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Forest Land Ownership Change in Switzerland

COST Action FP1201 FACESMAP Country Report



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

Forest Land Ownership Change in Switzerland

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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.

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Background of the project

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 ongoing 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.

Contents

- Executive Summary i**
- 1. Introduction 1**
 - 1.1. Forests, forest ownership and forest management in Switzerland..... 1
 - 1.2. Overview of the country report 1
- 2. Methods..... 2**
 - 2.1. General approach..... 2
 - 2.2. Methods..... 2
- 3. Literature review on changing forest ownership structures..... 3**
 - 3.1. Research framework and research approaches 3
 - 3.2. New forest ownership types 3
 - 3.3. Forest management approaches 3
 - 3.4. Policy change / policy instruments 4
- 4. Forest ownership 5**
 - 4.1. Forest ownership structure..... 5
 - 4.1.1. National data set..... 5
 - 4.1.2. Critical comparison with national data in Forest Resource Assessment Programme reporting 5
 - 4.2. Unclear or disputed forest ownership..... 6
 - 4.3. Legal provisions on buying or inheriting forests 6
 - 4.3.1. Legal restrictions for buying or selling forests..... 6
 - 4.3.2. Specific inheritance (or marriage) rules applied to forests..... 6
 - 4.4. Changes of the forest ownership structure in the last three decades 6
 - 4.4.1. Changes within public and private ownership..... 6
 - 4.4.2. Changes within public forest ownership categories..... 6
 - 4.4.3. Changes within private forest ownership 6
 - 4.4.4. Main trends of forest ownership change..... 7
 - 4.5. Gender issues in relation to forest ownership 7
 - 4.6. Charitable, NGO or not-for-profit ownership of the forests..... 7
 - 4.7. Common pool resources regimes 8
 - 4.8. Case Study Examples 8
- 5. Forest management approaches for new forest owner types 9**
 - 5.1. Forest management in Switzerland..... 9
 - 5.2. New or innovative forest management approaches relevant for new forest owner types 9
 - 5.3. Main opportunities for innovative forest management..... 9
 - 5.4. Obstacles for innovative forest management approaches 10
 - 5.5. Case example of innovative forest management approaches 10
- 6. Policies influencing ownership development / Policy instruments for new forest owners 12**
 - 6.1. Influences of policies on the development of forest ownership 12
 - 6.2. Influences of policies in forest management 12
 - 6.3. Policy instruments specifically addressing different ownership categories 12
 - 6.4. Factors affecting innovation in policies..... 13
- 7. Literature..... 14**
- 8. Appendices..... 16**
 - 8.1. Tables with detailed description of 7 most important publications 16
 - 8.2. Forest ownership structure – detailed tables..... 23

Tables

Table 1:	Comparison of the 2013 Swiss national ownership data with the data from the FRA report 2010	6
Table 2:	Significance of trends in forest ownership in Switzerland.....	7
Table 3:	Organizations forms owning forest areas in Switzerland.....	7
Table 4:	Forest area subdivided into ownership category and cantons in 2013.....	23
Table 5:	Forest area subdivided into ownership category and cantons in 2005.....	24

Acronyms and abbreviations

COST	European Cooperation in Science and Technology
CPR	Common property regimes
ETH Zurich	Swiss Federal Institute of Technology Zurich
FACESMAP	Forest Land Ownership Changes in Europe: Significance for Management and Policy
FAO	Food and Agricultural Organization of the United Nations
FOEN	Federal Office for the Environment
FRA	Forest Resource Assessment Programme
FSO	Federal Statistical Office
ha	hectares
NGO	Non-governmental organization
RO	Regional Organizations
SAEFL	Swiss Agency for the Environment, Forests and Landscape (today FOEN)
SHL	Schweizerische Hochschule für Landwirtschaft (today HAFL, School of Agricultural, Forest and Food Sciences)
OAK Schwyz	Oberallmeindkorporation Schwyz (a regional corporation)
PFO	Private forest owners
WSL	Swiss Federal Institute for Forest, Snow and Landscape Research

Executive Summary

FACESMAP is a European research project in the frame of the COST Action FP1201 that aims to analyse the ownership situation concerning the forests in the 30 participating countries. As a first step, country reports are written to gain an overview of the current forest owners, ownership changes and policies addressing and influencing different forest owner types.

For the country report of Switzerland, a literature review has been conducted, which has been supplemented with statistical data and expert knowledge. Swiss forests are studied in detail, but only a few publications focus on ownership questions.

About 70% of the forest area in Switzerland is owned by public actors, roughly 28% by private actors and the rest by a mix of public and private actors. The share of public and private actors has not changed significantly in the last decades. Data on the changes within these main categories are unavailable. One major trend that can be observed is that private owners increasingly come from an urban context and no longer from an agricultural one. Empirical data revealing this change or analysing the consequences of this trend on forest management do not exist.

An organizational form of forest ownership and management, which has a long history, but is currently gaining significance is the “cooperative”. It allows private owners, who own rather small forest plots, to jointly organise the management of their forests in an efficient way.

The key goal of Swiss forest policy is that forests should be managed in a sustainable way. The Federal Act on Forest defines various instruments that help to achieve this target. This law applies to all forest owner types – public, private and mixed.

1. Introduction

1.1. Forests, forest ownership and forest management in Switzerland

In Switzerland, the forest plays several important roles. About one third of the whole area of Switzerland is covered by forest. That makes it a considerable part of the landscape and a vital habitat for many species. Another important function of the forest is the provision of wood. Timber is used for construction, commodities and energy production. The protective forests, most of all in mountainous areas, protect people, construction and infrastructure from impacts of natural hazards such as avalanches or floods. Finally, the Swiss population values the forest for recreational use such as jogging or horseback riding (Brändli, 2010: 32; 40).

The Swiss forest area currently covers about 1'280'000 hectares. Statistical data show that the forest area of Switzerland is growing. From 1985 to 1995 it increased by 3.3%, from 1995 to 2006 by 4.9%. In total this is an increase of about 98'000 ha (Brändli, 2010: 36). This increase is on the one hand due to the fact that increasingly agricultural land in the mountains that is hard to cultivate is abandoned and naturally converts to forest over the years. On the other hand, there is a strong protection of the forest area in Switzerland as deforestations are in general forbidden by the Federal Act on Forest.

The protection of forest area goes back to the nineteenth century, when the first national legal act on the forest was enacted. Back then, a main target was to preserve the forests as protection against natural hazards. The prohibition of deforestations has remained a central aspect of Swiss forest policy. Another important instrument for the maintenance of the forest areas and their functions are regulations of forest management, as stated in the Federal Act on Forest, which are therefore binding for all public and private forest owners.

There are two main categories of forest owners in Switzerland: public and private actors. About 70% of the forest area are owned by public actors. This share has not significantly changed in the last decades (FRA, 2010: 15).

1.2. Overview of the country report

After the introduction and an overview of the methods in section 2, section 3 of this country report consists of a literature review on forest ownership change in Switzerland. The first part aims is to give an overview of the existing literature, therefore it is solely based on the content of the cited literature. In addition to this summary of the literature, seven core publications are described in detail in the appendix.

The information from the literature review is supplemented by statistical data from the Federal Statistical Office, the Federal Office for the Environment and by expert knowledge in section 4. , which gives a detailed overview over the characteristics of the current forest owners in Switzerland.

Section 5 then focuses on forest management approaches. It provides insight into who typically manages forests in Switzerland, if there are new management approaches that are related to new ownership types, which are the main opportunities for innovative forest management and what the obstacles or challenges to these new approaches are.

Section 6 finally examines the influence of policies on the development of forest ownership and management. In addition, the relationship between policy instruments and different ownership types is addressed. Specifically the question of whether the instruments are designed to target new forest owners is answered.

2. Methods

2.1. General approach

To achieve the aim of the country report, which is to give a comprehensive overview of forest ownership issues in Switzerland, a mix of methods is applied. It includes a literature review, secondary data, expert interviews as well as the expert knowledge of the authors.

Sources include quantitative data (from official statistics and scientific studies) as well as qualitative data (own expert knowledge, expert interviews and results from studies). 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 studies will be accomplished in subsequent work packages in the COST Action.

2.2. Methods

A comprehensive literature review has been conducted. The information gathered in this first step provides a picture of the current ownership structures of the Swiss forests and new management approaches. The literature

comprises of empirical studies based on surveys and case studies, but also on theoretical reflections, interpretations of data sets, and evaluations or essays by practitioners. Important sources for the literature include the publications by the Federal Office for the Environment, publications by the Department of Environmental Systems Sciences of the Federal Institute of Technology ETH Zurich and the online archive of the "Schweizerische Zeitschrift für Forstwesen" (the Swiss Forestry Journal).

For further insights, two national data sets have been consulted. They have been recorded by the Federal Statistical Office, by the Forest Division of the Federal Office for the Environment and by the Swiss Federal Institute for Forest, Snow and Landscape Research WSL.

Finally, the expert knowledge present at the Forest Division of the Federal Office for the Environment and at the Professorship of Environmental Policy and Economics of the ETH Zurich has been an important source for this report.

3. Literature review on changing forest ownership structures

3.1. Research framework and research approaches

Statistical data concerning forests in Switzerland, which are registered by the Federal Statistical Office and the Federal Office for the Environment, are collected at the national and subnational (cantonal, i.e. constituent-state) level. They contain, for example, economic data, the development of forest areas or the processing of timber. The share of public and private forest owners is also recorded.

There are not a lot of studies about forest ownership in Switzerland. Seven key publications are described in detail in the appendix. One major survey (Wild-Eck and Zimmermann, 2005a), funded by the Federal Office for the Environment and conducted by the Chair of Forest Policy and Economics at the Swiss Federal Institute of Technology Zurich (ETHZ), focused on private forest owners from all parts of Switzerland at the national level. The results of the survey led to important insights about the characteristics of private forest owners and their attitude towards forest-related policies. Although these results are representative of all private forest owners, it is not possible to distinguish the answers of the “new owners”.

Some case studies at the regional level analyse new management approaches. But also in these cases it is not possible to differentiate between developments of ownership structures and developments that are dependent on other basic circumstances like the economy or technology.

3.2. New forest ownership types

According to Wild-Eck and Zimmermann’s (2005a: 86) study, historically many private forest owners grew up in an agricultural environment and therefore they have had some knowledge and skills related to managing a forest. While in Switzerland there is currently a decrease in the number of farms and of people who are active in agriculture, this type of forest owner might already have diminished prior to this trend. The projection is that the coming generations of private forest owners will have increasingly grown up

in an urban setting and without any ties to agriculture. It remains to be seen how and to what extent these new owners without an agricultural background will manage their forests.

A major change of forest owners in the next years is predicted. According the Wild-Eck and Zimmermann’s (2005a; 2007) study, 90% of all owners are older than 40 years, 40% are older than 60 years and 20% are older than 70 years. Therefore, in the next few decades, a large part of the private forest will be passed on or sold to new owners. This again leads to uncertainty about who these new owners will be and how they will manage their forest.

The results from the Zimmermann and Wild-Eck (2005a) study show that a relatively big part of private owners lack knowledge about their own forest. For example 13% of all owners have not been to their forest for more than a year, 23% do not know if someone is hunting in their forest and 40% do not know if someone is collecting berries or mushrooms in their forest. It seems reasonable to say that some of these owners with loose ties to their forests are the above mentioned new owners, coming from an urban setting. However, whether this conjecture holds true cannot be ascertained from the data provided in the Zimmermann and Wild-Eck (2005a) study.

3.3. Forest management approaches

The primary goal of private forest owners is not an economic one. Mainly because of the rather small areas that are owned by private actors, strong incentives for efficient wood production is generally lacking. Economic incentives are stronger among forest owners with larger parcels, which are mostly public actors. But again, the main aims of the public owners are political and ecological in nature rather than economic (Pudack, 2006: 76).

For the wood processing industries in the forests (e.g. timber harvesting), efficiency could be increased if decisions about wood production would be made for bigger areas. This would entail larger ownership structures. According to Pudack (2006), these economic

goals could be met by the following organizational forms:

- Cooperations of private forest owners,
- Associations of public forest enterprises,
- Cooperations of both, private owners and public forest enterprises.

These organizational forms would entail that multiple (public and/or private) owners join together in a new structure through which they would jointly manage a given forest area. By becoming members in such joint organizational forms, the forest owners coordinate decision-making in the respective organization's decision-making bodies (e.g., general assembly, assembly of delegates from municipalities). Whether or not the ownership rights are transferred to the new organizational entity depends on the specific form of cooperation.

Beyond organizational forms, management approaches such as offering advisory services from wood processors for the owners or contracts which allow the harvesting enterprises to decide when they harvest in which forest area would enable a more effective forest economy than is currently the case (Pudack, 2006, 78ff.).

Similar propositions for a more efficient forest management are formulated by Hostettler (2003: 46ff.).

Another study (SHL, 2010: 3) names enlargement of forest enterprises, diversification and cooperation as possibilities for a better economic performance of Swiss forest enterprises. They identify the cooperation as the most promising, as the others are difficult to realise in the frame of today's Swiss forest industry.

The study by de Spindler (2008) proposes special purpose districts as an approach for a more efficient forest economy, both in private and public owned forests.

3.4. Policy change / policy instruments

The study of Zimmermann and Kissling (2012) analyses the effectiveness and efficiency of national financial measures supporting the improvement of forest management entities. Small positive effects leading to the creation of new and bigger entities can be observed. Yet the measures are evaluated as being too detailed. Accordingly, Zimmermann and Kissling (2012) propose a new conceptualization of the measures to focus on the operating efficiency and the „management by objectives“.

4. Forest ownership

4.1. Forest ownership structure

4.1.1. National data set

National data concerning forestry in Switzerland are collected by the Federal Statistical Office FSO in cooperation with the Federal Office for the Environment FOEN. A second important data source is the National Forest Inventory. The aim of this inventory is to measure the condition and changes of Swiss forests. It is realized by the Swiss Federal Institute for Forest, Snow and Landscape Research WSL and the FOEN.

Concerning ownership structure, the national data sets distinguish between three main groups of owners: Public, private and others. Public forest owners consist of political municipalities (including all people living in the municipality; *politische Gemeinden*), citizen municipalities (including all people who have citizen rights to that municipality, regardless of whether they live there or not; *Bürgergemeinden*; historically these entities have had the competences for managing common resources such as forests or alps), cantons (constituent-states), the federal state as well as and corporations (*Korporation*). Private owners are defined as individuals and families, private organizations like nature protection organizations and private enterprises (Brändli, 2010: 255).

According to the FOEN and FSO statistics from 2013, over 70% (about 885'000ha) of the total forest area is comprised of ca. 3200 public forest owners. The 27% of forest area owned by private actors (about 340'000ha) is owned by roughly 240'000 different individuals. That means that the private actors own in general only small forest areas, whereas public actors own bigger plots. Additionally, in 2013 over 5700 owners which are classified as "mixed" have been recorded, which means that public and private actors share the ownership. The forest area of this ownership type sums up to narrowly

33'000ha, which is approximately 2.5% of the whole forest area. This form is especially widespread in the canton of Lucerne, where most of these owners have been found (FOEN and FSO, 2014).

According to Ingold and Zimmermann (2011: 100) the three most important categories of forest owners are political municipalities, citizen municipalities) and corporations. All of them are public actors.

4.1.2. Critical comparison with national data in Forest Resource Assessment Programme reporting

In 2010, the Food and Agricultural Organization of the United Nations FAO published country reports about forestry that display a multitude of statistical data. Those have been written in the frame of the Forest Resource Assessment Programme FRA. Through this programme, the FAO monitors the world's forests, their management and their uses (FRA, 2010: 2). FRA published a table in Switzerland's country report, which displayed the development of forest ownership categories from 1990 to 2005 (FRA, 2010: 15). Similar to the national data sets, this indicates a main distinction between public, private and other owners. But in contrast to the Swiss data, the FRA-framework termed corporations as private or public owners, depending on the owner of the corporation (FRA, 2010:11). In the Swiss data corporations are only termed as public ownership types.

Table 1 shows a comparison of the FRA-data and the latest Swiss ownership data for the year 2013 (FOEN and FSO, 2014). In the FRA-table from 2010, there is a distinction of different private actors within the category of private owners displayed. As this distinction is not reported in the latest national data, we do not specify those categories in Table 1.

Table 1: Comparison of the 2013 Swiss national ownership data with the data from the FRA report 2010

Owner Categories according to FRA, 2010	Forest area (1000 hectares)			
	1990 ¹	2000 ¹	2005 ¹	2013 ²
Public ownership	780	811	827	884
Private ownership	371	383	390	342
Other types of ownership	0	0	0	33
TOTAL	1151	1194	1217	1259

¹ Data from FRA-report (FRA, 2010: 15)

² Latest data from the Federal Office for the Environment and the Federal Statistical Office (FOEN / FSO, 2014)

The development of the total forest area clearly shows the increase of the forest area in the last decades. The area under private and public ownership has increased between 1990 and 2005 according to the increase of the area. However, this development is not shown in the last time period, as from 2005 to 2013, the area under private ownership decreased. This can partly be explained by the new ownership type, i.e., the above mentioned mixed ownership. But of course this decrease and also the strong increase of public owners from 2005 to 2013 is mainly due to the different classification of corporations in the two data sets. When these data are further analysed, it is crucial to pay attention to this inconsistency in the definitions.

4.2. Unclear or disputed forest ownership

In Switzerland, in general all ownership structures are clearly defined and legally binding, as specified in the related laws and ordinances.

4.3. Legal provisions on buying or inheriting forests

4.3.1. Legal restrictions for buying or selling forests

According to the Federal Act on Forest, municipalities and cooperatives can sell their forests only with approval from the cantonal administration. A precondition is also that no forest functions are affected by the sale. There are no further restrictions.

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

There are no specific inheritance rules concerning forests. The inheritance is regulated, like all other cases, by the Law of Succession in the frame of the Swiss Civil Code.

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

4.4.1. Changes within public and private ownership

The data show that the number of private forest owners has decreased over the last 30 years: in the 1970s Switzerland had around 260'000 private forest owners. In 2013 the number of private forest owners reached approximately 240'000. The number of public forest owners decreased from nearly 3'900 in 1993 to 3'200 in 2013. Both decreases have not always been continuous (FOEN and FSO, 2014).

4.4.2. Changes within public forest ownership categories

There is no further literature about changes within public forest ownership.

4.4.3. Changes within private forest ownership

There is no further literature about changes within private forest ownership.

4.4.4. Main trends of forest ownership change

Across Europe, the following drivers for ownership changes has 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)

Table 2 shows the significance of these drivers for the forest ownership change in Switzerland. The significance has been estimated by the authors.

Table 2: Significance of trends in forest ownership in Switzerland

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	0
• New forest ownership through afforestation of formerly agricultural or waste lands	1
• Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)	3

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

In Switzerland, the most important of these drivers is the changed lifestyle of new forest owners. Private forest is generally handed down to the children of the owner. As already discussed in section 3.2, new forest owners in general lack agricultural knowledge, as they typically have an urban lifestyle (Wild-Eck and Zimmermann, 2005a: 86). So far, there are no empirical data which illustrate how these changes may influence future forest management.

4.5. Gender issues in relation to forest ownership

There are almost no data or further

information about gender issues in relation to Swiss forest owners. Only the 2005 survey revealed, that 80% of all private forest owners are male and 20% are female (Wild-Eck and Zimmermann, 2005a: 27). But the answers to the questionnaire have not been analysed separately.

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

Table 3 gives an overview of the organizations forms that own forest areas in Switzerland.

Table 3: Organizations forms owning forest areas in Switzerland

Forests owned by ...	Yes	No	Uncertain
• Foundations or trusts		x	
• NGO with environmental or social objectives	x		
• Self-organised local community groups		x	
• Cooperatives/forest owner associations	x		
• Social enterprises		x	
• Recognized charitable status for land-owners		x	
• Other forms of charitable ownerships		x	

The most important organization owning forest with environmental objectives is called *Pro Natura*. This environmental protection organization owns nature protection areas which also cover notable forest areas. Furthermore local environmental protection organizations like ornithology organizations own forests. However this type of ownership is negligible in Switzerland.

4.7. Common pool resources regimes

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 action and self-organization (of rules and decisions).

In Switzerland, the commons are a widespread form of natural resource

management. 35% of the forest area is owned by common pool resource regimes. The two categories in Switzerland are the corporation and the citizen municipalities. Both categories are considered as public forest ownership types (see section 4.1.1). One well documented example is presented in the case study 4.

4.8. Case Study Examples

Forest cooperatives, forest owner associations and corporations are the most common form of new private forest owners (who increasingly come from an urban rather than agricultural setting) to manage their forests. Several examples of cooperatives and associations are presented in the literature cited in the appendix (e.g. Schmidhausen, several years; SHL, 2010) as well as in section 5. Three examples are illustrated in the following case study boxes.

CASE STUDY 1: CORPORATION ROMANSHORN-UTTIL

In the canton of Thurgau, the forest corporation Romanshorn-Uttwil exists since 1784 and covers 260ha of forest area. It is jointly owned by 159 associates. In the 1980s, the corporation had a financial deficit but managed to develop to a successful forest enterprise. This was possible due to the financial and personal commitment of the associates. This example shows that private forest owners can build a strong forest enterprise, when they join their properties and work together (Nussbaumer, 2011: 80).

CASE STUDY 2: COLLABORATION AMONG PRIVATE OWNERS IN KONOLFINGEN, CANTON OF BERNE

The Forestry Service of the Canton of Berne has created the concept "Auriga", which provides funding for mechanization, mobilization and more professionalism: It should motivate forest owners to increase the use of their wood. In the region of Konolfingen, the processing of timber has been jointly organized by private forest owners since more than 70 years, as the regional association of forest owners has always promoted the collaboration among its members. After the initiation of "Auriga", the forest owners in the region of Konolfingen founded a new enterprise for a professional marketing (Mohr, 2011: 71).

CASE STUDY 3: COOPERATIVE "WALDPFLEGEGENOSSENSCHAFT SCHWÄNDELIFLUE"

This example can be found in the Canton of Lucerne, where 70% of the forest area belongs to private owners. In 1996 a group of 36 private forest owners created a cooperative called "Waldpflegegenossenschaft Schwändeliflue". They transferred their individual rights of disposal over their forest areas to the cooperative. This led to an amalgamated area of a total of 135 ha, which is now owned by the cooperative and managed by a forest professional. This new structure makes it possible to sustainably manage the forest, which is first of all a protection forest against natural hazards (Binding Stiftung, 2014).

CASE STUDY 4: CPR "OBERALLMEINDKORPORATION SCHWYZ"

In the canton of Schwyz a corporation named "Oberallmeindkorporation Schwyz OAK" exists since 1114. Today this corporation is an enterprise with over 16'500 members who is active in different areas, one of them is for example energy production out of wood. The main line of action of the OAK has always been the management of common natural resources. Today, the corporation owns more than 9'000 ha forest. The corporation's forestry enterprise manages the forest in a sustainable way and maintains eleven forest protection areas (OAK Schwyz, no date: 2ff.).

5. Forest management approaches for new forest owner types

5.1. Forest management in Switzerland

The public forest¹ is generally managed by a professional forester who is employed by the owner (Buser et al., 2006: 17).

According to the Wild-Eck and Zimmermann survey from 2005, 53% of the private forest owners manage their forest area on their own, 14% in a mixed form, 13% let someone else manage their forest and 17% answered that their forest is not managed at all. Most private forest owners who have someone else manage their forest assign this task to farmers or public foresters. How the collaboration occurs, i.e., whether the private forest owners and the managers make contracts and management plans, is not specified. About 5% of the private forest owners work with forestry enterprises (Wild-Eck and Zimmermann, 2005a: 23)

Both owner categories, private and public, highly trust the professional foresters and either let them manage their forest without intervening or if the owner manages the forest on his own, he is happy to gain advice from professionals (Buser et al., 2006: 41f.).

The Federal Act on Forest and the related Ordinance state that the cantons define who has to develop a management plan for their forests and what they have to include. In general, all forest owners, except those who own only very small plots, are obligated to have a forest management plan. A management plan typically consists of a description of the actual situation, the goals and concrete measures to be reached. The cantonal forest authority has to approve the plan. The management plan is one of several instruments at the forest enterprise level that fosters the sustainable management of Swiss forests.

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

In several regions, cooperatives or other forms of collaboration among private, public, or mixed owners have emerged in the last decades. These are specifically relevant for those new owners holding only very small forest areas due to splitting up of the properties when they are handed down from one generation to the next. For these owners a cooperation with the owners of neighbouring forest plots is important for a more efficient management. Another new owner group, i.e., those who lack an agricultural background and who do not live close to their forests, typically let their forest be managed by a professional forester.

Among public owners, especially municipalities, some new forms of collaborations have emerged in the last years. For example in the canton of Aargau, some communities have contracts for a joint forest management. Others work together with private forestry enterprises to reduce their own fixed costs (Häfner, 2003: 251f.). But these developments are more a reaction to the underlying changing conditions (e.g. economy, technology) than related to new ownership types.

5.3. Main opportunities for innovative forest management

New private owners are increasingly urban with little interest in timber production. They own only small forest areas and as the forest is not their main income source, these owners do not have an economic motivation for implementing effective forest management forms (e.g. cooperatives). But they can be motivated to engage in such new organizational forms with other foci which are in line with their values, for example the enhancement of biodiversity or the production

¹ For definitions of public and private forest owners, please see chapter 4.1.1

of timber for energy production (Zimmermann and Kissling, 2012: 77ff.).

5.4. Obstacles for innovative forest management approaches

Cooperatives, such as the regional organizations in Lucerne, have proved to be economically profitable (Seeland et al., 2011: 357). However, many forest owners tend to be sceptical about joining such cooperatives. Interview partners from the study by Seeland et al. (2011: 355) stated the following reasons for not joining: reluctance to comply with the rules and obligations of the regional organization, lack of trust and conservative resentment against institutions, lack of economic interest due to small forest holdings, good economic conditions, no need of help and lack of information.

A study by Zimmermann and Kissling (2012: 66) also found that the willingness of forest owners, especially of private ones, to form joint ownership organizations such as cooperatives or corporations is quite low.

Other obstacles for innovative forest management might be:

- In the representative survey of 2005 about half of all private forest owners indicated that their knowledge about their rights and duties is limited. 75% never participated in any educational program about forest management. But the forest owners have clear preferences of what courses would be helpful (Wild-Eck and Zimmermann, 2005a: 37).
- Few private forest owners have contacts with other private owners. Only 10% state a willingness to jointly manage their forest with other owners. Private owners who manage their forest by themselves have a significantly lower willingness to collaborate than those who engage with a professional forester (Wild-Eck and Zimmermann, 2005a: 51; 62).

Based on the results of the 2005 private forest owner survey of , the authors of the study developed some advice for the formulation and implementation of (new) forest policies (Wild-Eck and Zimmermann, 2005a: 96ff.). The following list is a selection out of this advice:

- The people addressed by the policy instruments are heterogeneous, so it is to be expected that they react differently to these instruments.
- The social development (less farmers, more urban forest owners) has to be considered when developing new forest policies.
- The private forest owners have to have a say in the process of policy formulation. Additionally, it's important that the administration applies an active information and communication strategy and as well fosters education and research.
- The local forestry services can play an important role when implementing new instruments, as they are highly trusted by the private forest owners.
- When it comes to measures for biodiversity, it is important to apply a mix of different policy instruments, as the knowledge of the private forest owners in this field is limited.
- In the field of the value added chain of wood, a lot of information and persuasion is needed to successfully implement new policies.

5.5. Case example of innovative forest management approaches

The most important new organizational and management approach applied to overcome such obstacles are cooperatives among private, public or mixed forest owners. Some examples are mentioned in sections 3.3 and 4.6. The most important case study is presented here, as it comprises several cooperatives:

CASE STUDY 5: FOREST COOPERATIVES IN THE CANTON OF LUCERNE

When the forest cooperative initiative began in 2006, 70% of the forest area of the canton of Lucerne was in hands of private owners, which is the reverse of the general ownership proportion in Switzerland. The areas which one private owner holds is on average larger than in other regions. But still, the areas are too small to achieve the economic efficiency which theoretically would be possible (Röösli-Brun, 2007: 270). The cantonal administration thus started a program whereby "Regional Organizations" (RO) should be created, which private forest owners can join on a voluntary basis. Within these RO, the planning of the forest maintenance, the cutting of timber, and the marketing is done jointly. However, the ownership of the forest areas remains with the individual private owners. Additionally, each forest owner decides if management actions are performed and if he is performing them himself or not. The implementation and the first four years of the RO is supported financially by the federal and cantonal administration. The program has been more successful than expected, as the target of 6 RO within 3 years has been achieved after only one year (Röösli-Brun, 2007: 271f.). The RO have also achieved their economic goal, that means the net financial return from wood sales has improved, at least in the short term. Additionally, it seems that the RO in Lucerne facilitate innovation (Seeland et al., 2011, 358).

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

6.1. Influences of policies on the development of forest ownership

In Swiss forest policy, ownership has not been a target. In the Federal Act on Forest, no distinction is made between different owner types.

The inheritance right supports the splitting up of parcels, as when the forest areas are handed down to several children, each of them gets the same share. Today this factor no longer seems to play an important role, because the economic importance of forests has decreased and most of the potential future owners rely less on the products of their forests for commercial purposes than for their personal use (e.g. wood for household energy or construction purposes).

6.2. Influences of policies in forest management

The Federal Act on Forest states that a forest has to be managed in a way that it can fulfil all its functions over the long-term, or in other words, it has to be managed sustainably. The cantons are responsible for further management regulations, such as specifying how the principle of near-natural silviculture has to be implemented.

The Federal Act on Forest also mandates that any person who wishes to fell trees needs to have a permit issued by the cantonal forestry service. The cantons may grant exemptions. Furthermore, clear-cutting and forms of wood harvesting that have effects similar to clear-cutting are prohibited.

In addition, forest clearance is prohibited. Exceptions to this rule can be granted under the condition that a plot of the same area is reforested elsewhere.

The national Ordinance on Forest obligates the cantons to define who has to develop a management plan for the forest. Therefore these regulations differ among the cantons and are not the same for all private owners. However, most cantons obligate forest owners - except forest owners with a small

forest area - to create forest management plans (see section 5.1).

Based on the Federal Act on Forest as well as the Ordinance, the federal state pays subsidies for different measures concerning the maintenance of the functions of forests. Examples include measures for the protection against natural hazards or for the maintenance of the biodiversity within the forests. Other instruments of the state and the cantons to influence forest management are the prohibition of measures that harm the forest's functions and information and education for the forest owners about appropriate management measures.

In the frame of the 2005 survey, the private forest owners were asked if payments from the state influence their forest management. 52% answered that they are not influenced, only 44% said "yes" (Zimmermann and Wild-Eck, 2007: 281).

A case study which focused on six public forest enterprises found that forest regulations are not the most influential factor on forest management decisions. More important factors are returns from timber production, experience of the forest manager and advice from experts and suppliers (Ingold and Zimmermann, 2011: 101f.).

6.3. Policy instruments specifically addressing different ownership categories

The old forestry law specified some differences between the regulations for public and for private forests. With the new Federal Act of Forest, which is in force since 1993, all the regulations are true for all ownership types. Hence, no instruments addressing different ownership categories exist at the national level. This is true for all instrument types, both for "hard" instruments such as regulative or market-based ones as well as for "soft" instruments like persuasive ones.

A key focus of the Federal forest policy is the management of protective forests. These forest plots protect people and infrastructure

from natural hazards such as avalanches or landslides. As Switzerland is a mountainous country, these protective forests play an important role. Only a small amount of private forests is defined as protective forests. Therefore the policy instruments concerning protective forests mainly address public owners. This is one reason why a large amount of the public financial incentives are allocated to public forests and less to private forests.

Generally it can be said that policy instruments in forestry have not specifically addressed different or new ownership categories in Switzerland. Reasons for the latter may be that new forest ownership categories still play a marginal role and that information about them is missing.

6.4. Factors affecting innovation in policies

As different studies have shown (Wild-Eck and Zimmermann, 2005a; Zimmermann and Wild-Eck, 2007) most of the 240'000 private forest owners in Switzerland lack an economic interest in forest management. The main factor of this lack of interest is the fragmented structure of private forest

ownership, i.e., with small parcels. Policymakers would like to change this structure in the direction of having bigger forest entities which are arguably more appropriate for an economically efficient forest management. Such a shift would help to achieve the national forest policy goals (e.g. to harvest the sustainable harvestable wood potential; FOEN, 2013: 18). Experience indicates that a change towards larger private ownership structures is very difficult to achieve. This is mainly due to historical reasons (e.g. splitting up of parcels when the forest areas are handed down to several children) and psychological attitudes of the current private forest owners (e.g. low economic interest with rather low technical knowledge but emotionally bound to the forest). A possible way to trigger such change would be to encourage public forest owners to also manage some neighbouring private forests. Such additional management on the part of the public owners could be supported by forest policy, especially by measures of encouragement like information, counselling and financial incentives. At the national level a change of the Federal Law on Forest would be needed not for the persuasive but for the financial measures.

7. Literature

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Statistical Data

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8. Appendices

8.1. Tables with detailed description of 7 most important publications

Full reference of study/publication	Wild-Eck, S. and Zimmermann, W. (2005) Der Schweizer Privatwald und seine Eigentümerinnen und Eigentümer. Schlussbericht (The private forest in Switzerland and its owners. Final Report), Schriftenreihe Umwelt, Nr. 382, Berne: Federal Office for the Environment FOEN.
English language summary/abstract	The Chair of Forest Policy and Economics at the Swiss Federal Institute of Technology Zurich (ETHZ) was commissioned by the Swiss Agency for the Environment, Forests and Landscape (SAEFL) to conduct a survey with 1,300 individuals considered as representative of Swiss private forest owners (PFOs). As well as showing how heterogeneous the group is, the survey also highlights the personal and structural factors the PFOs have in common. These include a high incidence of small forest plots, spatial proximity between the owners' residences and their forests, the predominantly advanced age-profile of PFOs and their (continuing) affinity with agriculture. Results show a generally high level of acceptance of current forest policy instruments. PFOs trust their local forest services and are mostly in favour of positive state incentives.
Language of the study/publication	German
Type of organization conducting the study	University
Type of funding used	National
Regional scope	National
Theoretical approach	Political / social sciences
Methodical approach	Questionnaire survey
Thematic focus	Motives and behaviour of private forest owners
Main results	There are about 250'000 private forest owners in Switzerland. More than half of them own areas which are smaller than 1ha. 98% are individuals, only 2% are private organizations. Within the report, these individual owners are characterized demographically: 20% female; 90% older than 40 years; 25% farmers or related work. Additionally, their membership in different organizations has been recorded: 30% are member of a cooperative, a corporation or a "Bürgergemeinde" which owns forest; 9% are member of a forestry union. About 50% don't know if their interests are represented by the Swiss forest owners association and 25% think that they are not. 1/6 of the private forest owners are member of an environment organization. Asked about their political interests, the private forest owners show a higher participation at national votes and election than the average of all Swiss citizens. Among those who indicate a preference for a political party, the more conservative parties are stronger preferred than in the whole population. About half of the owners say that the forest is a hobby for them. Accordingly for almost no of the owners the forest is an important income source. In 25% of all cases it's even a losing bargain. Most of the private forest owners do not feel a constraint by legal regulations. To sum up, the survey revealed a large heterogeneity of private forest owners and that they aren't easily accessible.
Weblink	www.bafu.admin.ch/publikationen/publikation/00555/index.html?lang=de

Full reference of study/publication	Seeland, K., Godat, J. and Hansmann, R. (2011) Regional forest organizations and their innovation impact on forestry and regional development in central Switzerland, Forest Policy and Economics, vol. 13, pp. 353-360.
English language summary/abstract	The capacity for innovation spurred by regional organizations (ROs) and their impact on regional economic development are explored through forest expert interviews and a survey of small-scale forest owners in the Canton of Lucerne, in central Switzerland. The results show significant differences between the economic positions of forest owners who joined ROs and those who did not. Among RO members, the proportion of certified forests is higher, and in net financial return from their forest holdings and marketing effectiveness, they are significantly better off after only a short period of time compared with RO nonmembers. This process innovation, however, will not transform the forest sector substantially nor does it intend to do so. Its economic impact on regional development is modest at the present level of organization.
Language of the study/publication	English
Type of organization conducting the study	University
Type of funding used	National
Regional scope	Sub-national
Theoretical approach	Economics/social sciences
Methodical approach	Interviews and questionnaire survey
Thematic focus	New management approaches
Weblink	www.sciencedirect.com/science/article/pii/S1389934111000293

Full reference of study/publication	Pudack, T. (2006) Ansatzpunkte für den Strukturwandel in der Schweizer Forstwirtschaft (Starting point for structural change in Swiss forestry), Schweizerische Zeitschrift für Forstwesen, vol. 157, nr. 3-4, pp. 73-81.
English language summary/abstract	Swiss forestry is under transition. Members of the industry are searching for new business models, new organizational forms and new ways to co-operate with one another. From the economists point of view this search gives evidence to changes in the traditional industry structure. The paper presents an economic analysis of these changes and identifies starting points for re-shaping the industry. It becomes obvious that assigning harvesting decisions to the individual forest owner entails high transaction costs in the market for automated harvesting services. We suggest options to re-assign the harvesting decision and line out their consequences.
Language of the study/publication	German
Type of organization conducting the study	Public Research Institute
Type of funding used	National
Regional scope	National
Theoretical approach	Economics
Methodical approach	Economic analysis
Thematic focus	New management approaches
Main results	The author suggests three types of management approaches which could help to turn Swiss forest industry more efficient: cooperations of private forest owners, associations of public forest enterprises and cooperations of both, private owners and public forest enterprises. Also offering advisory services from wood processors for the owners or contracts, which allow the harvesting enterprises to decide when they harvest in which forest area would be management approaches for a more effective forest economy.
Weblink	http://www.szf-jfs.org/doi/abs/10.3188/szf.2006.0073

Full reference of study/publication	Röösli-Brun, B. (2007) Kooperation im Luzerner Privatwald (Essay) (Cooperation in Lucerne's private forests), Schweizerische Zeitschrift für Forstwesen, vol. 158, nr. 9, pp. 270-274.
English language summary/abstract	In the canton of Lucerne, where there are many private forests, the forest owners have voluntarily pooled together for a cooperative management of their forests. The so called «regional organisations» (RO) are managed professionally and plan the overall forest maintenance and timber use. The timber is sold collectively. At the same time, the ownership is not transferred to the RO and joining the RO is voluntary. Thereby, as well as thanks to short-term start-up help of the canton and federation, the chances are high that establishing the RO will be successful and that the timber use of private forests can be increased.
Language of the study/publication	German
Type of organization conducting the study	Cantonal administration
Type of funding used	Public sub-national
Regional scope	Sub-national
Theoretical approach	Economics
Methodical approach	Case study
Thematic focus	New management approaches
Main results	The program has been more successful than planned, the target of 6 ROs within 3 years has been achieved after one year. The ROs have also achieved their economic goal, that means the net financial return from wood sales has improved, at least in the short run.
Weblink	http://www.szf-jfs.org/doi/abs/10.3188/szf.2007.0270

Full reference of study/publication	Nussbaumer, H. (2011) Die Waldkorporation Romanshorn-Uttwil – ein Zukunftsmodell für den Privatwald? The forest corporation Romanshorn-Uttwil – a possible model for private forests in future?) Schweizerische Zeitschrift für Forstwesen, vol. 162, nr. 3, pp. 76-80.
English language summary/abstract	The forest corporation Romanshorn-Uttwil in the canton of Thurgau has been in existence since 1784. It covers 260 ha of forest and is the property of 159 associates. In the nineteen-eighties two thirds of the forest area were still wooded with existing coppice with standards. On account of insufficient returns the forestry company was in arrears, but over the past 20 years it has been developed into a successful business. Decisive factors in this process were a clearly defined goal for all participants, a large but temporary financial contribution of all associates, and the fact that progress was made with a lot of commitment and in small steps, thus moving third parties to contribute to the modernization of the system. The example shows that successful businesses are also possible in private forests, as long as there is a precise goal and they are run as a single unit. Despite the fact that today most forest owners are not ready to give up their individual ownership in favour of joint possession, this model, fitted to future use, should not go unheeded.
Language of the study/publication	German
Type of organization conducting the study	Private person (former forester in this region)
Type of funding used	Private
Regional scope	Sub-national
Theoretical approach	Economics
Methodical approach	Case study
Thematic focus	New management approaches
Weblink	www.szf-jfs.org/doi/abs/10.3188/szf.2011.0076

Full reference of study/publication	de Spindler, J. (2008) Die Zweckgemeinde – auch ein walddpolitisches Referenzmodell (The Special Purpose District – also a policy reference model), Schweizerische Zeitschrift für Forstwesen, vol. 159, nr. 12, pp. 427-434.
English language summary/abstract	The article is a contribution taken from the Public Choice Theory and concerns the improvement of requirements in forest policy in order to obtain an optimal forest economy. The subjects under study are institutional aspects based on the reference models known as Special Purpose Districts. These provide criteria for shaping the political level which includes institutions in charge of the public forest and is endowed with political authority, competence and responsibility. In this, two main principles are decisive: the institutional and the organisational congruity. Only when, as far as is possible, compatibility has been consistently established between these two can a further step be taken in the optimal development at the operational level. For the institutions in charge define the positive and negative incentives for the decision-makers within the operational units and thus the efficiency of the forest policy.
Language of the study/publication	German
Type of organization conducting the study	Private research institute
Type of funding used	Private
Regional scope	National
Theoretical approach	Economics
Methodical approach	Theoretical thoughts
Thematic focus	New management approaches
Weblink	www.szf-jfs.org/doi/abs/10.3188/szf.2008.0427

Full reference of study/publication	Von Arb, C. and Zimmermann, W. (2004) Federalism. A Characteristic Element of Swiss Forest Policy. Zurich: Swiss Federal Institute of Technology Zurich.
English language summary/abstract	Like the entire political system of Switzerland, Swiss forest policy is shaped to a high degree by the principle of federalism, meaning that a state – the federation – consists of several member states, and both the federation and the member states have a share in sovereignty. There are different types of federalism. The Swiss political system has all characteristics of federalism in general, like, for example, constitutionally guaranteed rights and competences of the cantons (member states) and a bicameral parliament. Special features of the Swiss type of federalism are the complementary (i.e. partly by the federation, partly by the cantons) fulfilment of public tasks (cooperative federalism) and the existence of a third level within the federation: Besides the federation and the cantons, there are the communes (municipalities). The communes have political institutions and competences of their own and are integrated into the federalist system.
Language of the study/publication	English
Type of organization conducting the study	University
Type of funding used	National
Regional scope	National
Theoretical approach	Political sciences
Methodical approach	Document analyses
Thematic focus	Policy instruments addressing ownership
Main results	The results reached so far suggest that political responsibility for forests will be partly retransferred from the federation to the two lower levels. This does not exclude that the federation retains or even reinforces its commitments to certain partial tasks, like the maintenance of protective forests or the preservation of biodiversity. On the whole, there will probably be a downward transfer of tasks. In any case, it can be expected that the subject of decentralization will become, after about 150 years of a tendency towards centralization, a focal point of the discussion about Swiss forest policy again.
Weblink	www.pepe.ethz.ch/publications/archive/buecher_und_monographien/2004/Federalism1.pdf

8.2. Forest ownership structure – detailed tables

Table 4: Forest area subdivided into ownership category and cantons in 2013

	Private		Public		Mixed	
	Number of owners	Total forest area in ha	Number of owners	Total forest area in ha	Number of owners	Total forest area in ha
Total	238'871	341'070	3'228	884'252	5'781	32'888
Waadt	26'966	41'094	372	85'547	.	.
Wallis	19'686	9'446	226	97'827	10	1'736
Genf	1'566	1'289	26	1'716	.	.
Bern	36'298	86'331	445	89'734	.	.
Freiburg	11'926	18'803	209	24'090	.	.
Solothurn	5'149	6'415	143	25'071	.	.
Neuenburg	2'886	13'130	99	17'426	.	.
Jura	4'114	8'633	62	30'497	.	.
Basel-Stadt	160	86	4	385	.	.
Basel-Landschaft	6'044	4'435	92	15'977	.	.
Aargau	14'017	10'939	235	38'428	.	.
Zürich	18'195	24'661	217	25'587	.	.
Glarus	1'457	2'655	12	18'350	.	.
Schaffhausen	1'852	2'068	28	10'702	.	.
Appenzell A. Rh.	4'240	5'412	24	1'571	2	208
Appenzell I. Rh.	2'996	2'782	28	2'087	.	.
St. Gallen	17'769	21'997	135	32'772	1	140
Graubünden	10'159	16'289	204	172'259	428	6'946
Thurgau	8'793	10'854	77	8'830	.	.
Luzern	6'334	9'719	74	6'543	5'340	23'858
Uri	1'489	2'980	25	17'636	.	.
Schwyz	3'375	5'838	87	21'274	.	.
Obwalden	1'800	1'635	14	17'024	.	.
Nidwalden	571	2'453	20	5'305	.	.
Zug	805	1'813	27	4'634	.	.
Tessin	30'224	29'313	343	112'980	.	.

Source: FOEN and FSO (2014)

Table 5: Forest area subdivided into ownership category and cantons in 2005

	Private		Public		Mixed	
	Number of owners	Total forest area in ha	Number of owners	Total forest area in ha	Number of owners	Total forest area in ha
Total	245'390	351'466	3'722	884'567	408	6'477
Waadt	26'948	40'405	400	85'415	-	-
Wallis	19'473	9'305	236	99'209	-	-
Genf	1'566	1'392	26	1'625	-	-
Bern	35'889	83'076	471	90'993	-	-
Freiburg	11'879	18'239	213	23'843	-	-
Solothurn	5'149	6'415	131	24'951	-	-
Neuenburg	3'206	13'104	107	17'564	-	-
Jura	4'513	7'268	95	31'765	-	-
Basel-Stadt	160	86	4	385	-	-
Basel-Landschaft	6'044	4'187	93	16'048	-	-
Aargau	14'266	10'789	288	38'283	-	-
Zürich	18'052	24'852	217	24'949	-	-
Glarus	1'455	1'823	37	16'626	-	-
Schaffhausen	2'089	2'081	32	10'573	-	-
Appenzell A. Rh.	4'242	5'693	25	1'507	-	-
Appenzell I. Rh.	2'996	2'782	24	2'068	-	-
St. Gallen	17'924	22'397	140	33'009	-	-
Graubünden	10'477	12'484	266	169'577	401	5'924
Thurgau	8'865	10'792	94	8'326	7	553
Luzern	11'491	28'539	305	11'081	-	-
Uri	1'489	2'970	25	17'620	-	-
Schwyz	3'354	6'840	86	20'447	-	-
Obwalden	1'800	1'635	14	16'750	-	-
Nidwalden	571	2'453	20	5'305	-	-
Zug	805	1'909	26	4'503	-	-
Tessin	30'687	29'950	347	112'145	-	-

Source: FOEN and FSO (2014)



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