



A gift programme for sustainable forest management? A Swiss perspective on public policies and property rights

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Abstract. For multifunctional forests that seek to fulfil societal, environmental and economic demands, active forest management is key. However, like in many other western European countries, Switzerland's small-scale private forest owners increasingly do not manage their forests. By applying and adapting the Institutional Resource Regime (IRR), a framework for environmental policy analysis that considers use rights both from public policies and property rights, we analyse the situation in Switzerland. Subsequently, we propose a Swiss forest gift programme – based on the Canadian Ecological Gifts Program (EGP) – consisting of different policy instruments that would ultimately lead to a transfer of property rights from the current to new owners. In sum, we argue that our proposal would lead to more “coherence”, with regard to the IRR's sustainability dimension, and consequently to clearer responsibilities for the sustainable management of forests in Switzerland.

1 Introduction

Forest policy in Western countries has become rooted in multifunctionality and sustainability since the end of the last century (Cubbage et al., 2007; Sotirov and Arts, 2018; Wiersum 1995). In other words, forest policies mandate forest management to simultaneously cater to several forest services, such as environmental (biodiversity), social (recreation) and economic (timber) functions, and ensure that they are met fully and in perpetuity.¹ The attainment of these goals requires active forest management, which in turn depends on public policies – and particularly the effectiveness of policy instruments – as well as on forest owners and their motivation and resources (Cubbage et al., 2007). Survey evidence suggests that types of forest owners are changing across Europe. In addition, forest owners' motivations and resources

can vary strongly, and different policy instruments are necessary to target different types of owners (for an overview, see Ficko et al., 2019).

As in many European countries, an increasing number of private forest owners do not manage their forests in Switzerland (anymore) (Walker and Artho, 2018). This situation typically results in negative consequences for the multifunctional aims defined in Swiss forest law, namely environmental, social and economic functions of the forest. Unlike many other types of property, the rights acquired through forest ownership are strongly restricted by a range of policy instruments, many of which are regulatory in nature. In most cases, such governmental intervention regulates the use of forest property, especially when collective goods have to be safeguarded (Cubbage et al., 2007). However, diverse policy instruments exist, and we often find a mix of informational, cooperative, economic and regulatory instruments in environmental policy (Ingold et al., 2016). For instance, governments can use multiple types of policy instruments to aid the transfer of property rights. One case in point is the Cana-

¹Although the Swiss forest law also takes the protective function (e.g. avalanche protection) into account, this is not the focus of this article, which is why we will not focus on this dimension.

dian Ecological Gifts Program (EGP), a policy instrument mix that encourages private landowners to donate their property so that it is subsequently preserved for environmental reasons (Canadian Wildlife Service, 2011; Government of Canada, 2017). Taking the EGP's policy mix approach as the basis, this paper explores the role of policy instruments in relation to sustainable forest management by means of transferring property rights, posing the following question: could an adaptation of the EGP be applied to the Swiss case to ensure sustainable forest management?

To address this question, we draw on the Institutional Resource Regime (IRR) framework, which serves as an analytical lens to assess formal rules, namely property rights, in interaction with public policies (and here specifically public policy instruments). The IRR framework is especially suitable to the problem at hand because public policies governing a natural resource like the forest tend to restrict property rights. The Swiss case is well suited to apply this framework and to address our question, as the Swiss forest sector currently faces various challenges related to continuous sustainable forest management that depend on public and private policies. While state authorities manage publicly owned forest areas, Swiss private owners decide individually about management issues, and although a majority conduct active management, about one-sixth do not. Moreover, a majority of private forest owners currently do not make a profit with their forest or even incur a loss (Walker and Artho, 2018). Such a development can lead to management being limited even further or completely halted (NZZ, 2004). In some cases, landowners already make use of the so-called "dereliction", thereby renouncing the property rights of their owned forests, as they are simply not interested (in its management) or do not want to pay for its maintenance (see, for example, Al lenspach and Kaufmann, 2006). This indicates an increased potential for the transfer of property rights, at least on the part of private forest owners. In line with these developments, the federal statistics show that the number of small-scale forest owners has declined continuously since 2004 (BFS, 2015).

Our analysis is a hypothetical application of a possible public policy instrument mix in Switzerland that would lead to a transfer of property rights, allowing a clearer attribution of responsibility on all issues concerning forest ownership. In doing so, we build on the EGP and analyse how it could be utilised and adapted to be beneficial for the Swiss case of forest management. We conclude the article by arguing that implementing a programme promoting a formal transfer of property rights of forested land would lead to clearer responsibilities and more sustainable forest management than is currently the case in Switzerland.

2 Understanding natural resource management and a demand for change

2.1 The Institutional Resource Regime (IRR)

The IRR framework (Fig. 1) was developed to structure the systematic analysis of sustainable natural resource management (Gerber et al., 2009). In doing so, the framework seeks to foster insights into the

"Relations between (1) the institutional regime ... (public policies and property rights) of natural resources, (2) the actors (owners and non-owners) and their uses, and (3) the condition of the natural resources (Gerber et al., 2020)."

As the IRR framework was developed to examine institutions in continental Europe, it differentiates between civil (private law, including property rights) and public law (public policies), which both ascribe certain privileges, restrictions and obligations on use rights (Gerber et al., 2009; de Buren, 2015). Property rights "are the legal expression of the guarantee of access to a benefit stream in the context of a given legal, political and social order" (Gerber et al., 2009:803) and are often referred to as a "bundle", since they incorporate several rights. Most importantly, use rights, which refer to management rights, can be linked to ownership but can also be granted to individuals not owning a property.

As shown in Fig. 1, there are different strategies for managing resource use: the first strategy (1) implies the use of public policy instruments that do not affect property rights (e.g. informational instruments). The second strategy (2) incorporates measures that can restrict property rights of owners, for example by introducing regulatory instruments. The third strategy (3) refers to the "[r]egulation through the redefinition of the institution of property rights" (Gerber et al., 2009:805), such as the introduction of the Swiss Civil Code in 1912. Lastly, the fourth strategy (4) refers to the modification of property rights, which occurs, for instance, when a private property is expropriated by the state.

The IRR differentiates between four different property types (Table 1): state property, private property, common property and no property (Kissling-Näf and Kuks, 2004).

Within the IRR framework, we understand the use rights granted within each different type of property in combination with public policy instruments. While multiple typologies categorise environmental public policy instruments, there is a widespread approach to differentiate instruments based on the degree of government intervention (Vedung, 1998). In line with this literature, we specifically draw on Ingold et al. (2016) in our differentiation of public policy instruments and relate this to the public law aspect of the IRR framework: regulatory, economic, cooperative and informational instruments². Regulatory instruments rely on legally bind-

²The original terms used in German are *regulativ*, *marktwirtschaftlich*, *kooperativ* and *persuasiv* (Ingold et al., 2016:77).

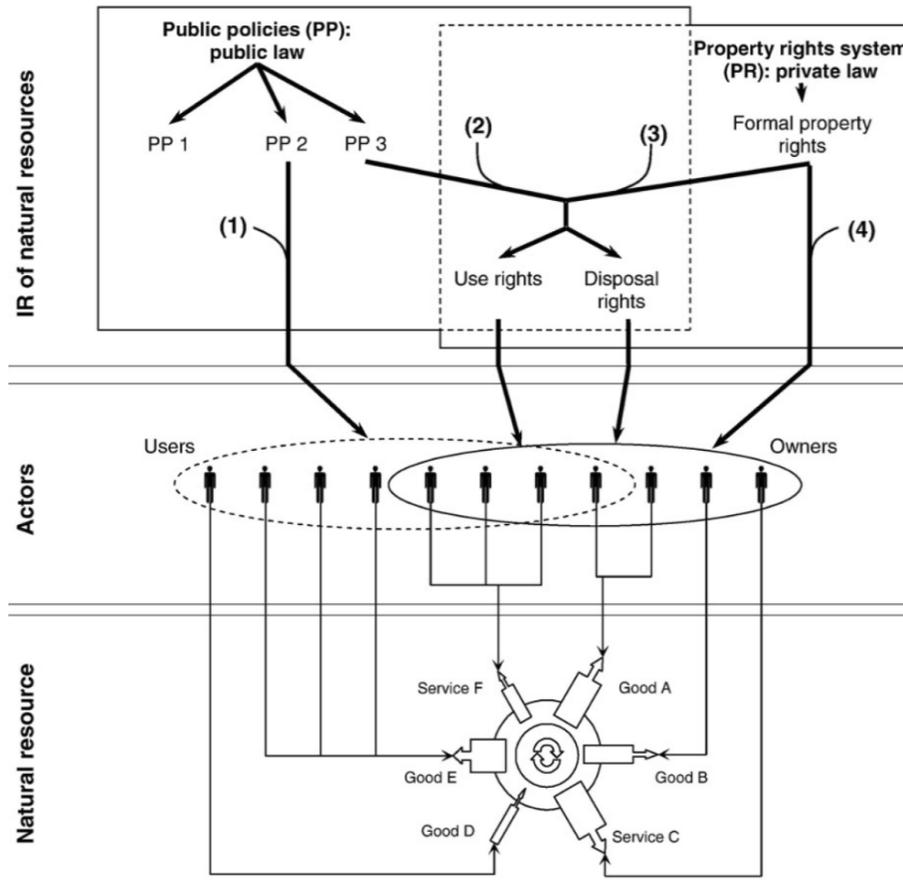


Figure 1. Model of the IRR framework, taken from Gerber et al. (2009), displaying the relationship(s) between public policies (PP) and property rights (PR) (a), the actors using the resource (b), and its condition (c).

Table 1. Property right bundles. Source: Kissling-Näf and Kuks (2004:7).

Type of property	Definition
State property	Exclusive title in the hands of the state: local, province, canton, national Access control by the state Decision-making by administration or state agency
Private property	Exclusive title in the hands of individuals and corporations Access control by individuals backed by state Decision-making by individuals/corporations
Common property	Exclusive title in the hands of groups/corporations Possible exclusion of non-owners Access control by group, corporation backed by the state Decision-making by group/corporation
No property (res nullius)	Title in the hands of nobody/everybody

ing, traditional mechanisms of the government and hence involve high intervention on the use rights of the property, typ-

We modified the terms *market-oriented* and *persuasive*, resulting in *economic* and *informational*, as we believe they more accurately describe the intent of the instruments.

ically coupled with control mechanisms and sanctions (Metz and Ingold, 2014). Economic instruments focus on steering actors through either induced positive (e.g. subsidies, compensation payments) or negative (e.g. taxes, fees) financial incentives (Bressers and Huitema, 1999; Jordan et al., 2007). They can also involve the creation of markets through trade-

able permits, licenses and emission rights (Howlett, 2011). In contrast to regulatory instruments, here the target groups are free to react to the incentives, rendering them moderately interventionist (Bandelow and Schubert, 2009). Cooperative and informational instruments are considered “soft” instruments, which entail a low degree of government intervention and include different types of agreements, ranging from negotiated agreements to public-voluntary schemes (Jordan et al., 2007; Metz and Ingold, 2014). Informational instruments involve knowledge exchange through campaigns, research and education (Bandelow and Schubert, 2009). These instruments do not have to be enshrined in the law and often involve voluntary commitments between public and private actors.

2.2 A demand for transferring forest ownership and changing management

With the continuous growth of cities and the densification of developed spaces, there is an increasing demand for space. Especially municipalities provide many direct public services, ranging from water supply and electricity services to the provision of recreational space (Torjman and Leviten-Reid, 2003; Wollmann, 2018). With regard to (sub-)urban areas, municipalities often maintain green space for outdoor activities by managing forests and parks (Arnberger, 2006). To fulfil these societal demands, municipalities need to own or have access to land that they can specifically dedicate to such use. The provision of such space can be understood as a service to residents and function as a means to attract potential taxpayers (Arnberger, 2012) and can – in IRR terms – be defined as making the property with extensive use rights available to the public (link between the upper and the middle box of the IRR model in Fig. 1). Moreover, based on the (dis-)economies of scale, the management of additional public land – provided that management structures are present – does not result in higher financial efforts or might even be financially attractive. This is especially the case when land simultaneously provides resources that can be sold (e.g. wood) or services that contribute to well-being of the community (e.g. water purification or recreational space; Londo and Grebner, 2004; Chavas, 2008). With reference to the IRR, this means that one actor can capitalise on multiple goods and services (link between middle and lower box in Fig. 1).

We also observe a demand on the donating side – that is, the owners as actors being affected by property rights and public policy (see the middle box of the IRR model in Fig. 1). First, while several reasons for owning land exist, cultivating it to make a profit, as this is done by the primary sector of the economy, has continually lost relevance in Western industrialised countries (Kjeldsen-Kragh, 2007). Although ownership patterns have changed, especially in Europe, some people have kept property rights to the land their ancestors managed, by means of inheritance (Keskitalo et al., 2017). How-

ever, depending on the size of the plot, conducting small-scale land or forest management is often not economically viable (Londo and Grebner, 2004). While some owners of small plots might still manage the land, for example as a hobby, and thus be willing to incur financial costs, others might have no interest in management, especially if it means bearing the respective costs. Moreover, in legal contexts such as the Swiss case, owners possess the building rights of an owned property, yet these rights are restricted by public law, which results in the property being less economically valuable compared to a condition where such a restriction does not exist (Gerber et al., 2017). Coming back to the IRR, this highlights the vital interplay between property and use rights, where the latter are affected by public policies (see top box of Fig. 1). Accordingly, we see the chance that particularly small-scale private forest owners could be interested in transferring their property rights.

Finally, many private forest owners are no longer dependent on their land to support their livelihood, which has led to a change in attitude toward the exploitation of nature and its resources (Ziegenspeck et al., 2004; Wiersum et al., 2005). This is especially the case for owners who live in more urban settings and own plots in more rural areas, which is increasingly the case. Along this line, urbanites not engaged in productive land use tend to have more ecocentric attitudes, i.e. arguing for protecting nature for its own sake, while rural residents’ as well as farmers’ views are rather anthropocentric, viewing nature protection as a way to preserve economic activity (Gifford and Sussman, 2012). In IRR terms, this sheds light on the interplay between different types of actors and resources (middle and lower boxes in Fig. 1). From this we deduce that particularly for owners with no economic interest in land use, there is a potential for a transfer of property rights – particularly if their plot would contribute to sustainable forest management and/or nature conservation efforts.

3 Research design

3.1 Case study approach and methods

The management of forests is a central element in the Swiss federal government’s strategic focus “Forest Policy 2020”; amongst its 11 central goals, 2 are to utilise more sustainable wood and to improve the economic situation of the forest sector (BAFU, 2013). However, a recent evaluation showed that these goals are currently not being met (Wilkes-Allemand et al., 2017). Partially, this can be explained by the economic context in which the Swiss forest sector is embedded but also relates to ever more small-scale forest owners not being interested in forest management (Walker and Artho, 2018). Consequently, besides adapting policy instruments, altering ownership structures is an option to approach the current situation.

Methodologically, we first conducted an in-depth qualitative literature review on public policy instruments, focus-

ing on instruments from several environmental policy fields, namely the forest, water, agricultural and land use sector. The review was conducted within a larger search to identify innovative policy instruments for current challenges facing forests. The search engines Scopus and Web of Science were employed and set to include publications that were published in 2000 or later and which focus on existing policy instruments applied in OECD countries, as a certain comparability with regard to Switzerland should be given. This resulted in 45 articles being coded deductively, following Mayring's (2014, 2015) qualitative content analysis and applying codes based on the typology of policy instruments by Ingold et al. (2016): informational, cooperative, economic and regulatory instruments. Through this literature review, a specific policy instrument mix from Canada stood out as an option that could be adapted to promote sustainable forest management by means of a transfer of ownership: the EGP. Subsequently, through the snowballing technique (Pawson et al., 2005), we analysed more literature on the EGP. In doing so, we accounted for the fact that the legal systems of both countries vary to a great extent (civil law in Switzerland and common law – except for Quebec, where there is a hybrid system – in Canada), especially the land use rights and forest laws.

As public policy and the property rights regime are both critical for the realisation of the EGP, the IRR framework is well suited for the analysis. The paper especially draws on Gerber's (2012) case study, where he utilised the IRR to unravel the strategies of non-governmental organisations (NGOs) regarding land use planning. We adapted the Gerber (2012) framework to set up a hypothetical policy instrument mix to tackle the non-management of privately owned forests.

While several definitions of sustainable natural resource management exist, the IRR relates sustainability to the two dimensions of "extent" and "coherence". Extent "refers to the number of goods and services that are regulated" by a regime at a certain point in time (de Buren, 2015:16). When all uses are regulated, the extent is high; if none are regulated, it is low. Coherence, in contrast, indicates the interconnectedness between the different "user-actors within the regime" (Gerber et al., 2009:798). The underlying assumption is that all natural resources can be affected by rival demands or conflicting aims. According to the IRR, the problem at hand of non-management of forests (a right derived from ownership) and the promotion of forest management for environmental, social and economic reasons (a stated public policy goal) constitutes an incoherence. This means that the rights allocated within ownership rights conflict with the objectives stemming from public policy, as non-management can impede protective, social, economic and environmental functions. In this analysis, we focus on coherence rather than extent in relation to sustainable forest management.

With regard to an applied, practical forest management, we draw on the "sufficiency approach" conducted in a Swiss

midland municipality, which is based upon an integrated management form based on the principles of selective cutting, a near-natural silviculture practice that is a special type of continuous cover forestry (Zingg, 2011; Meile, 2016). Moreover, a speciality in the community is the fact that certain trees, so-called "value carriers", are only felled when they have reached their natural end (Schoop, 2016). This represents merely one example of a possible forest management approach. It should serve as a reference point for a conceptual approach, showing that there are highly sustainable forest management concepts that go beyond the Swiss legal requirements – and are yet applicable as well as successful in fulfilling the environmental, social and economic functions, thus also meeting IRR's coherence dimension.

3.2 The Ecological Gifts Program

The Canadian federal government introduced the EGP in 1995 (Canadian Wildlife Service, 2011). It is a policy mix – mainly consisting of informational and economic but also cooperative instruments – that aims to bring about a transfer of ownership rights (or, at least, a transfer of use rights for a certain period of time) of land so that this can subsequently be conserved, i.e. that a respective plot is not developed for construction or other purposes (Logan and Wekerle, 2008). An ecological gift is defined as a donation of "ecologically sensitive land" or rights to land – which has to meet certain criteria – to a recipient, who has been certified by the federal secretary for the environment beforehand, e.g. various public institutions like provincial governments and NGOs (Government of Canada, 2017).

There are three different donation options (see Table 2). First, the "full title" option (about 60 % of all gifts) is a donation which is made with no reserved rights to a recipient (Canadian Wildlife Service, 2011:8). Second, there are conservation easements (also named covenants or servitudes), which consist of a legal agreement between the donor (owner) and the recipient, while the former determines the exact conditions (Government of Canada, 2017). With such an agreement, the donor still possesses the land and can live on it and pass it on as an inheritance. At the same time, the recipient guarantees that the agreement, and the constraints attached to it, are followed. Third, owners can donate land while retaining a "life interest" to keep living on the plot for the rest of their life, but the property rights are nonetheless transferred to the recipient (Canadian Wildlife Service, 2011:8).

While the term "gift" implies the voluntariness – and indeed, 84 % of donors participate "because they were motivated by a desire to conserve the natural values" – financial incentives (as economic policy instruments) are also linked to the programme (Canadian Wildlife Service, 2003:20). Donors can receive income tax benefits when donating ecologically sensitive land; concretely, individuals obtain a non-refundable tax credit and corporations "may deduct the

amount of their ecological gift directly from their taxable income” (Government of Canada, 2017). Moreover, some provinces also reduce the provincial income tax when the federal income tax is lowered, resulting in an additional benefit.

4 Application

4.1 The specificities of the Swiss case

First, it is key to stress that the aim of a Swiss gift programme would differ from the Canadian version as follows. Instead of preserving land for ecological purposes, the goal of transferring property rights in Switzerland is to promote sustainable forest management that fulfils all three dimensions and that goes that goes beyond the state-regulated minimum standards, which the new owners would commit themselves to when taking over the property (or, at least, to incentivise current forest owners to conduct forest management). Based on the IRR framework and as shown in Table 3, the ownership of Swiss forests (amounting to 1.27×10^6 ha) can be categorised into public, private and common property. Common owners comprise civil communities (see Table 1), which exhibit a high degree of organisational complexity, with large variations between and within cantons (Sieber, 2005)³. Common owners are highly diverse regarding size, capital and estate assets, and forest ownership (Caluori, 2018). There are common owners that possess large forest areas and operate a forest enterprise, while others only own a rather small forest plot and have no forest enterprise (or no longer have it). Ownerless forest plots do not exist.

Public and common forest owners often operate their own forest enterprise, which is especially worthwhile if the forest area amounts to a certain size. For example, a forest enterprise in the midlands maintains an average area of 471 ha (Walker and Artho, 2018). While public forest owners primarily work towards a “healthy and stable forest”, they also aim at providing recreational value for society (Walker and Artho, 2018:43). Just like the public forest owners, the most important aim for common owners is to keep the forest healthy and stable, while the general orientation towards the community, providing recreational value for the public, is even more pronounced than that of public forest owners. Especially common owners profit from owning forest: for more than 30 % of civil communities and corporations the forest is “a major source of income” (Walker and Artho, 2018:50).

Second, the relatively small plot sizes of private forest owners are due to the fact that many forest owners bequeath their woodland to their heirs, often resulting in a splitting of the existing forest estate (Landolt et al., 2015). The exact conditions for splitting a plot in case of inheritance depend on the canton. Small-scale private forest owners generally

do not have an own forest enterprise, which again raises the relative costs if the owners do the work on their own (Pudack, 2006). Consequently, 51 % of forest owners currently do not earn anything with their forest area, and 20 % even incur a loss (BAFU, BFE, and SECO, 2017; BAFU, 2018). Whereas some forest owners are not interested in making a profit, as owning a forest is primarily their hobby, at least 15 % do not manage their forests – probably due to financial burdens and/or disinterest (Wild-Eck and Zimmermann, 2005; Walker and Artho, 2018)⁴.

While forest owners who hold large properties cannot generally be characterised as “better owners”, they do more often meet the (multifunctional) goals defined in Swiss forest policy, as they – in contrast to many small-scale forest owners – base their management on long-term plans. While large-scale forest management – as an end in itself – is no aim of the proposed approach, we do see the highest potential for ownership change amongst small-scale forest owners. A hypothetical Swiss gift programme would seek to meet the policy goals captured in the Swiss forest law by conducting forestry based on the sufficiency approach – and thus go beyond the regulated sustainability minimum standards.

The development rights in Canada and Switzerland belong to the owner of a respective property. However, in Switzerland, these rights are restricted by public law (Gerber et al., 2017). In consequence, property in Switzerland can only become building land if the responsible governmental entity rezones the area (i.e. changing the administrative provisions that relate to the use of the land). Second, the right to freely enter the forest and collect mushrooms and berries is central in Swiss law and prevents forest owners from keeping the public off their land (Art. 699, Swiss Civil Code), also known as Everyman’s right (*Jedermannsrecht* in German). As a result, Swiss forests are a highly decommodified good (Gerber and Gerber, 2017). Across Europe, similar regimes exist, but often with different designations and slightly different arrangements (Campion and Stephenson, 2010). In Canada, such rights do not exist, where imposing restrictions on access to private property is permitted and quite common. Lastly, compared to other countries, the Swiss forest law – which was fully revised in 1991 – is very restrictive (Bollmann, 2011). These restrictions affect ownership in a multitude of ways regarding forest management styles, as exemplified in the next paragraph (Jenni, 1993).

The Federal Act on Forest (ForA) sets out to conserve both the quality and the quantity as well as all natural and societal functions of the Swiss forest (Art. 1, ForA). On the one

⁴According to the study by Walker and Artho (2018), currently 15 % of private forest owners do not manage their forest (Zimmermann and Wild-Eck, 2007, declared that about one-sixth – 17 % – do not manage their forest). However, given that the study of Walker and Artho (2018) is merely a sample that builds on survey data, we can assume that active forest owners are overrepresented in the data. In consequence, we imagine that the actual number of forest owners not conducting any management is higher in reality.

³Civil communities (Burgergemeinden or Bürgergemeinden in German) exist in 14 of the 26 Swiss cantons (Sieber, 2005).

Table 2. Overview of the EGP. Source: own representation based on Environment Canada (2011) and Government of Canada (2019).

Donation options	Property rights	Recipients
“Full title”	Transferred to recipient	Federal government
“Conservation easement”	Stay with the donor	Provincial/territorial governments
“Life interest”	Transferred to recipient, but conditions apply	Municipalities NGOs

Table 3. Forest ownership structures in Switzerland. Source: own representation based on data from BAFU (2018), BFS (2018), and Walker and Artho (2018). * There are no separate statistics for state- and common-owned forests in absolute terms, so state or common owners and plots are aggregated in the respective data (three last columns). These data are, however, differentiated in relative terms (second column).

Owner category	Amount (in %) of Swiss forests	Total number of owners	Average (in ha) plot size	Size (in ha) in absolute terms
Public property	34.8	3.500*	255*	898.000*
Federal	0.8			
Cantonal	4.4			
Municipal	29.7			
Private	29.0	245.000	1.5	372.500
Common	27.7	3.500 (public owners included)*	255 (public-owned forests included)*	898.000*

hand, the law seeks to prevent deforestation by forbidding forest clearances (Art. 5, ForA), implying that any clearances that are inevitable must be replaced in the same region by the same quality and quantity of forest (Art. 7, Paragraph 1, ForA). These laws prohibit forested areas from becoming potential construction land and thus much more economically attractive. On the other hand, the management of forests is strictly regulated, making any harvesting efforts expensive and in the current market rarely economically worthwhile (Thees, 2016). All harvesting in Swiss forests must follow sustainable forest management principles (Art. 20, ForA), which by definition excludes specific harvesting practices, such as clear-cutting (Art. 21, ForA). In other words, although private forest owners in Switzerland hold the ownership rights, the use rights (of their land) are restricted to a high degree due to many societal and environmental public policy goals.

4.2 Strategies to develop a Swiss forest gift programme

We develop four strategies for a hypothetical new approach to enhance sustainable forest management, as summarised in Fig. 2. First, public policies that do not have an impact on property rights can be mobilised (1). These address private forest owners (currently not managing their forests) via informational instruments about forest management practices. Apart from the distribution of informational material, the state forester is a vital agent in disseminating relevant information about forest management (concepts), as they are

– for professional reasons – in constant exchange with local and regional forest owners. However, the contact usually exists with forest owners who already conduct forest management, whereas the ones not managing their plots are probably harder to identify and/or contact. For this reason, an information campaign addressing forest owners currently not managing their forest would be important for getting them to become active.

Second, public policies impacting property rights can be implemented (2) by offering the owners to transfer their land to a new owner (e.g. a NGO) who would subsequently hold the property and thus also the use rights. Again, informational instruments also play an important role, as this time they can inform private forest owners about the possibility of donating their forest, which can be done – again – via informational material and a respective campaign, as done in Canada by publishing and disseminating brochures about the EGP. By providing details through informational instruments, one would point out that the option to give up one’s property rights exists, or even actively encourage owners to do so, depending on the exact framing.

Apart from informational instruments, economic instruments can be used to encourage forest owners to donate their forested land. As in Canada, tax credits for owners donating their forest could be granted as a positive tax incentive⁵.

⁵Previous studies have shown that several forest owners do *not* react strongly to economic incentives like subsidies (Wild-Eck and Zimmermann, 2005; Walker and Artho, 2018). Along these lines, it is questionable if tax credits for donations would achieve its ob-

People with high environmental awareness might be more responsive to arguments relating to the sufficiency management approach. Others who are simply not interested in their plot might just choose to be relieved of any potential costs that forest ownership may incur, such as dealing with a bark beetle infestation. More interventionist instruments as part of the policy mix are also options. In Austria, new forest owners are obliged to attend courses about forest management (Hader, 2011). Although this regulation only applies to buyers and not heirs, a similar approach addressing owners having inherited forest is a viable option for Switzerland. Thus, new forest owners would either learn about forest management and its benefits or they could decide not to invest the necessary time and donate the plot instead. A regulatory instrument that goes even further in terms of intervention involves a forest management plan. While different policies in Swiss cantons exist in terms of the obligation to have a forest management plan (Flückiger, 2017), there is no explicitly formulated management obligation given at the federal level. However, some cantons proceed in such a way that protective forests need to be managed at a minimum level, while several cantons exempt small-scale private forest owners if the respective plot size is below a certain threshold (Helbling, 2010). There is certainly the possibility to lower this threshold, thus obliging more forest owners to maintain a forest management plan or generally stipulating that the forest owner must prepare a plan, no matter the exact plot size (as this is the case in several EU states). Regulating this at the federal or cantonal level by introducing an obligation to have a forest management plan would lead forest owners to then either conduct forest management or consider a transfer of ownership⁶.

The third strategy consists of the redefinition of property rights, which thus affect use rights (3). The design of inheritance taxes is very diverse across Swiss cantons (Credit Suisse, 2019), and the federal body is not allowed to raise an inheritance tax. While a policy instrument at the national level would be more efficient, it could only be realised by reforming the Swiss Civil Code. In terms of policy instruments, taxes on the inheritance of forested land could be levied; thus, possible future owners of forest plots would either decide to inherit forest or be taxed. Since the willingness to pay taxes also implies an interest in the inherited land, it is most likely that the owners will then also take care of the accruing management (costs). Otherwise, the owner could choose to not pay taxes and subsequently refrain from inheriting the forest. The forest plot could then be transferred to the respective new owner, e.g. the municipality.

jective or if forest owners deciding to donate their plot would have done so independent of a financial incentive.

⁶One must obviously distinguish between the obligation to prepare a forest management plan and a possible consequent obligation to also execute the respective tasks. The latter could then also consist of checking whether the forest owner actually is doing so, which would certainly be very cumbersome.

The fourth possible strategy relates to the modification of the distribution of property rights (4) and thereby directly changing the nature of the ownership. This is not explained further, as it involves expropriation, which is highly unlikely in Switzerland and does not involve an interplay with public policies.

5 Discussing the applicability of a donation programme

Of the three outlined strategies above, strategy 1 one is the weakest, as it does not incur a change or transfer of property rights – and would not alter the current incoherence – and hence is not discussed further. This leaves us with strategies 2 and 3. Strategy 3 would require a reform of the Swiss Civil Code, which has remained stable since 1912 (Gerber et al., 2017), and it furthermore involves a shift in competencies from the cantonal to the national level. Within the Swiss direct democratic context, such a change in policy is highly unlikely.

In contrast, we consider strategy 2 to be the most realistic because it, firstly, involves a mix of public policy instruments, without a “hard” ownership change, as it only affects the use rights. To begin with, studies have found that Swiss owners respond particularly well to informational instruments that involve contact with the state forester (Wild-Eck and Zimmermann, 2005). In strategy 2, the state foresters have a central role, e.g. informing owners that a donation option exists in the first place. Moreover, informational campaigns and other low-intervention policy instruments also exhibit the advantage of not requiring changes in the law and are therefore easy to implement. However, while “soft” policy instruments are principally accepted because they do not entail any restrictions, they are for the same reason less effective (Ingold et al., 2016). Even though the Swiss forest law is based upon restrictive regulatory measures, the majority of forest owners do not consider these laws to be too rigid and do not feel restricted by them (Wild-Eck and Zimmermann, 2005). At the same time, additional efforts would only be demanded from the owners of non-managed forests; the owners conducting management need not change anything. By including more interventionist regulations, the effectiveness of the policy mix could be increased. Moreover, only current forest owners not managing their forest would need adapt their behaviour, and addressing them with such an instrument might make them reflect on the future of their forest, while simultaneously presenting them the benefits of sustainable forest management with advantages for nature conservation is likely to motivate some of them to act. Second, and this is especially important for forest owners valuing recreational and other forest services, the forest owners could mostly continue to use the forest as a recreational space as they did before – given the Swiss regulation allowing everyone access to the forest. Third, in Switzerland, the great

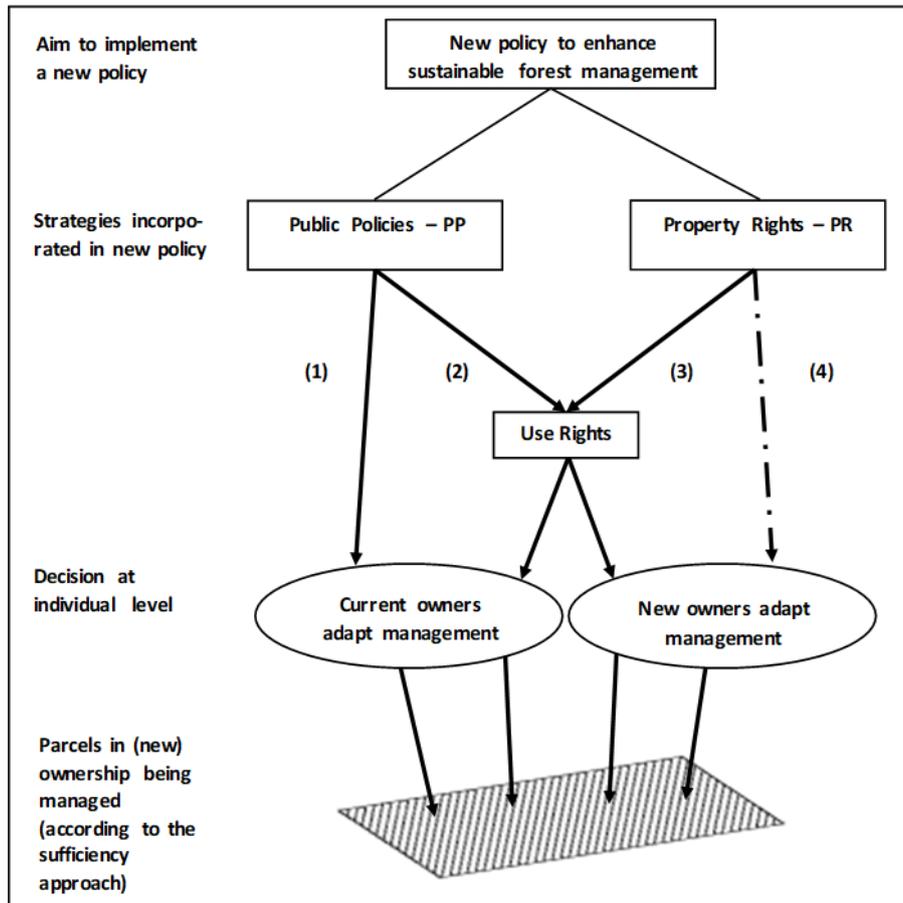


Figure 2. Policy implementation of the Swiss forest gift programme. Source: own representation based on the IRR framework and adapted from Gerber (2012). The numbers refer to the following strategies: (1) PP with no impact on PR, (2) PP impacting PR, (3) redefinition of PR and (4) modification of the distribution of PR. The dashed line of (4) implies that we will not focus on this strategy, but it is nonetheless a part of the framework.

majority of private individual forest owners are no longer dependent on the income from their forest, which goes in line with the general trend of urbanisation of forest owners, who are rarely employed within the agricultural or forestry sector (Landolt et al., 2015). Especially private forest owners having inherited the plot and living in urban areas are often not interested in economic profits but value environmental issues instead (Zimmermann et al., 2012). By offering them the option to donate their forest – which they possibly do not manage or manage at a loss – that is subsequently going to be managed according to the sufficiency approach, they can decide to proactively contribute to sustainability. Throughout Switzerland, similar donations (or inheritances) are an established practice nowadays; many people transfer their forest to a municipality (or civil community) they feel personally connected to (see, for example, Gemeinde Biel-Benken, 2019). In sum, the coherence could be increased by aligning the rights allocated within ownership with the objectives stemming from public policy through a transfer of ownership and steering through different policy instruments

incorporated in the proposed Swiss forest gift programme. Moreover, the henceforth applied sufficiency management approach is adequate in meeting the different forest's functions (environmental, social and economic) and thus able to ensure coherence. This should then lead to more likeliness of achieving the public policy goals that are captured in the forest law and subsequently lead to improved sustainable forest management.

This paper took the sufficiency model as a basis for a highly sustainable forest management approach – a more sustainable concept than the management practices codified in Swiss forest law and appropriate for improving forests sustainability regarding coherence. However, if the sufficiency approach were to be presented to possible donors and recipients, the question is how the former would assess it and how the latter would integrate the newly gained plots into their current management practices. As in Canada, where the EGP consists of different donation options, a Swiss forest donation programme could permit the people involved to determine the exact conditions themselves – and thus the involved

actors can decide on how exactly they want to go beyond the legal management methods. While some donors may donate their forest without conditions, solely wanting the recipient to generally follow the sufficiency model, others might insist on management practices serving specific environmental goals, such as biodiversity. Such (innovative) parts could also be made available to both sides – that is, donors and recipients – prior to a donation, e.g. via a website. Leaving both parties the option to include certain requests also fits best with regard to the various geographical settings Swiss forests are in, as the different forest types also have disparate demands, especially regarding biodiversity. Finally, further research could deal with private small-scale forest owners and their general acceptance and/or conceivability of donating their forest. Our study can serve as a starting point for the ever more pressing topic of how to design public and private laws to ensure sustainable forest management – not only for Switzerland but also for other western European countries.

6 Conclusion

This paper examines the question as to how an adaptation of the Canadian EGP could be applied to the Swiss case to ensure sustainable forest management. Ever more forest owners have inherited their forest plots and have no connection to forest(ry), often living in (more) urban areas. They often value nature conservation issues more than productive forest services. While some agree on management contracts with forest management companies, others do not manage their forest at all, and others make use of dereliction or transfer their property rights to the municipality or civil community. Given this wide range of agreements, we argue that a programme adapting use rights in combination with informational policy instruments would lead to clearer responsibilities and a more sustainable forest management than is currently the case in Swiss forest policy and management. In this context, we outline the idea for a policy mix (strategy 2 in Fig. 2) – based on the Canadian EGP – that would lead to a transfer of use rights, where the new user would conduct forest management according to the sufficiency approach, whose nature conservation efforts go beyond the legal requirements. To guide this conceptual application by transferring an instrument to the Swiss context, we have utilised an adapted version of the IRR framework, as it is able to connect public policies and property rights.

While this paper focuses on the Swiss case and is embedded in the Swiss legal regime, and thus needs to be understood within the Swiss policy landscape, the general insights gained from this paper can be applied to forest management challenges across Europe. Particularly small-scale private forestry in western Europe is facing increased pressure regarding sustainable management (Weiss et al., 2007). Not only in Switzerland but also in several other European countries, more and more owners lose interest in their forests

and therefore cease to manage them, leading to an increase in ownerless or abandoned forest plots (for the situation in Germany, see Knapp, 2018).

In sum, the paper provides a major contribution by proposing a (hypothetical) policy mix for Swiss forest policy, which could thus help address a real-world problem. However, the extent to which such a policy would have any impact would ultimately depend on the political will of the relevant stakeholders. Moreover, it is certain that the exact policy design requires further debate, including the specificities of donating and receiving property rights and their respective criteria.

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Author contributions. LC conducted the main part of the analysis and wrote the bulk of the paper. TO supported to the entire process, being involved in the analysis and the writing process. EL supervised the entire process, giving guidance during the analysis and writing process as well as contributing specific sections to the article.

Competing interests. The authors declare that they have no conflict of interest.

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