against 328 016 ha (61%) of state forests. The highest value of private forests is found in Nordrhein-Westfalen (594 754 ha or 67% of the forest area) against 292 796 ha (33%) of public forests. It is important to mention Treuhand Wald with respect to other types of forest ownership in Germany: these are areas which had been expropriated within the scope of the land reform in the former German Democratic Republic, transferred into public ownership and are then privatized. The amount of Treuhand Wald is 405 887 ha in the entire country, but are mainly located in Eastern Germany (Brandenburg-Berlin 146 572 ha, Mecklenburg-Vorpommern 81 479 ha, Sachsen 60 831 ha, Thüringen 39 238 ha and Sachsen-Anhalt 77 767 ha). In Germany public forests include property of the federal state, those at Länder level (sub-national: states) and communal forest, while private forest are properties of private individuals or institutions (e.g. church forests) (Figure 23).

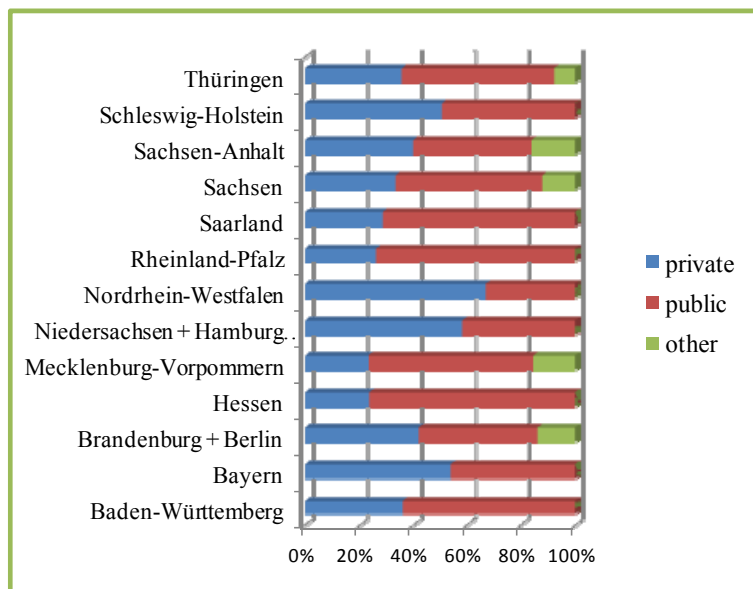


Figure 23. Forest ownership shares in the 13 Länder (states) of Germany.

Ireland

In Ireland there are large amounts of public forests as established by the National Forest Inventory Republic of Ireland, 2004-2007 (Department of Agriculture, Food and the Marine, 2006). The data are available at the level of counties and show that the lowest values of private forests are in the county of Carlow and in the county of Laois respectively with about 31 % (1200 ha) and 26% (3610 ha). The county of Longford shows the highest amount of private forests 75% (3980 ha). In Ireland public forests are all state owned forests while private refers to private afforested land which was either grant supported and/or premium since 1980. Other private forests are not subject to grant aided plantations or naturally regenerated forests (Figure 24).

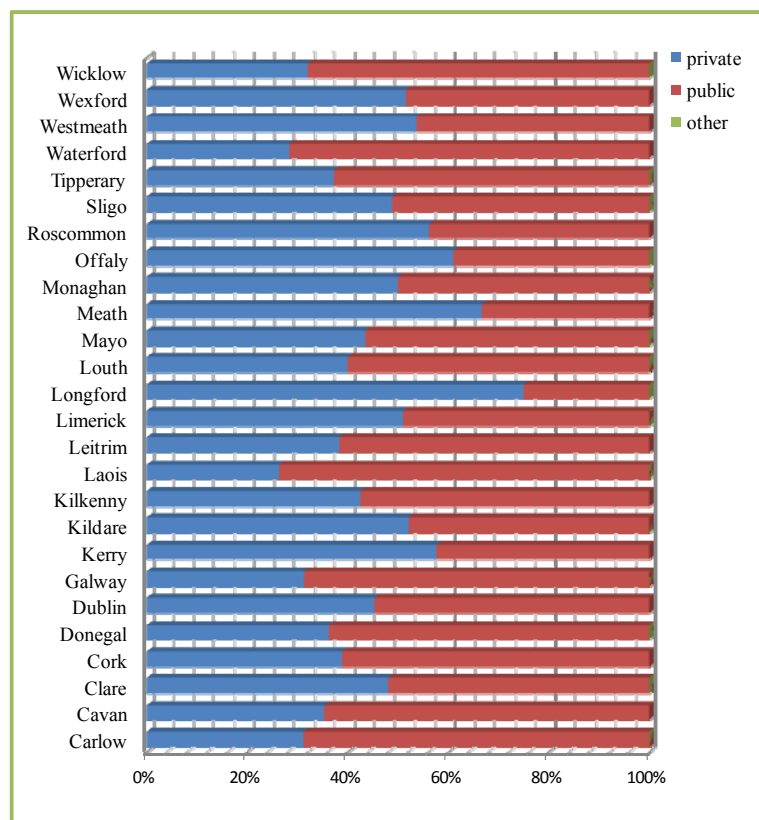


Figure 24. Forest ownership shares in the 26 counties of Ireland.

Liechtenstein

In Liechtenstein 6002 ha (81% of the forest area) of the forests are private property while only 1370 ha are state forests (Amt für Wald, Natur und Landschaft - AWNL, 2000). (Figure 25).

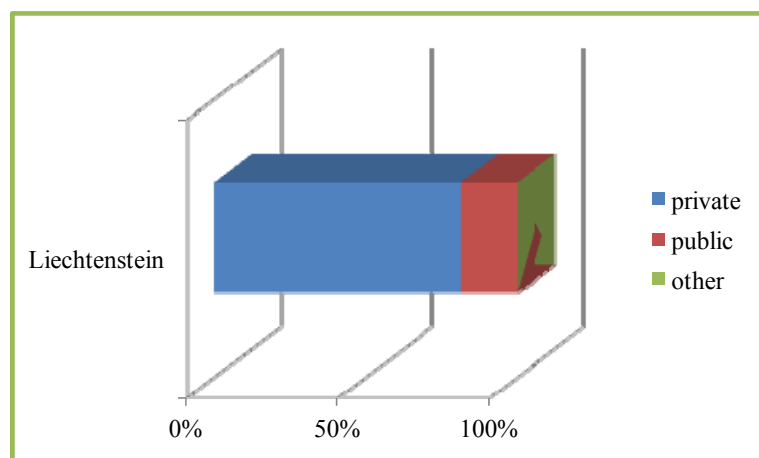


Figure 25. Forest ownership shares in Liechtenstein.

Luxembourg

In Luxembourg 74 900 ha (87% of the forest area) of forests are private and 10 900 ha (13%) are publicly owned (Figure 26) (Le gouvernement du Grand Duché du Luxembourg, 2003). Public forests in general belong to municipalities and other public bodies.

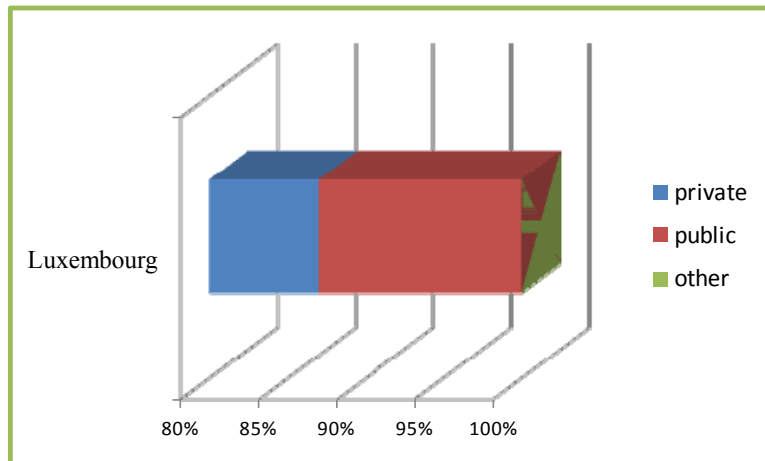


Figure 26. Forest ownership shares in Luxembourg.

The Netherlands

The majority of forest land in the Netherlands is in public ownership (Landbouw, natuur en Voedselkwaliteit 2006). The lowest value of private forests is in the province of Flevoland with 2200 ha (15% of the forest area) against 12 600 ha (85%) of public forests. The highest value of private forests is in the province of Overijssel with 23 900 ha (74%) against 8500 ha (26%) of public forests. In the Netherlands public forests include all the forests that belong to the various ministries including Environment, Infrastructure, Finance and Defence. Other public forests belong to provinces, municipalities, and other public organizations. Private forest owners include the Natuurmonumenten, other nature management organisations and Provinciale Landschappen, as well as private individuals (Figure 27).

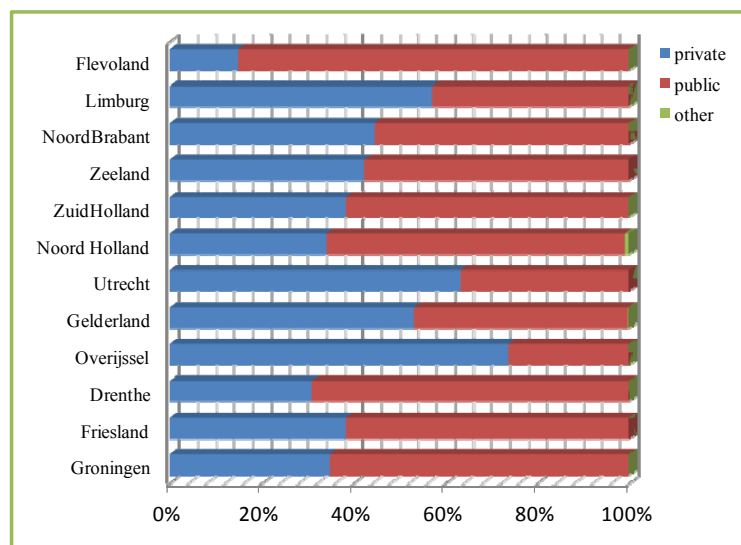


Figure 27. Forest ownership shares in the 12 provinces of Netherlands.

Switzerland

In Switzerland most of the forests are publicly owned (Brändli 2010). The share of private forests reach the lowest value in the Cantons of Glarus and Schaffhausen, respectively with 2600 ha (about 12% of the forest area) and 1600 ha (12.5%). The highest value of private forests is in the Canton of Lucerne where there are 29 800 ha or 71% of the Canton, Forest area (Figure 28).

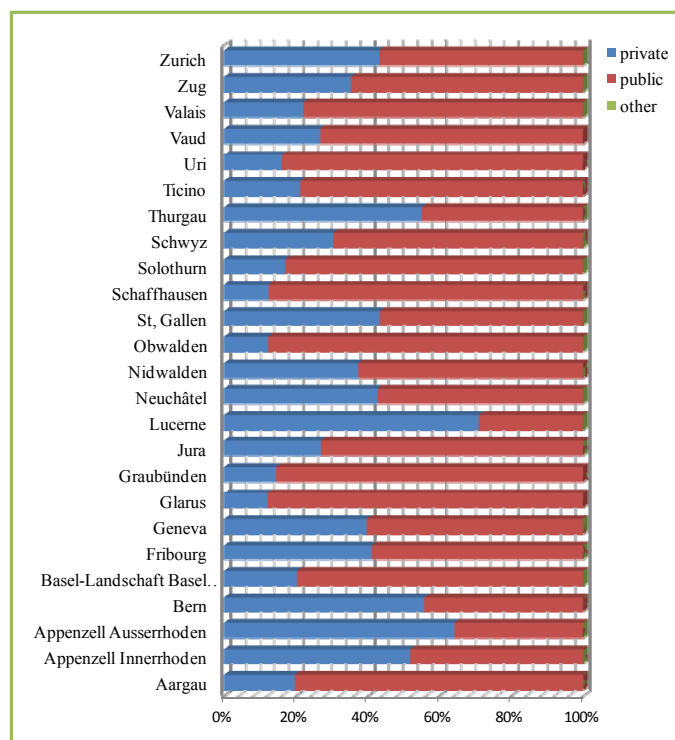


Figure 28. Forest ownership shares in the 25 cantons in Switzerland.

United Kingdom

In the United Kingdom 707 000 ha (or 69% of the forest area) in England are private forests, 137 000 ha, (51%) in Wales and 676 000 ha (54%) in Scotland (NIWT and Forestry Commission 2010). In public ownership are respectively 311 000 ha (or 30% of the forest area), 133 000 ha (49%) and 563 000 ha (45%) (Figure 29). In Northern Ireland there are 24 000 ha of private forests (28%) and 62 000 ha (72%) of public forests. In the United Kingdom the distribution of the forest is divided among many organizations. Public forests include all those belonging to the Forestry Commission (land owned by or land leased to the Forestry Commission), other public bodies (woodland that is owned by or leased to other public bodies – Government department/agency, nationalized industry, etc.), common land, local authority (Region, county, district or other council). Private forests are all forests that belong to e.g. individuals, private family trusts and family partnerships, private forestry or timber businesses, forests owned by wood processing industry, other private business (e.g. companies, partnerships, syndicates and pension funds), charitable organizations (e.g. funded by public donations: National Trust, churches and colleges), and community ownership. There are also forests that have unclassified ownership (Figure 30).

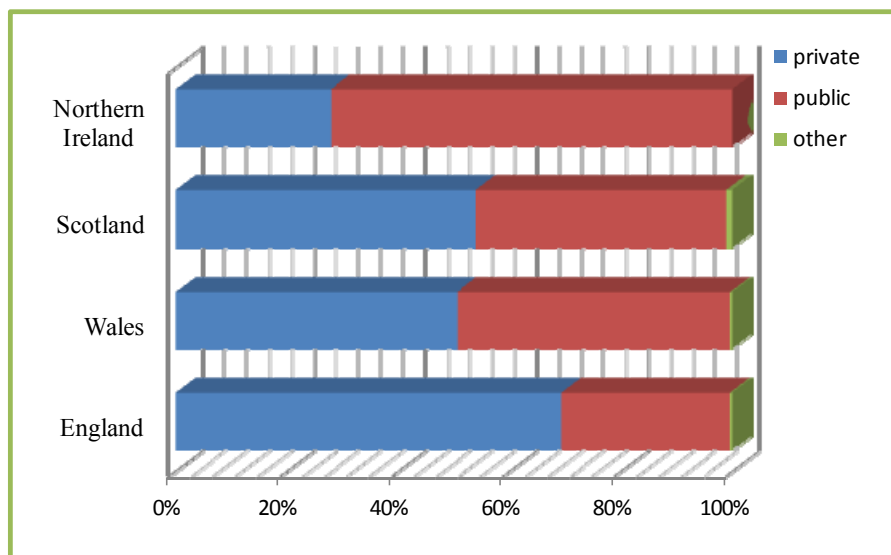


Figure 29. Forest ownership shares in the United Kingdom shown for England, Wales, Scotland and Northern Ireland.

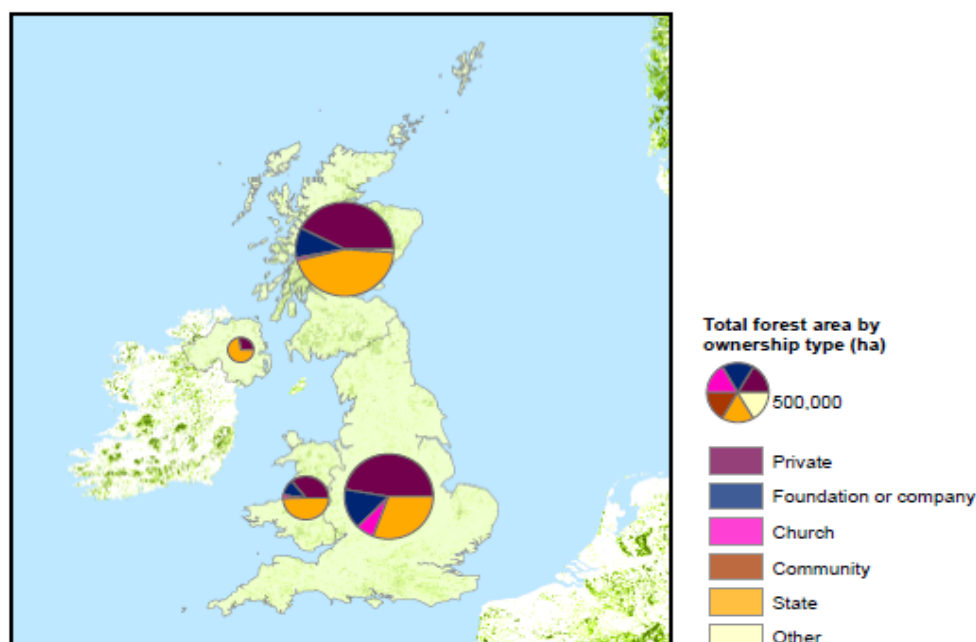


Figure 30. Map of the forest ownership distribution in the United Kingdom based on National classifications. Source: Forest Ownership Map of Europe database.

3.2.1.3 Results on existing information on forest ownership in Central West Europe (Belarus, Czech Republic, Georgia, Hungary, Moldova, Poland, Romania, Slovak Republic, Slovenia and Ukraine)

Belarus, Moldova, the Slovak Republic and Ukraine do not have a NFI, so the results on forest ownership were derived from other national statistics. The data are available at a sub-national level for Czech Republic, Hungary and Slovenia. For the remaining countries the data are available at national level. For the majority of countries including Belarus, Czech Republic, Georgia, Moldova, Slovak Republic and Ukraine the amount of public forest is clearly dominating. Forests are to a main part under a state management status with the exception of Hungary and Slovenia where restitution processes have progressed considerably.

Belarus – Georgia – Moldova – Ukraine

In these countries most forest is publicly owned. In Moldova the data are available only at national level (FOREST EUROPE, UNECE and FAO 2011). In Moldova the largest part of the forest is state property corresponding to 362 000 ha (99.7%); however, there are 1000 ha (0.3%) of private forests. In Moldova the public forest area is managed by the Agency “Moldsilva”, and the Forest fund of Transnistria and local authorities (Primarii). Georgia, Belarus and Ukraine have 2 755 060 ha, 9 406 000 ha and 9 568 000 ha of forest, respectively. There are no recent NFIs and the figures for the forest area are taken from national publications and international statistics: Georgia – FAO 2010; Belarus - Gerasimov

and Karjalainen 2010; and Ukraine - FOREST EUROPE, UNECE and FAO 2011. (Figure 31). In the Ukraine there are 7000 ha of private forest. In Belarus and Georgia all forests are owned by the state.

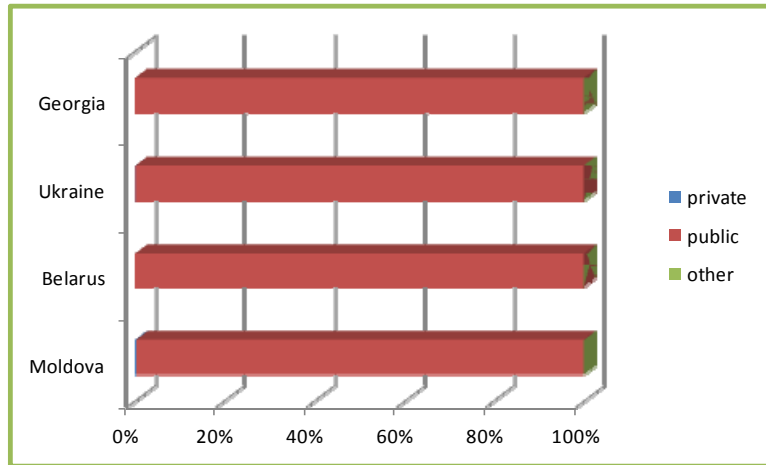


Figure 31. Forest ownership shares in Moldova, Belarus, Ukraine, Georgia.

Czech Republic

The share of private forests varies from 3135 ha (2% of the forest area) in Karlovy Vary region to 80 176 ha (38%) in Vysočina region and 40% in the region of Zlín (65 165 ha) (Figure 32). The public forests are divided into: regional forests, military forests, national forests in National Parks, other state forests, municipal and urban forests. Moreover, private forests are classified as: church forests, forests owned by individuals and private groups (ÚHUL 2004a,b,c,d,e; see Figure 34). Worth mentioning is that there are about 130 000 ha where forest ownership could not be clearly allocated (Figure 33).

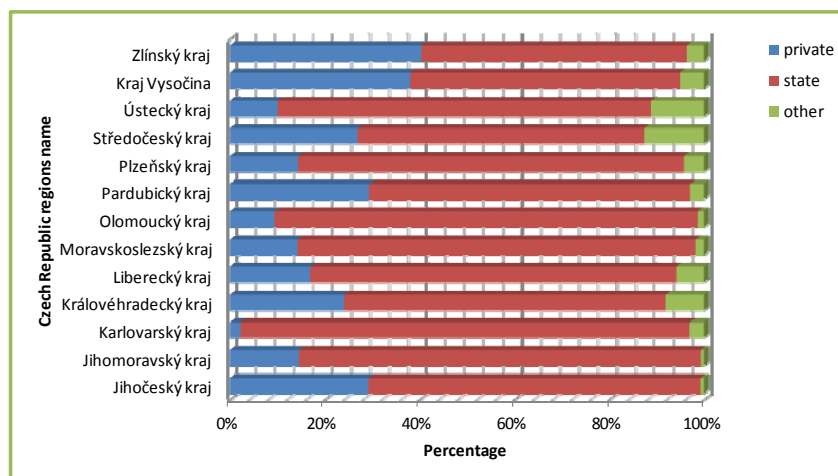


Figure 32. Forest ownership shares in the 13 regions of the Czech Republic.

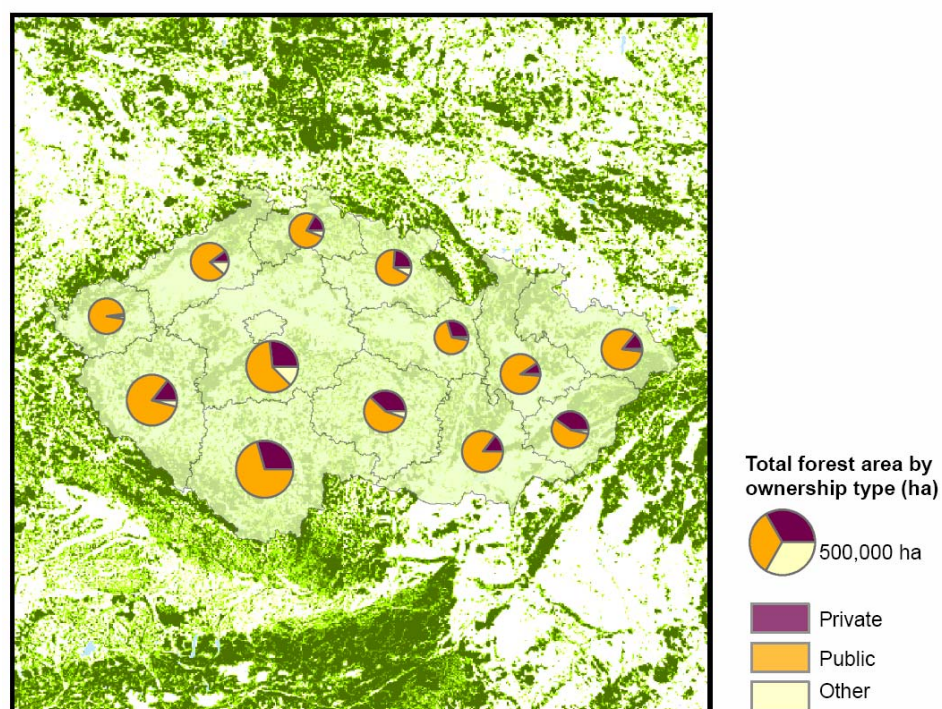


Figure 33. Map of the forest ownership distribution in the Czech Republic. **Source:** Forest Ownership Map of Europe database.

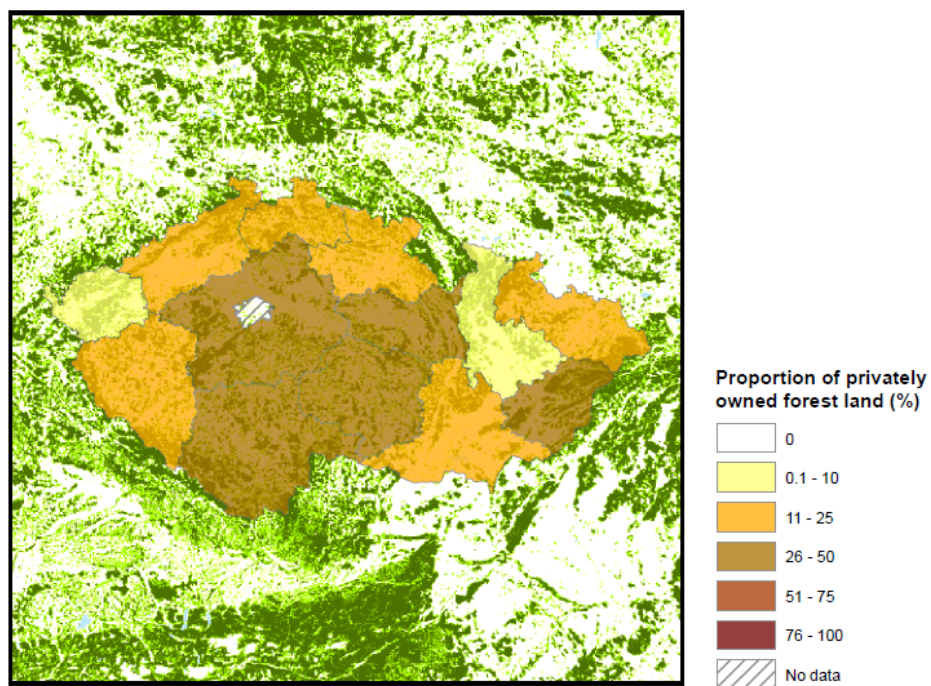


Figure 34. Map of the private forest ownership proportions in the Czech Republic. **Source:** Forest Ownership Map of Europe database.

Hungary

In Hungary the amount of private forests shown by the results of the Hungarian NFI 2001-2006 (MGSZH 2006a,b,c) is lowest in the county of Komárom-Esztergom with 11 847 ha (18% of the forest area) as compared to 53 892 ha (82%) of public forests. In the district of Szabolcs-Szatmár-Bereg there is the highest amount of private forests 79 165 ha (70%) while 34 050 ha are designated as public forests (Figure 35).

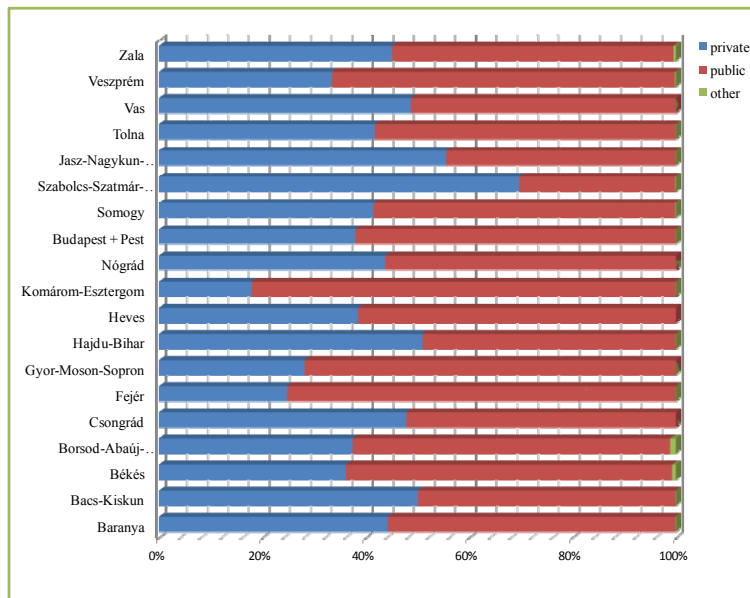


Figure 35. Forest ownership shares in the 19 counties in Hungary.

Poland

In Poland data are available at the sub-national level (Portal Informacyjny, 2010). The proportion of privately owned forest in the sub regions varies considerably from 1% in Katowicki, Gorzowski, City of Szczecin, Szczeciński, up to 52% in Lubelski and Tamowski. In Poland the public forests are classified as state owned property, municipality forests and state national parks (Figure 36). It is noted that for Poland more detailed data are available (NUTS 4 and 5) but, for the purpose of this report, data were used at NUTS 3 level.

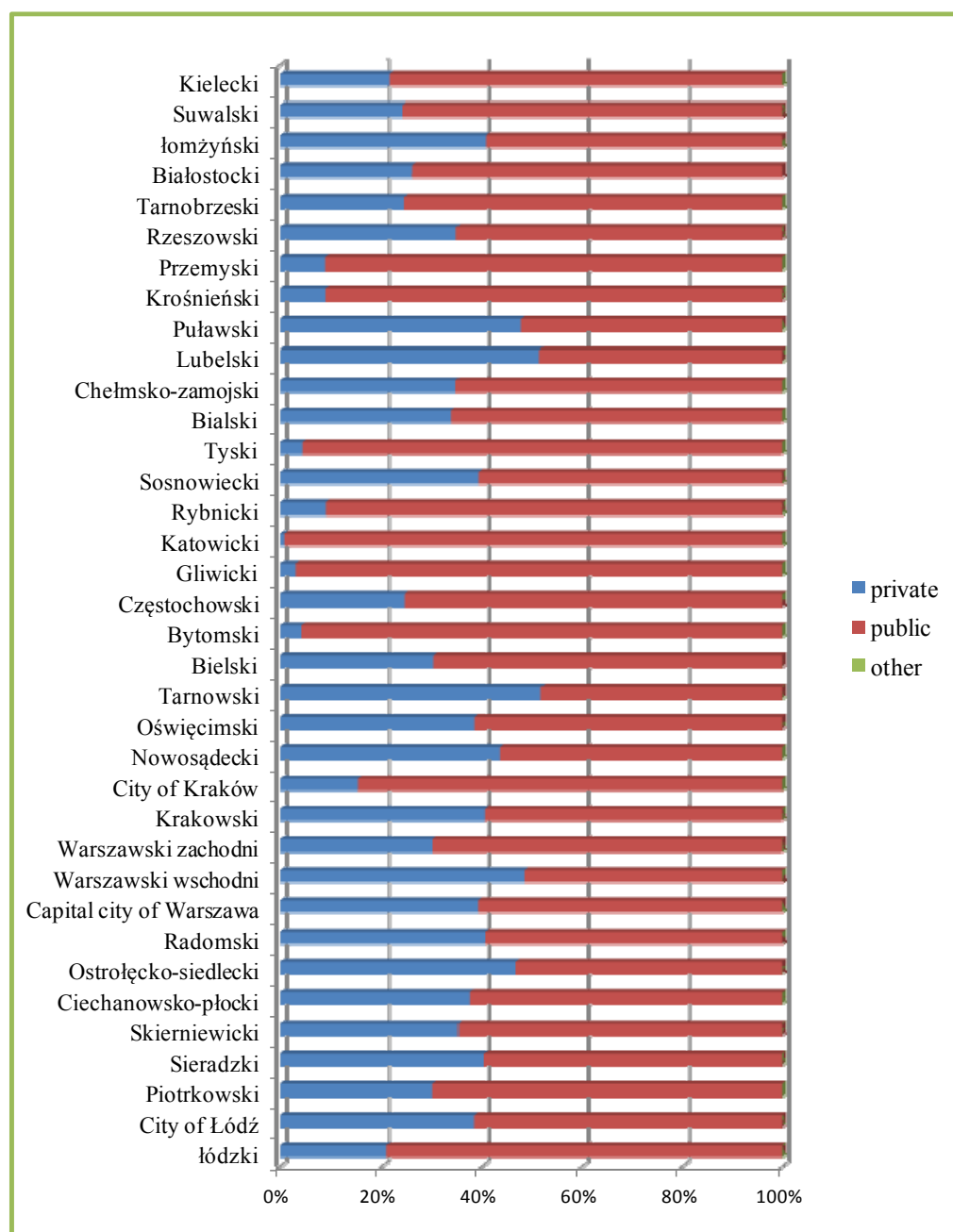


Figure 36. Excerpt (36 out of 66 districts are shown for illustration) of the forest ownership distribution in Poland. (The full table is found in Annex 7).

Romania

In Romania the total forest area is equally distributed between public (51%) and private (49%). Nevertheless at the county level the distribution of ownership of forest is variable. For example in Constanta county and in Tulcea county all forests are public (33 104 and 91 459 ha respectively). In the remaining counties the share of private forest varies from a minimum of about 7% (1389 ha) in the Calarasi county, to 81% (117 471 ha) in Mehedinti county and

82% (154 217 ha) in Bistrita – Nasaud county. In Romania private forests belong to individuals, associations, church/monasteries and communities (SILVA RNP database, Regia Nationala a Padurilor, 2011 database; personal communication, Angheluta Vadineanu) (Figure 37).

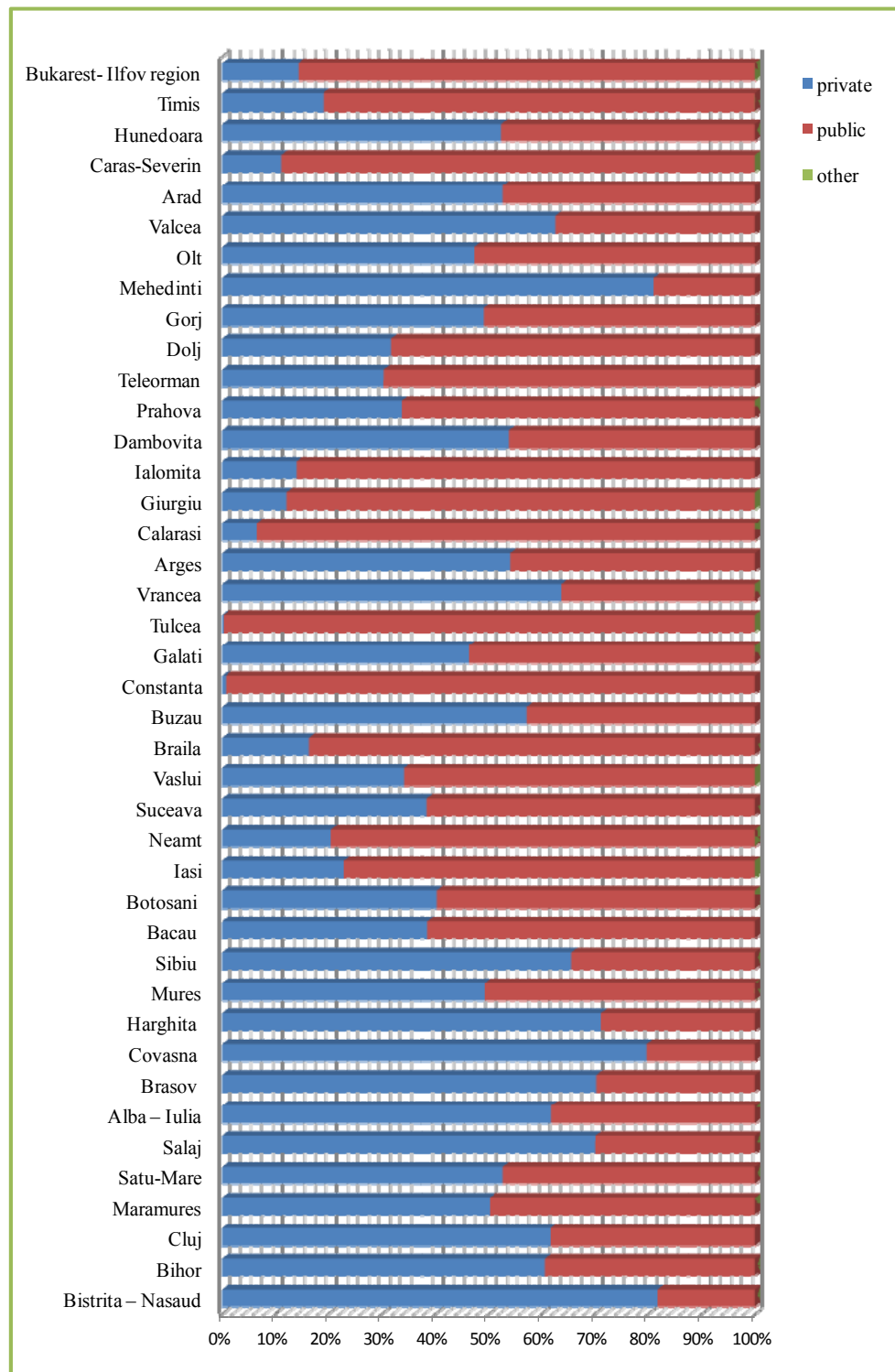


Figure 37. Forest ownership shares in the 41 counties of Romania.

Slovak Republic

In the Slovak Republic the data are available only at national level (FOREST EUROPE, UNECE and FAO, 2011). The Slovak Republic has 827 000 ha of private forests (or 46% of the forest area) while 980 000 ha (54%) are publicly owned (Figure 38).

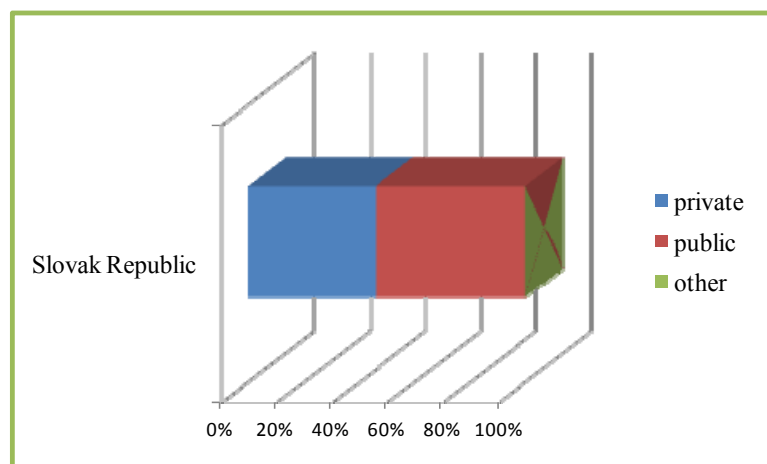


Figure 38. Forest ownership shares in Slovak Republic.

Slovenia

In Slovenia the lowest value of private forests is in the regional unit of Kocevje with 39 460 ha (43% of the forest area) against 52 975 ha (57%) of public forests (Zavod za Gozdove Slovenije, 2011). The highest values of private forests are found in the regional units of Kranj (89%), Ljubljana (87%), Brezice (86%) and Nazarje (85%). In Slovenia the public forests are divided into forests owned by the state and forests owned by communes (Figure 39).

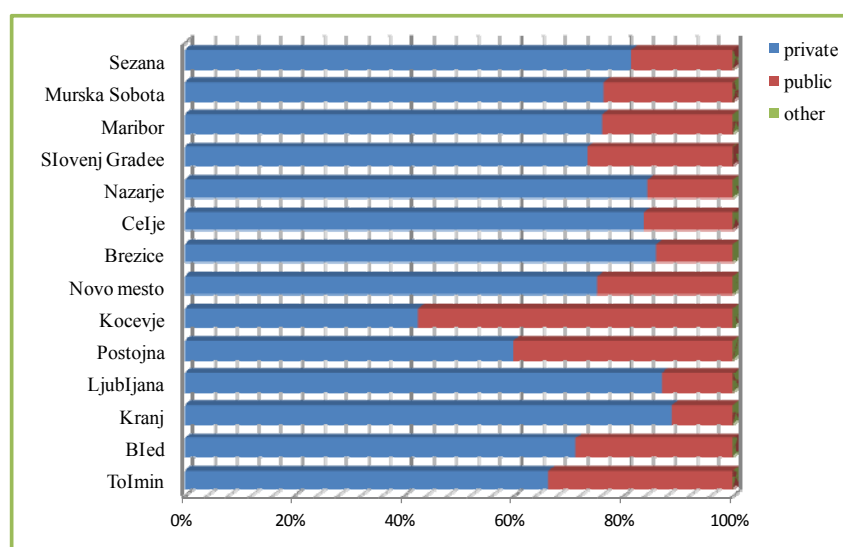


Figure 39. Forest ownership shares in the 15 regional units of Slovenia.

3.2.1.4 Results on existing information on forest ownership in South West Europe (Andorra, Holy See, Italy, Malta, Monaco, Portugal and Spain)

Italy, Portugal and Spain have recent NFIs. The data are available at sub-national level, as are the definitions of forest for these countries. For Andorra and Malta the data are available from international statistics but for our forest ownership mapping negligible. For the Holy See and Monaco no data are available. A general observation for this country group is that the share of private forests predominates.

Italy

The data for Italy result from the second Italian NFI (INFC 2007a). These data show that the main portion of the forest area is privately owned. However differences among the 21 regions are clearly visible. The regions with the lowest amount of private forests are Trentino with 104 770 ha (28% of the forest area) and Abruzzo with 167 308 ha (43%), whereas in Toscana and Liguria the values of private forests are the highest with respectively 864 680 ha (85%) and 292 692 ha (86%). In Italy the public forests are owned by the State and other public bodies (INFC 2007a) (Figures 40, 41 and 42).

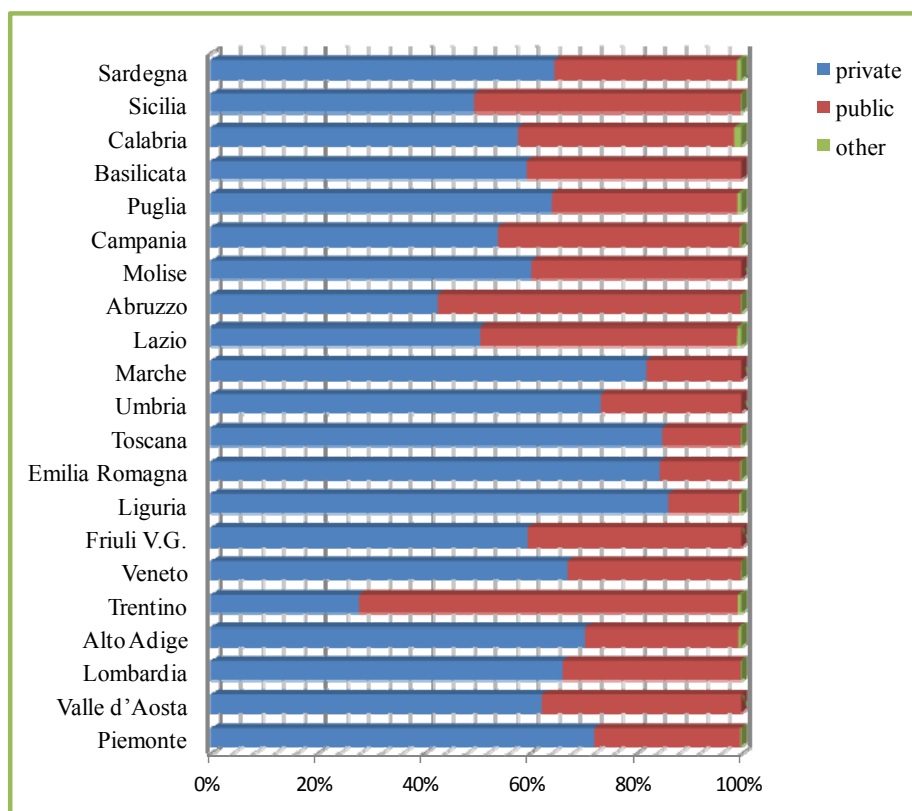


Figure 40. Forest ownership share in the 21 regions of Italy.

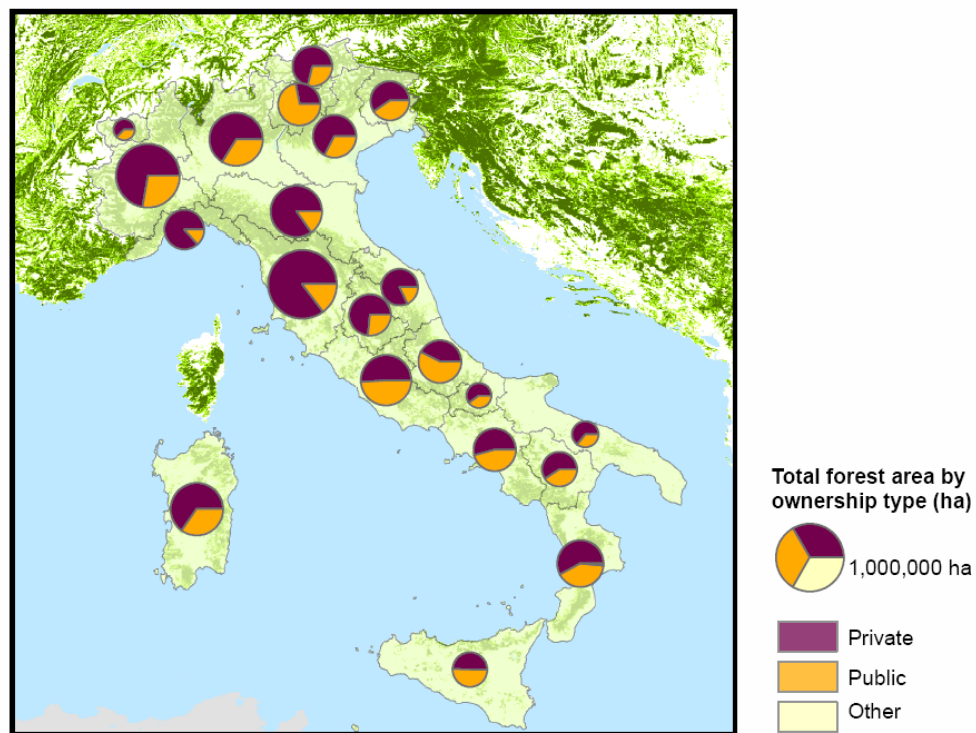
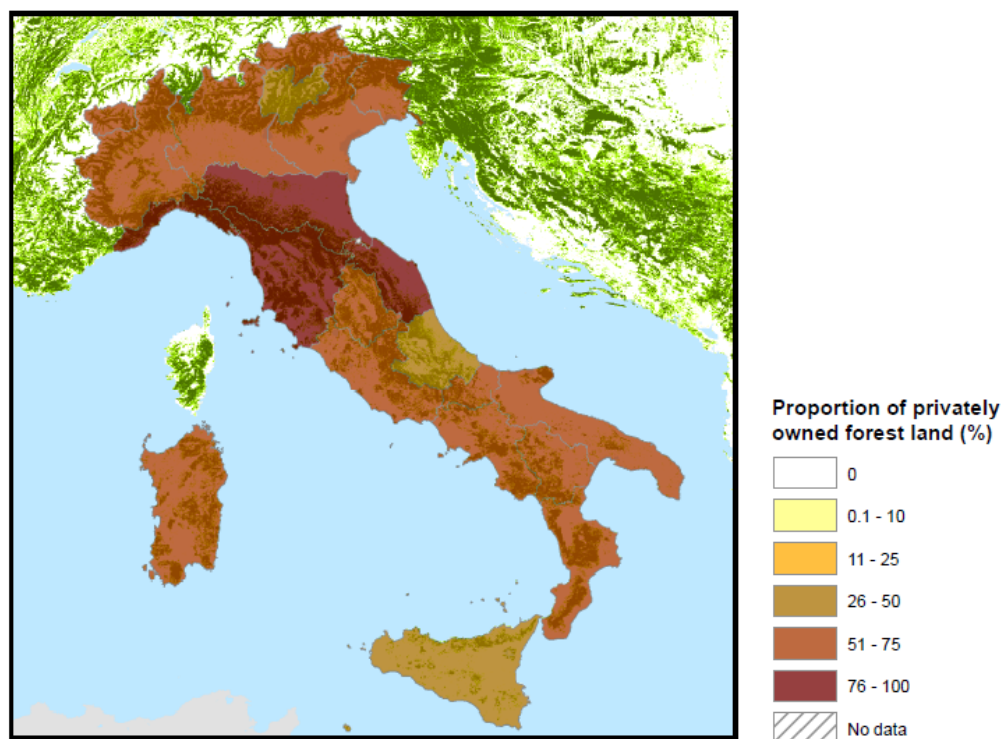


Figure 41. Map of the forest ownership distribution in Italy. **Source:** Forest Ownership Map of Europe database.



Figures 42. Map of the private forest ownership proportions in Italy. **Source:** Forest Ownership Map of Europe database.

Portugal

In Portugal there are very high percentages of private forests owned by companies and foundations as shown by the Inventário Florestal Nacional (Autoridade Florestal Nacional (AFN) and Ministerio da Agricultura do Desenvolvimento Rural e das Pesca 2010). The highest share of private forests is visible for the regions of Algarve and Alentejo where it reaches the 98% of the forest area with 129 870 ha and 1 381 507 ha respectively. The highest value of public forests is in the region of Norte with 93 787 ha (14%). In Portugal the public forests are classified as "matas nacionais e perimetros forestis (MNPF)" and other public forest properties (Figure 43).

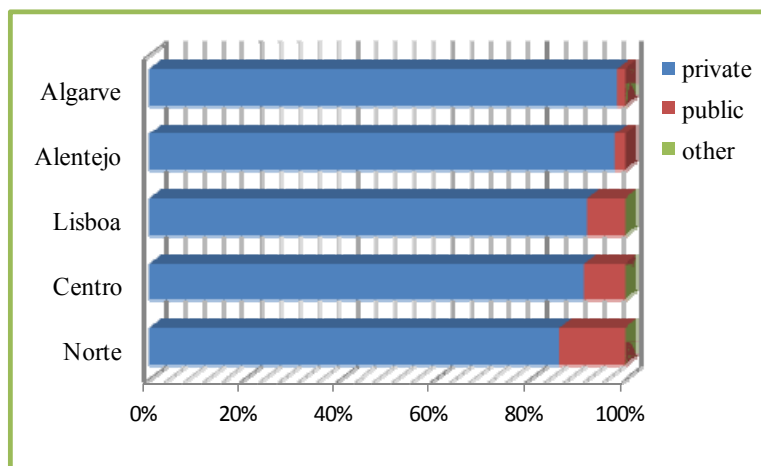


Figure 43. Forest ownership shares in the 5 regions of Portugal.

Spain

In Spain the share of forest in private, public and other ownership differs considerably between regions (MARM 2008). There is a very low share of private forests in Andalucía 68 317 ha (about 2% of the forest area), 839 382 ha (28%) are public forests while about 70% (2 061 379 ha) are of other forest ownership (ownership unknown or unclear). The highest proportion of private forests is found in the Baleares 179 331 ha (96%) and Galicia with about 1 382 414 ha (98%). In Spain public forests are all the forests that belong to state, the Autonomous Regions (CCAA), or the municipalities. Private forests are in the ownership of individuals and associations. In Valencia and Canarias there are also significant areas where ownership could not be clarified and is thus designated as 'other' (Figure 44).

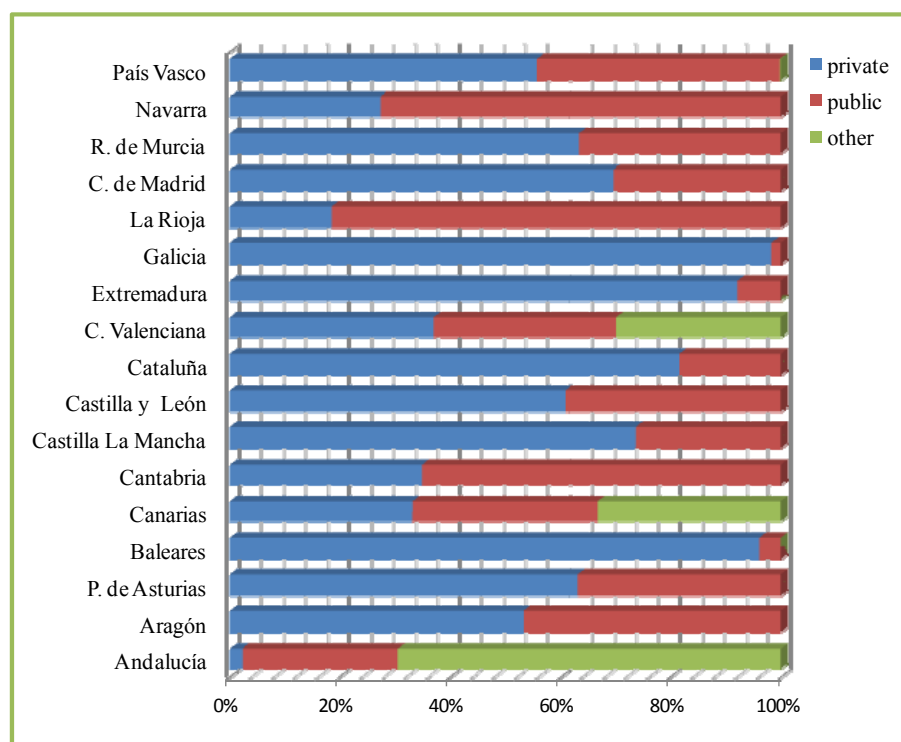


Figure 44. Forest ownership shares in the 17 autonomous regions of Spain.

3.2.1.5 Results on existing information on forest ownership in South East Europe (Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Greece, Kosovo, Macedonia, Montenegro, Republic of Serbia and Turkey)

In this country group Bosnia and Herzegovina, Croatia, Kosovo, Republic of Serbia and Turkey have recent forest inventories. Information for the other countries was found from other national and international statistics.

The data are available at a sub-national level for Bosnia and Herzegovina, Bulgaria, Croatia, Macedonia, Republic of Serbia, and, while for the other countries only national level data were found. The definitions of forest are available for all countries except Montenegro where the national forest inventory is under development and the definition of forest is also being developed. It has shown that in this region the predominant form of ownership is public ownership.

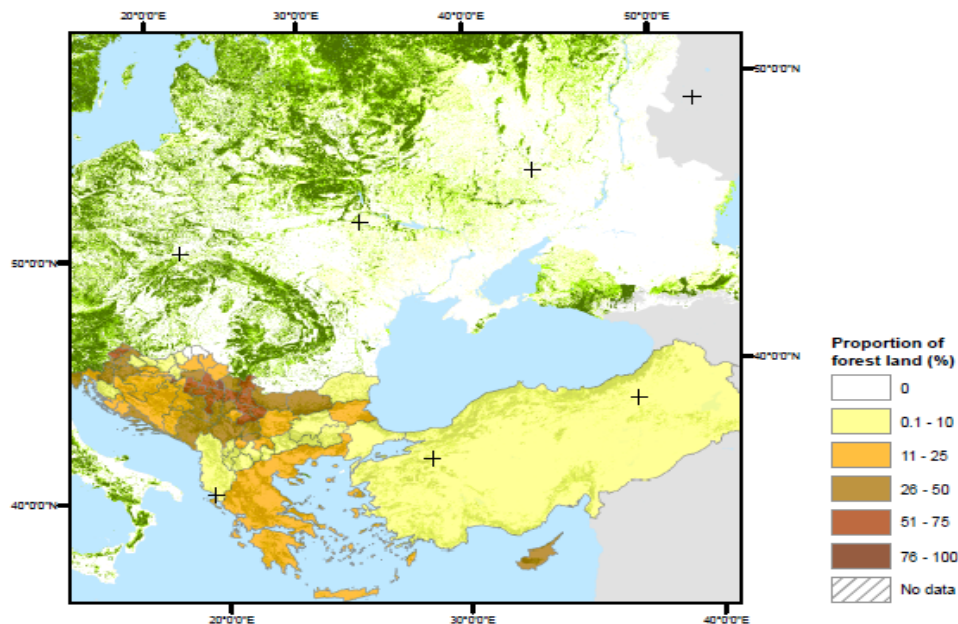


Figure 45. Proportion of private forest ownership in the Southeast Europe region. **Source:** Forest Ownership Map of Europe database.

Albania

The data on the forest ownership shares in Albania are available only at national level (FOREST EUROPE, UNECE and FAO, 2011). In Albania nearly all of the forest is publicly owned (769 000 ha or 98% of the forest area).

Bosnia and Herzegovina

For the Federation of Bosnia and Herzegovina the data for three regions come from different sources. Some 277 000 ha of the forest area are privately owned, while 1 240 622 ha are public property. Noteworthy is the Republika Srpska region where 278 056 ha of forest are in private hands as compared to 1 000 680 ha in public ownership. At the level of the entire country 21% of forests are privately owned while 79% are public forests (Ministry of Agriculture, Water Management and Forestry 2011 - Federation of Bosnia and Herzegovina; Ministry of Agriculture, Forestry and Water Management 2010 - Republika Srpska; Kapic et al., 2007 - Brčko District). (Figure 47).

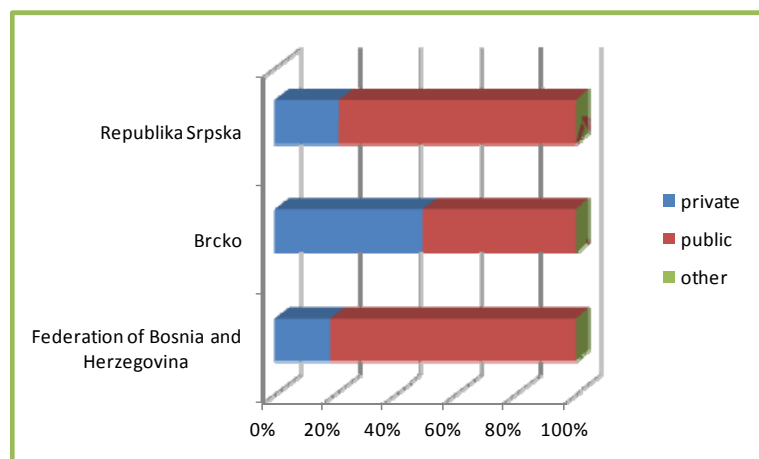


Figure 47. Forest ownership share in the 3 regions of Bosnia & Herzegovina.

Bulgaria

For Bulgaria the data was taken from the database compiled by Schelhaas et al. (2006). The amount of publicly owned forest is higher than that of private forests. The highest value of private forests is located in the Northern region amounting to 121 791 ha (36% the forest area) while the lowest value is found in the South-West region 6162 ha (2%). In Bulgaria private forests are represented by private persons, legal entities and religious communities (Figure 48).

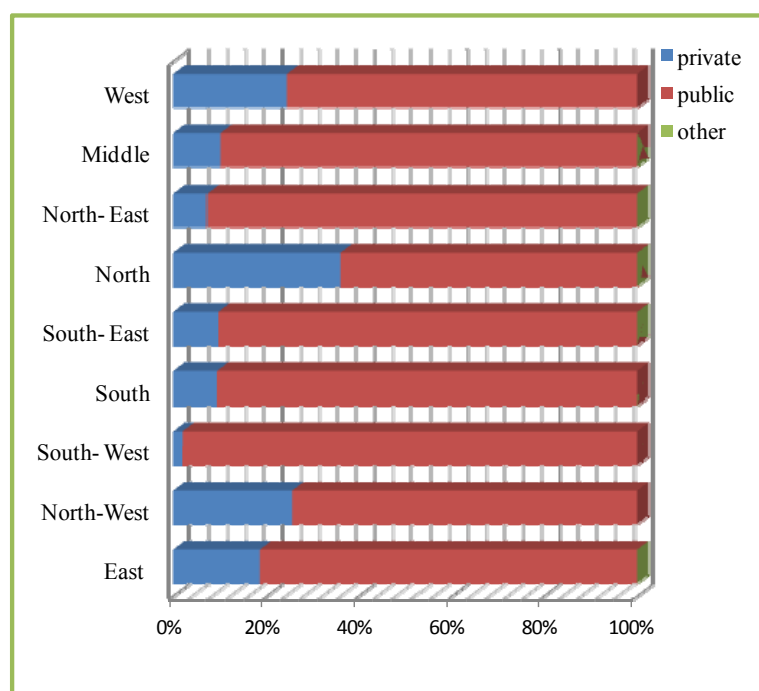


Figure 48. Forest ownership shares in the 9 regions of Bulgaria.

Croatia

In Croatia 78% (1 852 540 ha) of forests are in public ownership and either managed by state-owned forest company, "Hrvatske šume" Ltd. Zagreb or managed by other state agencies (e.g. National Parks). 22% of the forest area (525 180 ha) are in private ownership. When looking at the counties (zupanija) the distribution of forest ownership is very heterogeneous. The amount of private forests varies from slightly more than 1% in Vukovarsko- srijemska zupanija to 57% in the counties of Varazdinska and Krapinsko- zagorska. The share of public forests varies from a minimum of 43% in the counties of Varazdinska and Krapinsko- zagorska to the highest value of about 99% in Vukovarsko- srijemska zupanija (Čavlović 2010; Figures 49, 50 and 51).

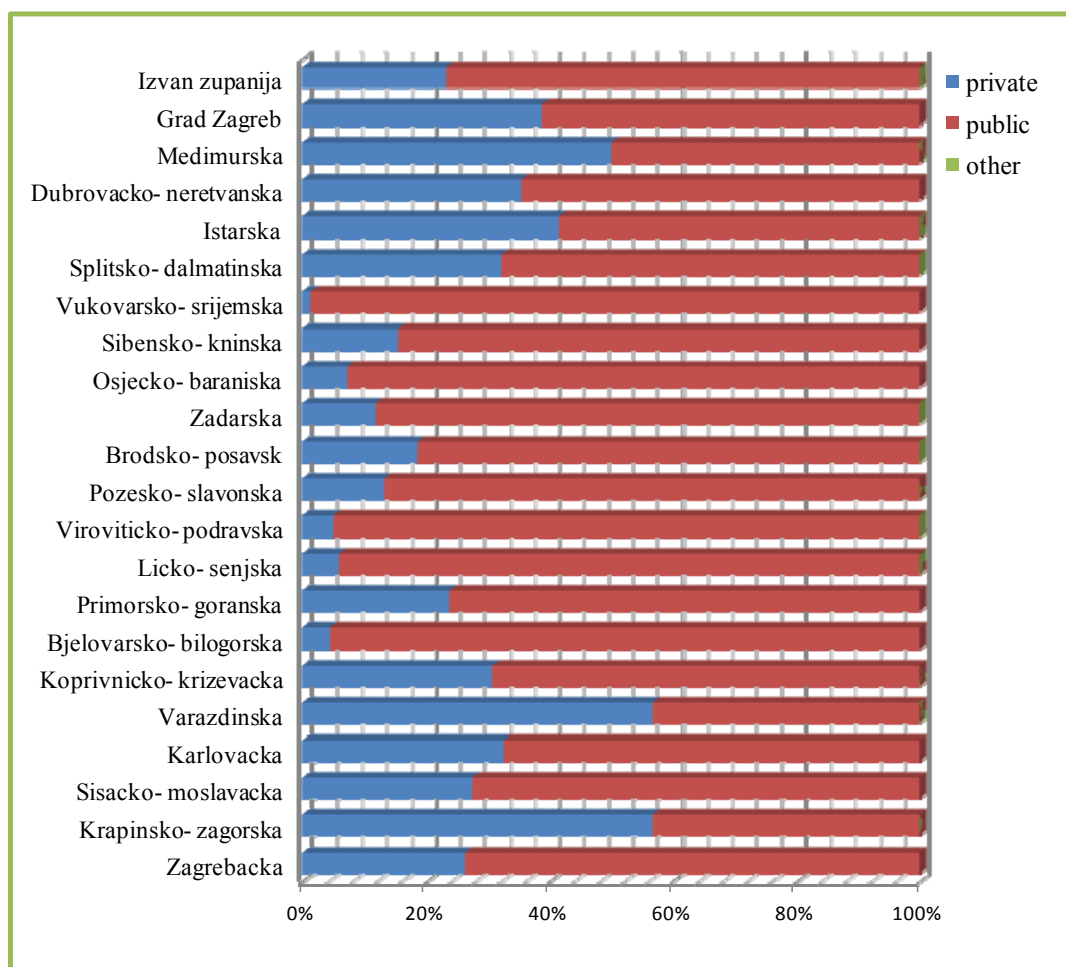


Figure 49. Forest ownership shares in the 22 counties of Croatia.

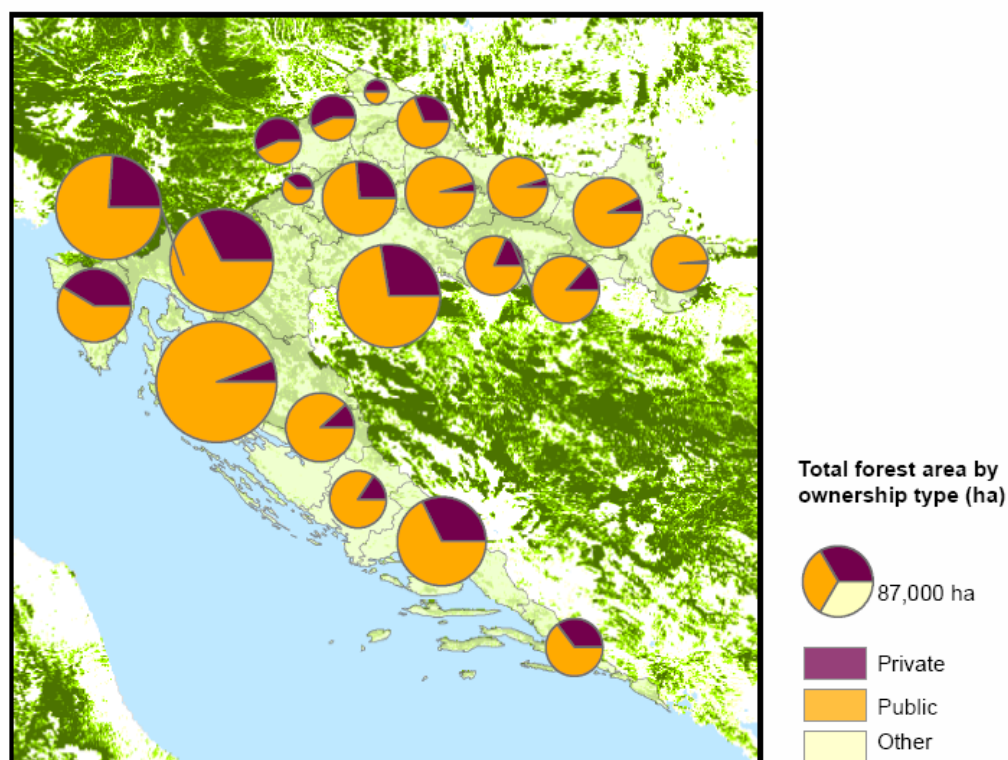


Figure 50. Map of the forest ownership distribution in Croatia. **Source:** Forest Ownership Map of Europe database.

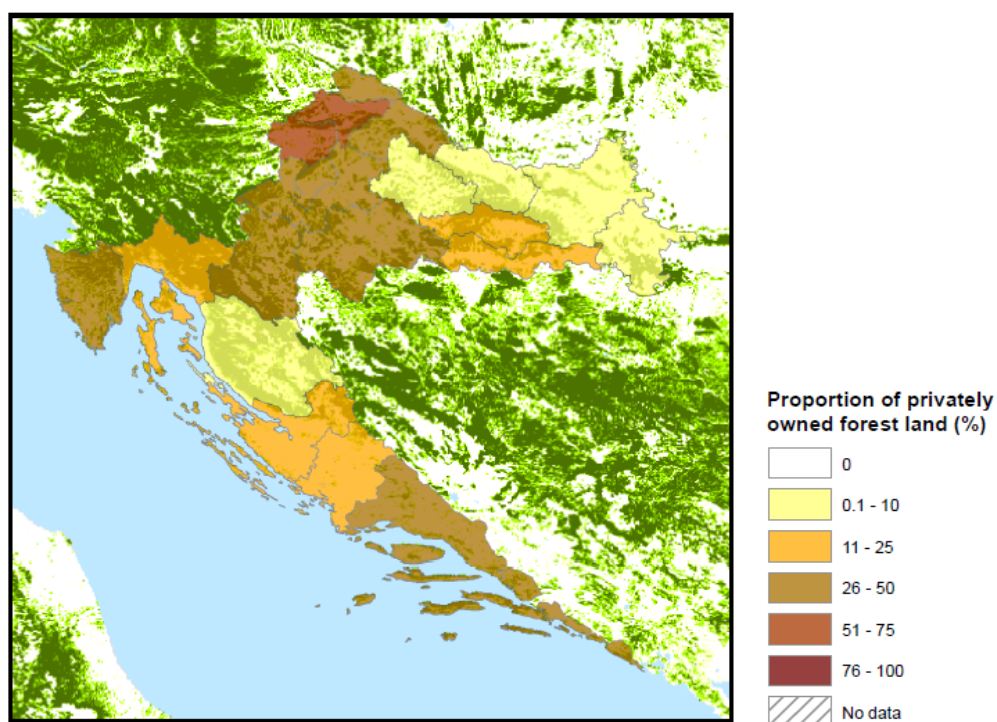


Figure 51. Map of the private forest ownership proportions in Croatia. **Source:** Forest Ownership Map of Europe database.

Cyprus

The data on forest ownership shares in Cyprus are at the national level. In Cyprus 66 970 ha (about 38% of the forest area) are privately owned (Figure 52) while 107 430 ha (62%) are public forests (Cyprus Ministry of Agriculture Natural Resources and Environment, Department of Forests and FAO 2005). In Cyprus an important part of the public forests find their origin in “Hali Land Forests”. Hali-lands are areas that have never been claimed by anyone due to high property and farming taxes imposed by the Ottoman administration. These areas were later declared as common lands and the ownership passed to public domain. Hali-land is dispersed across Cyprus and was not regularly utilised during the last 300 years. Some of these areas have naturally reforested. (Kyriacou 2002).

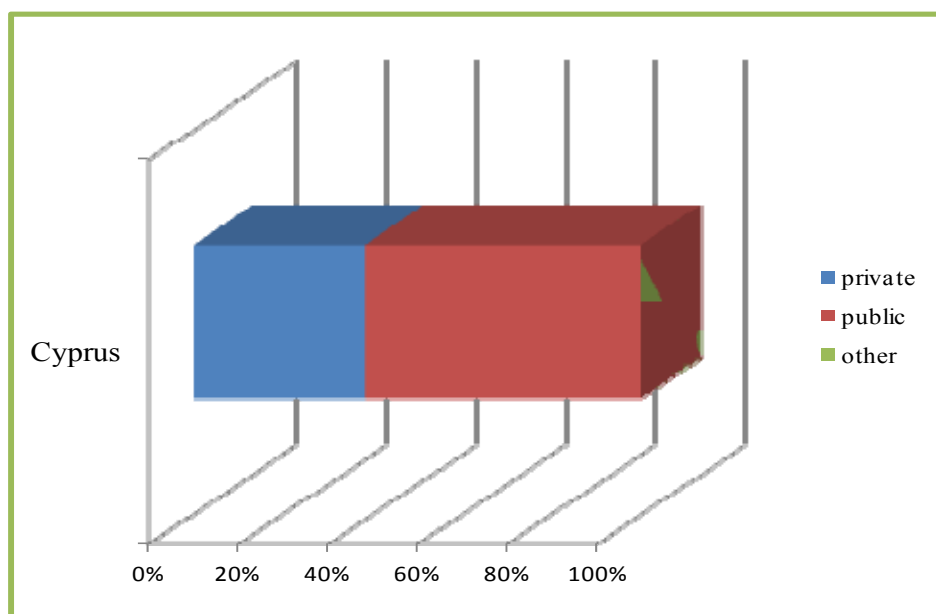


Figure 52. Forest ownership shares in Cyprus.

Greece

The data on forest ownership shares in Greece are at the national level. In Greece more than three-quarters of the forests are publicly owned (2 907 000 ha) with 22.5% (845 000 ha) being privately owned (FOREST EUROPE, UNECE and FAO 2011; Figure 53).

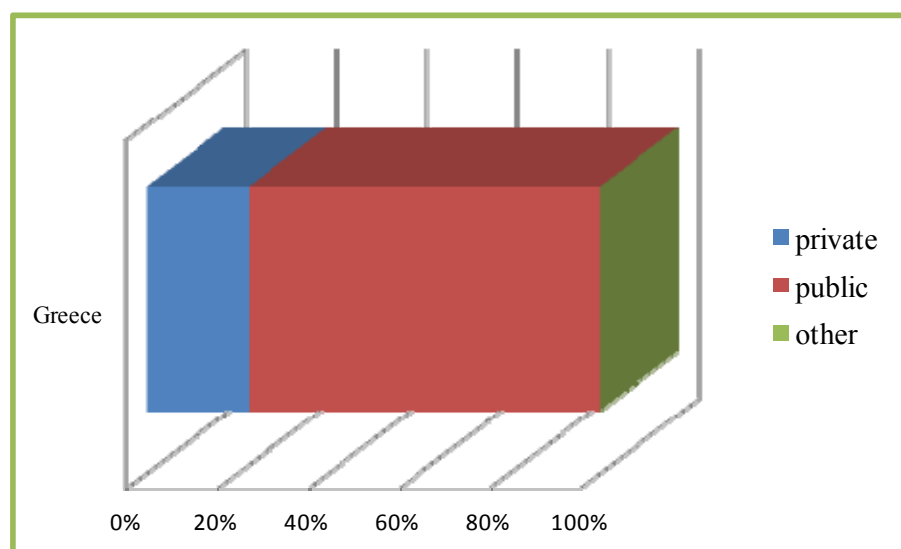


Figure 53. Forest ownership shares in Greece.

Kosovo

The data on forest ownership shares in Kosovo are at the national level. In Kosovo 40% of the forest area is private (185 920 ha) while the remaining 60% are publicly owned (278 880 ha) (Gashi 2010; Figure 54).

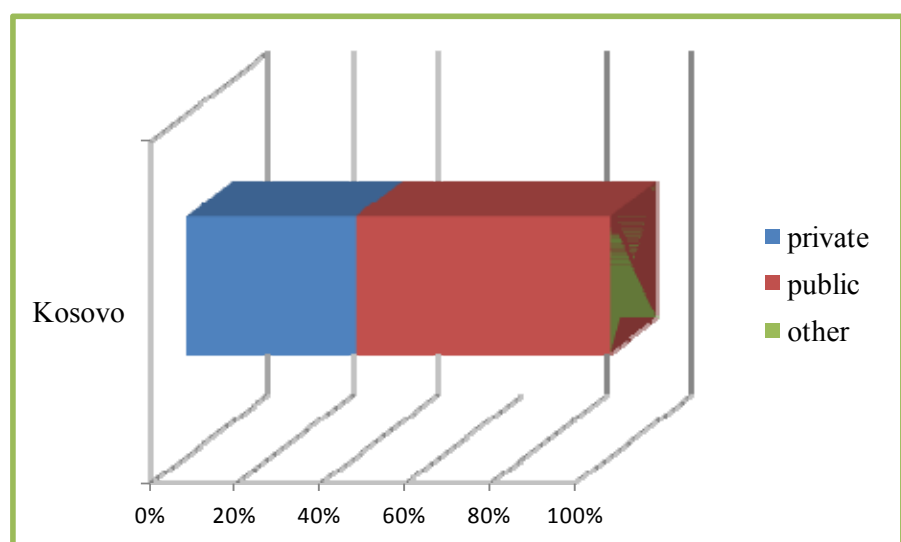


Figure 54. Forest ownership shares in Kosovo.

Macedonia

Figure 55 shows that in Macedonia the largest part of the forests is in public ownership. The share of private forests is very low as illustrated by the regions Vardar and in Pelagonia with respectively 3620 ha (3% of the forest area) and 2817 ha (2%). The share of privately owned forest is higher in the North-Eastern region with 18142 ha or 32% of the forest area (Glück et al. 2011).

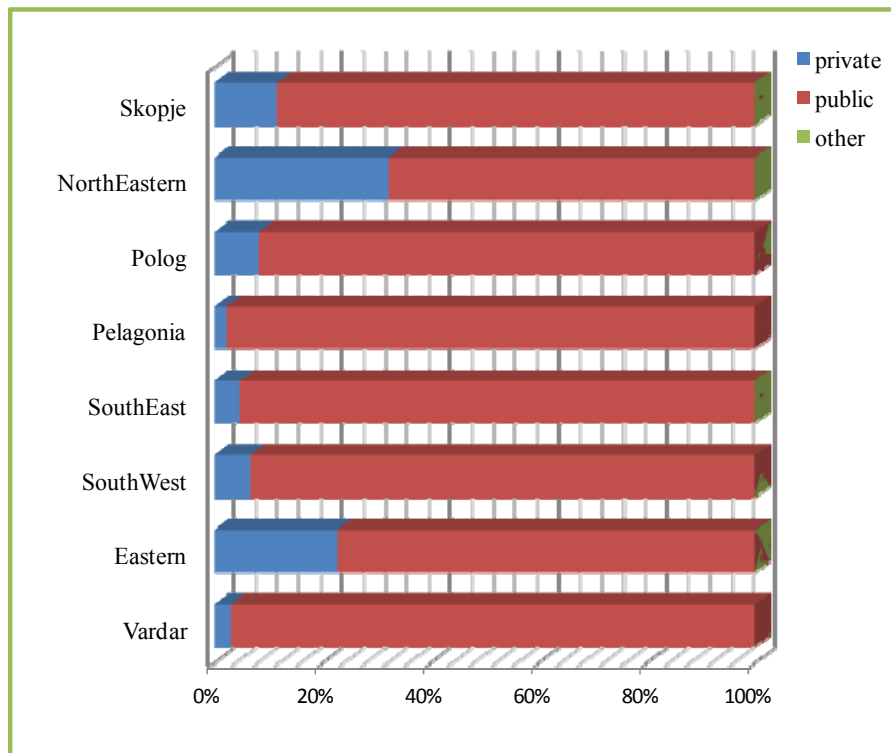


Figure 55. Forest ownership shares in 8 regions of Macedonia.

Montenegro

The data on the forest ownership shares in Montenegro are only available at the national level. The 'State of Europe's Forests 2011' report states that there are 337 000 ha (72%) of publicly owned forests and 130 000 ha (28%) of privately owned forests (Figure 56) (FOREST EUROPE, UNECE and FAO 2011).

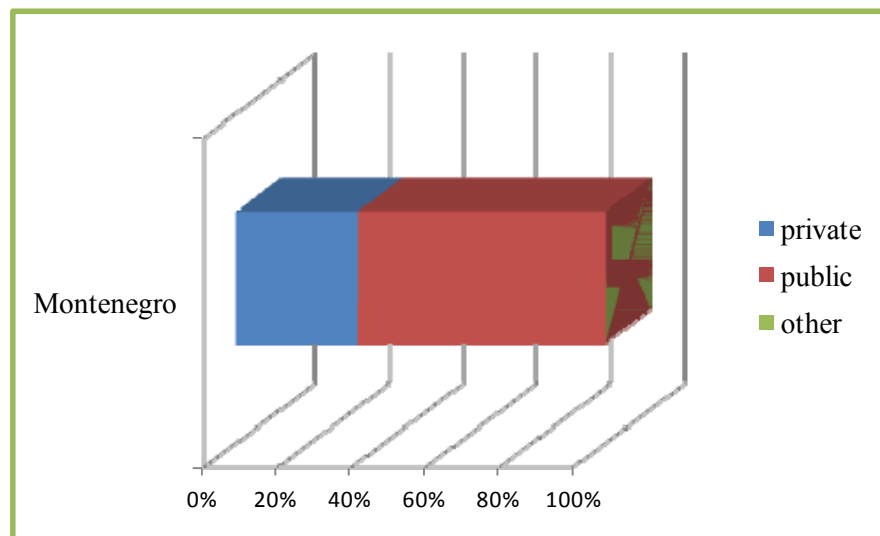


Figure 56. Forest ownership shares in Montenegro.

Serbia

In Serbia the situation of forest ownership is very heterogeneous (Ministry of Agriculture, Forestry and Water Management of the Republic of Serbia, Forest Directorate 2009). For example in North-Backa administrative district 100% of the forests are public while in the Podunavlje administrative district all the forests are private. The next lowest value of private forest is in West-Backa administrative district with slightly more than 2% or 400 ha the forest area as compared to 16 800 ha of public forests. Another high value of private forest is found in Kolubara administrative district with a share of 68% or 49 600 ha (Figure 57).

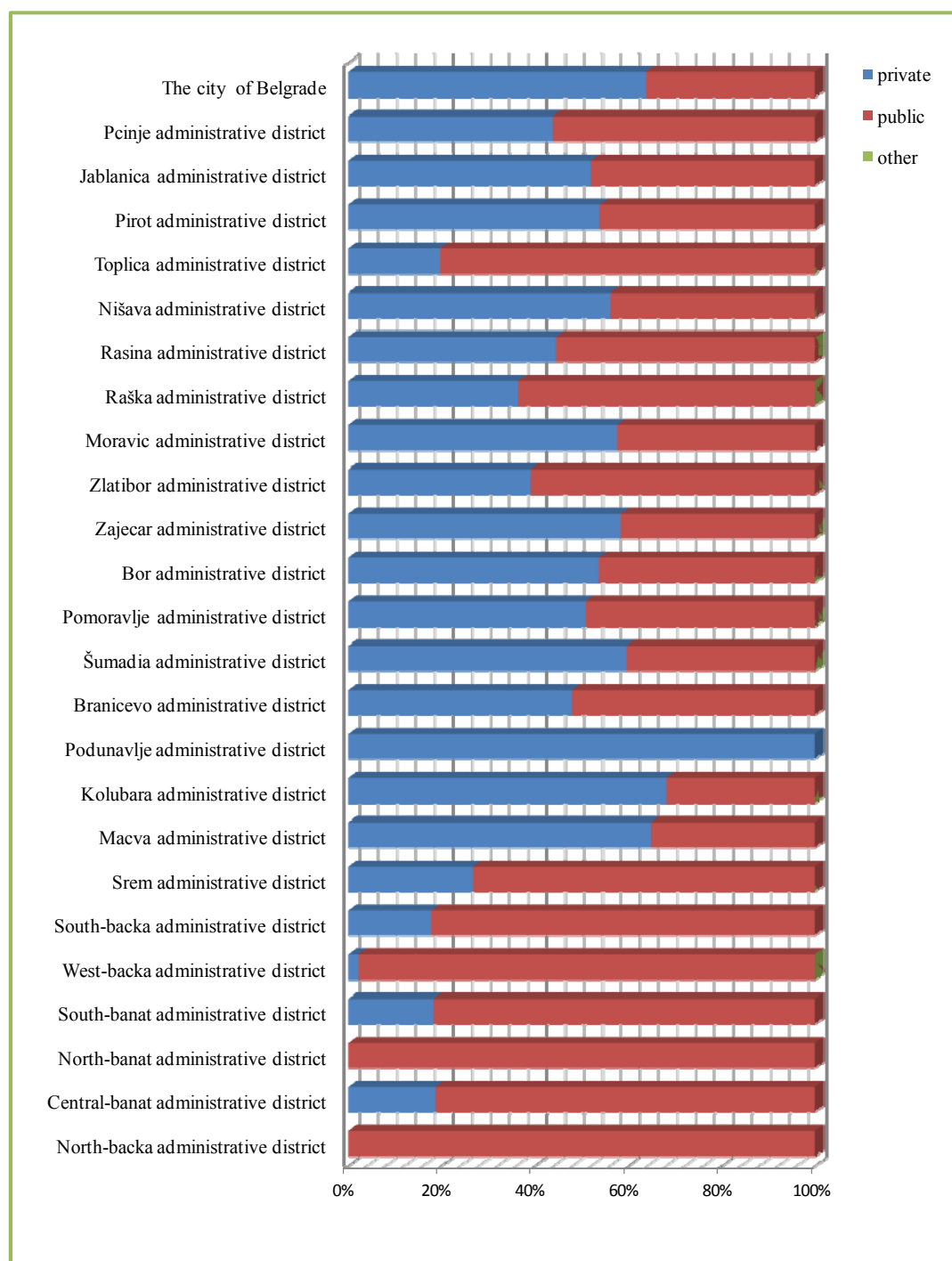


Figure 57. Forest ownership shares in the 24 administrative districts of Serbia.

Turkey

The data on the forest ownership share in Turkey are at national level. In Turkey nearly all of the forest is in public domain (10 730 000 ha), while less than 1% is privately owned (FOREST EUROPE, UNECE and FAO 2011, Figure 58).

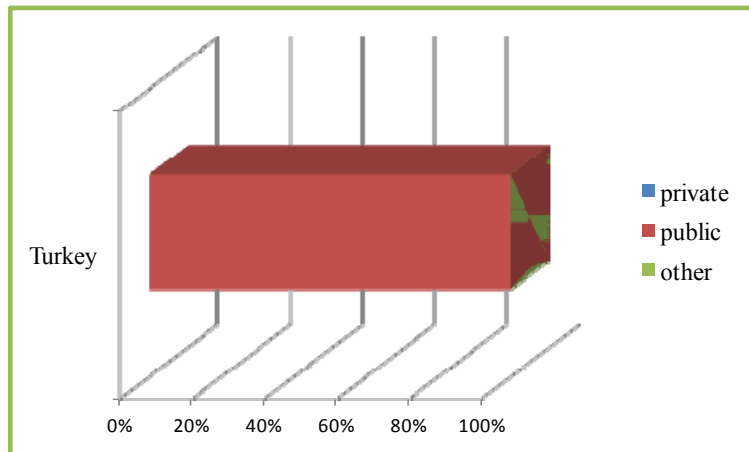


Figure 58. Forest ownership share in Turkey.

3.2.1.6 Results on existing information on forest ownership in the Russian Federation (European part)

The data were available for 56 oblasts (regions) of the European part of the Russian Federation (Figure 59; see also Annexes 1, 7, 9). All forest ownership in the European part of the Russia is exclusively publicly owned (Federal Forestry Agency, 2011). Considerable amounts of the forest are leased by companies (Ilavský 2007). The total forest area in the European part of the Russian Federation amounts to 171 188 100 ha. The forests are owned by Ministry of Natural Resources, Ministry of Defence, Ministry of Education, Ministry of Agriculture and city.

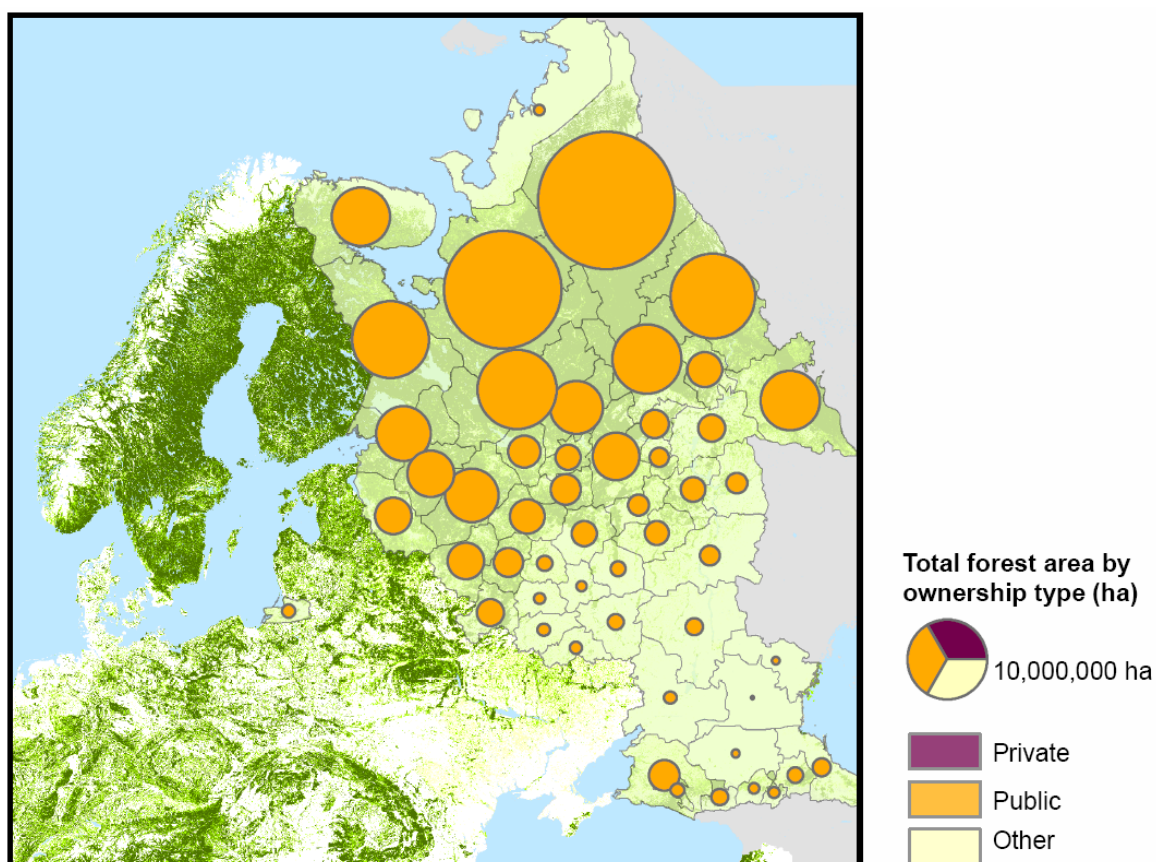


Figure 59. Spatial map of the forest ownership distribution in the Russian Federation (European part).
Source: Forest Ownership Map of Europe database.

3.2.2 Differences among countries by European MCPFE sub regions at the national level

There are 376 329 215 ha of forests in the 47 countries (46 MCPFE countries + Kosovo) included in this study. Of these about 100.3 million ha (27%) are privately owned, while 272 million ha (72%) are in public ownership. About 4 million ha are in ownership which could not be clearly distinguished. When excluding countries in which all forests are owned by the state (the European part of the Russian Federation, Ukraine, Belarus and Georgia) the forest area amounts 183.4 million ha. Those forests divide as following based on ownership: about 55% (100.3 million ha) are privately owned, while 43% (79.1 million ha) are in public ownership. The remaining area (about 4 million ha equivalent to 2%) could not be clearly designated.

There are numerous sources of data that quantify the amount of forests for Europe and worldwide. They can vary with regard to reference years and/or the adopted definition of “forest”. These are issues that make it challenging to compare figures between sources. For this study official national data sources were used if they were available. If national data sources were not available, then the data reported for particular countries in international reports were used. The figures for forest area reported in national data sources were compared with the figures reported in the ‘State of Europe’s Forests 2011 (SoEF 2011)’ report (FOREST EUROPE, UNECE and FAO 2011) (see Table 2). For details see Annexes 7 and 8. As expected, the table indicates that for most countries the figures available from national sources compare well with those reported for the SoEF 2011. For most countries the variation is within $\pm 10\%$. For a few countries the values diverted slightly more. The European part of the Russian Federation (data only exists for whole of the Russian Federation in the SoEF 2011), Monaco, Holy See and Malta were not investigated.

3.2.3 The processing of the statistical data

The data were compiled from the national statistics and other official sources. The forest ownership data at national/sub-national were categorized according to ownership type (public, private and other kind of forest ownership; see Annex 7). Often more level of detail was available concerning ownership types for national statistics as compared to the internationally agreed classification system (public, private, other) used for building the forest ownership map. They included small forest holdings, church forests, communal, municipal, regional and community forests, foundation forests, company forests and numerous other country specific ownership classifications (Annex 6).

In a following step the national/sub-national ownership forest classes were assigned to internationally agreed definitions of private, public and other forest ownership (FAO, 2010; FOREST EUROPE, UNECE and FAO 2011).

Table 2. Ratio of 'forest area' figures acquired from national statistical sources to the forest area reported for the 'State of Europe's Forests 2011' report (FOREST EUROPE, UNECE and FAO 2011). The full table showing the areas reported from national sources and those reported in SoEF along with the reference years is given in Annex 8.

Country	Ratio SoEF/ national stats	Country	Ratio SoEF/ national stats	Country	Ratio SoEF/ national stats
Albania	0.99	Germany	1.00	Norway	0.93
Austria	0.97	Greece	1.04	Poland	1.00
Belarus	0.91	Hungary	1.03	Portugal	1.00
Belgium	0.98	Iceland	1.00	Romania	1.03
Bosnia and Herzegovina	1.13	Ireland	1.18	Serbia+ Kosovo	1.00
Bulgaria	1.24	Italy	1.04	Slovak Republic	1.00
Croatia	0.81	Latvia	1.00	Slovenia	1.06
Cyprus	0.99	Liechtenstein	1.05	Spain	1.00
Czech Republic	0.97	Lithuania	1.02	Sweden	1.01
Denmark	1.03	Luxembourg	1.01	Switzerland	0.97
Estonia	1.00	Macedonia	1.10	Turkey	1.06
Finland	1.10	Moldova	1.06	Ukraine	1.01
France	0.99	Montenegro	1.00	United Kingdom	1.10
Georgia	1.00	Netherlands	1.16		

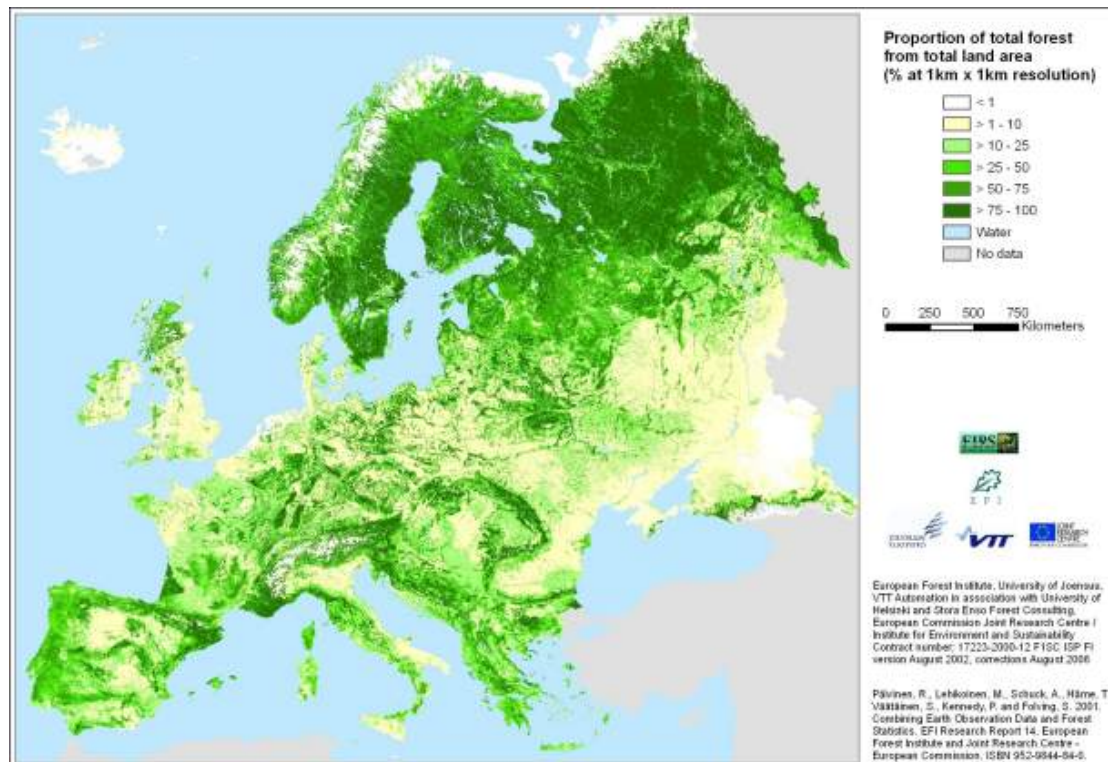


Figure 60. Forest Map of Europe. (Gunia et al. 2012).

The recently updated European Forest Map as elaborated by Gunia et al. (2012) is based on the approach developed by Päivinen et al. (2001) and Schuck et al. (2002 and 2003). It shows the proportion of the total forest cover from total land area at a resolution of 1km x 1km (Figure 60). The forest map of Europe is shown here to illustrate more visually the distribution of forest ownership in Europe and thus may serve a more illustrative picture when looking at the forest ownership maps presented in Figures 61-63.

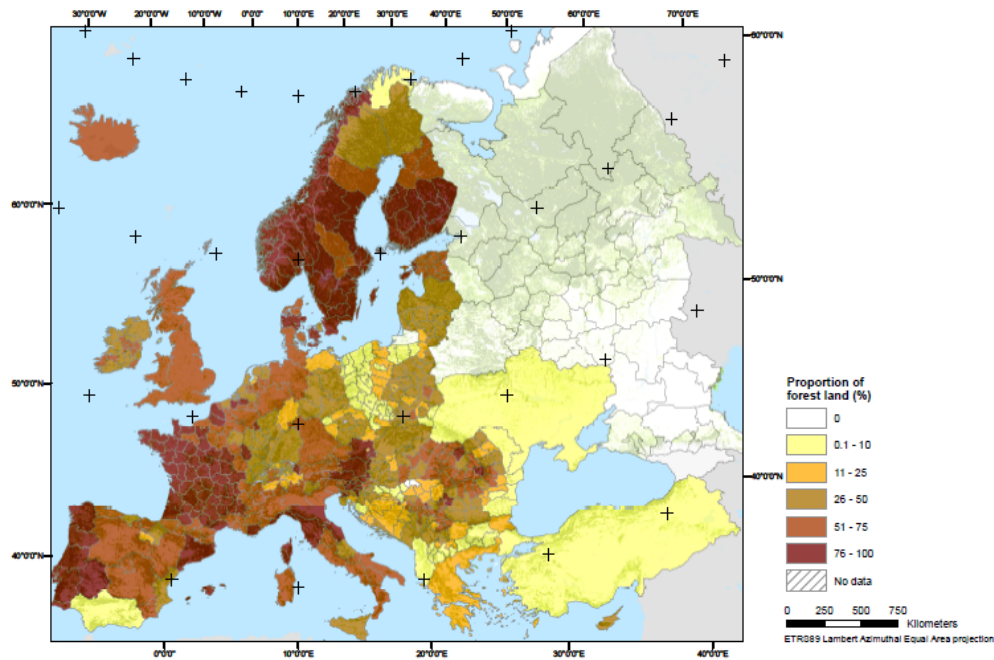


Figure 61. Proportion of forest land in private ownership. **Source:** Forest Ownership Map of Europe database.

Figure 61 shows that there are considerable amounts of private forests (more than 75%) in many or most of their sub-national level polygons in northern Europe (Finland, Sweden and Norway) and also in Portugal, France, Slovenia and Austria. Most European countries, are characterized by a more balanced share of private forests ranging between 26 and 50% at sub-national level with some exceptions. Some countries in Central East, Southeast and in the Russian Federation show lower figures. Figure 62 gives the distribution of public forest which is consequently more dominant Central Eastern and South Eastern regions and in the Russian Federation. Figure 63 completes the picture by presenting forest ownership of other kind, neither private nor public. However these data were scarce for most countries as ownership is well designated with national statistics.

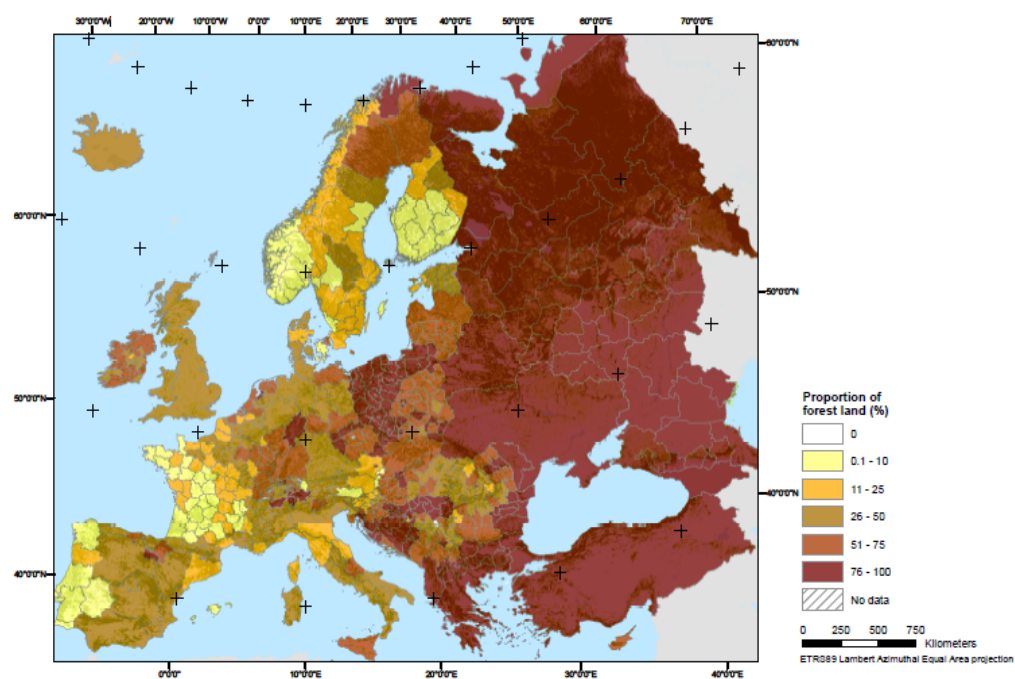


Figure 62. Proportion of forest land in public ownership. **Source:** Forest Ownership Map of Europe database.

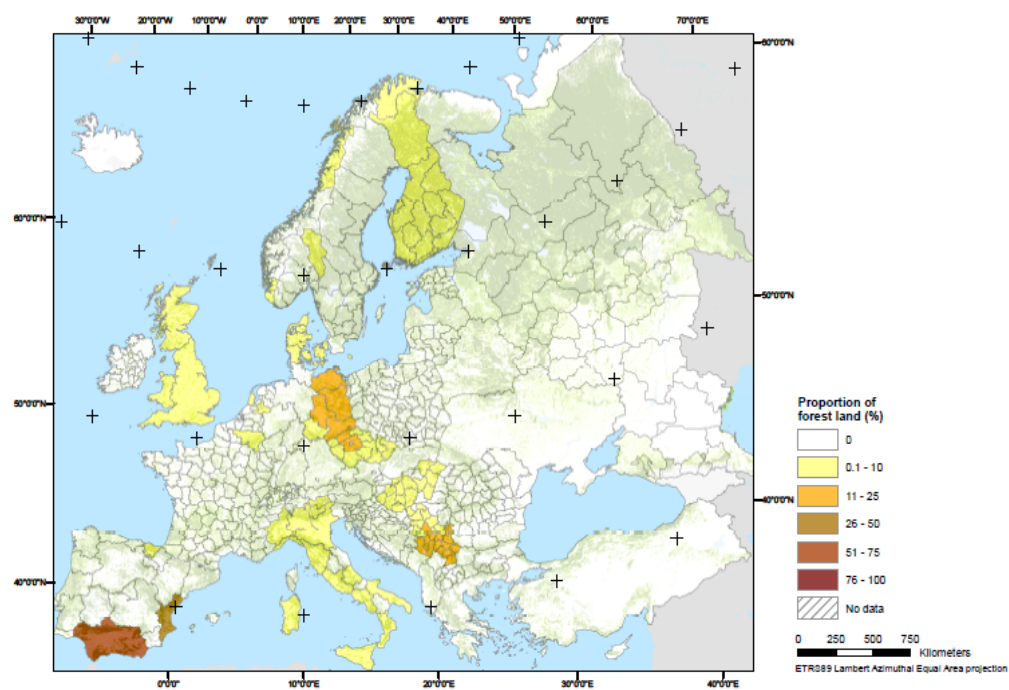


Figure 63. Proportion of forest land in other kind of ownership. **Source:** Forest Ownership Map of Europe database.

3.2.4. Existing forest ownership maps in European countries

The availability of the geo-referenced maps for producing more elaborate forest ownership maps for Europe is of crucial importance. For the study a questionnaire was elaborated for investigating the availability of such geo-referenced maps of forest ownership. About half of the investigated countries replied to the questionnaire. In the case of no reply, web searches were conducted. Moreover in many of the countries where maps were identified they were either not freely available or their access restricted. The outcome of the enquiry is presented in the following (see also Annexes 4 and 5).

An important observation was that geo-referenced forest maps were limited to those on public ownership. Geo-referenced maps on private forest ownership were in general not available.

The following two figures show which countries have available geo-referenced public forest ownership maps (Figure 64) and present the situation regarding maps on private forest ownership (Figure 65). 21 respondents verified the existence of public forest ownership maps (green shading). Countries where such maps do not exist are shown in red while grey represents those countries where no information could be acquired from questionnaire or web research.

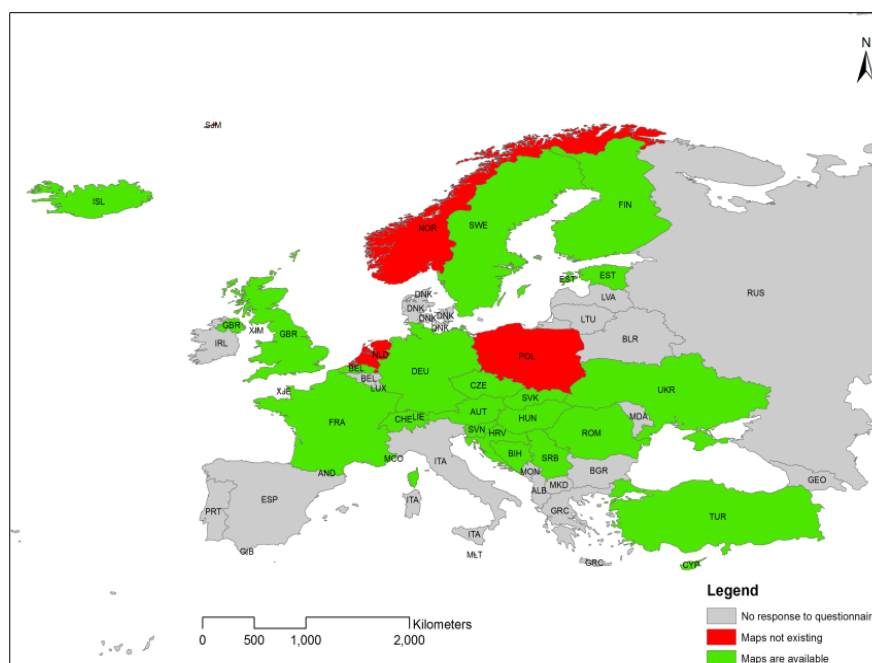


Figure 64. Availability of public forest maps in European countries. **Source:** Forest ownership map of Europe database.

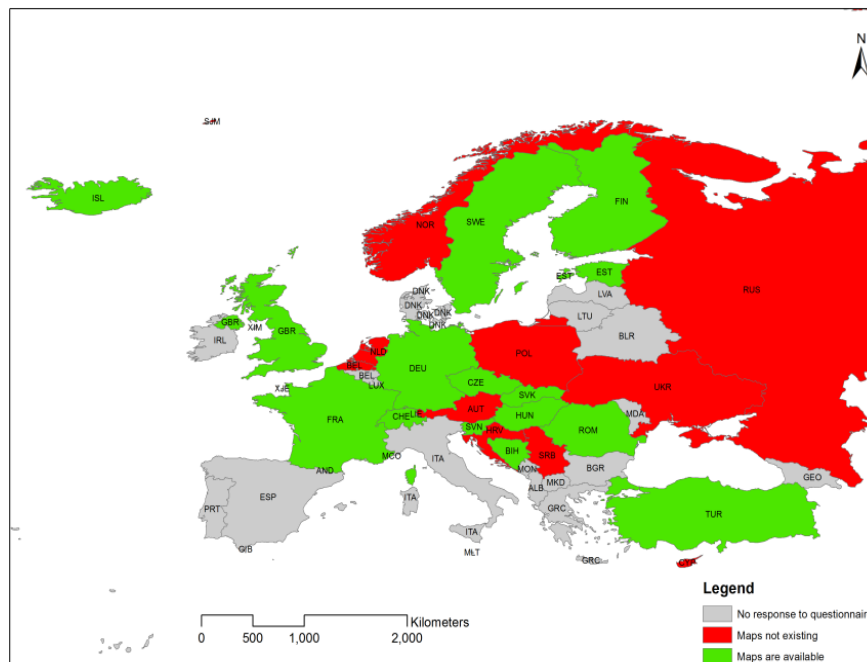


Figure 65. Availability of private forest maps in European countries. **Source:** Forest Ownership Map of Europe database.

In the following section the information are presented for those countries that have available private and/or public geo-referenced forest ownership maps. It includes additional information collected through the questionnaire on restrictions towards accessibility, what types of restrictions exist, how the maps may be acquired/accessed and in which format they are available.

Austria

The Austrian respondent stated that a geo-referenced map on public forest exists but not for private forests. The respondent explained that private and public ownership are registered in the land registry ("Grundbuch"), which has a spatial component (digital cadastral map - DKM). Access to this land registry is very much restricted. Public maps are only available for the Austrian state forests (Bundesforste). More information can be found at:

- http://www.bundesforste.at/fileadmin/user_upload/Presse/Publikationen/UL_Folder-Einzelseiten-2011.pdf
- <http://map.bundesforste.at/oebf-betriebe/#6>
- http://gis.lebensministerium.at/geoinfo/frames/index.php?&146=true&gui_id=geoinfo
- <http://www.brainworker.ch/Oesterreich/Forstwirtschaft.html>

Belgium

In Belgium the respondent stated that forest matters are of regional concern as there are separate National Forests Inventories for Wallonia and Flanders.

For Wallonia it was said that the only map that gives explicit information about forest ownership is produced by the forest administration and access to the information is restricted. In order to obtain the map it is necessary to send a paper request to the forest administration. No map exists for private forests.

For Flanders there are forest maps for 1990 and 2000 for public forests (Figure 66). They can be found at:

- <http://metadata.agiv.be/Details.aspx?fileIdentifier=63D62DD2-E800-4406-BF59-74DF33D109E1>

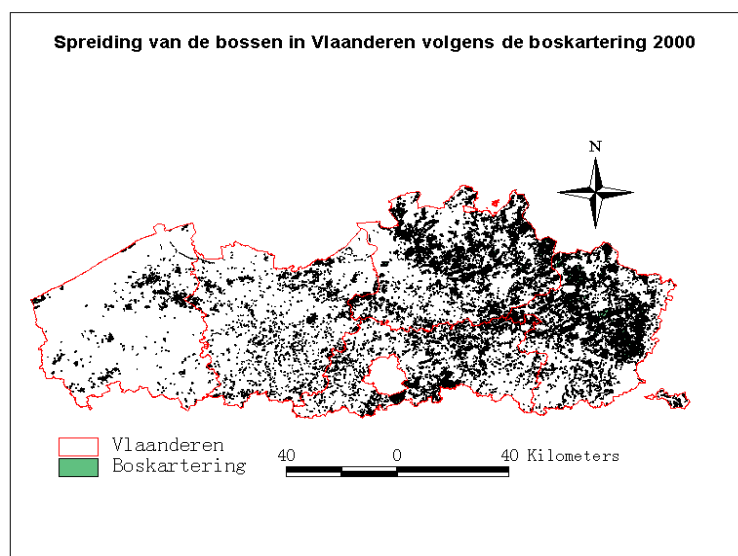


Figure 66. Distribution of public forest ownership in Flanders. **Source.** Agentschap voor Geografische Informatie Vlaanderen 2012.

Bosnia and Herzegovina

The questionnaire from Bosnia and Herzegovina provided information that geo-referenced forest ownership maps exist. It was suggested that cantonal forest enterprises (in the Federation of Bosnia and Herzegovina) and public enterprise Šume RS (in the Republic of Srpska) are the holders of such maps. The availability of the maps is with restrictions, and only public forest administration, researchers and other interested users (under special conditions) can have access. The conditions to access are in some cases also linked to fees. As concerns forests in public ownership, these maps exist for roughly 80% of public forests.

Maps on private ownership exist for some cantons (e.g. Sarajevo and Zenica-Doboj) and Brčko DC. Web links that may be consulted are:

- Šume Unsko-sanskog kantona (the F B-H): <http://www.ussume.ba/>
- Šume Tuzlanskog kantona (the F B-H): <http://www.jpsumetk.ba/site/>
- http://illegallogging.rec.org/publications/BiH_IL%20Fact%20Finding_Final.pdf

Croatia

From Croatia the respondent informed that geo-referenced maps on forest ownership exist. They are available for all forests in public ownership. Regarding private forests, currently there is ongoing process to map private ownership in Croatia. Therefore no geo-referenced map for private forest ownership is available at this point in time. On the web site of “Hrvatske šume” Ltd. there is a link (<http://javni-podaci-karta.hrsume.hr/>) to an interactive map which shows the distribution of forests in Croatia also giving basic data for public forest from forest management plans for every forest management unit.

Each privately owned forest that has in place a forest management plan can be also found on the map. The web link does not offer the possibility of downloading the map, it only gives information to the public in an interactive interface. Acquiring the map is possible by formal request to the Ministry of Agriculture through the above web link. Conditions for acquiring the map depend on the purpose for which the map will be used. It can be as paper copy, .pdf file, .shp file or other.

Cyprus

The contact in Cyprus responded that a geo-referenced forest ownership map for public forests exists. Access to the map is restricted. There are no geo-referenced maps on private forests, because information for private owned forest land is not available and information of forests in private land is not recorded.

Czech Republic

From Czech Republic no response was received to the questionnaire. A map on the forest ownership was found from the Czech NFI web site available in .jpg format at (Figure 67):

- http://www.uhul.cz/il/vysledky/map_vyst/pages/druh_vlastnictvi.php

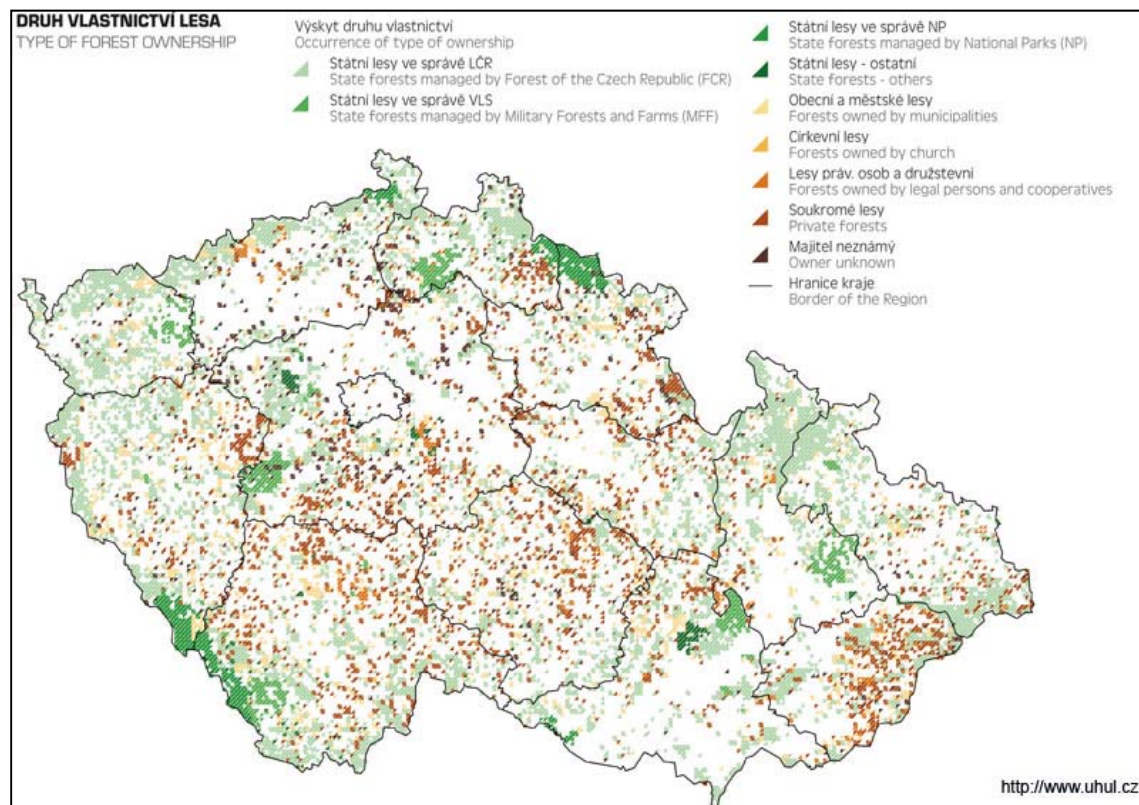


Figure 67. Distribution of forest ownership in Czech Republic. **Source:** ÚHUL (2004a,b,c,d,e).

Estonia

The respondent from Estonia stated that a geo-referenced map for public forests exists. In fact everyone may access the maps. Also a geo-referenced map on private forests exists but, access is restricted. Further information can be found at the web site of the EEIC (Department of Forest Register):

- <http://register.metsad.ee/avalik/>

Finland

The respondent from Finland informed that such maps exist and that general ownership data for the whole country are maintained by National Land Survey of Finland (NLS), <http://www.maanmittauslaitos.fi/en/real-property-21>. The cadastral index map and the cadastral registry are the most accurate data including ownership. However, they do not separate land uses. The Population Register Centre of Finland has produced an ownership classification to the cadastral units but it does not coincide with that used by the National Forest Inventory of Finland. Metsähallitus (which manages most of the state owned forests), some larger forest companies, and the Finnish Forestry Centre (which operates in private forests), each carry out forest management planning and keep maps of forest ownership

(based often on the NLS cadastral index map). An ownership map dividing the forests to public and private forest ownership could be constructed for most of the public forests based on the available data from forest land managed by Metsähallitus.

The respondent noted that the availability of maps showing private forest varies, as well as the costs to access such data.

Companies and Forestry Centres collect and maintain data of forest resources in private forests (forest management plans). Access to these data needs permission from each of the forest holding owners. Information about access to the data can be found from the companies and groups directly:

- UPM - <http://www.upm.com/>
- Tornator - <http://www.tornator.fi/>
- Metsä Group - <http://www.metsagroup.fi/>
- Finnish Forestry Centre - <http://www.metsakeskus.fi/>.

France

No response to the questionnaire was received from France. Based on Internet searches a map including both private and public forest was identified. It can be purchased at:

<http://www.ifn.fr/spip/spip.php?rubrique44&lang=en>. Both private and public forests are available in a pdf format at: http://www.ifn.fr/spip/IMG/pdf/memento_IFN_EN2.pdf (see Figure 68).

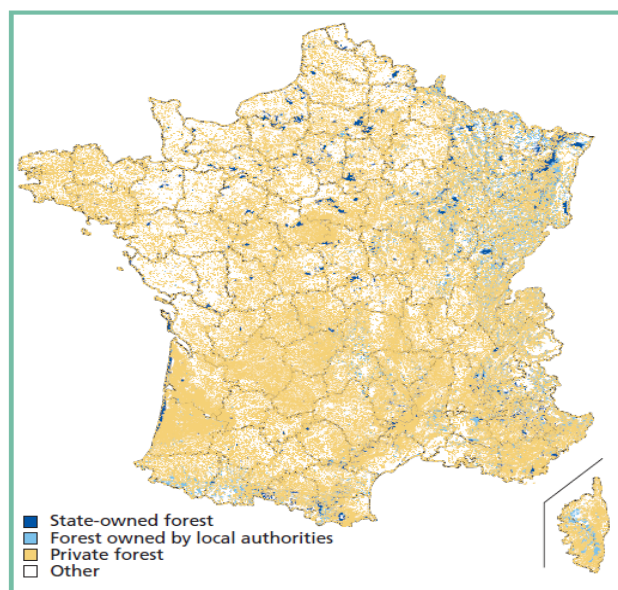


Figure 68. Distribution of forest ownership in France. **Source.** Institute National de l'Information Géographique et Forestière. Inventaire Forestier National 2010.

Germany

For Germany it was stated by the respondents that there are some data sets available on forest ownership at federal state level (Länder level). Web links to such information were provided. Examples are:

- Thuringia:
<http://www.thueringen.de/de/picloader.asp?pic=/imperia/md/images/forst/wald/eigentum.jpeg> (Figure 69)
- Baden-Württemberg: <http://www.fva-bw.de/indexjs.html?http://www.fva-bw.de/monitoring/foe/tbn/waldbesitzarten.html> (Figure 70)
- Saxony: Links to download 15 PDF forest ownership maps for different administrative districts <http://www.smul.sachsen.de/sbs/6709.htm>

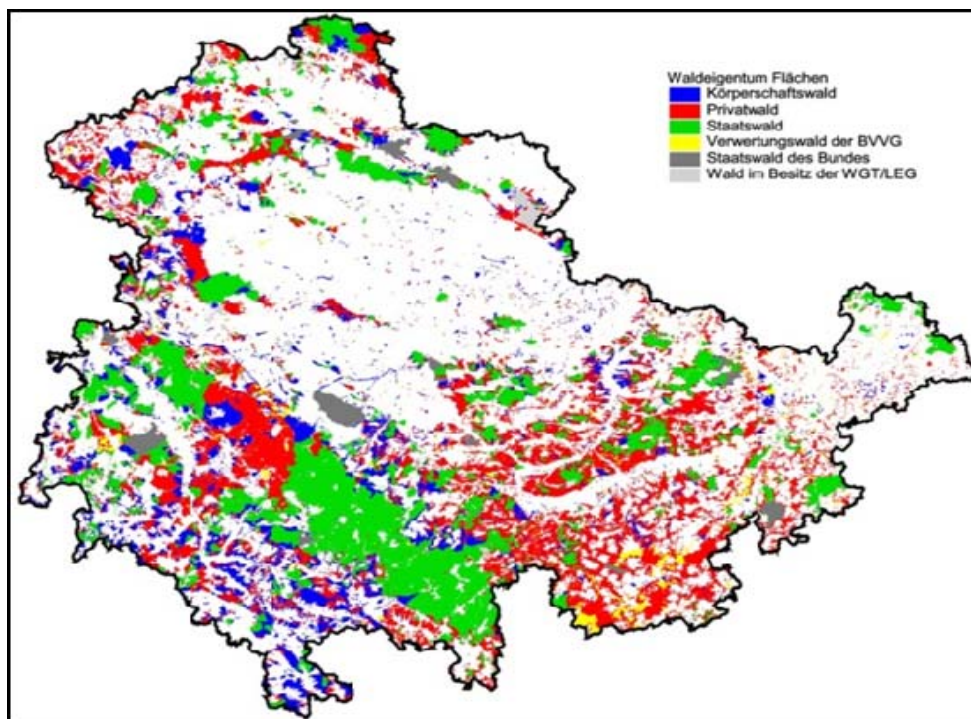


Figure 69. Distribution of forest ownership in Thuringia.

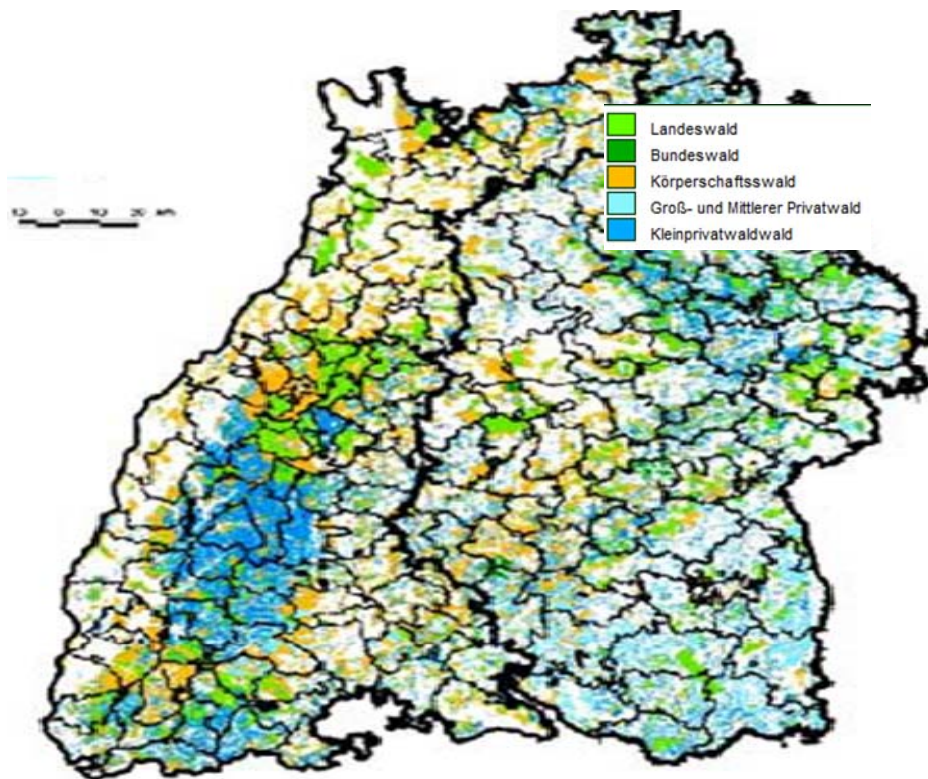


Figure 70. Distribution of forest ownership in Baden-Württemberg.

The websites of forestry administrations at ‘Länder’ level to access for further information are:

- Bundesforst – Federal Forest Service – since 2005, Bundesforst has been a division of the Federal Agency for Real Estate (Bundesanstalt für Immobilienaufgaben): (<http://www.bundesimmobilien.de/>)
- Baden-Württemberg: Forstverwaltung Baden-Württemberg (<http://www.forstbw.de>); Ministerium für Ländlichen Raum und Verbraucherschutz (<http://www.mlr.baden-wuerttemberg.de/>)
- Bavaria: Bayerische Forstverwaltung (<http://www.forst.bayern.de>); Unternehmen Bayerische Staatsforsten (<http://www.baysf.de>)
- Berlin: Berliner Forsten, Senatsverwaltung für Stadtentwicklung Berlin (<http://www.stadtentwicklung.berlin.de/forsten/>)
- Brandenburg: Landesforstverwaltung Brandenburg (<http://www.mluv.brandenburg.de>)
- Hamburg: Landwirtschaft und Forsten in Hamburg (<http://www.forst-hamburg.de>)
- Hessen: Landesbetrieb Hessen-Forst (<http://www.hessen-forst.de>)
- Mecklenburg-Western Pomerania: Landesforst Mecklenburg-Vorpommern (<http://www.wald-mv.de>)

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- North Rhine-Westphalia: Landesbetrieb Wald und Holz Nordrhein-Westfalen (<http://www.wald-und-holz.nrw.de>)
 - Lower Saxony: Niedersächsische Landesforsten (<http://www.landesforsten.de>)
 - Landwirtschaftskammer Niedersachsen Forstwirtschaft (<http://www.lwk-niedersachsen.de>)
 - Rhineland-Palatinate: Landesforsten Rheinland-Pfalz (<http://www.wald-rlp.de>)
 - Saarland: Landesbetrieb Saarforst (<http://www.saarforst.de>)
 - Saxony: Staatsbetrieb Sachsenforst (<http://www.forsten.sachsen.de>)
 - Saxony-Anhalt: Landesforstbetrieb Sachsen-Anhalt (<http://www.landesforstbetrieb.de>)
 - Landesbetrieb für Privatwaldbetreuung und Forstservice: (<http://www.forst-sachsen-anhalt.de>)
 - Schleswig Holstein: Landesforst Schleswig Holstein (<http://www.umwelt.schleswig-holstein.de>)
 - Landwirtschaftskammer Schleswig Holstein, Fachbereich Forstwirtschaft (<http://www.lwksh.de>)
 - Thuringia: Freistaat Thüringen Landesforstverwaltung (<http://www.thueringen.de/de/forst/>)

Further important access points to information at national level are the von Thünen-Institute (<http://www.vti.bund.de/en/startseite/home.html>) and the German National Forest Inventory (<http://www.bundeswaldinventur.de>). Also the German statistical yearbook gives limited information on forest ownership

(<http://www.bmelv.de/SharedDocs/Pressemitteilungen/2011/029-Statistisches-Jahrbuch.html>).

Further there is the Federal Research Institute for Cultivated Plant (Julius Kühn-Institut - Bundesforschungsinstitut für Kulturpflanzen; <http://www.jki.bund.de/>). At the Federal State level the Forest Research Institutes are important access points. They are listed below:

- Forstliche Versuchs- und Forschungsanstalt Baden-Württemberg (FVA; <http://www.fva-bw.de/>)
- Bayerische Landesanstalt für Wald und Forstwirtschaft (LWF; <http://www.lwf.bayern.de/>)
- Landeskompetenzzentrum Forst Eberswalde (LFE), Brandenburg; (<http://forst.brandenburg.de/>)
- Nordwestdeutsche Forstliche Versuchsanstalt (NW-FVA) Gemeinsame Einrichtung der Länder Niedersachsen, Hessen und Sachsen-Anhalt; (<http://www.nw-fva.de/>)
- Forschungsanstalt für Waldökologie und Forstwirtschaft (FAWF) Rheinland-Pfalz; (<http://www.fawf.wald-rlp.de/>)
- Thüringer Landesanstalt für Wald, Jagd und Fischerei (TLWJF; <http://www.thueringenforst.de/>)
- The umbrella organisation: Deutscher Verband Forstlicher Forschungsanstalten (DVFFA; <http://www.dvffa.de/>)

Greece

For Greece the respondent explained that the matter of ownership is very sensitive. There are no officially available maps (neither analogue nor digital) on forest ownership for the whole country. However, each Forest Inspectorate will have ownership maps (mostly in analogue format), but only for the area for which the Forest Inspectorate has responsibility. This may result in not capturing all forest areas within an administrative region.

Hungary

For Hungary it was noted by the respondent that such maps exist but are not freely available. There is no other restriction besides a purchase fee. The amount depends on the type of request. A general map of forest ownership based on the results of the Hungarian National Forest Inventory is available at: http://www.mgszh.gov.hu/erdeszeti_cd/htm/r_019.htm (MGSZH 2006, Figure 71). An interactive map on forest lands in Hungary (in Hungarian language) was found through web search at: <http://erdoterkep.mgszh.gov.hu/>

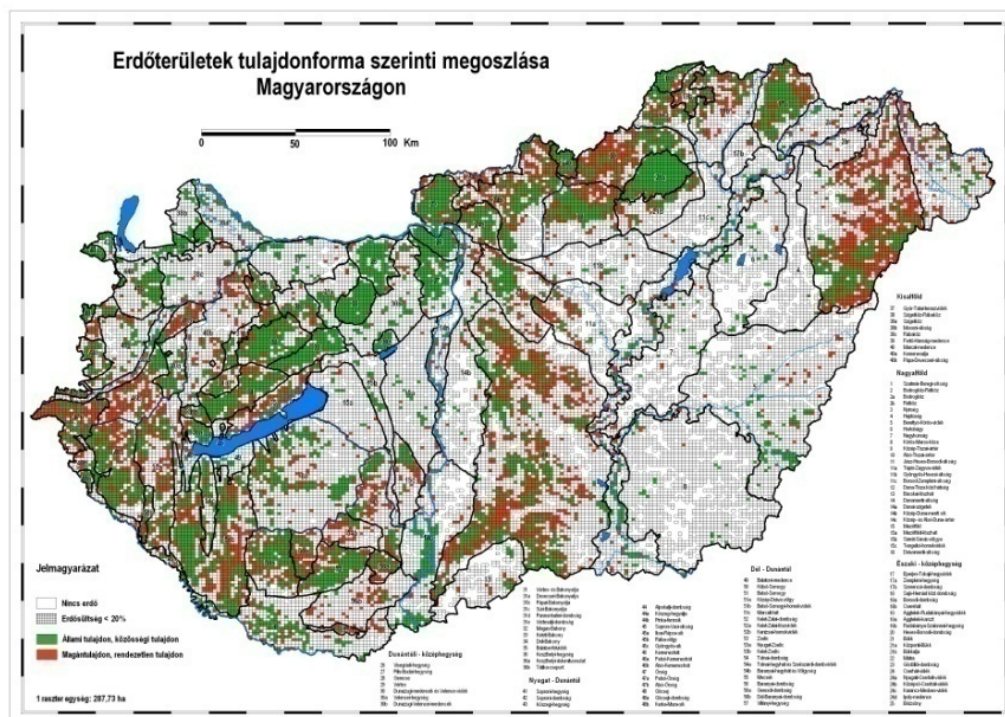


Figure 71. Distribution of ownership forest in Hungary.

Iceland

The respondent informed that both geo-referenced maps of private and public forest ownership exist. The maps are produced by the Icelandic Forest Research (IFR). They are available under certain restrictions.

Italy

No response was received from Italy. Following a thorough web search a forest ownership map of Italy was found. It includes both private and public forests. It is based on the first National Forest Inventory as of 1985 (the digital map can be found at <http://www.sian.it/inventarioforestale/img/cartogrammi/proprieta.jpg> (Ministero Delle Politiche Agricole, Alimentari E Forestali, Corpo Forestale Dello Stato, CRA (Istituto Sperimentale per l'Assestamento Forestale e per l'Alpicoltura), 2007; Figure 72). More recent maps showing the location of private forests do not exist due to the Italian Legislative Decree n° 196/2003 “Law on Privacy” (Parlamento Italiano, Camera dei Deputati, 2003). This Decree prevents the dissemination of sensitive data such as the geo-referenced position of private forest properties on forest maps.

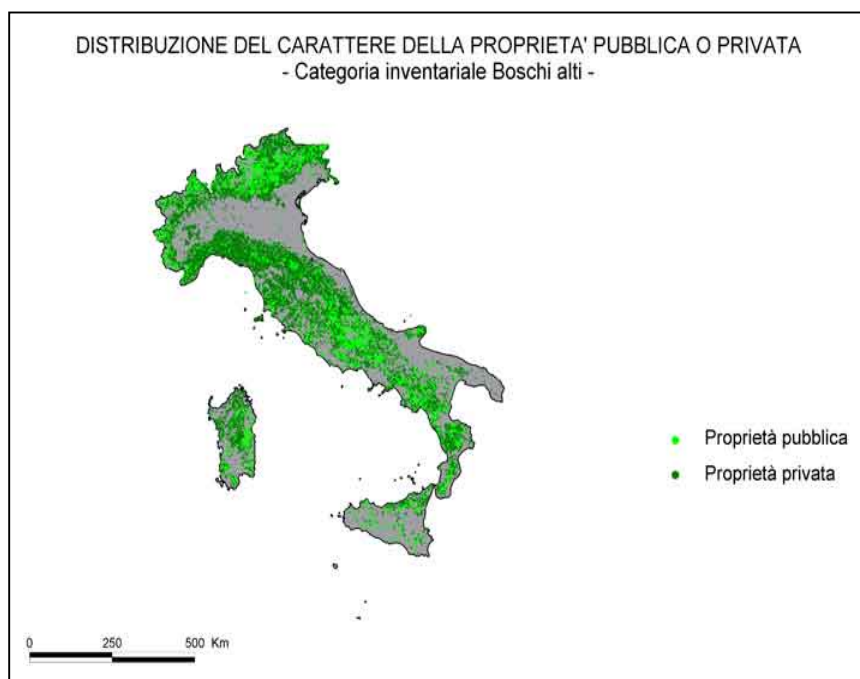


Figure 72. Distribution of the forest ownership in Italy.

The Netherlands

The respondent from the Netherlands stated that such maps do not exist for either private or public forests.

Norway

In Norway it was stated by the respondent that currently no geo-referenced map on forest ownership is available. It would be possible to develop such a map (for most of Norway) by combining information from land-cover maps with cadastral maps and information on ownership categories from public registers.

Poland

For Poland it was stated that there exists detailed information and maps on state and private forests. However there are no official geo-referenced maps publicly accessible that present forest ownership distribution for Poland. The situation may change in the near future as there are efforts of establishing a comprehensive forest data bank that will include also geo-referenced forest ownership distribution.

Romania

For Romania the respondents stated that there are ownership maps, but payment must be made to acquire them. The maps can be found at: <http://geoportal.ancpi.ro/> The map in on the private forest property in Romania (Figure 73) is available in format pdf at: <http://darwin.defra.gov.uk/documents/14018/1322/14-018%20AR2%20Ann7%20Distribution%20of%20private%20forests%20in%20Romania.pdf>.

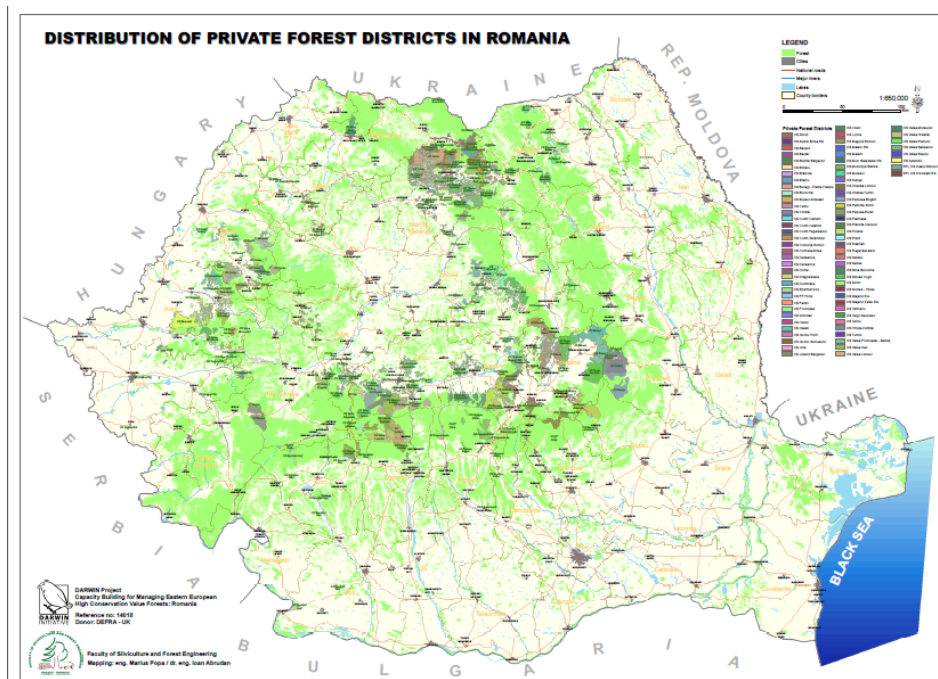


Figure 73. Distribution of the forest ownership in Romania.

The Russian Federation

The respondent for the Russian Federation stated that all forests are in public (state) ownership. There may be changes based on the introduction of a new Forest Law. However, the transfer of forests to other ownership categories will not exceed 3-5% of the total forest area. Geo-referenced maps of forests are available. Due to the fact that all forests in the Russian Federation are state owned, forest maps are representative for ownership. For this

Slovak Republic

For the Slovak Republic forest ownership maps exist. The access is not restricted but a fee for covering map preparation applies. Data on forest ownership are collected in the process of preparing forest management plans. The responsible organization for these maps is the National Forest Centre, Institute for Forest Resources and Information, Department of Remote Sensing and Cartography. Further information can be found at the following web sites: <http://www.skylinesoft.com>, <http://lvu.nlc.sk.org>, <http://lvu.nlc.sk.org/lgis/> and <http://lvu.nlc.sk.org/LC/>.

Slovenia

For Slovenia the respondent explained that forest ownership maps exist, but there are restrictions. They are available via online registration to e.g. forest professionals and researchers based on the type of request. A handling fee for preparing the data is charged. The geo-referenced maps are provided by the Surveying and Mapping Authority of the Republic of Slovenia at: <http://e-prostor.gov.si/> and accessible with Web Digital Certificate. The data on forest parcel-level are also accessible with official registration at: <http://www.geoprostor.net/PisoPortal/Default.aspx>, but cannot be downloaded. For every parcel registered users can acquire e.g. ownership type, location and size. A further useful web link is:

- http://www.zgs.gov.si/fileadmin/zgs/main/img/CE/gozdovi_SLO/Karte/Struktura_gozdne_posesti_SLO.JPG.

Sweden

The respondent from Sweden stated that forest ownership maps exist both for public and private forest and are available upon payment. The Swedish land survey (<http://www.lantmateriet.se/epidefault.aspx?id=55&lang=EN>) provides such maps. They do not directly give information about ownership but must be combined with other databases where information about ownership can be retrieved.

Switzerland

The Swiss respondent explained that forest ownership maps exist without restrictions but are not very up to date. The map on forest ownership elaborated by the Swiss National Forest Inventory was published 1988 and is to date the only map presenting both public and private forest ownership (Figure 75). To use and/or reproduce the map in any form users need the permission of the Swiss National Forest Inventory and swisstopo. Web links are: <http://www.swisstopo.admin.ch/internet/swisstopo/en/home.html>. For further information it was suggested to consult the following link: <http://www.lfi.ch/publikationen/publ/lfi1-en.php>.

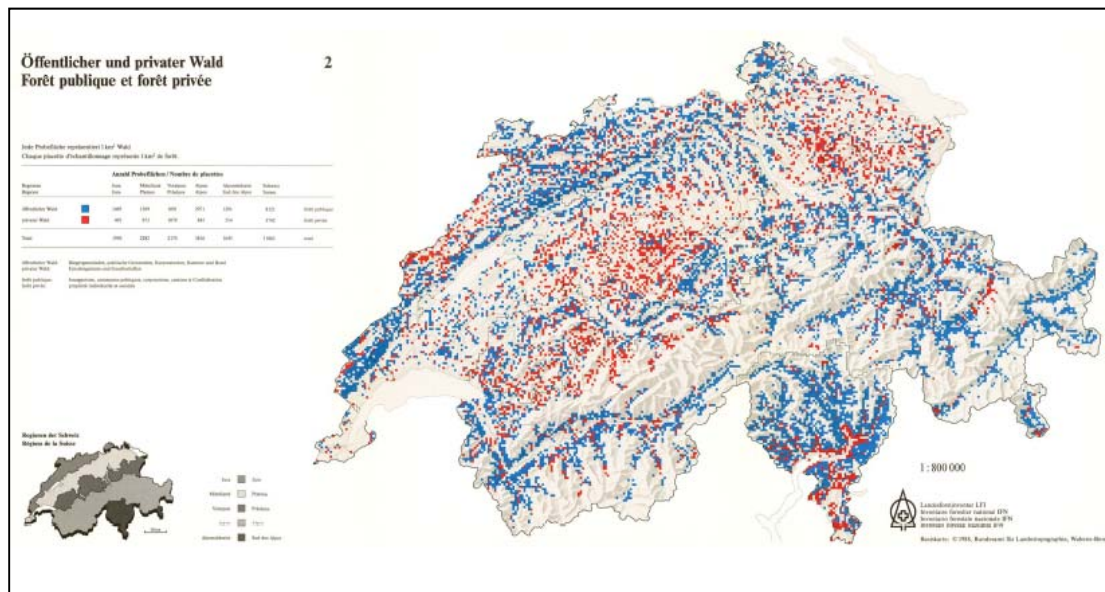


Figure 75. Distribution of forest ownership in Switzerland.

Turkey

For Turkey no response to the questionnaire was received. Internet searches revealed a map in .pdf format which includes information on both private and public forest ownership in Turkey. As the amount of private forest ownership is very low in Turkey it is hardly visible on the map. The map can be found at: http://www2.ogm.gov.tr/maps/turkiye/orman_tr.jpg (Ministry of Environment and Forestry - Republic of Turkey, 2009; Figure 76).

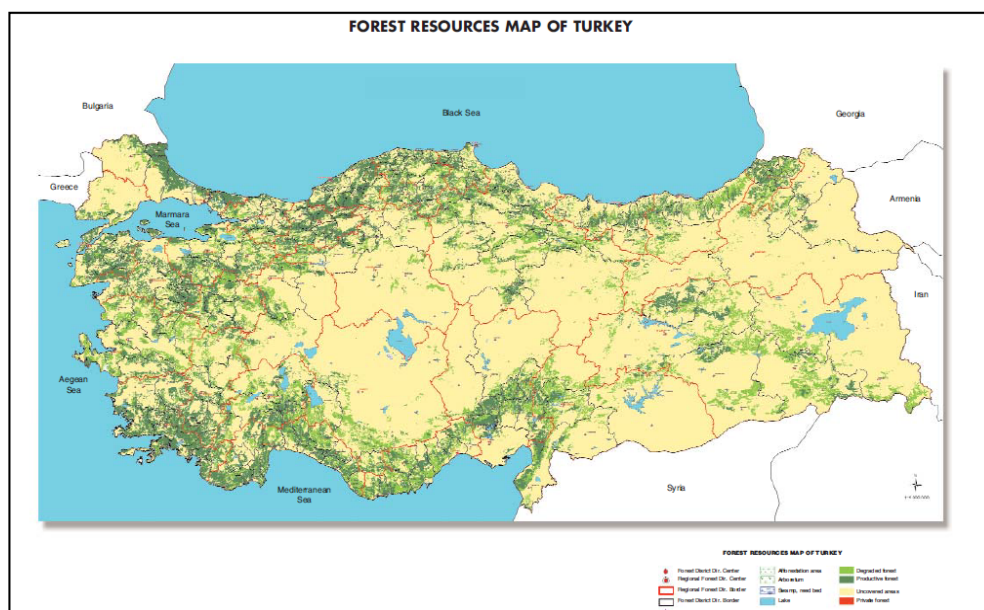


Figure 76. Distribution of forest ownership in Turkey.

Ukraine

The contact from the Ukraine stated that a geo-referenced forest map exists for public forests. All but a very small amount of the forest is in public ownership. There are restrictions for access. In fact the State Forest Inventory Enterprise only grants access to researchers based on clearly defined project activities.

United Kingdom

The response from the United Kingdom was that forest ownership maps exist. There are maps of the public estate (Sub Compartment Database) and of all forests based on the National Forest Inventory of the United Kingdom. If one is compared against the other, it may allow indentifying private forest estates. Maps can be found at the following web sites: <http://www.forestry.gov.uk/datadownload>

and [http://www.forestry.gov.uk/pdf/GB_Map.pdf/\\$FILE/GB_Map.pdf](http://www.forestry.gov.uk/pdf/GB_Map.pdf/$FILE/GB_Map.pdf). There is no limitation to access but a subscriber will need to fill out a data license agreement. For more information a user can contact: national.forest.inventory@forestry.gsi.gov.uk. A map on forest ownership for Northern Ireland, as presented below, is available in .pdf format at: <http://www.dardni.gov.uk/forests/service/options-forestry-consultation-04.pdf> (Northern Ireland Forest Service, 2004; Figure 77).

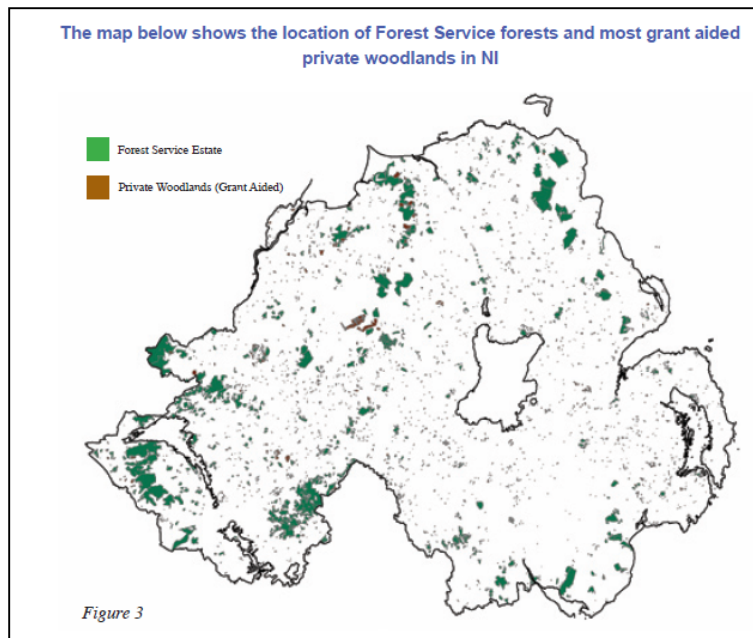


Figure 77. Distribution of forest ownership in Northern Ireland.

Follow up actions

The questionnaire survey implemented in the course of this study was a first step in investigating on the general availability of geo-referenced forest ownership maps in European countries. It is planned to further investigate in more detail for those countries that have available comprehensive ownership data in order to test for a set of countries the elaboration of a cross border geo-referenced map on forest ownership. Besides developing a technical approach within a GIS environment the following issues to be taken into consideration are, but may not be limited to, the following:

- scale of the map/maps
- minimum mapping unit
- mapping bases (examples: topographic map 1:100000; forest administration map based on a forest cadastre; other)
- reference year/years of the map/maps
- update cycles

4. Conclusion and further actions for the implementation of a Forest Ownership Map of Europe

About 27% of Europe's forests (including the European Part of the Russian Federation) is privately owned forest. 71% are in public ownership, while the remaining 2% of the forest area could not be clearly designated. When looking at particular regions (and countries) of Europe the share of privately owned forest can be rather significant (see Chapter 3.2.1). The same accounts to the number of private forest owners and related property sizes. The data collected for this report, attempted to compile information at sub-national level. It demonstrates that private forests and thus their owners play a key role for the forest sector. The dataset that was assembled in the course of the work allowed visualizing how private and public forests are distributed at a sub national level across Europe. Such a distribution map has to date not yet been produced and is thus a novel product.

Besides the visualization of the ownership distribution in Europe a number of other applications of such more detailed map information on forest ownership can be envisaged. Research activities related to climate change adaptation, forest risks and management regimes of forests, accessibility and utilization of timber resources, serving increased demands for woody biomass, ensuring the provision of forest ecosystem services correlated to carbon crediting are linked to and will ask for geo-referenced information on forest ownership at a more detailed level. A limitation of the mapping presented in this report is that the forest ownership information is available only at administrative boundary levels, being e.g. regions, counties or state level and not at individual property level.

An questionnaire enquiry revealed that in many countries detailed geo-referenced forest ownership maps at property/unit level exist but that there are restrictions of use in particular for private forests due to legal obligations to observe data confidentiality (see Chapter 3.2.4). A valuable outcome of the questionnaire was that geo-referenced maps of public forest ownership are available in many countries however attached to certain restrictions/conditions for use. The overall view from the questionnaire respondents was positive towards the administrative boundary based mapping approach applied for this report and the aim to further investigate options to build geo-referenced maps based on property boundaries. For such an approach the use of public forest ownership boundaries combined with a pixel based forest map of Europe (Schuck et al. 2003; Gunia et al. 2012) was seen as the most promising action. Having a pixel based map for public forests would then provide a general indication on private forest ownership distribution for European countries. Details will, however, not become visible on the distribution of private forest ownership types or the individual property sizes as well as their individual locations on the map.

Taking the outcomes from this report the next steps will focus on how to build a property boundary based forest map on public forest ownership for Europe while ensuring how to best incorporating different existing ownership classifications in European countries. Pilot studies for building such pixel based, public forest ownership maps are seen as a viable approach by the authors. Jointly with other experts their feasibility will be investigated for countries/regions with high quality and easily accessible data.

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7. Annexes (as separate pdf-files)

Annex 1: Forest definitions

Annex 2: Country data fact sheet

Annex 3 : Terms and definitions

Annex 4 : Questionnaire introduction

Annex 5 : Questionnaire

Annex 6: Detailed kind of ownership forest data

Annex 7: Private, public and other forests data

Annex 8: National statistics and “SoEF 2011” comparison results for all countries

Annex 9: Ownership maps for all investigated countries (harmonized ownership classes forest map in ha and percent; country specific ownership division where available).