



EUROPEAN FOREST INSTITUTE
CENTRAL-EAST AND SOUTH-EAST EUROPEAN
REGIONAL OFFICE – EFICEEC-EFISEE



Forest Land Ownership Change in Belgium

COST Action FACESMAP Country Reports



COST Action FP1201
Forest Land Ownership Change in Europe:
Significance for Management and Policy
(FACESMAP)

These series is edited by the European Forest Institute Central-East and South-East European Regional Office (EFICEEC-EFISEE) at the University of Natural Resources and Life Sciences, Vienna (BOKU). Research Series papers are not subject to review procedures. Thus, the responsibility for the content lies solely with the author(s). Comments and critique by readers are highly appreciated.

Reference:

Jacques Rondeux, Vincent Colson, Christine Farcy, Didier Marchal (2015) Forest Land Ownership Change in Belgium. COST Action FACESMAP Country Reports, European Forest Institute Central-East and South-East European Regional Office, Vienna. 40 pages. [Online publication]

Published by:

European Forest Institute Central-East and South-East European Regional Office
(EFICEEC-EFISEE) c/o
University of Natural Resources and Life Sciences, Vienna (BOKU)
Feistmantelstrasse 4
1180 Vienna
Austria

Tel: + 43-1-47654-4410
e-mail: eficeec@efi.int
Web site: www.eficeec.efi.int

Papers published in this series can be downloaded in PDF-format from:
<http://facesmap.boku.ac.at/library/countryreports>



COST is supported by the EU Framework Programme Horizon 2020



COST (European Cooperation in Science and Technology) is a pan-European intergovernmental organisation allowing scientists, engineers and scholars to jointly develop their ideas and initiatives across all scientific disciplines. It does so by funding science and technology networks called COST Actions, which give impetus to research, careers and innovation.

Overall, COST Actions help coordinate nationally funded research activities throughout Europe. COST ensures that less research-intensive countries gain better access to European knowledge hubs, which also allows for their integration in the European Research Area.

By promoting trans-disciplinary, original approaches and topics, addressing societal questions, COST enables breakthrough scientific and technological developments leading to new concepts and products. It thereby contributes to strengthening Europe's research and innovation capacities.

COST is implemented through the COST Association, an international not-for-profit association under Belgian law, whose members are the COST Member Countries.

"The views expressed in the report belong solely to the Action and should not in any way be attributed to COST".

Contents

Background	i
1. Introduction	1
1.1. Forests, forest ownership and forest management in Belgium (Wallonia)	1
1.2. Overview of the country report	3
2. Methods	5
2.1. General approach.....	5
2.2. Methods used.....	5
3. Literature review on forest ownership in change	6
3.1. Research framework and research approaches	6
3.2. New forest ownership types	6
3.3. Forest management approaches	7
3.4. Policy change / policy instruments	8
4. Forest ownership	9
4.1. Forest ownership structure.....	9
4.1.1. National data set.....	9
4.1.2. Critical comparison with national data in FRA reporting.....	11
4.2. Unclear or disputed forest ownership.....	11
4.3. Legal provisions on buying or inheriting forests	12
4.3.1. Legal restrictions for buying or selling forests.....	12
4.3.2. Specific inheritance (or marriage) rules applied to forests.....	12
4.4. Changes of the forest ownership structure in the last three decades	12
4.4.1. Changes between public and private ownership	12
4.4.2. Changes within public ownership categories.....	13
4.4.3. Changes within private forest ownership	13
4.4.4. Main trends of forest ownership change.....	13
4.5. Gender issues in relation to forest ownership	14
4.6. Charitable, NGO or not-for-profit ownership of the forests.....	14
4.7. Common pool resources regimes	16
5. Forest management approaches for new forest owner types	17
5.1. Forest management in WALLONIA.....	17
5.2. New or innovative forest management approaches relevant for new forest owner types.....	17
5.3. Main opportunities for innovative forest management.....	18
5.4. Obstacles for innovative forest management approaches	19
6. Policies influencing ownership development / Policy instruments for new forest owners	21
6.1. Influences of policies on the development of forest ownership	21
6.2. Influences of policies in forest management	21
6.3. Policy instruments specifically addressing different ownership categories	22
6.4. Factors affecting innovation in policies.....	24
7. Literature	25
8. Annexes	28
8.1. Tables with detailed description of 10 most important publications	28

Figures

Figure 1: Distribution of the Walloon private forest by class of ownership area (SPW - OEWB 2015).....	10
--	----

Tables

Table 1: Data on forests and the Belgian context (2010) (Staebel 2015, Belgium.be Portal 2015).....	1
Table 2: Distribution of major stand types in private woodlands in Wallonia (areas in ha)	2
Table 3: Evolution of the Walloon forest (1984-2008) estimated areas by the regional forest inventory (RFI) (SPW 2014)	3
Table 4: Structure of enterprises by type of ownership and size group (situation in 1970) for Belgium (national level) (Rondeux, 1991).....	9
Table 5: Comparison with national data in FRA reporting.....	11
Table 6: Evolution of forest areas from 1980 to 2010 (estimated values)*	12

Abbreviations

CAPFP	Cellule d'appui à la petite forêt privée - Support Unit for Small Private Forests
CPR	Commons - forest common property regimes
EC	European Commission
EU	European Union
FACESMAP	COST Action FP1201 Forest Land Ownership Changes in Europe: Significance for Management and Policy
FAO	Food and Agriculture Organization of the United Nations
FMP	Forest Management Plan
FRA	Forest Resources Assessments
FSC	Forest Stewardship Council
NFP	National Forest Program
NGO	Non-governmental Organisation
OEWB	Office économique wallon du Bois - Walloon Economic Office for Wood
PEFC	Programme for the Endorsement of Forest Certification Schemes
SRFB	Société Royale Forestière de Belgique - Royal Forest Society of Belgium

Background

Forest ownership is changing across Europe. In some areas a growing number of so-called “new” forest owners hold only small parcels, have no agricultural or forestry knowledge and no capacity or interest to manage their forests, while in others new community and private owners are bringing fresh interest and new objectives to woodland management. This is the outcome of various societal and political developments, including structural changes to agriculture, changes in lifestyles, as well as restitution, privatization and decentralization policies. The interactions between ownership type, actual or appropriate forest management approaches, and policy, are of fundamental importance in understanding and shaping forestry, but represent an often neglected research area.

The European COST Action FP1201 FOREST LAND OWNERSHIP CHANGES IN EUROPE: SIGNIFICANCE FOR MANAGEMENT AND POLICY (FACESMAP) aims to bring together the state-of-knowledge in this field across Europe and can build on expertise from 30 participating countries. Drawing on an evidence review across these countries, the objectives of the Action are as follows:

- (1) To analyse attitudes and constraints of different forest owner types in Europe and the on-going changes (outputs: literature survey, meta-analyses and maps).
- (2) To explore innovative management approaches for new forest owner types (outputs: case studies, critical assessment).
- (3) To study effective policy instruments with a comparative analysis approach (outputs: literature survey, case studies, policy analyses).
- (4) To draw conclusions and recommendations for forest-related policies, forest management practice, further education and future research.

Part of the work of the COST Action is the collection of data into country reports. These are written following prepared guidelines and to a common structure in order to allow comparisons across the countries. They also stand by themselves, giving a comprehensive account on the state of knowledge on forest ownership changes in each country.

The common work in all countries comprises of a collection of quantitative data as well as qualitative description of relevant issues. The COUNTRY REPORTS of the COST Action serve the following purposes:

- Give an overview of forest ownership structures and respective changes in each country and insight on specific issues in the countries;
- Provide data for some of the central outputs that are planned in the Action, including the literature reviews;
- Provide information for further work in the Action, including sub-groups on specific topics.

A specific focus of the COST Action is on new forest owner types. It is not so much about “new forest owners” in the sense of owners who have only recently acquired their forest, but the interest is rather on new types of ownership – owners with non-traditional goals of ownership and methods of management. For the purpose of the Action, a broad definition of “new forest owner types” was chosen. In a broad understanding of new or non-traditional forest ownership we include several characteristics as possible determinants of new forest owners. The following groups may all be determined to be new forest owners:

- (1) individuals or organizations that previously have not owned forest land,
- (2) traditional forest owner categories who have changed motives, or introduced new goals and/or management practices for their forests,
- (3) transformed public ownership categories (e.g., through privatisation, contracting out forest management, transfer to municipalities, etc.), and
- (4) new legal forms of ownership in the countries (e.g. new common property regimes, community ownership), both for private and state land.

This embraces all relevant phenomena of changing forest ownership, including urban, absentee, and non-traditional or non-farm owners as well as investments of forest funds or ownership by new community initiatives, etc. Although the COST Action wants to grasp all kinds of ownership changes it has to be noted that the special interest lies on non-state forms of ownership.

BELGIUM

Authors: Jacques Rondeux, Vincent Colson, Christine Farcy, Didier Marchal

1. Introduction

This country report is prepared for the European COST Action FP1201 FOREST LAND OWNERSHIP CHANGES IN EUROPE: SIGNIFICANCE FOR MANAGEMENT AND POLICY (FACESMAP), which has the aim to bring together the state-

of-knowledge with regard to forest ownership across Europe. The 30 country reports aim to give an overview of the forest ownership structures and respective changes in the single countries and insight on specific issues in the countries.

Important remark

Due to the low relevance of the Action topic in Belgium, which is confirmed by a very low number of research projects undertaken in the field of ownership changes, the authors compiled the report focusing mainly on private forests issues. The authors also decided to describe the situation in Wallonia (nearly 80% of the Belgian forests) trying to be as exhaustive as possible and to insert, when relevant, illustrations and complements from Flanders and if possible from the Brussels Region.

At national level, we consider that the issue of the Cost Action FACESMAP is not one of the main current research topics. Its relevance is mainly linked to the evolution of the society in a post-industrial context and can only be considered as problematic in some specific situations.

1.1. Forests, forest ownership and forest management in Belgium (Wallonia)

Belgium is a federal country where some competences are matter of federated entities. This is the case of the forest policy which is under the responsibility of the regions (Flanders, Brussels and Wallonia) and for which national policy does not exist. As an example, the well-known "Forêt de Soignes", located just beside Brussels city, is in fact at

the crossroads of the three Regions and a specific policy coordination scheme between regions is thus required to ensure its coherent management and planning.

As presented in table 1, total forest cover in Belgium is near 700,000 ha or 22% of the country area. Nearly 80% of Belgian forests are located in Wallonia, where forests represent 33% of the area. In Flanders, forests cover represents 10% of the region's area. In the Brussels Region they cover some 1,700 ha.

Table 1: Data on forests and the Belgian context (2010) (Staebel 2015, Belgium.be Portal 2015)

	Brussels	Flanders	Wallonia	BELGIUM
Population (inh)	1,089,538	6,251,983	3,498,384	10,839,905
Population density (inh/km ²)	7,257	462	211	349
Forest area (ha)	1,735	146,381	554,000	692,916
Forest area (%)	10	10	33	22
Part of Belgian forest cover (%)	<1	21	79	100

Wallonia is by far the most wooded region. Only this region will be described in this report, because it is a good example of the

forest evolution in the beginning of the century and reflects the relative importance of the roles that are expected of it.

The Walloon region can be broadly defined by the following aspects (SPW 2014) valid for 2008:

- forest land: 554,000 ha (with 479,500 considered as productive);
- forest cover or proportion of the forest

land in the whole Walloon territory: 33%;

- private forest: 286,950 ha (52%);
- public forest: 267,050 ha (48%);
- broadleaved forest: 256,250 ha (53%);
- coniferous forest: 223,500 ha (47%).

Some definitions are used to define land classification (Rondeux et Lecomte 2010d, SPW 2014.)

-forest land: includes forest used for purposes of production, protection, conservation and multiple uses. It must have a minimum area of 0.1 ha with tree crown cover of more than 10% comprising trees with the potential to reach a minimum length of 5 m at maturity. Thus forest land or woodlands include both productive and non-productive forest areas.

-productive forest land: all stands, clear cuts and natural reserves.

-non-productive forest land: part of forest area permanently or temporarily unstocked: forest roads, firebreaks, muds, moors, grazing lands, ponds, rivers, clear cuts older than at least 4 years and not reforested

Since 1984, the total forest area increased slightly (+3% in general and +6.3% for private forest), the share allocated to productive areas decreased. This also means that the areas of “non-productive” forests have grown at about 30,800 ha (+70%) mainly due to no-reforestation after clear cuttings and, to a

lesser degree, to an increase of the forest road network (SPW 2014).

The different species or major stand types in the Walloon forest in decreasing order of importance are presented in table 2, which refers to the total area (productive and non-productive forests in ha) (SPW 2014).

Table 2: Distribution of major stand types in private woodlands in Wallonia (areas in ha)

	Total	Public	Private
<i>Conifers</i>	<i>223,250 ha (40.3%)</i>	<i>100,600</i>	<i>122,650</i>
Spruce	163,450	79,650	92,800
Douglas fir	13,950	6,200	7,750
Larch	7,750	3,500	4,050
Pine	12,600	7,700	4,900
Other conifers	25,700	12,550	13,150
<i>Hardwood high forest</i>	<i>133,600 ha (24.1%)</i>	<i>82,050</i>	<i>51,550</i>
Beech	41,700	32,750	8,950
Oak	34,050	19,650	14,400
Other spp of value(*)	34,800	19,900	14,900
Mixed hardwoods	23,050	13,300	13,300
<i>Coppice with standards</i>	<i>98,450 ha (17.8%)</i>	<i>48,950</i>	<i>49,500</i>
Beech standards	2,000	850	1,150
Oak standards	48,550	28,600	19,950
Other spp of value (*)	25,000	9,950	15,050
Mixed hardwoods	22,900	9,550	13,350
<i>Coppice</i>	<i>14,400 ha (2.5%)</i>	<i>4,350</i>	<i>10,050</i>
<i>Poplars</i>	<i>9,800 ha (1.8%)</i>	<i>1,150</i>	<i>8,650</i>
<i>Productive forest land</i>	<i>479,500 ha (86.5%)</i>	<i>286,950</i>	<i>267,050</i>
<i>Non-productive forest land</i>	<i>74,500 ha (13.5%)</i>	<i>29,950</i>	<i>44,450</i>
Total forest land	554,000 ha	267,050	286,950

(*) Chiefly ash, wild cherry, maple, red oak

The following types of forest owners exist within public forests (267,050 ha):

- Communal (local municipalities) properties: 196,900 ha (35.5%);
- Wallonia: 55,350 ha (10.0%);
- Other (military zones, church administrations, public social aid centres, etc.): 14,800 ha (2.7%)

It is also interesting to note that the forests and natural reserves (included in productive forestland) belonging to the Walloon Region amount to nearly 55,000 ha (10% of the whole forest area).

If we consider the evolution of the total forestland (public + private) during the last 24 years, an increase of 3% (16,300 ha) is observed. It is mainly due to an increase of broadleaved stands (+8,350 ha or 3.4%) and

non-productive areas (+30,800 ha or 70.5%) which compensates a decrease of coniferous stands (-22,850 ha or 9.3%) especially affecting the spruce and the pine. However, conifers continue to dominate in private forests. At the same time, the area of other conifers (douglas fir, larch) has grown to nearly three times, which should be interpreted as a diversification of species and a renewed interest for mixed stands with in certain places the development of natural regeneration.

Concerning private forests, it is noticeable that the total forest area is remaining rather constant. However, a special attention has to be paid to a decrease of coniferous stands (-16,200 ha or 11.7%) and a high increase of non-productive forestland (+18,950 ha or 74%).

Table 3: Evolution of the Walloon forest (1984-2008) estimated areas by the regional forest inventory (RFI) (SPW 2014)

Land classification	1984 <i>Public</i>	<i>Private</i>	<i>Total</i>	2008 <i>Public</i>	<i>Private</i>	<i>Total</i>
Broadleaved stands	136,500	119,750	256,250	128,850	119,050	247,900
Coniferous stands	100,600	122,650	223,250	107,550	138,550	246,100
Productive forest land	237,100	242,400	479,500	236,400	257,600	494,000
Non-productive forest land	29,950	44,500	74,500	18,100	25,600	43,700
Total forest land	267,050	286,950	554,000	254,500	283,200	537,700

Regarding the growing stock, the Walloon forest represents around 113.10⁶ m³, which corresponds to a mean volume/ha of 235 m³ (productive forest). The volume of spruce stands constitutes 41% of the total volume. Since 1984, a significant increase is observed (+24%) despite a reduction of the total wooded area of 3%.

In Wallonia, the PEFC certification scheme is in use, particularly in public forest (97%) while it only concerns around 11% of the private forests until now (PEFC 2015).

The Natura 2000 network represents 220,883 ha in Wallonia, which means 13% of the Walloon area. The Natura 2000 network in the Walloon forested area represents 150,629 ha (27% of the forest area)(SPW 2013).

1.2. Overview of the country report

The country report is structured as follows:

First of all, we present some references of papers or reports dealing with forest owners, especially private (more change over time compared to what is observed in public) and ownership in Belgium from various points of views: management approaches, influence of forest policy, owner profile, owner assistance systems.

The second step is to describe the forest ownership on the basis of our broad knowledge failing to have relevant data or statistics emphasising all what can concern ownership. The areas addressed are focusing on:

- the types of owners and a comparison of national/regional data collected with the FRA database;

- a summary of the situations where ownership is not always clear;
- the potential restrictions for buying or selling forests;
- the inheritance rules applied to forests;
- trends of changes in ownership structure in the last decades;
- the proportion of female and male owners;
- the presence of NGO or not-for-profit owners and common pool resources regimes.
- It has not been possible to answer all the questions because of the absence of data or because some of them do not apply to the country.

The third step concerns the forest management approaches that specifically

address new forest owner types. If the emergence of new owners is observed it is too early to highlight corresponding management procedures. The most that can be said is that management due to the size of the properties seems to move in two main directions: either nature-oriented or business-oriented.

The last step deals with policies influencing ownership development and policy instruments in the following context: types of influence policies on the development of forest and forest management, policy instruments reaching different ownership types and new forest owners.

As it will be seen from this report a recurring lack of data does not allow to answer all the above questions.

2. Methods

2.1. General approach

According to the aims of the country report, which is to give a comprehensive overview of forest ownership issues in the country, a mix of methods is applied. They include a literature review, secondary data, expert interviews as well as the expert knowledge of the authors.

Data include quantitative data (from official statistics and scientific studies) as well as qualitative data (own expert knowledge, expert interviews and results from studies). A literature review explicates the state-of-knowledge in the countries and contributes to a European scale state-of-art report. Case examples are used for illustration and to gain a better understanding of mechanisms of change and of new forest owner types. Detailed analyses of the collected data and case study analyses are done in subsequent work steps in the COST Action.

2.2. Methods used

The country report has been prepared using a mix of various sources given the scarcity of syntheses and statistics dealing with the forest ownership and its evolution in Belgium. The organisation of the country in 3 regions (Brussels, Flanders, Wallonia) does not always help to find useful data and to provide

sufficiently reliable results. To respond to these problems it has been decided to use only data concerning Wallonia because it represents the most wooded area of Belgium (80% of the whole forest, forest rate of 33% compared to Flanders with a forest rate of 11%).

Both quantitative and qualitative data have been used. The first ones, mainly statistical data, have been taken largely from information collected by the permanent regional forest inventory ongoing in Wallonia since 1996. The latter were first of all gathered as a result of a series of questions asked to forest managers, owners and forest service or local experts. In the context of the preparation of the new Forest Law (2008) (SPW 2009), which has encouraged the forest multifunctionality, universities and institutions involved in R&D have also conducted several forest-based surveys related to forest owners profiles and ownership strategy.

Interviews of forest service members and experts in private forests management in the Region have been used to identify specific trends in the evolution of the ownership's mentality, the nature of the would be purchasers, what drives people to become forest owners, the type of problems faced by long-time owners or managers.

3. Literature review on forest ownership in change

The COST Action national representatives aimed to review and compile information on changes in forest ownership in their countries based on scientific and grey scientific literature, including reports and articles in national languages and official statistics, formal guidance or advisory notes from official websites, etc.

The scope of the literature review is as follows:

- Forest ownership change (with a specific focus on new forest ownership types),
- private forest owners' motives and behaviour,
- management approaches for new forest owner types,
- and related policies and policy instruments.

The literature review consists of the following three steps: collection of all literature as defined relevant, detailed description of 10 most relevant publications, and a 1-3 pages summary according to the structure given in the guidelines. The full list of literature includes grey literature, i.e. literature not easily accessible by regular literature search methods (unpublished study reports, articles in national languages, etc.). These references are listed at the end of the report. The 10 detailed descriptions of publications are found in the Annex. The literature review contains the following questions: Which research frameworks and research approaches are used by research? What forms of new forest ownership types are identified? Which specific forest management approaches exist or are discussed? Which policies possibly influence ownership changes in the country and which policy instruments answer to the growing share of new forest owner types?

3.1. Research framework and research approaches

Forest research has a long tradition in Belgium but the interest for private forests and owners is limited. Furthermore, public institutions have not paid significant attention to the state and the evolution of private

forests. That is the most important reason why there is a lack of relevant data that should be useful now in the context of the national or regional forest policy. One striking example is what happened to the national ten years census for agriculture and forest (the so-called "*Recensement général de l'Agriculture et des Forêts*"). This survey originated in 1846. It concerned public and private forests (surfaces, volumes, financial values) and cadastral data (which unfortunately were not updated) until 1980. At that time, data were only given for public forests ("soumises au régime forestier"). No information, even rough, was available for private forests. Since 1994, the source of information, and especially in Wallonia, is the permanent regional forest inventory based upon a sampling design (Rondeux et al., 2010; 2010b; 2010c). Such inventory is also conducted in the Flemish part. The inventory is based upon a systematic sample (grid of 0.5 x 1 km: each point has a "weight" of 50 hectares) and is carried out repeatedly (10,000 sampling plots revisited, one tenth per year).

Since 1980, all relevant data are gathered in computerised cadastral files and maps but were not available for preserving user privacy.

3.2. New forest ownership types

At first glance there is no data on new forest ownership types available in the literature.

In the view of some actors of the private forest like SRFB ("*Société Royale Forestière de Belgique*" - *Royal Forest Society of Belgium*) or NTF ("*Propriétaires Ruraux de Wallonie*" - *Rural Landowners of Wallonia*), complemented by many contacts in the forestry sector (owners, forest service, forest managers), one can consider that in Wallonia the emergence of real "new forest ownership" is not relevant at all or, in other words, impossible to identify because not clearly giving a new face or forest profile.

However, from a more general point of view, different cases can be found, without being able to identify them:

- new forest owners that are people who inherit and intend to change the way to manage the property;
- trading companies interested in acquiring forest holdings for achieving financial goals (for example tourism activities, eco-adventure parks);
- people who buy non-wooded parcels for the practise of sport hunting;
- NGO's and especially nature conservation associations which buy forests to extend nature reserve areas;
- people who buy forest to own and manage "their piece of nature";
- people who buy forest as a saving haven in periods of uncertainty (lack of profitability of money placed in a bank account);
- people who want to diversify their investments (real estate, movables, agriculture, forest, buildings,..);
- persons interested in small woodlands for their firewood potential (not widespread practice).

One can also consider the special case of the new young owners, who are following training sessions organized by forest associations (e.g. "*Société Royale Forestière de Belgique*").

3.3. Forest management approaches

Since 2012, at a regional level (Wallonia), a quite new structure called "*Cellule d'Appui à la Petite Forêt Privée*" (Support unit for small private forests) has been created within the Walloon Economic Office for Wood (OEWB, for "Office Economique Wallon du Bois") in order to help private forest owners (properties less than 5 ha in a contiguous geographic area) in 3 complementary ways (Defays and Colson 2012):

- help and information desk;
- cartographic portal (mapping information system available on a website);
- forest enhancement of scattered holdings.

This experience suggests that the most interested people are not traditional owners

but rather those who own small properties for which there is little or no silvicultural monitoring and those who inherited and appreciate to be supported in their management activities.

In relation to the new Forest Law ("Code forestier") (SPW 2009; Gérard 2008; Gérard et al. 2011), the multifunctional role of forests has been put forward and it seems more and more evident that even a lot of traditional owners tend now to see values other than timber production. An example is the opening of rather large private forests to walking or recreational activities.

From a silviculture point of view clear cuttings greater than 5 ha (coniferous) and 3 ha (broadleaves) are strictly prohibited. Nevertheless, such clear cuttings may be authorized if the owner submits a scheme of plantation (the so-called "document simple de gestion") to the Forest Service with a minimum validity of 20 years.

A special attention is also paid to the adequacy species/soil. The outcome of an important research conducted by the universities has been a referential guide or species ecological file ("Fichier écologique des essences") (WEISSEN et al. 1991) for choosing species in relation with geographical zones, types of soils, climatic conditions. This new tool, which also considers biodiversity impacts, is becoming known and mixed plantation or in some cases natural regeneration is progressing. A new version of the tool is in preparation (CLAESSENS et al. 2014).

Due to increased risks of major forest disturbances (climate change, storms and pests) going to more resistant forests and forest structures is a promising or necessary way sometimes enhanced by public subsidies from regional or provincial entities (there are 9 provinces throughout the country).

The forest owner, especially in the case of small properties (comprising some compartment or patch forest), is free from restrictions. Intervention by the state is minimal, so that management is almost entirely a question of personal choice. Sometimes, forest owners are taking part in the management of their woodlands but more generally that is the task of forest experts or cooperatives. Quite often too, for very small properties (compartments generally less than

5 ha), the silvicultural operations are carried out by stakeholders such as people providing advisory oversight or game managers who are occasionally involved in forest works and current silviculture.

Except for large properties, there is not precisely a contract but only a partnership generally with the same persons traditionally involved in wood sale or forest operations.

That situation does not seem to have deeply changed over the past last years.

As concerns the potential new owners, at first sight, the likelihood is that they get in touch with experts belonging to the Federation of Forest Experts (“Fédération des experts forestiers”) or sometimes with cooperatives regardless of the area involved.

3.4. Policy change / policy instruments

Due to the persistent low profitability rate of money in the bank, the most recent suppression of inheritance duties on standing trees (ground is not concerned) seems to be attractive to “new forest owners” or people looking for a diversification of their holdings and a more interesting way or opportunity for successful long-term investment.

New approaches or measures, sometimes restrictions, are applied in managing the forests in a more sustainable way. They are related to the Natura 2000 network and the new Forest Law (SPW 2009, Gérard 2008). To some extent they also concern the private forests.

4. Forest ownership

The aim of this chapter is to give a detailed overview of forest ownership in the country. The most detailed information on national level is often structured in different ways in different countries. In order to show the most accurate information, it was decided to use the national data sets in the country reports. In order to make this information comparable still, the information is also collected in an international format, which is used in the Forest Resources Assessments by FAO. The transfer from national data sets to international definitions is, however, not always easy. This report therefore critically assesses in how far the national categories and definitions may be transformed into the international FRA data structure or in how far there are inconsistencies between them.

4.1. Forest ownership structure

4.1.1. National data set

The latest complete official agriculture and forest statistics were updated in 1980 (INS 1986) but only concerning public forests. The 1970s census (INS 1976) shows a forest area of 616,918 ha (poplar stands included), with 323,977 ha or 52.4% in private ownership.

The first census was carried out in 1846. The total forest area increased over time as follows (in brackets and %: private) (Administration des Eaux et Forêts, 1958):

- 1846 : 485,666 ha (65%)
- 1866 : 434,596 (not available)
- 1880 : 489,423 (64%)

- 1895 : 521,495 (63%)
- 1910 : 521,215 (58%)
- 1929 : 541,140 (52%)
- 1950 : 600,899 (53%)

The increase in forest cover from 1866 to 1950 (+ 38%) happened mainly due to conifer plantations.

The 1970s census (INS 1976) shows a forest area of 616,918 ha (poplar stands included), with 323,397 ha or 52.4 % in private ownership. The census of 1950 indicated lower values: 600,899 ha of which 339,028 ha (or 53.4 or ~54%) were private. Concerning the private forest area there is no change observed not only during the period 1950-1970, but also in the last past 60 years (period 1950-2010).

In 2014, forest area is estimated at 692,916 ha, which represents 22.7% of the territory (Belgium.be Portal 2015).

These private forests are small in size and subdivided. Indeed, there are more than 100,000 individual owners, which equate to an average holding of about 3 ha (Rondeux 1991).

Both state and communes have registers of forest property throughout their areas from which data on forest structure can be gathered, but for private forests uniform and reliable information at the individual enterprise level does not exist. Table 4 gives a breakdown of private ownership in terms of the size of holding and number of owners, with corresponding figures for the public sector (state, region or commune).

Table 4: Structure of enterprises by type of ownership and size group (situation in 1970) for Belgium (national level) (Rondeux, 1991)

Area owned (ha)	Private forest		Public forest	
	No. of owners	Area %	No. of owners	Area %
< 0.5	53,950 (51.3 %)	3.7	44 (3.8%)	-
0.5 – 1	18,792 (17.9%)	4.2	55 (4.7%)	-
1 – 5	24,097 (22.9%)	15.9	195 (16.8%)	0.2
5 – 20	5,789 (5.5%)	17.3	177 (15.2 %)	0.7
20 – 50	1,411 (1.3%)	13.9	107 (9.2%)	1.3
50 – 100	599 (0.6%)	13.2	114 (9.8%)	3.2
100 – 500	396 (0.5%)	23.2	339 (29.1%)	30.6
>500	32 (0.0%)	8.6	132 (11.3%)	64.0
Total	105,066		1,163	

This clearly shows that nearly 100,000 owners (92%) own less than 5 ha and these small holdings comprise 25% of the total private forest area. Half of these own less than 0.5 ha, who do not consider themselves as forest owners. They own a wood or land registered as woodland. It is important to note that these small ownerships comprise a significant number of small compartments, which are usually located within larger blocks rather than being geographically scattered.

At the Walloon regional level, definitions of each forest ownership are the following (Rondeux and Lecomte 2010d; SPW 2014).

- (1) Walloon Region: forests owned by the Walloon Region (“forêts domaniales”)
- (2) Provinces: forests owned by provinces (Brabant wallon, Hainaut, Liège, Luxembourg, Namur)
- (3) Communes: forests owned by the communes
- (4) Church administration (“Fabrique d’église”): forests owned by the church administration (communal level)
- (5) Social administration (Centre Public d’Aide Sociale - “CPAS”): forests owned by the social administration (communal level)
- (6) Army: forests owned by the army (federal level)

(7) Private owners: forests owned by private owners (individuals or legal entities of private law).

Categories (1) to (6) are called “public forests”. These forests are managed by the Walloon Forest Service, which is an regional public service.

The results of a regional inventory conducted in the Walloon region in southern Belgium (Lecomte et al. 2002) containing 554,000 ha (more than 80% of the national forest area, poplars excluded) showed that 53.2% was in private ownership.

In 2014, the Walloon Forest Administration and the federal Ministry of Finance (which is in charge of cadastral data) found an agreement allowing to get statistics about the ownership of the Walloon forest. All data are anonymous but the area by ownership is available.

The first analyses by the Forest Administration and the Walloon Economic Office for Wood (OEWB) show that the mean area of the private forest ownership in Wallonia is around 2.75 ha (SPW-OEWB 2015). The distribution by class of ownership area confirms that the majority of owners have less than 1 ha of forest (Figure 1). On the other side, ownerships of more than 100 ha represent less than 1% of the number of ownerships but 27% of the private forest area.

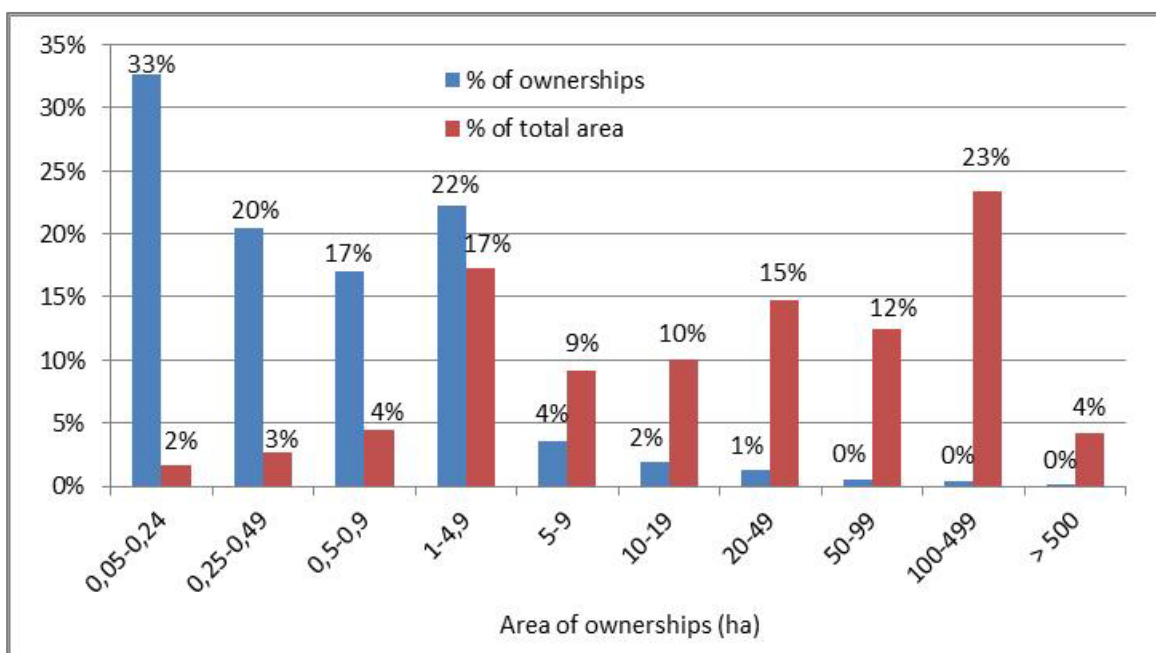


Figure 1: Distribution of the Walloon private forest by class of ownership area (SPW - OEWB 2015)

4.1.2. Critical comparison with national data in FRA reporting

National data collected for FRA are the result of the compilation of data from the three

regions (Wallonia, Flanders, Brussels). The following table shows the comparison between the categories from the Walloon Region and those issued from FRA.

Table 5: Comparison with national data in FRA reporting

FRA 2010			Regional (Wallonia) data	
Categories	Forest area Belgium (1000 hectares) (2005)	Wallonia	Categories	Forest area (1000 hectares) (2010)(*)
Public ownership	298.7	268.5	Walloon Region	61.7
			Provinces	1.2
			Municipalities	192.5
			Social administration	4.8
			Other public owners	0.3
			Army	2.5
			Nature reserve	5.5
Private ownership	373.9	286.5	Private ownership	286.5
...of which owned by individuals	317.8	243.5		
...of which owned by private business entities and institutions	56.1	43.0		
...of which owned by local communities	0			
...of which owned by indigenous / tribal communities	0			
Other types of ownership	0			
TOTAL	672.6	555.0	TOTAL	555.0

(*) data from the Walloon forest survey 2008-2012 (1 plot per 166.67 ha) (SPW 2014)

The distribution between the categories of private ownership was estimated on the basis of Regional Walloon inventory plots whose owners are known. Percentages obtained from this sample for individuals (85%) and private business entities (15%) were then applied to the total area of private forests. It was assumed that the distribution made in Wallonia was applicable to private forest in Flanders. The same proportions were used in 2010, in the absence of data update.

4.2. Unclear or disputed forest ownership

Property rights have been clear over time, even if in some cases the usufruct represents the right for someone to benefit returns of the forest without being owner. Co-ownership is a legal status, which gives the same rights on

the property. The main cause is when there is no division of the property at the death of the owner so that none has integral rights on its part. Such situations may be a problem when conflicts are occurring between the owner himself and the usufruct or between co-owners, more specifically if one of the partners wants to sell the property.

In some cases, the boundaries of forest parcels are very unclear and pieces of forest land seem to be abandoned. Generally due to successive generations of owners (woodland in joint ownership) and for very small properties it is not rare to observe 10 ares belonging to more than 30 owners. Referring to the services of the land register it is very often impossible to know or identify the last owner, as in such cases they are dead and their heirs are not known.

4.3. Legal provisions on buying or inheriting forests

4.3.1. Legal restrictions for buying or selling forests

Regarding the state forest land, parcels with a size greater than 1 ha cannot be sold without a decree (Forest Law 2008, art 114) (SPW 2009). There is an exception for exchanges, expropriations in order to meet public or general interest and also cessions to get out of joint ownership (possession) with private owners. As concerns other public forest owners (communes, provinces, social public welfare) they cannot be sold without a government's authorization.

There is no legal restriction in private forests regarding the buying/selling forestland. It is not the case in agriculture, for which there is a right of pre-emption to secure farmlands or persons occupying lands.

4.3.2. Specific inheritance (or marriage) rules applied to forests

No origin rules are given for forests transfer from a generation to another. The forest owner may purchase or sell the forest separately or in common.

On ownership/property matters, Belgium is heir to Roman Law and to the Napoleon Code of 1804.

More often, the owner of the land is also owner of standing trees. In case of inheritance, the receiver has to pay succession duties on the value of the land and also on the value of standing trees.

In Wallonia, both provisions have been repealed: on the value of the land and standing trees when forest are located inside Natura 2000 site and on the value of standing trees or growing stock only for all owners according to the new Forest Law (SPW 2009).

4.4. Changes of the forest ownership structure in the last three decades

The following table shows the evolution of forest areas among the various types of owners between 1980 and 2010.

Table 6: Evolution of forest areas from 1980 to 2010 (estimated values)*

Owners	1980		2000		2010	
	Area (ha)	Std Err (%)	Area (ha)	Std Err (%)	Area (ha)	Std Err (%)
Walloon Region	50,287	1.0	55,350	0.9	67,168	1.9
Communes	191,300	0.4	196,900	0.3	192,504	0.9
Other public owners	12,819	2.7	14,800	2.4	8,834	8.9
Total public owners	254,406	0.3	267,050	0.3	268,505	0.7
Private forest owners	285,133	0.3	286,950	0.3	286,506	0.6
Total	539,539	0.2	554,000	0.2	555,011	0.4

*Information provided by the Walloon Forest Service - The values for 2010 are based upon results concerning around 30% of the sampling points. Std Err (=standard error at 95% confidence level).

According to the results of national surveys and regional forest inventory there is no significant change concerning the relative importance of each forest ownership category. No information is available to follow-up the evolution among owners themselves.

4.4.1. Changes between public and private ownership

The distribution between public and private forests is quite stable. The small increase of the public forests is probably due the acquisition of land set aside to nature reserves or protected areas.

4.4.2. Changes within public ownership categories

Within public ownership categories we observe the quasi-stability of forests belonging to communes and the decrease of other types of public properties.

4.4.3. Changes within private forest ownership

During the last three decades there are no significant signs of change of ownership structure.

Up to now, it is not possible to make use of any credible information as long as the information of the cadastral database is not available without payment. Furthermore the status of properties is refreshed after 1 year as concerns ownership change. It is quite different for the land status updating.

As presented in the paragraph 4.1.1, new data obtained thanks to the agreement between the Walloon Forest Administration and the federal Ministry of Finance will make possible in the near future to perform studies about the structure of the Walloon forest ownership.

At the very most one can think that many forest owners have tried to purchase parcels joining their properties in order to expand it. This is also a useful way to look to mechanized forest harvestings and to gain in the sale of wood.

This would contribute to reducing the high degree of fragmentation (small widely dispersed forest patches), which is a real obstacle to improvement of the quality of management and decision-making. It is then also easier to put into practice and less complicated to attempt to optimise a suitable combination of functions for a given area. According to some experts, in practice, this

evolution is quite different for big ownerships, in particular already scattered or concerning hundreds of hectares, which are always divided on inheritance.

4.4.4. Main trends of forest ownership change

Across Europe, the following drivers for ownership changes had been identified in the COST Action:

- Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)
- Privatization of public forest management (introduction of private forms of management, e.g. state owned company)
- New private forest owners who have bought forests
- New forest ownership through afforestation of formerly agricultural or waste lands
- Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)

In Wallonia, according to surveys carried out by key actors like SRFB and NTF in their own associations (results not published), the following table shows that the main driver of ownership change should be linked to an evolution of lifestyle and attitudes of forest owners.

Due to the increase of the forest land value, forest experts guess one can assume that new forest owners buying forests and afforestation are two trends which could be more important in forest ownership than observed now.

Trends in forest ownership: New forest ownership through...	Significance*
• Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)	0
• Privatization of public forest management (introduction of private forms of management, e.g. state owned company)	0
• New private forest owners who have bought forests	1
• New forest ownership through afforestation of formerly agricultural or waste lands	1
• Changing lifestyle, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)	2
• Other trend	-

* 0 (not relevant); 1 (to some extent); 2 (rather important); 3 (highly important)

The 2 case examples presented below are based on contacts with the Walloon Forest Service and experts who know situations more pronounced during the 3 last decades.

CASE STUDY 1: NEW FOREST OWNERS WHO HAVE BOUGHT FOREST

- a. People buying forest to contribute personally to sustainable development. They have no specific knowledge in silviculture/forestry but they want to act in harmony with national or international declarations about sustainable development. They are more often interested in keeping forest in its natural condition and sometimes they seem to be sensitive to methods close to the ideas developed by "ProSilva"(*)
- b. People who buy forest think it is a safe investment. They calculate (or not) the profitability of such placement and they try to manage their forest as a real financial investment with the help of experts.

(*) ProSilva is a European federation of professional foresters across 24 European countries and in the USA who promote a silviculture close to nature as an alternative to clear felling and short term plantations. It promotes forest management strategies which optimise the maintenance, conservation and utilisation of forest ecosystems in such a way that the ecological and socio-economic functions are sustainable and profitable.

CASE STUDY 2: CHANGING LIFESTYLE, MOTIVATIONS AND ATTITUDES OF FOREST OWNERS

- a. Inheritance of forests by people disconnected to the land. This case occurs very often when the presumed new owners are children of former farmers that convert agricultural land to forest when giving up farming. The next generation of heirs left these areas when they were young and lost contacts with the local population. The old generation managed the forest, but the deficiencies of transmission of information/knowledge and the lack of time to spend in forest of the young generation have an influence on their way to become themselves managers of their forests.
- b. After cutting, a proportion of private forest owners do not want to plant forest again, and the parcel (compartment) is conducted in a different way than the previous stand. Different cases can be observed:
 - i. People do not want to invest and spend money on planting;
 - ii. People are discouraged to plant because of the different risks, in particular deer damages;
 - iii. People have other objectives than wood production, for example: nature conservation, hunting, leisure.

4.5. Gender issues in relation to forest ownership

Theoretically and practically, gender disaggregated data exist even if it can be quite difficult to consider in the case of a co-ownership. But these data are not available due to privacy protection policies. Cadastral data are held by the Federal Ministry of Finance. All data giving information about the owner are protected and not available. Characterization of owners and especially distinction about gender is thus not possible on the basis of cadastral data. Other types of surveys on owners profiles are old (BARY-LENGER et al. 1993) and the field of gender is not considered as very important until now.

4.6. Charitable, NGO or not-for-profit ownership of the forests

This section is concerned with forests owned by organisations such as conservation and heritage NGOs, self-organised community-based institutions and other philanthropic ("Characterized or motivated by philanthropy; benevolent; humane" OED) organisations. The management objective for these forests is usually to deliver social or environmental aims with maximisation of financial or timber returns as a secondary concern. Most owners are corporate and may invoke at least an element of group or participatory decision-making on management objectives and high ethical standards. It is possible for such ownership to be entirely private. However, the provision of public benefits (services (e.g. biodiversity, amenity, recreation etc.) which are free for everyone to enjoy or provide

benefits to local communities (employment for disadvantaged people etc.) are sometimes recognised in the form of charitable registration. This in turn puts restrictions on

the rights of the owners to use profits and to dispose of assets in exchange for tax exemptions and access to charitable funding.

Forests owned by ...	Yes	No	Uncertain
• Foundations or trusts			X
• NGOs with environmental or social objectives	X		
• Self-organised local community groups			X
• Co-operatives/forest owner associations			X
• Social enterprises			X
• Recognized charitable status for land-owners	X		
• Other forms of charitable ownerships, namely:		X	

Concerning “NGOs with environmental or social objectives”, the case is frequently observed in Nature conservation organisations, which buy forests in order to create nature reserves. Concerning “Recognized charitable status for land-owners”, Social administration owns about

4800 ha that are, as all forests public properties, managed by the Walloon Forest service. It is the same situation for church administrations which own around 300 ha. Those figures are based upon the 2008-2012 Walloon Forest Survey (1 plot per 166.67 ha).

CASE STUDY 3: NATAGORA AN ASSOCIATION FOR NATURE PROTECTION

In Wallonia, some nature associations aim at developing conservation areas. Natagora is such an association for nature protection that develops a strategy for the purchase or lease of land with an outstanding biological interest in Wallonia. To date, Natagora natural reserves cover over 4,300 hectares and represent a vast network of protected sites in Wallonia.

These reserves are purchased through donations that the public can perform. Walloon and European funding are also used in programs, such as LIFE.

Initiated in 1992 by the European Commission, the LIFE fund¹ finances projects intended to improve the environment in the broadest sense. Within this fund, *LIFE Nature* deals more specifically with safeguarding biodiversity through programmes for the protection and restoration of habitats and endangered species at EU level. Through their specific actions, the LIFE Nature programmes contribute to the implementation of the “Birds” and “Habitats” European Directives and the set-up of the Natura 2000 network.

Since the creation of the LIFE Fund, Wallonia has benefitted from around 15 *LIFE Nature* projects, mainly focused on the restoration of natural habitats in decline such as peat bogs, wet meadows, chalk grasslands, or the implementation of measures for the protection of vulnerable species such as otter, pearl mussel, and some butterfly species.

As an illustration, here are some key figures for the “*Croix-Scaille valleys*” project:

Natura 2000 sites: 4,500 ha	Drain plugging: 400 plugs
Project duration: 4 years (2006-2009)	Ponds created: 150 ponds
Budget expenditure: €2,065,000	Miles of rivers cleared: 15 miles
Total area restored: 263 ha	Surface area dedicated to nature by the end of the project: 250 ha
Area of conifers felled: 174 ha	New nature reserves: 113 ha
Windrowing: 90 ha	
Milling / Stripping-Raking: 90 ha	

For further information visit <http://www.natagora.be> (last accessed 04.09.2014)

¹ The EU's funding instrument for the environment.

4.7. Common pool resources regimes

Commons - forest common property regimes (CPR) are resource regimes where property is shared among users and management rules are derived and operated on self-management, collective actions and self-organization (of rules and decisions). Examples of traditional CPR regime are pastures, forest land communities in Sweden, Slovakia, Romania Italy and other European countries or irrigation systems in Africa or Asia. The number of new common property regimes is growing and it is challenge of this Action to transfer knowledge and skills of traditional CPRs to new CPRs and vice versa. Example of new CPR regime is community woodlands in UK, established in last 20 years

mainly in Scotland, Wales. Our interest in "traditional" and "new" common pool resources regimes (CPRs) in European forest, is based on the understanding that robust resource regimes are critical for sustainable forest management regardless of the property rights. Ongoing practice shows that local land users (without ownership share) leased use agreement may also be CPR regime if they have the rights to determine management rules typical for commons (e.g. self-organisation and shared rights and responsibilities). Thus proper rules on management (harvesting, decision making and conflict resolution mechanism, cost/benefit sharing, sanctioning etc) are key for sustainable use of CPR regimes.

Forest common property regimes (CPR), as type of ownership, do not exist in Belgium.

5. Forest management approaches for new forest owner types

The Action is interested if there are any new forest management approaches that specifically address new forest owner types, or that could be particularly relevant for new forest owner types. We are aware that there is not much awareness for this and that there is not much literature available, however, we are convinced that this is an issue: if owners have different goals for their forests there must be new kinds of management, if they have not the skills any more to do it themselves then there must be new service offers, etc. There are assumingly implications in silviculture, technology, work organisation, business models, etc. Such new approaches may be discussed under the key word of new ownership types but often not.

5.1. Forest management in WALLONIA

The forest owner, especially in the case of small properties, is free from restrictions. Intervention by the state is minimal, so that the management is almost entirely a question of personal choice.

Sometimes the forest owners are taking part in the management of their woodlands but more generally that is the task of forest experts or “informal” stakeholders.

Except for large properties, there is not precisely a contract but only a partnership generally with the same persons traditionally involved in wood sale or forest operations.

That situation does not seem to have deeply changed over the past last years.

As concerns the potential new owners, at first sight, the likelihood is that they get in touch with experts belonging to the Forest expert federation (“Fédération des Experts Forestiers”) or sometimes with cooperatives regardless of the area involved.

5.2. New or innovative forest management approaches relevant for new forest owner types

In practice, it is impossible to identify new forest management approaches linked to “new forest owners”. However, for holdings of more than around 20 ha it is likely that in the future simple management plan (“plan simple de gestion”) be encouraged on voluntary basis at first.

Even if it is obvious that such initiatives are very limited, the trend would become increasingly apparent.

In some cases the emergence of Pro Silva has probably created the conditions that should aim to help the development of the concept of “adaptive” management (silviculture adapted to climate change) especially in middle-size properties. This idea has taken roots in the global conscience of a forest policy, which should be to manage forests at a more global level in projects gathering public and private forest owners. But it seems to be difficult to set up among others due to the respect of ownership.

The use of very simple management plans is present but without any obligation to apply them. Up to now, it seems that they are mainly useful for those who intend to join the frame of a certification process (PEFC/FSC).

In some places, in Wallonia and Belgium, private owners are trying to work together. Such cooperative is formed by the owners themselves without any public assistance or subsidies. Their principal aim is to promote management activities in order to reduce harvesting costs and increase the efficiency and effectiveness of operations, and to provide technical service and advice. It became clear that a good knowledge of the wood market can form the basis of strategic planning, particularly regarding the rationalising of product specifications; which eventually led to the creation of a separate society dealing solely with timber sales. The membership system is designated to preserve the freedom of every owner,

regardless of the size of his holding. Forest inventories and management advice, for example, are prepared for the individual enterprise at the request of the forest owner himself. The normal forest operations of planting, pruning, thinning, or other activities such as extraction and transport, are carried out by contractors.

The “Groupement de Gestion” and “Socofor-Samkenpen” are the 2 most significant forest cooperatives listed in 2014. The first one deals with forest management and wood sales (200 members, 16,000 ha) while the second one is more focused on bundled sales (530 members, 35,000 ha). (<http://www.groupementdegestion.be>; <http://www.socofor-samkempen.be>)

5.3. Main opportunities for innovative forest management

In agreement with international recommendations (*Interministerial conferences on the protection of forests in Europe*) and the attention paid to sustainability and multifunctionality of forests, their management will probably be considered as a part of land use management and at the level of substantial non-broken blocks of forests which could bring together private and public forests. As already mentioned, it is a promising way to avoid or to reduce further fragmentation of ownership and sometimes premature fellings before normal rotation age.

Most of the private forest owners, due to the size of their holdings or lack of knowledge, do not use a management plan. Nevertheless, several attempts have been made to implement simple working plans (“documents simples de gestion”) which get more attention in the new generations of young owners. It should be probably the same when considering new owners themselves. What is very important is to propose a simple information system based upon data easy to collect and suitable for a great number of forest properties whatever their sizes. The main objectives of these working plans are thus to propose documents compiling updated descriptive information dealing with administrative data, stand and structure composition, species, age classes, ownership

locations, planning and control of main silviculture operations. Information from the forest are collected at the compartment level (planning unit being defined by permanent boundaries) and are registered in a computerized database so that any owner can make continuing use of information such as various repartitions (areas and species by age, by structure) digitized thematic maps (stand, soil, silvicultural operations,...).

It should be noted that a minority of traditional forest owners is interested to go down this path proposed to improve forest management. Although being not formally known as useful, for people becoming new forest owners, it is important to have in mind that these are probably much more open to well-structured and rigorous approaches. This is particularly the case as the ownership size is large. It just happens that potential new forest owners are interested in buying more forest parcels rather than individual parcels. Such owners are also thinking in terms of integrated management combining several objectives.

The most innovative idea is to create positive conditions to associate public and private owners in a same territory in order to stimulate sustainable management taking into account the multifaceted importance of the forest at local levels.

Innovative forest management has to be considered as a way not only to be in agreement with sustainability but also to increase and diversify the forest production under favourable conditions.

The creation of mixed species stands and a better adequacy soil/species should be more often taken into consideration.

The economic valuation of non-marked benefits of forestry is also an important tool for supporting the sustainable use of forest but the outputs forestry produces have no price since being not traded in markets.

Societal demands could be a new market provided public support and market tools are completed. More specifically recreation and outdoor activities are real opportunities and research which has been conducted in Wallonia (Colson, 2009) reveals an average willingness to pay off about €4.4/activity. The global value of forest recreation in Wallonia has been estimated at around 2 billion Euros.

In the same context the preservation and the enhancement of biodiversity seem to be more and more accepted by the forest owners without any return (except Natura 2000 and Life programs that provide compensations).

In some cases wood energy market has probably influenced silvicultural practices and the way to manage but due to the hard competition between wood purchasers and increasing uncertainty this new opportunity is down even if such situation benefits to forest owners.

5.4. Obstacles for innovative forest management approaches

The relative lack of organised working plan, as one of the obstacles for innovative forest management, can be attributed to several reasons:

the size of forest holdings (averaging about 3 hectares);

the lack of expertise and knowledge among small woodland owners, who are basically part-time operators whose main source of income is from other occupations;

the scarcity of forest roads in heavily wooded areas;

the socio-economic conditions influencing the major costs of labour and production;

the absence of financial support, in contrast to agriculture which receives aid with few strings attached;

the absence of coordination between the concerned actors: forest owners and other stakeholders;

the inheritance rules that allow heirs to manage their forest as they want, without any constraint.

It has to be admitted however that many owners are reluctant to change, except for those owning large holdings. Curiously, an element, which can help to take conscience of the importance of a management plan, even superficial, is the increasing use of computers. Children and young people have found that the forest was a very interesting field of applications of new technologies (GIS, GPS). It has been clearly seen on the launching of a survey dealing with forest owner's attitude about the use of simple management plan and particularly its computerized form (Colson *and al.*, 2004a, 2004b). The online consultation of general information concerning ownerships (localisation, cadastral references and additional facilities like stand description, length and area calculation) (SRFB 2013) is now attracting attention.

The only way to change is to go improve and strengthen education, develop and improve tools for training in forestry practices, even if a lot of efforts are already made in this regards. Those who we call "new forest owners" should probably be more open as they should want to acquire knowledge in forest management and silviculture.

Among the attempts to make management more operational 2 cases are presented. They concern an integrated management a large forested area, the implementation of a computer- controlled planning system in a cooperative.

CASE STUDY 4: INTEGRATED MANAGEMENT OF A FOREST COMPRISING PUBLIC AND PRIVATE OWNERSHIPS ("PGISH" - Projet de gestion intégrée du massif forestier de St-Hubert)

In 2000-2004 a forest massif of broadleaved and coniferous trees covering around 18,000ha has been selected to develop a management model based on participation of stakeholders (forest owner, forest service, hunters, hiking groups, ecologists, research scientists). This massif comprised private ownerships (6,000ha) and public ownerships (10,000 ha belonging to communes and 2,000ha to the Walloon region).

The concerted aim was to adapt management rules to a general objective, which was defined for this forest (Rondeux, 2005). The problems to be studied concerned natural regeneration, game pressure and use of hydromorphic soils, so the common question was "which kind of future forest do we want considering the existing potential?". The study piloted by universities has focused on a sector-based approach using a process carrying out the following steps: analysis of the initial forest situation (through interviews and sampling forest inventory - scenarios building - evaluation and comparison of scenarios using indicators - concentration and negotiation - selection of a scenario. This study results in proposing a realistic vision of the future forest ("strategic level"), a global management for both the whole massif and each ownership area ("tactical level") and a priority action program ("operational level").

Multi-criterion analysis has been used as decision support tool, especially to mitigate the effects of very different expectations formulated by stakeholders.

Unfortunately the results of the project have not been implemented in practice, due to the high cost and the low involvement both of forest service and private owners. Nevertheless some forms of concertation (interviews, forums,...) have been used in the frame of the touristic valorisation of large forest areas including public and private ownerships.

For further information :

Ir. D. Marchal (didier.marchal@spw.wallonie.be)
<http://www.environnement.wallonie.be>

Prof. P. Lejeune (p.lejeune@ulg.ac.be)
<http://www.fsagx.ac.be/gf>

CASE STUDY 5: A COOPERATIVE IMPLEMENTING A COMPUTER-CONTROLLED PLANNING SYSTEM

A cooperative “Le Groupement de Gestion” has been created in 1960 in a region well known for its richness in high quality broadleaves. In 2014 it has more than 200 owners and owning around 16,000 ha of forest, with holdings’ sizes varying from 5 to 150 ha. This cooperative was formed by the owners themselves, without any public assistance or subsidies. Its principal aim has been to develop and promote management activities in order to reduce harvesting costs and increase the efficiency and effectiveness of operations, and also to provide technical service and advice.

One of the main goals is to organize all aspects of harvesting and marketing, from volume estimation to selling of wood. That is the reason why this cooperative is linked to a society specialized in timber trade and using a conversion depot (a stacking area where valuable hardwoods are sorted by log quality, species and size). In 1990, more than 10,000 m³ were sold using this way, particularly logs for slicing and peeling. This system of log grading adds significantly the sale value of timber; to some extent it contributes to stabilising prices and increases the owner’s chance of obtaining a fair return. It also allows him to negotiate directly with the mills, which provides higher returns compared with the traditional system based on standing trees.

Since 2000, the whole planning strategy has been reviewed because of the importance of new challenges such as international wood trade, exports, market volatility, etc.

In the 1990s, it has set up a first computer-controlled system (Rondeux,1987) covering the following operations:

- management and control of a the log sorting yard;
- development of a simple plan model based upon a compartment database, which has been used in conjunction with the other operations;
- establishment of a geographic database, mapping species, stands, subcompartments, forest operations, etc.;
- forest survey, involving complete enumerations and sampling.

From a management point of view, special attention was paid to scheduling forest treatments. Reliable information on each wood is collected at the sub-compartment level and entered on a database comprising three interconnected files organised as follows:

- at compartment level (several hectares): administrative identification and site description – ownership, location, aspect, soils;
- at sub-compartment level (from several ares to hectares): qualitative and quantitative description of the species, age, structure of the growing stock, site quality, top height and basal area followed by details of work required – planting, cleaning, pruning, thinning, etc.

Examples of the type of information which this computer-based system is capable of providing at the local level include:

- area distribution of stands by species, age class, growing stock, or cutting classes;
- a calendar of silvicultural operations, showing timing and priorities;
- mapping of various purposes; stand and species maps, cutting areas, etc.;
- outputs in tabular or graphical form;
- reviews of budget decisions.

To summarize the main services of the cooperative are: all silvicultural operations comprising plantings, cleanings, thinnings and since 2010 a new computerized management plan (“Document simple de gestion”) which is proposed to all members of the cooperative. It gives an updated calendar of all activities to be implemented over space and time for each holding.

For further information: <http://www.groupementdegestion.be>

6. Policies influencing ownership development / Policy instruments for new forest owners

Policy and ownership are related in various ways: Policies directly or indirectly influence ownership development or even encourage or create new forms of ownership; and policy instruments are emerging that answer to ownership changes, including instruments addressed to support new types of owners e.g. through advisory services, cooperative or joint forest management, etc.

6.1. Influences of policies on the development of forest ownership

In Wallonia, there is no specific **instrument stimulating the privatisation, decentralisation or nationalisation of forests.**

Concerning **regulations related to inheritance rights, with an effect on creating smaller parcels or hindering such a development**, Belgium is heir to Roman Law and to the Napoleon Code of 1804. More often, the owner of the ground is also owner of standing trees (considered as realty). In case of inheritance, there is a need to pay succession duties on the value of the ground and also on the value of standing trees. In Wallonia, both provisions (on the value of the ground and standing trees) have been repealed when forests are located inside Natura 2000 sites and only the provision on the value of standing trees for all other owners in accordance with the new Walloon Forest Law (2008) (SPW 2009).

It is also worth noting that the official reason behind the recent suppression of inheritance rights in 2008 was above all to reduce the fragmentation of forest holdings. Official data dealing with property sizes, number of owners and ownerships are only available since 2014. They however need to be processed. In the given context it is difficult today to assess the impact of this measure.

Afforestation of agricultural land was induced with the EC Regulation 2080/92 and follow-up measures of the EU rural development policy. In Belgium this is regulated through regional land-use planning code. It must result from a specific application

or permit. Afforestation of agricultural land does not constitute a significant trend in Belgium.

In Belgium, in 1999, thanks to **a law, a new legal form of ownership** (“groupement forestier familial”/ “family forest association”) has been created allowing better fiscal conditions for avoiding land fragmentation (Moniteur belge 1999, FRNB MRW-DGRNE 2001). There are in 2014 around 30 types of such ownership, which are registered for a total area covering 7,800 ha.

6.2. Influences of policies in forest management

Among the main policies influencing forest management, there is a lot of rules linked to Natura 2000 sites which have to be respected. According to the nature of the management units the restriction can be more or less important.

According to the Forest Law (SPW 2009), from 2008, even for a private owner, it is forbidden to cut more than 5 hectares (forming a block) in coniferous stands and 3 hectares (forming a block) in broadleaved stands. However, some derogations from the rules are possible but in such cases the owner must prepare a management plan - covering a 20-year period - for approval by the government (regional forest service).

In the frame of Natura 2000 involving possible silvicultural restrictions in certain areas the regional government has decided to compensate all the concerned owners by suppressing property taxes and helping them in preserving the forest site in accordance with Natura 2000 prescriptions (Naturawal 2015). Furthermore, compensations for forest measures are fixed at a level of €40/ha and €100/ha for voluntary forest measures. They are defined in the Walloon Order of 24 November 2012 and awarded on an annual basis.

To be eligible for compensations the following requirements are necessary (Naturawal 2015):

- to be owner of a total area so that an indemnity of € 100 can be allowed;
- to identify on maps small-sized conservation areas called “conservation islands”, at least 2 dead trees and 1 tree/2 ha with high biological value out of the aforesaid conservation areas;
- to produce photoplans of parcels (compartments) concerned by Natura 2000 measures.

6.3. Policy instruments specifically addressing different ownership categories

In Wallonia, the government supports various initiatives undertaken by forest owner associations or organisms (several non-profit associations under Belgian law) dedicated among others to advise private owners.

A specific initiative (“Cellule d’appui à la petite forêt privée - CAPFP”- “support unit for small private forests”) integrated into the Walloon Economic Office for Wood has been created in 2012 to support most specifically small-scale private forest owners (Defays and Colson 2012) (See Case 1 below).

Non-profit organizations, as the “Société Royale Forestière de Belgique” through field trips, its bimonthly magazine “Silva Belgica” and trainings (silviculture, electronic data processing), contributes to improving knowledge in various fields relating to

silviculture and management. A few forest centers working in nature education with the financial support of the region are also active in providing advices on how to approach forest management. Another non-profit organization (Forêt Wallonne) more involved in public forests works in close cooperation with universities inside an annual research program. The main results achieved are disseminated in both public and private settings using technical reports and training sessions on new tools in forest management.

In some places, mainly at communal level, the CAPFP tries to drive owners into bundled timber sales concerning several tracts of forest of a few hundred hectares. The same approach is also tested for a lot of works dealing with grouped silvicultural operations (planting, cleaning, thinning, road network maintenance, etc.).

There is essentially no very active political lobby in place except an association grouping land and forest owners (NTF) that provides to their members legal information and assistance. The main objectives are to defend owners’ rights and influence the claims and proposals submitted to regional levels of policy and administration. Recent and significant examples are: Natura 2000: simplification of procedures concerning conditions of obtaining financial and fiscal compensations; and Forest Law (NTF 2014, SPW 2009, SRFB 2014): negotiation to obtain abolition of gift and succession duty.

CASE STUDY 6: A PUBLIC ORGANISATION DEDICATED TO SMALL FOREST OWNERSHIP

In 2008, the Walloon Government edicted a new Forest Law (“Code forestier”) which includes, among others, new rules for the private forest ownership (size of clear-cuttings, adequacy between species and soils, etc.). These new rules made it necessary to set up an information desk for private owners.

In 2012, the Walloon Government decided to create a public organisation specifically dedicated to stimulate the wood industry: the Walloon Economic Office for Wood (OEWB, “Office économique wallon du Bois”). One of the missions of this organisation is to encourage a sustainable management of forest resources, with a special target on the small forest ownership.

These two political decisions resulted in the creation of a specific service of the OEWB called “Support unit for small private forests” (“Cellule d’Appui à la Petite Forêt Privée”, CAPFP).

The three main missions of this service are:

- The information desk to give the forest owners all information they need to manage their forest or to contact professionals;
- The development of projects of “forest management group” in scattered woodlands in order to encourage and to optimize forest management in wooded parcels smaller than 5 hectares;
- The monitoring of the small forest ownership (owners profiles, structure of the ownership, evolution of forest resources, etc.).

All these missions that have been clearly defined are supervised by a committee bringing together delegates from the forest administration, associations of owners, entrepreneurs and academics.

Commercial acts are not allowed for the CAPFP and redirection to professionals (private sector) has to be done. The information desk is free for the private owners except for the visits on site (a small financial contribution is asked to the owner).

One of the missions entrusted to the CAPFP specifically consists in developing forest "collective management" (which means in this context that each owner, keeping all this property rights, accepts to participate in silvicultural or management actions covering a territory including its own properties or parcels). Such activities only concern for the moment woodlands or parts of territories which are very scattered and owned by a lot of small forest ownerships.

The work plan of the CAPFP for each project can be summarized as follows:

- identification of target woodlands or parts of the territory particularly scattered and thus potentially dedicated to "collective management";
- contacts with local communes (partner of each project) and organisation of personal contacts with owners (mail, conferences,...);
- offer of personalized advice to owners (entirely free of charge and of any subsequent commitment): this visit should make the owner aware of good forest practices;
- incentive to attending grouped operations relating to logging, pruning, thinning or planting;
- choice of professional operators (enterprises and independents) to carry out these forest works which are supervised by the CAPFP;
- project monitoring by giving updated information to owners.

As a public and thus neutral organisation, the main CAPFP objective is to encourage owners, especially the smallest ones, to put some focus on forest management, to benefit from advantages provided by the collective management (better prices wood sales and silvicultural works, roads building opportunities, much more possible influence on forest policy decisions,...). Another objective is to stimulate over time the economic activity in forests and the sustainability of the Walloon forest resources.

Profiles of owners who agree to join these projects (generally less than 10% of the global number of forest owners concerned) are essentially:

- owners not directly connected to the land (living far from their forest);
- new forest owners assimilated to those who have inherited their forest but lack knowledge about forest management;
- owners getting old who can't manage their forest themselves or are no longer interested because of their age.

Nevertheless such actions also contribute to forest management in a larger part of the woodland, by other owners who work themselves in their parcels.

Benefits of each project are thus more important than the direct results of grouped operations.

The network built among owners in each woodland and maintained by regular newsletters also gives the satisfaction to the owners that they are part of a group and have a partner to help them in the management of their forest.

The first two years of activity of the CAPFP showed that the need of a such organisation is real, in particular for new forest owners and other owners disconnected from the land.

This initiative is the first one conducted by a public organisation to the benefit of private forests. Even if results are at a local level for now, this forest policy measure is a big change in terms of involvement of the Walloon Region for the small forest ownership.

For further information:

Dr. V. Colson, in charge of the "Cellule d'Appui à la Petite Forêt Privée", v.colson@oewb.be

CASE STUDY 7: THE “BOSGROEPEN”, AN EFFICIENT TOOL FOR THE SMALL FOREST OWNERSHIP IN FLANDERS

The Flemish region counts 19 “bosgroepen”, which are a particular type of forest owners association. The Flemish forest administration has developed this structure to find a solution to the high partition of the private forest area.

Created in 1994 by the Nature and Forest Agency (“Agentschap voor Natuur en Bos”) the “bosgroepen” are based on partnerships between private and public forest owners. In 2007 around 19 groups were attended by more than 5,000 owners.

The solution concerns not only forest management but also nature conservation.

Keys of the success of this policy instrument are:

- Autonomy and responsibility of each structure;
- Independence and neutrality;
- Possibility for every forest owners to reach the association independently of the ownership area.

The mean area of forest ownership member of the “bosgroepen” is around 2.9 ha. The members represent globally 10% of the total number of ownerships in Flanders and 33% of the wooded parcels. 53% of the forest area member of the “bosgroepen” are concerned by a management plan. The 19 “bosgroepen” count globally 177 volunteers.

Since January 2014, the “Bosgroepen” depend on the “Provinces” for labels, subsidies and monitoring of their activities.

For further information:

*Administratief Medewerkster Koepel van Vlaamse Bosgroepen vzw en Oost-Vlaamse Bosgroepen p/a Provincie Oost-Vlaanderen
Dienst Milieubeleidsplanning, -ondersteuning & Natuurontwikkeling
sylvie.focke@oost-vlaanderen.be
<http://www.bosgroepen.be>*

6.4. Factors affecting innovation in policies

In Wallonia, there is no national or regional forest programme and there is a lack of strategic development. Forest planning is also still conceived at ownership level without enough integration to/with other sectors and land-use.

We are of the opinion that it is probably due to several reasons:

- the lack of appropriate representation of the private forest in all its aspects. It is not easy for the government and the regional forest service in charge of

forest policy to find someone recognized as being the official and entitled representative;

- the tendency of forest owners (public as well as private) and industries not to work together;
- the lack of places of exchange and concertation (sector professionals and forest users);
- forest is still often neglected by policymakers even if it is seen as a renewable resource which is very important in the socio-economical development.

7. Literature

- ADMINISTRATION DES EAUX ET FORETS (1958) *Forêts, Chasse, Pêche*. Premier rapport général de l'Administration des Eaux et Forêts. Royaume de Belgique. Ministère de l'Agriculture. Bruxelles, 201p.
- BARY-LENGER, A., LUC, F., SALENGROS, P., STRODEUR, P., SYLIN, M., (1993) Comportement et motivations des propriétaires forestiers privés dont les biens sont situés en Région wallonne, *Silva Belgica*, **100**, pp. 7-22
- CLAESSENS H., BIFOLCHI E., BYTHELL S., CORDIER S., DE BONT A., DESJONQUERES A., IBOUKASSENE S., RIDREMONT F., VAN DER PERE R., VINCKE C., PONETTE Q. (2014). Le nouveau fichier écologique des essences. Pourquoi et comment ? *Forêt Wallonne*, **129**, 60-70.
- COLSON V., HEBERT J., RONDEUX J. (2002) Forêt privée et politique forestière en Région wallonne. *Les Cahiers Forestiers de Gembloux*, n°**30**, p. 15.
- COLSON V., PUISSANT T., HEBERT J., RONDEUX J. (2004a) La forêt privée wallonne, sa gestion et ses propriétaires (1^{ère} partie). *Silva Belgica* **111**, pp. 20-25.
- COLSON V., PUISSANT T., HEBERT J., RONDEUX J. (2004b) La forêt privée wallonne, sa gestion et ses propriétaires (2^{ème} partie). *Silva Belgica* **111**, pp. 32-38.
- COLSON V. ; PUISSANT T. ; HEBERT J. ; RONDEUX J. (2004) La forêt privée wallonne et sa gestion : des chiffres qui parlent. *Les Cahiers forestiers de Gembloux*, n°**31**, p. 45.
- COLSON V. ; (2009) *La fonction récréative des massifs forestiers wallons : analyses et évaluation dans le cadre d'une politique forestière intégrée*. Thèse de doctorat. Gembloux, Faculté universitaire des Sciences agronomiques, p. 277.
- DEFAYS E., COLSON V. (2012). L'Office Économique Wallon du Bois sur les rails. *Forêt Wallonne* **119**, pp. 55-57
- FRNB, MRW-DGRNE (2001). Guide d'aide à la création de groupements forestiers. Sous le patronage de la Fédération Royale du Notariat belge et de la Division de la Nature et des Forêts de la Région wallonne. Bruxelles and Namur (Belgium), Fédération Royale du Notariat belge and Ministère de la Région wallonne – Direction Générale des Ressources naturelles et de l'Environnement, p. 49 + annexes.
- GERARD E. (2008). 2008, le nouveau Code forestier. *Forêt Wallonne*, **96**, pp. 35-67.
- GERARD E., LOMBART X., ORBAN DE XIVRY E., QUEVY B. (2011). *Le Code forestier. Commentaire technique et juridique*. Brugge, Editions Vanden Broele, p. 191.
- INSTITUT NATIONAL DE STATISTIQUE (1976) *Recensement général de l'agriculture et des forêts de 1970*. Tome 5, Recensement forestier. Royaume de Belgique, Ministère des Affaires Economiques, Bruxelles, p. 261.
- INSTITUT NATIONAL DE STATISTIQUE (1986) *Recensement général des forêts de 1980*. Tome 1 : Bois soumis au régime forestier. Royaume de Belgique, Ministère des Affaires Economiques, Bruxelles, p. 587.
- JANDRAIN S., PUISSANT T., COLSON V., RONDEUX J. (2006) Un modèle de document simple de gestion (DSG) applicable en propriété forestière privée wallonne. *Les Cahiers Forestiers de Gembloux* **33**, p. 27
- LECOMTE H., RONDEUX J., LAURENT C. (1984) Estimation de la surface forestière wallonne par comptage de points. *Bull. Soc. R. For. Belg.* **91**, pp. 150-158.
- LECOMTE H., RONDEUX J. (1994) L'inventaire forestier wallon : brève présentation méthodologique. *Silva Belgica* **101**, pp. 9-16.
- LECOMTE H., RONDEUX J. (1996) Evolution des forêts (Taux de boisement actuel, Etendues productives, Composition de la forêt et capital de production). In : *Etat de l'Environnement Wallon 1995 ; 3. Forêts et Sylviculture*, Ministère de la Région Wallonne. DGRNE 23, pp.26-33.
- LECOMTE H., BOURLAND N., BURNAY F., RONDEUX J. (2005) La forêt wallonne au début du 21^{ème} siècle : bref état des lieux. *Silva Belgica* **112**, pp. 20-26.

- LECOMTE H., FLORKIN P., MORIMONT J.P., THIRION M. (2006) La forêt wallonne, état de la ressource à la fin du 20^e siècle. Ministère de la Région Wallonne. Direction Générale des Ressources Naturelles et de l'Environnement JAmnes (Namur), 71 p.
- Moniteur belge (1999). Loi visant à promouvoir la création de sociétés civiles de groupements forestiers. Moniteur belge 07.07.1999, pp 25468-25469.
- Naturawal (2015). <http://www.naturawal.be>
- PEFC (2015). <http://www.pefc.be>
- Portail Belgium.be (2015). <http://www.belgium.be>
- NTF (Propriétaires Ruraux de Wallonie) (2014) Internet site : <http://www.ntf.be>
- RONDEUX J. (1976) Considérations sur la gestion d'un chantier de conversion de produits ligneux. *Bull. Soc. R. For. Belg.* **83**, pp. 61-70.
- RONDEUX J. (1978) L'estimation des ressources forestières en Belgique : méthodes et perspectives. *In : Inventaire forestier national*. Joint meeting of I.U.F.R.O. Groups S4.02 and S4.04. Institutul de Cercetari si Amenajeri Silvice, Bucuresti (Romania), p. 655.
- RONDEUX J. (1983) Un inventaire forestier au service de la Région Wallonne. *Wallonie* **10**, pp. 41-50.
- RONDEUX J. (1985) An outline of a regional forest inventory in Belgium. I.U.F.R.O. Symposium on "National Forest Inventory system in Europe". Freiburg-in-Brisgau, June 10-14, 7 p. *In : Nationale Forstinventuren in Europa*. Mitteilungen der Abteilung für forstliche Biometrie 1985, **85**, p. 328.
- RONDEUX J., TOUSSAINT A. (1987) Regional forest inventory in Belgium : Main aspects of the data processing system. *Symposium National Forstinventuren in Europa (2-3/7/1987)* Abt. für Forstl. Biom. Univ. Freiburg i. Br., p. 9 .
- RONDEUX J. (1991) Management of small woods in Belgium. *Q. J. For.* **85**, pp. 37-42.
- RONDEUX J. (1993) How to update spatial data - some general considerations. *In : Stand inventory technologies 92*. Proceedings of the stand inventory technologies : an international multiple resource conference. The World Forestry Center, September 13-17, 1992. Bethesda, Maryland, American Society for Photogrammetry and Remote Sensing, pp. 329-332.
- RONDEUX J. (1994) Geo-referenced forest information for Belgium. *Les Cahiers Forestiers de Gembloux*, n°14, p.13 .
- RONDEUX J. (1994) L'inventaire forestier régional wallon : un outil de développement régional. *Wallonie* **34**, pp. 3-8.
- RONDEUX J. [1994] Geo-referenced forest information for Belgium. *In : Proc. Int. Workshop. "Designing a system of nomenclature for european forest mapping"*. Joint Res. Center EC and EFI. Joensuu Finland (13-15 June 1994). p. 455.
- RONDEUX J., LECOMTE H., FLORKIN P., THIRION M. [1996] L'inventaire permanent des ressources ligneuses de la Région Wallonne : principaux aspects méthodologiques. *Cah. For. Gembloux* **21**, p. 25.
- RONDEUX J. (1999) Les aménagements forestiers en Belgique : état des lieux et perspectives. *Rev. For. Fr.* **51**, n° sp., pp. 241-246.
- RONDEUX J., LECOMTE H. (2000) L'inventaire forestier wallon. *In : "Séminaire des 40 ans de l'Inventaire Forestier National (Collecte et utilisation des données forestières) », 13-14 avril 2000, Ecole Nationale du Génie Rural, des Eaux et Forêts, Nancy, p. 5.*
- RONDEUX J., LECOMTE H. (2001) L'inventaire forestier wallon. *Rev. For. Fr.*, LIII, pp. 263-267.
- RONDEUX J., LECOMTE H. (2005) L'inventaire permanent des ressources forestières : observatoire et base d'un tableau de bord de la forêt wallonne. *Wallonie* **83**, pp. 61-67.
- RONDEUX J. (2005) Vers une démarche structurée de gestion forestière intégrée et participative. *Note de recherche de l'Académie d'Agriculture de France* (Publication sur internet à l'adresse : <http://www.academie-agriculture.fr>), pp.1-10.
- RONDEUX J. (2006) Le document simple de gestion, un outil multi-facettes au service des propriétaires forestiers privés. *Silva Belgica* **113**, pp. 8-15.

- RONDEUX J. (2007) La forêt wallonne, réalités, enjeux et prospective. In : *The Millenium Ecosystem Assessment, Implications for Belgium*. Proceedings of a conference held in Brussels on 27 October 2006. Eds P. Bourdeau and E. Zacaï. The Royal Academies of Sciences and the Arts of Belgium (www.ulb.ac.be/igeat), p.132.
- RONDEUX J., LECOMTE H., LATTE N., HEBERT J. (2010a) L'inventaire forestier permanent de la Région wallonne : Bilan de 15 ans d'un outil aux multiples fonctions (Partie 1 – Fondements méthodologiques et nature des données récoltées). *Silva Belgica* **117**, pp.12-16.
- RONDEUX J., SANCHEZ C., LATTE N. (2010b) National Forest Inventory. Report 2. Belgium (Walloon Region), 73-78. In : *National Forest Inventories : Pathways for Common Reporting*. Eds : TOMPPO E., GSCHWANTNER T., LAWRENCE M., Mc ROBERTS R.E., Springer Heidelberg, p. 612.
- RONDEUX J., LECOMTE H., LATTE N., HEBERT J. (2010c) L'inventaire forestier permanent de la Région wallonne : Bilan de 15 ans d'un outil aux multiples fonctions (Partie 2 – Domaines d'exploitation, valorisation et diffusion des données, organisation de l'inventaire). *Silva Belgica* **117**, pp. 26-33.
- RONDEUX J., LECOMTE H. (2010d) - *Inventaire permanent des ressources forestières de Wallonie*. Guide méthodologique. SPW, Jambes (Belgique), p.163.
- SNOY, T., REGINSTER, Y., DEVILLEZ, F. (1987) The small forest-owner in Wallonia: images of a multiple-faced reality. Proceedings of the 11th seminar of the European Association of Agricultural Economists (EAAE) "Multipurpose Agriculture and Forestry", 28 April – 3 May 1986, Wissenschaftsverlag Vauk Kiel.
- SPW (2009). Décret du 15 juillet 2008 relatif au Code forestier. Dispositif et commentaire. Jambes (Belgique), Service public de Wallonie, p.87.
- SPW (2013). Les indicateurs clés de l'environnement wallon 2012. Jambes (Belgique), Service public de Wallonie, p.130.
- SPW (2014). La forêt wallonne, état des lieux après le premier cycle de mesures (1994 - 2008) et tendances récentes (2008 - 2012). Jambes (Belgique), Service public de Wallonie, p.250. (in preparation).
- SPW, OEWB, (2015) Analyse of the structure of the Walloon Private Forest, working paper (in preparation).
- SRFB (Société Royale Forestière de Belgique) (2014) Internet site : <http://www.srfb.be>
- SRFB (2013) Cartographie numérique, faites votre choix. *Silva Belgica* **120/3**, pp 26-30
- Statbel (2015) <http://statbel.fgov.be>
- WEISSEN F., BAIX P., BOSERET J.P., BRONCHART L., LEJEUNE M., MAQUET P., MARCHAL D., MARCHAL J.L., MASSON C., ONCLINCX F., SANDRON P., SCHMITZ L., GODEAUX P., LAMBERT D., MARNEFFE C., PIRET A. (1991). Le fichier écologique des essences. Jambes (Belgique), Ministère de la Région wallonne, p.45 + p.190.

8. Annexes

8.1. Tables with detailed description of 10 most important publications

SELECTED REPORTS/PUBLICATIONS	
Full reference of study/publication	Rondeux J. (1991) <i>Management of small woods in Belgium</i>. The Quarterly Journal of Forestry, vol LXXXV, January 1991, pp37-42.(Paper presented at the Morley Penistan Memorial Conference, Oxford, October 1990.
English language summary/abstract	In Belgium, forest occupies 20 per cent of the total land area. Private forests account for about 53 per cent; they are generally small (averaging about three ha) and their owners are not accustomed to basing their decision on a management plan. However, some attempts to develop co-operation through forestry associations exist and the regional authorities tend to encourage them. Whatever the details of any possible future legislation may be, the principal aim must be the development and introduction of an extremely simple form of management plan (the so-called "plan simple de gestion") in exchange for assistance to the private owner.
Language of the study/publication	English
Type of organization conducting the study (in case of multi-institutional studies multiple answers allowed)	<input checked="" type="checkbox"/> University <input type="checkbox"/> Public Research Institute <input type="checkbox"/> Private Research Institute <input checked="" type="checkbox"/> Other (please name below) <input type="text" value="Department of Nature and Forest"/>
Type of funding used (multiple answers allowed)	<input type="checkbox"/> Private Industry <input type="checkbox"/> Private other <input type="checkbox"/> National <input checked="" type="checkbox"/> Public Sub-National <input type="checkbox"/> Public EU/cross-national Europe <input type="checkbox"/> Public International beyond Europe <input type="checkbox"/> Public other
Regional scope	<input type="checkbox"/> Sub-national <input checked="" type="checkbox"/> National <input type="checkbox"/> Cross-national Europe <input type="checkbox"/> International beyond Europe

Theoretical approach (e.g., economics, sociology, political sciences, natural sciences, silviculture, specific theoretical approaches mentioned in the publication itself, etc.)	Existing statistics and personal expertise of the author
Methodical approach (e.g. case studies, questionnaire survey, qualitative interviews, etc.)	Study based on national forest statistics, questionnaire surveys, regional forest multipurpose inventory
Thematic focus	<input type="checkbox"/> ownership change (incl. on changes in quantitative terms, emerging new ownership types, etc.) <input checked="" type="checkbox"/> motives and behaviour of ownership types <input checked="" type="checkbox"/> new management approaches <input checked="" type="checkbox"/> policy instruments addressing ownership
Main results should be given here if not yet included in the summary.	See summary
Weblink	Not applicable

SELECTED REPORTS/PUBLICATIONS	
Full reference of study/publication	Colson V., Hébert J., Rondeux J. (2002) Forêt privée et politique forestière en Région wallonne. <i>Les Cahiers Forestiers de Gembloux</i>, n° 29, p. 15. (Private forest and forest policy in Wallonia)
English language summary/abstract	In Wallonia, private forest accounts for more than 50% of the regional forest. The ownerships are very scattered and heterogeneous. One shall keep in mind the extraordinary number of small properties and the diversity of attitudes underlying woodland ownership. Such diverse approaches remain a handicap to judicious forest development, which is exacerbated by the lack of fully comprehensive regional forest policy. A comparison is made with the French private forest which has a similar structure but for which a specific forest policy has been developed and continuously improved for about 40 years.
Language of the study/publication	French
Type of organization conducting the study (in case of multi-institutional studies multiple answers allowed)	<input checked="" type="checkbox"/> University <input type="checkbox"/> Public Research Institute <input type="checkbox"/> Private Research Institute <input checked="" type="checkbox"/> Other (please name below) <input type="text" value="Department of Nature and Forest"/>
Type of funding used (multiple answers allowed)	<input type="checkbox"/> Private Industry <input type="checkbox"/> Private other <input type="checkbox"/> Private other <input type="checkbox"/> National

	<input checked="" type="checkbox"/> Public Sub-National <input type="checkbox"/> Public EU/cross-national Europe <input type="checkbox"/> Public International beyond Europe <input type="checkbox"/> Public other
Regional scope	<input type="checkbox"/> Sub-national <input checked="" type="checkbox"/> National <input type="checkbox"/> Cross-national Europe <input type="checkbox"/> International beyond Europe
Theoretical approach (e.g., economics, sociology, political sciences, natural sciences, silviculture, specific theoretical approaches mentioned in the publication itself, etc.)	Existing statistics and personal expertise of the authors
Methodical approach (e.g. case studies, questionnaire survey, qualitative interviews, etc.)	Study based on national forest statistics, questionnaire surveys, regional forest multipurpose inventory
Thematic focus	ownership change (incl. on changes in <input type="checkbox"/> quantitative terms, emerging new ownership types, etc.) <input checked="" type="checkbox"/> motives and behaviour of ownership types <input checked="" type="checkbox"/> new management approaches <input checked="" type="checkbox"/> policy instruments addressing ownership
Main results should be given here if not yet included in the summary.	See summary
Weblink	Not applicable

SELECTED REPORTS/PUBLICATIONS	
Full reference of study/publication	Colson V., Puissant T., Hébert J., Rondeux J. (2004) La forêt privée wallonne et sa gestion : des chiffres qui parlent. <i>Les Cahiers Forestiers de Gembloux</i>, n° 31, p.42. (Walloon private forest and its management : figures that speak themselves)
English language summary/abstract	An investigation relating to Walloon private forest owners was carried out in order to characterise their properties and the management undergone in each one of them, as well as to identify the main problems the owners encounter. The results of this study emphasise the existence of multiple aspects of owners and their properties. The majority of the Walloon private properties represent above all an important inheritance along with a strong sentimental attachment with regards to the owner. A high proportion of owners manage their forest themselves by devoting a lot of time, but without necessarily planning management. This study clearly shows that a larger number of owners wish to be more informed and guided.
Language of the study/publication	French

Type of organization conducting the study (in case of multi-institutional studies multiple answers allowed)	<input checked="" type="checkbox"/> University <input type="checkbox"/> Public Research Institute <input type="checkbox"/> Private Research Institute <input checked="" type="checkbox"/> Other (please name below) Department of Nature and Forests
Type of funding used (multiple answers allowed)	<input type="checkbox"/> Private Industry <input type="checkbox"/> Private other <input type="checkbox"/> Private other <input type="checkbox"/> National <input checked="" type="checkbox"/> Public Sub-National <input type="checkbox"/> Public EU/cross-national Europe <input type="checkbox"/> Public International beyond Europe <input type="checkbox"/> Public other
Regional scope	<input type="checkbox"/> Sub-national <input checked="" type="checkbox"/> National <input type="checkbox"/> Cross-national Europe <input type="checkbox"/> International beyond Europe
Theoretical approach (e.g., economics, sociology, political sciences, natural sciences, silviculture, specific theoretical approaches mentioned in the publication itself, etc.)	Existing statistics and personal expertise of the author
Methodical approach (e.g. case studies, questionnaire survey, qualitative interviews, etc.)	Study based on national forest statistics, questionnaire surveys, regional forest multipurpose inventory
Thematic focus	ownership change (incl. on changes in <input type="checkbox"/> quantitative terms, emerging new ownership types, etc.) <input checked="" type="checkbox"/> motives and behaviour of ownership types <input checked="" type="checkbox"/> new management approaches <input checked="" type="checkbox"/> policy instruments addressing ownership
Main results should be given here if not yet included in the summary.	See summary
Weblink	Not applicable

SELECTED REPORTS/PUBLICATIONS	
Full reference of study/publication	Jandrain S., Puissant T., Colson V., Rondeux J. (2006) <i>Un modèle de document simple de gestion (DSG) applicable en propriété forestière privée wallonne. Les Cahiers Forestiers de Gembloux, n° 33, p.27.</i> (A model of simple working plan useful in private forest ownership management in Wallonia)

<p>English language summary/abstract</p>	<p>Most of the private forest owners don't use a management plan especially in the case of woodlands scattered in small compartments. Furthermore they generally miss documents compiling updated descriptive information dealing with administrative data, stand and structure composition, ownership location, planning and control of silvicultural operations. A similar situation is observed as concerns maps and cartographic elements. The main objective of this paper is to present a simple information system based upon data easy to collect and suitable for a great number of forest properties whatever their sizes. Information from the forest are collected at the compartment's level (planning unit defined by permanent boundaries) and are registered in a computerized database so that any owner can make continuing use of information such as various repartitions (areas and species by age, by structure,...), digitized thematic maps (stand, soil, silvicultural operations,...). Such a system provided in option can be considered as a pragmatic decision support. One of its the main objectives is to assure the follow-up of compartments years after years. To support it, the setting up of a structure at a regional level should be very useful for the forest managers and also a way to better assist the private forest ownership in the frame of a regional forest policy taking attention to the general recommendations of sustainable management.</p>
<p>Language of the study/publication</p>	<p>French</p>
<p>Type of organization conducting the study (in case of multi-institutional studies multiple answers allowed)</p>	<p> <input checked="" type="checkbox"/> University <input type="checkbox"/> Public Research Institute <input type="checkbox"/> Private Research Institute <input checked="" type="checkbox"/> Other (please name below) <input type="text" value="Department of Nature and Forest"/> </p>
<p>Type of funding used (multiple answers allowed)</p>	<p> <input type="checkbox"/> Private Industry <input type="checkbox"/> Private other <input type="checkbox"/> National <input checked="" type="checkbox"/> Public Sub-National <input type="checkbox"/> Public EU/cross-national Europe <input type="checkbox"/> Public International beyond Europe <input type="checkbox"/> Public other </p>
<p>Regional scope</p>	<p> <input type="checkbox"/> Sub-national <input checked="" type="checkbox"/> National <input type="checkbox"/> Cross-national Europe <input type="checkbox"/> International beyond Europe </p>

Theoretical approach (e.g., economics, sociology, political sciences, natural sciences, silviculture, specific theoretical approaches mentioned in the publication itself, etc.)	Existing statistics and personal expertise of the author
Methodical approach (e.g. case studies, questionnaire survey, qualitative interviews, etc.)	Study based on national forest statistics, questionnaire surveys, regional forest multipurpose inventory
Thematic focus	<p>ownership change (incl. on changes in <input type="checkbox"/> quantitative terms, emerging new ownership types, etc.)</p> <p><input checked="" type="checkbox"/> motives and behaviour of ownership types</p> <p><input checked="" type="checkbox"/> new management approaches</p> <p><input checked="" type="checkbox"/> policy instruments addressing ownership</p>
Main results should be given here if not yet included in the summary.	See summary
Weblink	Not applicable

SELECTED REPORTS/PUBLICATIONS	
Full reference of study/publication	Dedeurwaerdere, T. (2012) <i>Social Learning in the Governance of Forest Ecosystem Services</i>. In: Brousseau, E., T. Dedeurwaerdere, and B. Siebenhüner, (eds.) <i>Reflexive Governance and Global Public Goods</i>. Cambridge (MA): MIT Press, pp.205-223.
English language summary/abstract	<p>Much research on institutions has focused on the design of well-adapted systems of rules, which best fit to the biophysical and social environment. In this perspective, the goal is to look for the most optimal institutional design given a certain model of the actor situation. However, in spite of the obvious operational strengths of such an approach, it fails to address important dynamic features of complex systems, in particular in the case of environmental governance, where the relatively slow natural evolution of ecological systems is at present confronted to new rapidly evolving human induced constraints such as the biodiversity crisis, climate change and global market pressures on the exploitation of natural resources.</p> <p>Nevertheless, dynamic governance issues such as knowledge generation and social learning amongst a range of new actors and stakeholders that are bearing the consequences of the rapid changes still receive less attention. Moreover, there is still a lack of empirical analysis that allows to better understanding the possible role and function of various governance mechanisms in fostering such social learning. To contribute to bridging this gap, the analysis in this chapter aims to present an in depth case study analysis of such mechanisms by focusing on a specific governance experiment with social learning in the field of biodiversity governance.</p> <p>The case of managed forest landscapes seems an appropriate test field for analysing the contribution of social learning to dynamic efficiency. Indeed, to</p>

	<p>encourage forest owners to adopt multifunctional forest management, policy makers have used not only a wide range of regulatory and economic instruments, but also experimented with mechanisms based on process of social learning.</p> <p>In the case of the forest groups in Flanders, which will be the focus of this case study, social learning has led to quite impressive outcomes in a relatively short period, in a policy field where regulatory and economic incentive policies were well established, but were not able to produce the expected outcomes. One of the challenges in studying social learning as also highlighted in the previous chapter is to combine an analysis of its impact on effectiveness and on the normative legitimacy of the adopted rules, especially in situations of rapidly changing social and ecological systems. Therefore, this case study will focus in particular on three mechanisms of social learning that have been widely used in the management of social-ecological systems : (1) the recourse to monitoring based on sustainability criteria and indicators as an open ended learning device allowing to redefine the current beliefs around sustainable development, (2) the experimentation with disruptive action strategies to put the new beliefs into practice and (3) the involvement of new stakeholders and users in the learning process with the view to build new forms of social cooperation around these new beliefs and practices. The hypothesis behind this analysis is that a combination of cognitive and social mechanisms of social learning is needed to generate effective and legitimate institutional change.</p>
Language of the study/publication	English.
Type of organization conducting the study (in case of multi-institutional studies multiple answers allowed)	<input checked="" type="checkbox"/> University <input type="checkbox"/> Public Research Institute <input type="checkbox"/> Private Research Institute <input type="checkbox"/> Other (please name below) <input type="text"/>
Type of funding used (multiple answers allowed)	<input type="checkbox"/> Private Industry <input type="checkbox"/> Private other <input checked="" type="checkbox"/> National <input type="checkbox"/> Public Sub-National <input checked="" type="checkbox"/> Public EU/cross-national Europe <input type="checkbox"/> Public International beyond Europe <input type="checkbox"/> Public other

Regional scope	<input checked="" type="checkbox"/> Sub-national <input type="checkbox"/> National <input type="checkbox"/> Cross-national Europe <input checked="" type="checkbox"/> International beyond Europe
Theoretical approach (e.g., economics, sociology, political sciences, natural sciences, silviculture, specific theoretical approaches mentioned in the publication itself, etc.)	Philosophy of law.
Methodical approach (e.g. case studies, questionnaire survey, qualitative interviews, etc.)	Questionnaire survey
Thematic focus	<input type="checkbox"/> ownership change (incl. on changes in quantitative terms, emerging new ownership types, etc.) <input checked="" type="checkbox"/> motives and behaviour of ownership types <input type="checkbox"/> new management approaches <input checked="" type="checkbox"/> policy instruments addressing ownership
Main results should be given here if not yet included in the summary.	Click here to enter text.
Weblink	http://perso.cpdr.ucl.ac.be/dedeurwaerdere/articles/Tom/2011_Dedeurwaerdere_MIT_Chapter_11%20dec_2009.pdf

SELECTED REPORTS/PUBLICATIONS	
Full reference of study/publication	Farcy, C. and Devillez, F. (2005) New orientations of forest management planning from an historical perspective of the relations between man and nature. <i>Forest Policy and Economics</i>, Vol. 7, no. 1, pp. 85-95.
English language summary/abstract	The increasing trend towards a less utilitarian approach to nature justifies the urgent need to define new principles of forest management planning, a discipline which is still based today on concepts linked primarily to wood production organisation. The following study involves an historical and comparative analysis of man's perception of nature and of laws which govern his relationship to land. Focussed on Wallonia, a densely-populated, forested area, its aim is to define the causes of present-day disquiet regarding forest management planning on the one hand, and to contribute to the emergence of new principles on the other. The study shows how biological, physical and socio-economic systems, which have been constrained to particular paradigms for a long time, have been the subject of specific approaches within the framework of distinct spatio-temporal models. As a turning point, the traditional discipline of forest management planning played an important and well-defined role within this framework. The progressive break with this position is

	described; it results in an acknowledgement of complexity and leads to new principles of forest management planning requiring work models incorporating a transverse component. This would allow the identification, structuring and hierarchical ordering of coexisting systems, their components, their levels of spatial organisation, their dynamics and their purpose in relation to the rights and responsibilities of the parties and major players involved. The analysis of respective characteristics of systems involved would then allow the proposal of models and tools with full knowledge of the facts and according to the level of complexity.
Language of the study/publication	English
Type of organization conducting the study (in case of multi-institutional studies multiple answers allowed)	<input checked="" type="checkbox"/> University <input type="checkbox"/> Public Research Institute <input type="checkbox"/> Private Research Institute <input type="checkbox"/> Other (please name below) <input type="text"/>
Type of funding used (multiple answers allowed)	<input type="checkbox"/> Private Industry <input type="checkbox"/> Private other <input type="checkbox"/> Private other <input type="checkbox"/> National <input checked="" type="checkbox"/> Public Sub-National <input type="checkbox"/> Public EU/cross-national Europe <input type="checkbox"/> Public International beyond Europe <input type="checkbox"/> Public other
Regional scope	<input checked="" type="checkbox"/> Sub-national <input type="checkbox"/> National <input checked="" type="checkbox"/> Cross-national Europe <input type="checkbox"/> International beyond Europe
Theoretical approach (e.g., economics, sociology, political sciences, natural sciences, silviculture, specific theoretical approaches mentioned in the publication itself, etc.)	Interdisciplinary, systemic.
Methodical approach (e.g. case studies, questionnaire survey, qualitative interviews, etc.)	Bibliographic and conceptual research.
Thematic focus	ownership change (incl. on changes in <input type="checkbox"/> quantitative terms, emerging new ownership types, etc.)

	<input checked="" type="checkbox"/> motives and behaviour of ownership types <input checked="" type="checkbox"/> new management approaches <input checked="" type="checkbox"/> policy instruments addressing ownership
Main results should be given here if not yet included in the summary.	Click here to enter text.
Weblink	Forest Policy and Economics Website

SELECTED REPORTS/PUBLICATIONS	
Full reference of study/publication	Valentine van Gameren 2014 (to be published) <i>“L’adaptation de la gestion forestière privée au changement climatique: le cas wallon”.</i> In Sud Ouest européen, Numéro Adaptation aux changements environnementaux et territoires.
English language summary/abstract	The forestry sector is an area where one can expect to see the actors anticipate to medium and long run climate change, given the long-term effects of forest regeneration and management decisions. In this contribution, we are interested in how and why private forest owners adapt to climate change in their forest management. We approach this question in a regional context: the Walloon Region in Belgium. Through a qualitative study (32 semi-directive interviews) on private forest owners, we investigate measures that are already implemented and factors influencing their adaptive capacity. Profiles of private forest owners are elaborated showing different behaviors and motivations for adaptation. We finally discuss interactions between public and private adaptation initiatives. The adaptation of private forest management to climatic change, the Walloon case)
Language of the study/publication	French
Type of organization conducting the study (in case of multi-institutional studies multiple answers allowed)	<input checked="" type="checkbox"/> University <input type="checkbox"/> Public Research Institute <input type="checkbox"/> Private Research Institute <input type="checkbox"/> Other (please name below) <input type="text"/>
Type of funding used (multiple answers allowed)	<input type="checkbox"/> Private Industry <input type="checkbox"/> Private other <input type="checkbox"/> National <input checked="" type="checkbox"/> Public Sub-National <input type="checkbox"/> Public EU/cross-national Europe <input type="checkbox"/> Public International beyond Europe <input type="checkbox"/> Public other

Regional scope	<input checked="" type="checkbox"/> Sub-national <input type="checkbox"/> National <input type="checkbox"/> Cross-national Europe <input type="checkbox"/> International beyond Europe
Regional scope	<input type="checkbox"/> Sub-national
Theoretical approach (e.g., economics, sociology, political sciences, natural sciences, silviculture, specific theoretical approaches mentioned in the publication itself, etc.)	Environmental sciences, social sciences Practice of climate change adaptation
Methodical approach (e.g. case studies, questionnaire survey, qualitative interviews, etc.)	Qualitative methodology, semi-directive interviews
Thematic focus	ownership change (incl. on changes in <input type="checkbox"/> quantitative terms, emerging new ownership types, etc.) <input checked="" type="checkbox"/> motives and behaviour of ownership types <input type="checkbox"/> new management approaches <input type="checkbox"/> policy instruments addressing ownership

SELECTED REPORTS/PUBLICATIONS	
Full reference of study/publication	Valentine van Gameren 2014, <i>L'adaptation au changement climatique en Wallonie : le rôle des propriétaires forestiers privés dans la filière forêt-bois</i>, Thèse de doctorat en vue de l'obtention du titre de Docteur en sciences et gestion de l'environnement, Bruxelles, Université Libre de Bruxelles. (The adaptation of private forest management to climatic change, the Walloon case)
English language summary/abstract	<p>For a long time adaptation has been neglected in the responses to climate change. Now facing the early impacts of climate change and its increasingly alarming projections, societies are beginning to question the possibility to adjust their activities to these changes characterized by an unprecedented speed. Much more than a technical process, adaptation to climate change can be seen as a social phenomenon occurring in interaction with many other societal changes.</p> <p>This doctoral thesis in environmental science and management focuses on the issue of climate change adaptation in Wallonia, in the forestry sector and, partially, the timber industry. In strong interaction with the theoretical literature, we understand the practice of adaptation empirically, focusing firstly on a specific category of actors in forest management: private forest owners. Through an in-depth qualitative study, we identified different forms of integration of adaptation in forest management, materialized by various silvicultural measures. This analysis led to the development of a typology of different profiles of private forest owners</p>

	<p>according to their modes of action on adaptation. Then we investigated the adaptive capacity of these forest actors, understood as the ability to adjust to damage or opportunities of climate change. Several influencing variables were identified, revealing the multifactoriality of the concept of adaptive capacity.</p> <p>Secondly, the focus of the research was extended to study the process of mainstreaming climate change adaptation at other levels of the Walloon forest and timber sectors. Through a literature review, interviews and non-participant observation, we conducted an analysis of representations related to adaptation and the concrete initiatives that are being implemented in several forest and timber organizations (governmental departments, non-profit associations, training institutes, professional federations and enterprises). This work has showed the existence – or the absence – of different framings of adaptation according to the actors, revealing influences on the adaptive options that are currently promoted or hindered. These contributions have enriched our analysis of the private forest owners' adaptive capacity, confirming the relevance of our multi-scalar approach.</p> <p>Finally, the results of this thesis make us asking ourselves about the various strategies that can be associated with climate change adaptation, the "success" of different possible adaptive trajectories and their designations that are far from neutral (such as the notion of "no regret" measures).</p>
Language of the study/publication	French
Type of organization conducting the study (in case of multi-institutional studies multiple answers allowed)	<input checked="" type="checkbox"/> University <input type="checkbox"/> Public Research Institute <input type="checkbox"/> Private Research Institute <input type="checkbox"/> Other (please name below) <input type="text"/>
Type of funding used (multiple answers allowed)	<input type="checkbox"/> Private Industry <input type="checkbox"/> Private other <input type="checkbox"/> National <input checked="" type="checkbox"/> Public Sub-National <input type="checkbox"/> Public EU/cross-national Europe <input type="checkbox"/> Public International beyond Europe <input type="checkbox"/> Public other
Regional scope	<input checked="" type="checkbox"/> Sub-national <input type="checkbox"/> National <input type="checkbox"/> Cross-national Europe <input type="checkbox"/> International beyond Europe

Regional scope	<input type="checkbox"/> Sub-national
Theoretical approach (e.g., economics, sociology, political sciences, natural sciences, silviculture, specific theoretical approaches mentioned in the publication itself, etc.)	Environmental sciences, social sciences Practice of climate change adaptation
Methodical approach (e.g. case studies, questionnaire survey, qualitative interviews, etc.)	Qualitative methodology: semi-directive interviews, documentary review and observation.
Thematic focus	<p>ownership change (incl. on changes in</p> <input type="checkbox"/> quantitative terms, emerging new ownership types, etc.)



EUROPEAN FOREST INSTITUTE
CENTRAL-EAST AND SOUTH-EAST EUROPEAN
REGIONAL OFFICE - EFICEEC-EFISEE

European Forest Institute Central-East and South-East European
Regional Office (EFICEEC-EFISEE) c/o
University of Natural Resources and Life Sciences, Vienna (BOKU)
Feistmantelstrasse 4
1180 Vienna, Austria
Tel: + 43-1-47654-4410
eficeec@efi.int
www.eficeec.efi.int

