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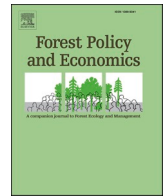
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# Guarding the For(es)t: Sustainable economy conflicts and stakeholder preference of policy instruments

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## ABSTRACT

As societies seek to transition towards a sustainable economy, new conflicts may arise from additional competing demands placed on limited resources and space. Using a perceptual approach, we show that such structural-functional conflicts are primarily perceived when other sectors' demands encroach on traditional use of forest resources or space. Moreover, using experts' assessment of stakeholder preferences, we also demonstrate that traditional forest actors have a pronounced preference for soft instruments. At the interface between sustainable sectors, however, regulatory instruments remain well accepted. These findings indicate that forest stakeholders seek to ward off other sectors' demands on the forest. The results are central in understanding where new conflicts are expected and how forest stakeholders seek to protect the forest from new demands, especially in the context of an ever-increasing competition over land use. This finding emphasises the importance of understanding competing cross-sectoral demands on a resource, even when all economic activity is in pursuit of the same overall goal, namely sustainability. Demonstrating the effect of encroaching sectors on policy instrument preference, we link the policy integration literature, which considers cross-sectoral politics, to the policy instrument literature.

## 1. Introduction

When pursuing a sustainable economy, that is, an economy based on renewable biological resources rather than fossil energy, the pressure on forests often increases (Kleinschmit et al., 2014; Wolfslehner et al., 2016). Such pressure can result from competing demands on a forest resource or from competing demands on the forest surface itself (Sandström et al., 2011). Forests provide several renewable natural resources, such as wood, and possess a significant potential to contribute to a transition towards fossil-free energy systems. Studies highlight both synergies as well as trade-offs when multiple demands relating to economic, social and environmental needs increase on the resources the forest provides and the space it occupies (Biber et al., 2015). The preservation of forest quality and quantity is not solely pursued because trees regulate temperature, improve air and water quality and sequester carbon, but also because forests are vital in terms of human well-being, having positive effects on physical and mental health (Miller et al., 2015). Moreover, diverging societal needs can restrict the spread of

forested land and/or create ever more conflicting demands on it. Departing from this observation that a transition towards a sustainable economy can entail intensified land and resource use, we formulate the following research question: "Where are sustainable economy conflicts within the forest perceived and which policy instruments do the stakeholders involved deem attractive to address these conflicts?" These conflicts are set in the context of the existing legal framework and policy instruments, which we outline in the case description.

We contribute to the policy integration literature by identifying conflicts that arise in the pursuit of an overarching goal, namely promoting a sustainable economy. We demonstrate that policy integration is not necessarily the be-all and end-all to achieving cross-sectoral policy goals (Sotirov and Arts, 2018). Rather it can be perceived as easing access of encroaching economic interests on weaker sectors, which may – for reasons beyond the economy – be worthy of protection, specifically, the forest and wood sectors. Combining the policy integration literature with observations from economics where regulatory instruments grant incumbent actors a competitive advantage over

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outsiders, we furthermore contribute to the policy instruments literature, demonstrating that instrument preference for forest stakeholders is a function of the threat perceived from other sectors. Last, by taking a perceptual approach to structural-functional conflicts within a neo-institutionalist context, we perform an integrated analysis, as described by Sandström et al. (2013).

Empirically, we focus on Switzerland, where we find ongoing processes of urban (and peri-urban) sprawl that create pressure on agricultural land (Mann, 2009). In this sense, Switzerland can be seen as an exemplary case when it comes to the demands forests should fulfil, while having many stakeholders involved in the policy formulation and dealing with a resource that is open to the public. Its main contribution is therefore to serve as a potential 'precursory case', which can be extended to other or future contexts: in many other countries, land use conflicts and sustainable economy goal conflicts are also likely to emerge in the near future (Wolfslehner et al., 2020). Thereby, addressing these issues in a densely populated country like Switzerland allows us to observe potential prospective conflicts for other countries. Moreover, it can be beneficial to detect certain structures that can serve as an example, which can be applied to other cases that also have decentralised decision-making systems and aim at transitioning towards a more sustainable economy.

The paper proceeds as follows: after the identification of conflicts by interviewed experts, we present their evaluation of stakeholders' preferences towards policy instruments on how to best solve these conflicts. Consequently, we interpret the findings in the context of a broader discussion as to how much regulation is necessary and meaningful in the forest (Schulz and Lieberherr, 2020; Saurer, 2020).

## 2. Theory and expectations

### 2.1. Concepts

This paper addresses conflicts that arise between different stakeholder groups in the pursuit of activities related to a sustainable economy. Our understanding of a sustainable economy affecting the forest subsumes all economic activity that is promoted by policy pursuing environmental goals. Such environmental goals, while each in itself of value, may conflict (Geijer et al., 2011). For the case of forests, sustainable economy activities are most commonly termed 'bioeconomy' and generally understood to support sustainable development while prioritising economic goals (Kleinschmit et al., 2014; Pülzl et al., 2014). We take a holistic approach to sustainable economy, including bio-, green and circular economy concepts in a broad sense, since the sectors we observe encroaching on the forest not only include resource use in the understanding of bioeconomy but also industries related to recycling and recreation (D'Amato et al., 2017; for an overview of sustainable economy activities leading to temporary or permanent forest clearances, see Troxler and Zabel, 2021). Furthermore, the conflicts are set in the context of a highly regulated environment, thereby excluding conflicts resulting from illegal activities, political or social instability (for an example of such a broad definition of conflict, see Mola-Yudego and Gritten, 2010). Conflicts stemming from a growing sustainable economy can broadly be categorised into two groups: the first following from the use of wood as a substitute for other materials as well as potentially competing demands on wood as a building material or as an energy source, and the second relating to a competition over space. Regarding competition for space, agriculture and urban expansion are well-known drivers of deforestation (Defries et al., 2010). Beyond that, climate change mitigation measures are increasingly being implemented in forests (Sandström et al., 2017). Clearances of forests for the construction of renewable energy infrastructures, such as wind turbines or ecological upgrading measures for the compensation of land use for infrastructure or settlement development, put additional pressure on forests (Eggenberger et al., 2021; Troxler and Zabel, 2021). Consequently, sustainable economy goals from different sectors regularly lead

to competition for forest space or over forest resources. Our focus on sustainable economy conflicts restricts itself to conflicts over land use and resource use, thereby explicitly excluding conflicts involving biodiversity. One reason is that we make the implicit assumption that all economic activity in the forest, also all activities that are assigned to sectors of the sustainable economy, affects biodiversity in some way (Niemi et al., 2005; Giddings et al., 2002).<sup>1</sup> The second reason is that we focus on economic activity which is pursued by identifiable private sector actors. In the Swiss case, the promotion of biodiversity in forests, while using a wide array of policy instruments including voluntary and economic instruments, is pursued almost exclusively by the government (Kaeser et al., 2013).<sup>2</sup>

How such conflicts in forests are dealt with is a question of choosing the appropriate policy instruments which generally involves taking stakeholders' preferences into consideration (Sandström et al., 2011). Indeed, when dealing with conflicts between ecosystem services as well as within competition for the scarce resource land, the choice of policy instruments can play a pivotal role: for example, subsidies for economically strong sectors of a sustainable economy (such as renewable energy or agricultural uses) can exacerbate the issue for economically weaker fields such as the forest sector. Current forest policies and their instruments for balancing these goal conflicts are being challenged and adaptations are called for (Sandström et al., 2017).

### 2.2. Policy integration and instruments

Although the main interest of this paper both in content and in geographical terms lies on forests, a net must be cast wide enough to include other sustainable sectors which may raise claims on forest resources or land. Environmental policy research has come to the understanding that today's environmental challenges span across multiple sectors, levels of government and territories (Varone et al., 2013). Current laws and public administrations are usually organised according to sectors, increasing the competition for scarce land due to a lack of policy integration and coherence (Wolfslehner et al., 2020). Typically, separate administrations for the forest, agriculture, traffic, settlements, economic development and environmental policies and nature protection exist (Bouckaert et al., 2010). The goals of these sectoral policies can be highly conflictive and incoherent (Creutzburg et al., 2020). To address such challenges, policy scholars have called for coordination and – more specifically – policy integration (Gerber et al., 2009; Sotirov and Storch, 2018). Environmental policy integration focuses on incorporating different objectives to 'balance' social, economic and environmental goals (Lafferty and Hovden, 2003; Cabbage et al., 2007). In this paper, we pay special attention to where goal conflicts are expected to arise, as forest policy has often, sometimes in the pursuit of policy integration, had its goals subordinated to those of other, more salient, sectoral goals (Sotirov and Arts, 2018). In the development towards a more sustainable economy, we observe more demands being put on forest resources and surfaces, where inevitably some demands will be prioritised over others (Sotirov et al., 2015). We expect goal conflicts resulting from such competing demands to accrue at the interface between different sectors, especially in the context of a cohesive and highly regulated forest sector, as is the case in many countries. Consequently, we formulate our first expectation as follows: "The current transition towards a sustainable economy creates conflicts as perceived by forest stakeholders at the interface to other sectors."

Having identified the conflicts affecting the forest, the feasible

<sup>1</sup> However, due to the restrictive nature of the Swiss Forest Act (e.g., the prohibition of clear cutting), the impact of such activities on biodiversity is not generalisable to other cases.

<sup>2</sup> One potential exception from this is the promotion of biodiversity (amongst other ecological values) through ecological upgrading in forests which we include in our analysis.

solutions, in the form of policy instruments, are evaluated. Policy instruments are the tools by which the government aims to change an actor's behaviour in order to achieve its policy objectives (Howlett, 1991). The 'traditional' environmental policy instruments focused on command-and-control regulations (Keohane et al., 1998). In the late 1980s and early 1990s, research on so-called 'new environmental policy instruments' increased rapidly (Jordan et al., 2003b). In response to criticisms that regulatory instruments were too rigid and did not foster innovation, softer instruments became increasingly popular amongst policymakers to solve ever more intractable problems (Jordan et al., 2005). This general shift in instruments was part of a broader policy development within the neoliberal trend, arguing for less top-down state regulation (Böcher, 2012). Yet overall, as Jordan et al. (2003a) note, the new instruments did not replace classical regulatory instruments in any way, nor did every country apply them equally. Even in the Netherlands and Great Britain, where tradable permits (as one soft instrument) are used more often than in other early industrialised states, regulatory instruments remain significant.

We expect regulatory instruments to remain of high preference to stakeholders who are not restricted by them or gain control through them, such as state agencies and environmental NGOs. Amongst forest owners as well as forest and wood industry actors, the literature implies stronger preferences for softer policy instruments, such as voluntary commitments, whereby the appeal of various soft instruments may vary strongly by owner type (Danley, 2019). As noted above, the position of the forest in the context of a transformation towards a more sustainable economy is often relatively weak, compared to competing sectors with stronger lobbies or more prominent issues (Sotirov and Arts, 2018). As such, policy integration aiming at broader environmental policy goals – formulated in national policies, such as in energy or biodiversity strategies – often has the adverse effect of disintegrating forest policy, resulting in new trade-offs and conflicts (Winkel and Sotirov, 2016).

In other economic contexts, scholars have found that actors support high levels of regulation if they can thus protect 'their' interests in the sector by keeping out other, i.e. new actors. Bailey and Thomas (2017, 247) conclude – with regard to company foundations – that incumbents "might actively seek increasing regulation to deter the entry of new firms and thereby limit competition". In economics, there is extensive evidence that actors promote high environmental protection and favour regulatory instruments to impede competitors from entering their domain (Tullock, 1967; Stigler, 1971; Peltzman, 1976). Thus, firms can "acquire strategic benefits from environmental regulations" (Thomas and Robert, 1995, 288). Moreover, studies have shown that stakeholders and citizens support protectionist measures for sectors they consider 'weak', to protect them from competition from abroad (Naoi and Kume, 2015; Lü et al., 2012). Given the weak position of the forest compared to other (economic) sectors, especially in the context of (increasing) conflicts between them, traditional policy instruments protecting the forest should therefore remain important to all forest stakeholders, as they can thus ward off external interests. Generally, regulatory policy instruments limit all activities in forests. Activities pertaining to forest management are regulated and specified while activities pursued by other sectors often involve clearing forest area or modifying its use, and are therefore typically prohibited. As such, regulatory instruments can have the effect of protecting the forests from outside demands.

Combining the afore presented arguments, we derive the following second expectation: "While forest owners and wood industry actors find policy instruments involving state regulation unattractive, regulatory instruments remain attractive to forest stakeholders when conflicts arise at the interface between the forest and other sectors."

From a theoretical perspective, our study of sustainable economy conflicts in the forest covers all three approaches (structural-functional, neoinstitutionalist and perceptual-ideational) as defined by Eckerberg and Sandström (2013) in different instances of our analysis. Therefore, it represents an integrated analysis, combining the different approaches (Sandström et al., 2013). The substance of the conflict is one of

structural-functional nature, as it portrays the conflict between competing economic interests seeking to use the same resources and/or space. The method of identification implies a perceptual approach, asking forest experts where and/or if they observe conflicts. The conflicts are therefore seen and interpreted through the perspective of these experts. Last, the formulation of our expectations regarding both the location of conflicts and the instruments preferred by actors in these contexts understands conflict in a neoinstitutionalist setting. Laws extend rights and impose restrictions on some groups while excluding others. The preferences for policy instruments, such as the use of regulatory instruments for conflicts involving sectors outside the forest, are set within the context of these existing institutions. In other words: groups given a comparative advantage through regulation prefer policy instruments that maintain it.

### 3. Methods

#### 3.1. Case selection and description

The paper applies the in-depth study of an exemplary case with the purpose of extending the insights to other similar cases (Gerring, 2004). Switzerland serves this purpose well since it exhibits competition over land use at a high level as can be expected for other cases in the future. The concept of 'multifunctionality' is the defining characteristic of Swiss forest policy, implying that several goals are pursued simultaneously and in perpetuity. These are made up of environmental (e.g. nature protection), social (e.g. recreational purposes), economic (e.g. timber production) and protective functions (forests that, for instance, prevent rock slides) (Steinmann et al., 2017). As such, forests in Switzerland are by definition expected to fulfil multiple demands, making them especially susceptible to structural-functional conflicts arising from competing demands. These include the role of forests for recreational purposes, especially in the densely populated areas in the midlands, and as a result, competing demands amongst users (e.g. hikers and bikers) and concerns regarding ownership rights and public interest (Wilkes-Allemann et al., 2020).

A major issue reinforcing conflicting demands is that undeveloped land is getting ever scarcer in Switzerland. This general shortage of land in combination with stricter protection of agricultural land – since the revision of the Spatial Planning Act in 2013 – leads to increased pressure on forests. Contrary to the increase in forest cover in the Alpine regions, forests in the Swiss midlands are experiencing stagnation and qualitative as well as quantitative decline (Brändli et al., 2020). Another feature of the Swiss forest is that, on the one hand, it is highly regulated, having a rigorous forest law (presented in more detail below). On the other hand, article 699 of the Swiss Civil Code grants all citizens the right to access woods (and pastures) (ZGB Art. 699). Therefore, private forest owners cannot prohibit the public from entering their forested land, hence having limited (property) rights (Leuch, 2007). We take into consideration that Switzerland has highly corporatist decision-making structures within a very decentralised system, especially regarding policy implementation (Vatter, 2016). Subnational state actors possess substantive leeway in terms of executing strategic and management-related decisions (Walker and Abt, 2020; Sciarini et al., 2015). Our analysis takes these features into account by including various stakeholder preferences regarding policy instruments.

#### 3.2. Legal context of the case

The Swiss Federal Act on Forest (ForA; SR 921.0) takes centre stage in all issues regarding forests. The Swiss forest and all activities pertaining to the forest and timber industry are highly regulated by instruments defined in the ForA and its respective ordinance (ForO). In the current regulatory framework, the prohibition of forest clearances (Art. 5 ForA) is prescribed, while if clearances are inevitable, they must be replaced in the same region by the same quality and quantity of forest

(Art. 7, Abs. 1, ForA) (for a detailed overview on this regulation and exceptions, see [Troxler and Zabel, 2021](#)). These provisions are in line with the proclaimed goal of the law, namely the preservation of forest land and all its functionalities (Art. 1 Abs. 1 Bst. a, Art. 1 Abs. 1 Bst. c & Art. 3 ForA), and the requirement that all cultivation of the forest is pursued in a sustainable, nature-based manner (Art. 20 Abs. 1 ForA, Art. 3 Abs. 2 Bst. E RPG), including the prohibition of clear-cutting and excluding other management practices (Art. 22 Abs. 1 ForA). These requirements place the forest industry in a special context when comparing it with neighbouring economies. In combination with geographically challenging conditions for harvesting and several factors reducing international competitiveness in recent years, the Swiss forestry industry has failed to prove itself economically sustainable by means of harvesting and selling wood ([Bürigi et al., 2016](#)). This development, in turn, conflicts with the proclaimed aim of the Swiss forest law to promote and maintain the forest sector (Art. 1 Abs. 1 Bst. d ForA). Conflicts hence arise from within forest policy ([Steinmann and Zimmermann, 2016](#)) or from neighbouring policy areas. One example is the Swiss Energy Strategy 2050, which has increased the demand for space to build renewable energy plants, leading to forest clearances ([Zabel et al., 2018](#)).

### 3.3. Data collection

To complement the potential conflicts identified in the literature, we conducted eleven in-depth qualitative interviews with experts from the Swiss forest sector or other related sectors (such as the agricultural sector). The interviews were conducted during the late autumn of 2018, placing them in a timeframe of an ongoing discussion on transitioning towards a sustainable economy, but with no specific forest-related event that could be described as a critical juncture in the debate. The interviews aimed to identify existing and potentially increasing conflicts of forest resources or forests spaces; first asking experts to name conflicts they observed or anticipated as a result of a growing sustainable economy and then asking whether they observed or anticipated conflicts on a list compiled from the literature. This two-step perceptual approach ensures that both insights specific to the expert as well as cases described in the literature are included. Next, we asked experts to name the most important stakeholders involved in the conflicts. Based on the conflicts and stakeholders identified by the experts, the attractiveness of policy instruments for each stakeholder was assessed, allowing aggregation of instrument preferences. By systematically sorting these assessments we answer the expectations put forth earlier in this paper.

In order to find appropriate interview partners, a comprehensive list was set up and structured into eight groups, building upon the work of [Zabel and Lieberherr \(2016\)](#): political institutions, forest industry, timber industry, agriculture, environmental organisations, research and education, recreation and other associations. We ordered the different experts within the groups according to their importance, as they were identified using network analysis by [Zabel and Lieberherr \(2016\)](#) in the revision of the Swiss forest law, excluding ministries, as these were deemed too far removed from forest practitioners. Subsequently, all experts listed as number one were approached (since we considered 'political institutions' and 'timber industry' as particularly relevant, the first two representatives of these respective groups were addressed).<sup>3</sup>

The structure for the interviews was set up according to [Witzel and Reiter's \(2012\)](#) problem-centred approach, a semi-structured interview technique that aims at connecting a theory-led basis with an open-minded interview approach. The interviews built upon five thematic blocks: goal conflicts, actors, policy instruments, case study regions and conclusion. Each interviewee filled out six different assessments of policy instruments, identifying the most important stakeholders

involved in a potential conflict and an assessment of the various stakeholders' valuation (on a five-point scale from 'not at all attractive' to 'very attractive') of different instruments. Cumulatively, interviewees identified 17 different stakeholders (see Table A.2 in the Appendix) and filled out 34 assessment questionnaires<sup>4</sup> regarding the attractiveness of instruments.

In conceptualising our standardised questionnaires, we draw on [Böcher's \(2012\)](#) categorisation of policy instruments: regulatory, economic, cooperative and informational. We follow the widespread approach which involves categorising environmental policy instruments from high to low level of government intervention ([Sager, 2009](#); for an application to the Swiss case, see [Ingold et al., 2016](#)).

## 4. Results

### 4.1. Conflicts from competing demands on resources and space

Based on the literature of competing demands on the forest (listed below in the description of each conflict) and the in-depth interviews with experts from different forest-related backgrounds, we identify perceived and theoretical goal conflicts in the Swiss forest. We illustrate the conflicts over competing demands by juxtaposing the different resource and land uses in [Table 1](#). In line with our previous definition of sustainable economy conflicts affecting forests, we limit our observations to demands stemming from an economic sector, such as tourism, forest industry or agriculture, as we are interested in conflicts that will arise from a transition towards a sustainable economy. Demands purely affecting ecological values with no economic sector attached to them, such as biodiversity, are therefore not listed.

#### 4.1.1. Perceived conflicts, theoretical conflicts: A structure<sup>5</sup>

We differentiate between two different types of competing demands. First, perceived (P) conflicts are those which at least one of our interview partners identified as a serious conflict within the Swiss forest. Second, theoretical (T) conflicts are competing demands on resources that are identified in the literature ([Pohjannies et al., 2017](#); [Vuletić et al., 2010](#); [Edwards and Kleinschmit, 2013](#); [Sotirov and Arts, 2018](#)) and may exist in diverse contexts (e.g. different countries). Other theoretical conflicts are simply deduced by logic when competing demands on space cannot be met simultaneously. One such example would be the use of a forest plot for a landfill, as clearing a plot for a landfill consequently prevents any activities that rely on growing trees, such as wood fuel or carbon sequestration.

#### 4.1.2. Identification of conflicts within forest and wood sectors

The next paragraphs walk through [Table 1](#) which summarises the competing demands and whether these result in conflict. The top left corner of [Table 1](#) juxtaposes demands within the forest management and wood industry. Theoretically, wood for material and energetic use, as well as forest space for carbon sequestration all compete over the same resource or space ([Geijer et al., 2011](#); [Söderberg and Eckerberg, 2013](#)). Although the harvesting of wood is highly regulated, forbidding clear-cutting (Art. 22 Abs. 1 ForA) and granting much authority over privately owned forests to the state foresters (Art. 21 ForA), the federal laws explicitly promote the mobilisation of timber (Art. 34a ForA) and

<sup>4</sup> Important actors were identified by multiple interviewees, so that several assessments were made for the same actor (number of assessments made per actor are listed in the second column of Table A.1)

<sup>5</sup> We acknowledge that several competing uses may result in synergies rather than conflicts. Whether and when synergies are feasible is, however, a more complex question to answer. For example, energetic and material wood use can in some contexts be seen as a synergy while in other situations these two uses may compete with one another. We therefore do not consider potential synergies in this analysis.

<sup>3</sup> The entire list of the interviewed organisations and experts is listed in the Table A.1 in the Appendix.

**Table 1**  
Identification of conflicts (own illustration based on information from experts).

	Wood Fuel	Material Wood Use	Carbon Sequestration	Recreation/Public Interest	Ecological Upgrading/ Agricultural Land	(Renew.) Energy Infrastructure
Material Wood Use	T					
Carbon Sequestration	T	T				
Recreation/Public Interest	P	P	/			
Ecological Upgrading/Agricultural Land	T	T	/	T		
(Renew.) Energy Infrastructure	T	T	/	/	P	
Landfills and Quarries	T	T	T	P	T	T

T = Theoretical conflict derived from literature or regulation.

P = Perceived conflict as observed by stakeholders.

/ = No conflict.

The order of resource or spatial uses presented in this table does not imply any priority or preference.

wood fuel (Art. 5 Abs. 3 bis ForA and Art. 12 Abs. 1 EnG; SR 730.0) as well as the economic sustainability of their attached industries (Art. 1 Abs. 1 Bst. D ForA). This regulatory promotion of wood is complemented with a range of economic, cooperative and informational instruments, such as eco-labels or institutionalised councils. Although the promotion of the same resource for different sustainable economy objectives could lead to conflict, experts do not identify or anticipate any conflict between material and energetic use of wood, due to the low prices offered for timber, the decline of low-quality wood processing (e.g. for paper) and the political promotion of wood fuel as a renewable energy source (Thees et al., 2013; Bürgi et al., 2016).

Currently, financial compensation for carbon sequestration in forests does not yet have a legislative foundation. Given that the Swiss government includes the carbon sequestered by Swiss forests in its commitments to the Kyoto Protocol (BAFU et al., 2017), demands have emerged to compensate forest owners for the service they provide. This was considered in the recently revised national CO<sub>2</sub> Act,<sup>6</sup> which enables forest owners to be compensated for the carbon sequestration of their forests, although the details of a certification scheme are not yet determined. So far, only the storage of carbon in wood products could be compensated monetarily (Art. 14 CO<sub>2</sub> Act). Within the field of voluntary markets, different instruments are in use in the Swiss case. One example is a project of the Oberallmeind Corporation, where a specific forest management regime is followed to capture more carbon emissions for offsetting (OAK, 2017).<sup>7</sup> The carbon certificates can be acquired voluntarily (OAK, 2017). Increased popularity in certification schemes (on a voluntarily and/or mandatory basis) will increase the demand to dedicate more forested land to the goal of carbon sequestration. This, in turn, implies a potential conflict with other forest uses, such as wood production (Creutzburg and Lieberherr, 2021). Experts both in interviews and the literature do not evaluate the use of the forest for carbon sequestration, while harvesting wood for material or energetic use, as leading to a conflict situation (Fischlin, 2008). Thinning and rejuvenating measures enable both increased harvesting as well as binding more carbon through younger stands (Thürig and Kaufmann, 2008).<sup>8</sup> In other countries, where harvesting of wood may be more aggressive, for example via clear-cutting, the demands of carbon sequestration and wood fuel promotion are perceived as a conflict between two sustainability goals (Backéus et al., 2005).

<sup>6</sup> While the revised CO<sub>2</sub> Act was passed in parliament, it failed approval in the popular referendum in June 2021. The revision therefore needs to be reinitiated in parliament. The changes to the law affecting the forest, however, were never the source of any discussion or disagreement. It can therefore be assumed that a future version of the law will include the provision to compensate forest owners for carbon sequestration in the forest.

<sup>7</sup> The process is certified, guaranteeing, on the one hand, the competent management process and, on the other hand, ensuring that there is no double counting of captured emissions (OAK, 2017).

<sup>8</sup> At the same time, however, it needs to be noted that several studies have highlighted that especially old forests bind carbon, often exceeding the CO<sub>2</sub> absorption of young forests (amongst others, see Stephenson et al., 2014).

#### 4.1.3. Identification of conflicts with other sectors

None of the potentially competing demands within the forest and wood industry generates a conflict as perceived by experts. The only conflict identified by the interviewees that include traditional forestry activities involves recreational users. This conflict arises from the above-mentioned article 699 of the Swiss Civil Code, granting the public the right to access all forests and permits visitors to collect berries and mushrooms. This conflict has two sides to it. First, recreational use and forest management activities often occur in the same space, which disrupts forest management activities due to safety considerations (Bernasconi and Schroff, 2008). Moreover, the forest industry faces heightened scrutiny by forest visitors who disapprove of the sight of tree felling. Second, the private sector recreation and tourist industry reap profits from activities conducted on – often private – forested land, while forest owners are responsible for the upkeep of forest infrastructures, such as roads. The conflicts observed between traditional forest activities and recreation, therefore, include many different stakeholders (Wilkes-Allemann et al., 2017). Several economic instruments have been implemented to resolve these conflicts: depending on the canton, state subsidies or voluntary financial contributions are complemented by local and regional cooperation between forest owners and recreational clubs as well as informational instruments provided by working groups, including various forest stakeholders (Arbeitsgemeinschaft für den Wald, 2019; Rey, 2014).

The three last competing uses, ecological upgrading/agricultural land, building renewable energy infrastructures and operating a landfill or quarry in the forest are mostly characterised as theoretical or perceived conflicts since their realisation precludes any other use on the same forest area. These conflicts arise either from the impossibility to pursue multiple activities in the same space or from recent changes in the laws as described below.

The absolute requirement to preserve all forested areas (Art. 1 Abs. 1 Bst. a ForA) and the necessity to replace all clearances with quantitatively and qualitatively equal forest (Art. 7 Abs. 1 ForA) put much pressure from settlement growth on agricultural spaces. This led to a softening of the requirement of a one-to-one replacement of cleared forested areas (2012 revision of Art. 7 of the national forest law), whereby exemptions from this rule can be made in efforts to conserve agricultural land or to preserve scenically or ecologically valuable spaces (Art. 7 Abs. 2 ForA). This change came nearly simultaneously with a change in the spatial planning law, which added the protection of agricultural land to its fundamental planning principles (Art. 3 Abs. 2 Bst. a RPG). As a result, measures for ecological upgrading can be pursued in the forest in lieu of replacement of forested space.

Building renewable energy infrastructure in the forest is considered – by experts from public administration, environmental and agricultural interest groups – to conflict with the demands on agricultural land in an indirect, yet acute manner. New infrastructures require forest clearances, which by law need to be replaced, thereby again increasing the demands on agricultural plots (and the challenges of replacing forest as described in the paragraph above). The once very high hurdles to clear

forest areas for infrastructure projects have recently been lowered in pursuit of the national goal of promoting renewable energies (Zabel et al., 2018). The 2017 revision of the Swiss Energy Act defines the use and extension of renewable energies as an object of national interest (Art. 12 Abs. 1 EnA). This national interest receives an equal appreciation in the change to the Swiss forest law (Art. 5 Abs. 3bis ForA), where the general ban on forest clearances can be lifted for infrastructures pertaining to renewable energies.

Although it is not intuitive to consider landfills and quarries as potential sectors that represent a conflict within the sustainable economy, they often result as a by-product of a sustainable economy sector. Interviewed experts identify the public and their demands for recreational use in the forest as the most conflictual counterpart in the context of using forest space for landfills and quarries. The desire to preserve forested areas, in combination with a “Not in My Back Yard” phenomenon, often leads to protests and formal appeals, in many cases delaying or blocking the realisation of a quarry or landfill. Regularly, such landfills are placed in forests since they guarantee a certain distance to settlements. Not only the plot required for the landfill or quarry leads to (non-permanent) forest clearances, but also the transport infrastructure required to run these sites affects significant amounts of space (Troxler and Zabel, 2021). Landfills and quarries, however, are one area where cooperative instruments via industry agreements have found application. In the canton of Berne, the gravel industry set up an agreement and founded the ‘Foundation Landscape and Gravel’.<sup>9</sup> The latter then enters into an agreement with the cantonal nature conservation authorities to implement voluntary conservation services after a site has been closed, which often include reforestation and ecological upgrades.

In summary, no observable conflicts were identified *within* the forestry and wood industry. Where the wood and forestry industry intersects with the recreational industry, however, conflicts appear to be common, especially near urban areas. Last, where the energy, agriculture as well as landfill and quarry sectors encroach on forest spaces, conflicts are observed. This confirms our expectation that sustainable economy conflicts affecting forests arise at the interface of different sectors.

#### 4.2. Attractiveness of instruments by stakeholder type

Bringing the conflicts together with the policy instruments, we now turn to the expert interviewees’ assessment of the most important stakeholders’ preferences for different instruments to address conflicts from a sustainable economy affecting forests. Fig. 1 illustrates the results of these standardised questionnaires, whereby assessments from 1 (‘not at all attractive’) to 5 (‘very attractive’) were averaged across the experts’ assessment of stakeholders and conflicts, depicted by the mean and standard deviation for each instrument. Regarding the attractiveness of regulatory instruments (see top left quadrant of Fig. 1), the assessments by experts confirm our expectations in that regulators and state agencies as well as stakeholders from forest preservation organisations exhibit a strong preference for instruments with a high level of state involvement, all scoring mean values above 3. This confirms the literature in that regulatory instruments, while not exclusively responsible for governing behaviour, remain relevant (Jordan et al., 2003a). Forest owners, the forest as production actors (all wood industry stakeholders) as well as other private sector actors (for example, from the energy sector), in contrast, are estimated to rate regulatory instruments as the least attractive of all the instrument types. This confirms our expectations based on previous studies (for example, see Danley, 2019). Especially the command-and-control instruments both at the national and cantonal level are given very low attractiveness scores. The attractiveness of economic instruments varies strongly according to who may profit financially from them. According to experts, public

revenue (which is essentially taxing certain activities) is deemed very attractive by state regulators but much less attractive by parties interested in using the forest space or its resources. Cooperative instruments are rated on average very attractive, except by state regulators. These instruments allow for a lot of flexibility on the side of private sector actors but often come at the expense of the public interest (Gunningham and Sinclair, 1998).

Not surprisingly, the instruments that least involve the state and often have the least impact on stakeholders, namely informational instruments, are deemed to be attractive to everyone. They come at little cost and yet have the potential to contribute to the solution of a conflict without actually restricting anyone’s behaviour (Gunningham and Sinclair, 1999). So far, these results are very much in line with our previously defined expectations. Only one stakeholder group exhibits an unexpected pattern: according to experts, stakeholders from the recreation sector exhibit a high preference for regulatory instruments. We ascribe this finding to our specific case: the Swiss forest act extends far-reaching rights to this user group (such as unobstructed access to all forests and the right to forage berries and mushrooms). So historically, regulation has served them well. Whether recreational users in other countries are this well inclined towards regulatory instruments, remains to be determined.

#### 4.3. Attractiveness of instrument type by conflict

The first two parts of our analysis took a perceptual (where do stakeholders perceive conflicts) and a structural-functional (what interests compete over the same resource) approach. In this last part of the analysis, we take a neoinstitutionalist approach in that we assess the preferred policy instruments in the context of existing institutions (regulation) which allocate rights to some activities while imposing restrictions on other activities.

If there is a conflict between the material and energetic use of wood, then all regulatory instruments are deemed very unattractive, receiving the lowest score assessment for all three stakeholders (see Fig. 2a,b). Bans and orders at the national level are furthermore considered unattractive for broader goal conflicts between the forest and the wood industry, as well as goal conflicts impacting forest owners’ property rights and all other public demands on forests. Bans and orders at the subnational level are rejected as solutions for promoting carbon sinks and building renewable energy infrastructures while being well accepted at the national level. This is in line with an interviewee’s assessment that broader goals, such as transitioning to renewable energy and adapting to the challenges of climate change, is best dealt with at the national level.

Moving to economic instruments, the use of public expenditures in the form of subsidies are well received for using the forest as a carbon sink, the conflict between preserving both agricultural land and forests simultaneously and for building renewable energy infrastructures. The assessment of artificial markets is quite well accepted, except for the conflicts dealing with the differing goals of the forest and wood industry, the recreational use of the forest and energy infrastructures.

Cooperative instruments are ranked as very attractive for all situations, except for the conflicts between the forest management and the wood industry and between the production and recreational use of the forest (see Fig. 2b). The first result is rather surprising since these industries are inherently linked to one another. Agreements with limited state interference would appear both popular and easily forged between such close stakeholders. This confirms previous studies establishing that wood and forest management stakeholders do not interact at the level that would be mutually beneficial (Pudack, 2006). Regarding the conflict with recreational users, this is mainly a function of the absence of an identifiable and unified actor in the sector of recreation who can be held accountable, for example, in the case of a unilateral commitment. The high attractiveness of negotiated agreements and simultaneous low attractiveness of all other cooperative instruments is an interesting finding and could lend insights to the forest governance literature

<sup>9</sup> In German: “Stiftung Landschaft und Kies”.

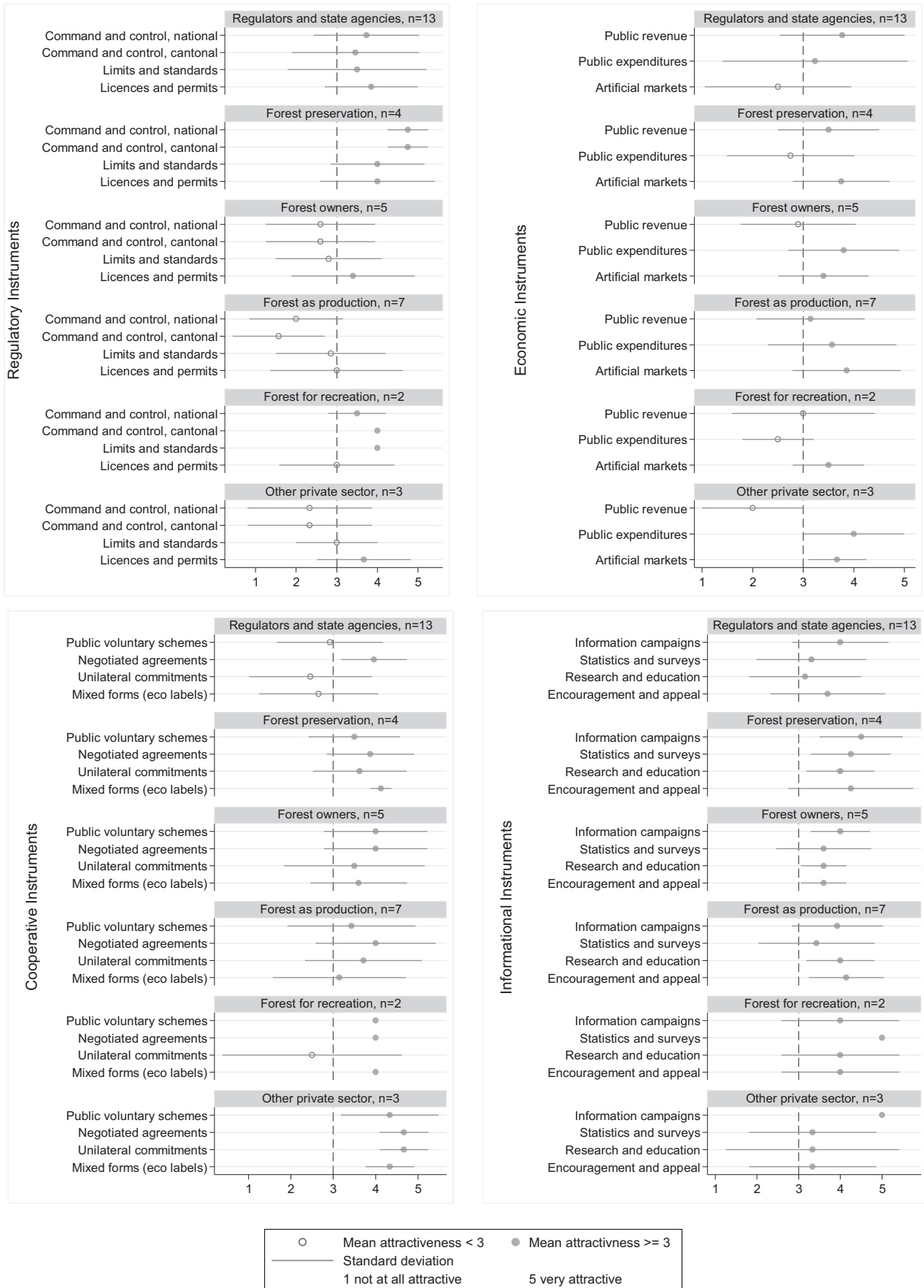
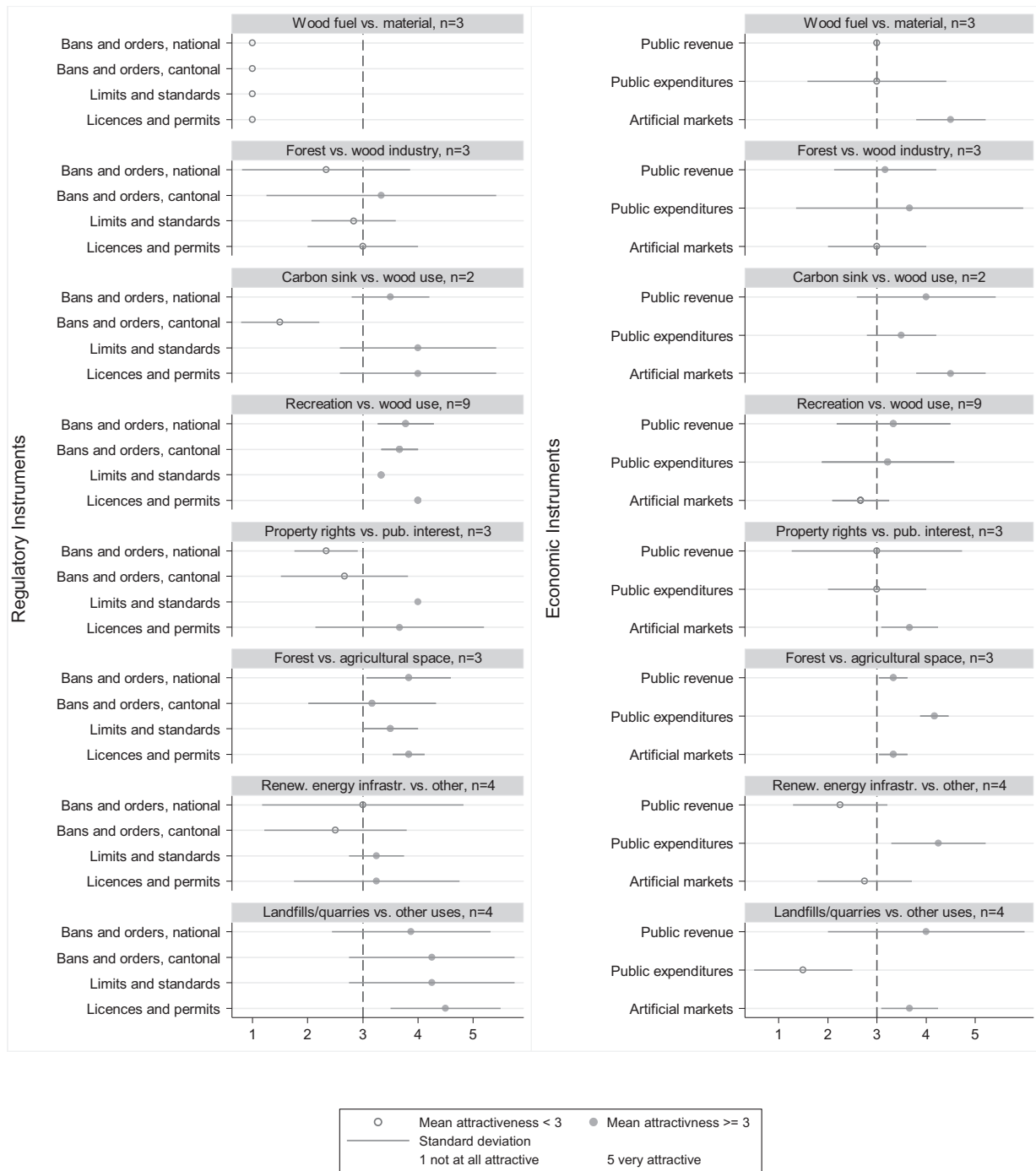


Fig. 1. Assessment of attractiveness of instruments by stakeholder type.





**Fig. 2.** a. Assessment of attractiveness of regulatory and economic instruments by conflict mean attractiveness. b. Assessment of attractiveness of cooperative and informational instruments by conflict.

dealing with recreational users which highlights the value of participatory instruments (for example, see Wilkes-Allemann et al., 2017).

The most interesting result relates to the conflicts identified by experts involving the sectors of agriculture, recreation and landfills and quarries, where regulatory instruments receive a favourable rating (Fig. 2a). We formulated the expectation that forest and wood industry actors will prefer regulatory instruments in cases where other sectors raise demands on the forest. From a neoinstitutionalist perspective, regulation is understood as a means to protect ‘insider interests’ by keeping others off their turf (Bailey and Thomas, 2017). In these three

cases, our expectation that regulatory instruments remain relevant at the interface to other sectors is therefore supported. According to experts’ assessment, forest stakeholders have a preference for strong regulatory instruments limiting activities in this protected environment as it isolates them from other sectors encroaching on their territory (Thomas and Robert, 1995). Even in the case of activities from other sectors that are in line with sustainable economy goals, the resulting trade-offs are expected on the side of the forest (Winkel and Sotirov, 2016). This finding does not apply to the same extent to the area of renewable energy infrastructures. We ascribe this to the fact that energy and forest

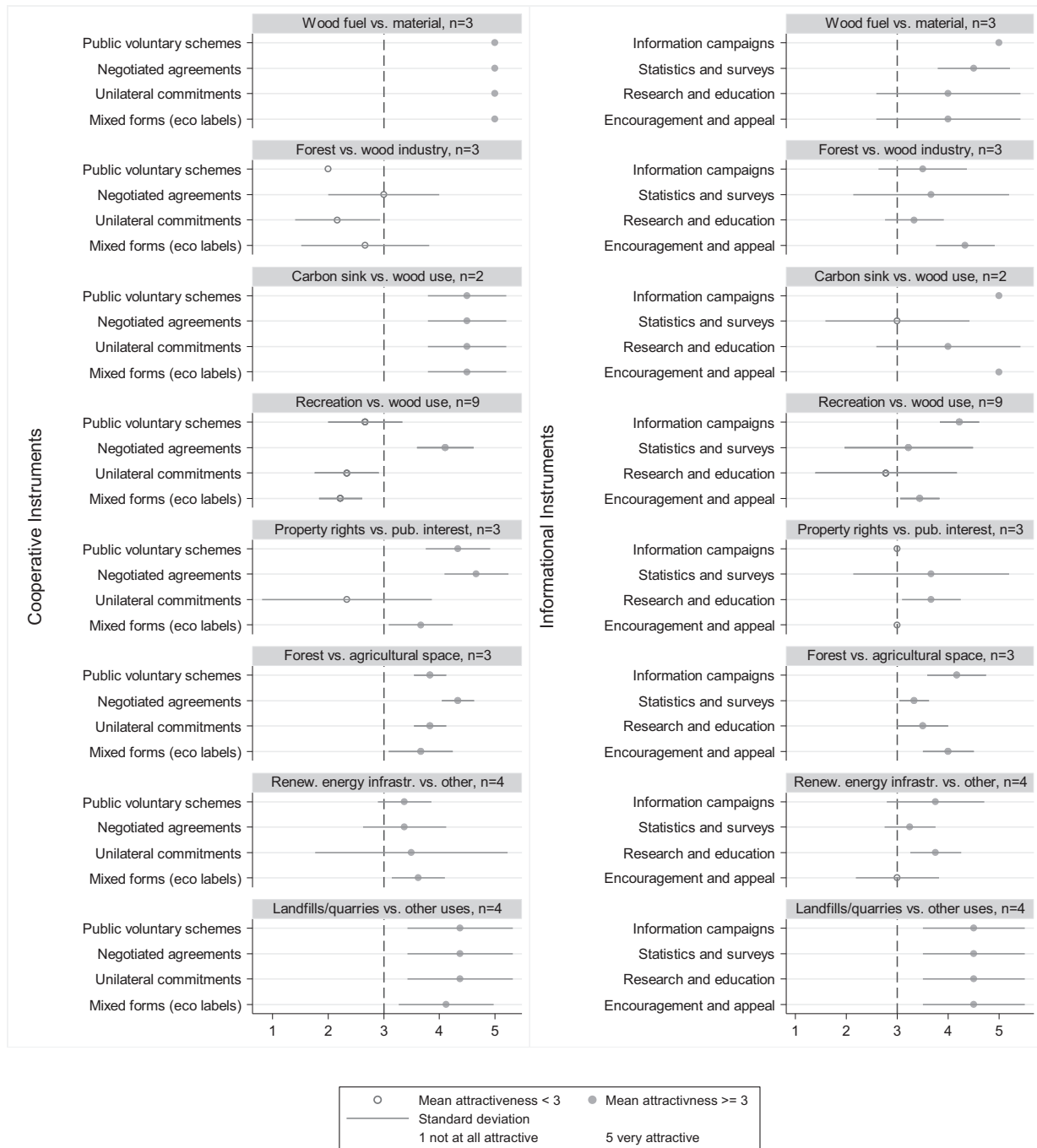


Fig. 2. (continued).

regulation is already integrated to some extent (Zabel et al., 2018).

Last, the use of forests as a carbon sink was not identified as an existing conflict in the Swiss context, yet nearly all instruments were rated very favourably. As mentioned in the previous section, carbon sequestration in Swiss forests so far only has a regulatory framework in planning without a concrete implementation strategy. The openness towards all policy instruments may reflect the still very much unregulated nature of this new sustainable economy activity.

### 5. Conclusion

This paper starts from the vantage point that a growing sustainable economy increases the demands put on forests (Humpeñöder et al.,

2018). Using Switzerland as an exemplary case, we show where sustainable economy conflicts are perceived by forest stakeholders. Understanding the substance of the problem as a structural-functional conflict, where different interests compete over limited resources, we put forth a first expectation: conflicts resulting from growing demands on the forest will materialise at the interface to other sectors.

Using a perceptual approach, we combine expert interviews with the current literature, leading to the first result of this analysis: while the increased demands put on the forest create many theoretical conflictual situations between different resource and space uses, only a few of these conflicts have materialised. This has generally been the case where other sectors make demands on the forest, which fits the existing literature that demands on forests and its resources are increasing from ‘outside’

the forest sector (Sotirov and Arts, 2018). Specifically, where recreational users encounter activities of the forestry or the landfill and quarry industry, or where the renewable energy sector and agriculture compete over land, conflicts are observed. We found that a contributing factor to these conflicts are two distinctive features of Swiss forest law, namely, the preservation of the forest, both qualitatively and quantitatively, and the unrestricted right to access the forest. The first feature, in combination with heightened protection for agricultural land (where traditionally forest clearances were compensated by reforestation or where ecological upgrades were implemented), escalates the competition over space. The second of these features blurs the boundaries between private and public property, at least in the perception of public users. Within the forest and wood industry, however, conflicts are not observed by experts.

Our second expectation is that while strong involvement of the state by means of regulatory instruments is not deemed attractive by forest stakeholders, it remains attractive when conflicts arise at the interface to other sectors. This understands conflicts and the policy instruments regulating them in the context of existing institutions. Stakeholders given an advantage through regulation vis-à-vis other actors will seek to maintain it. Empirically, we included expert assessments of a variety of stakeholders' different policy preferences to reflect the (still) corporatist decision-making process in public policy. Using these assessments, we have found that in the highly regulated context of the Swiss forest, forest owners, stakeholders from the wood and other private sector industries exhibit a preference for 'softer' instruments with little or no state involvement, thus being in line with previous policy studies (Danley, 2019). The instruments that entail less state involvement, such as the voluntary and informational instruments, are overall deemed quite attractive. On the one hand, this implies a potential for these instruments to be acceptable to a majority of stakeholders, and on the other hand, these instruments are likely to have the least actual impact, due to an absence of sanctions when not adhered to (Salamon, 2000). However, these softer tools have been found to be vital supplements for the harder instruments and may serve as essential glue to address the conflicts on the ground. Indeed, the 'traditional' regulatory and 'new' or soft environmental policy instruments are often used in combination with each other (Lascoumes and Le Galès, 2007).

In the case of materialised conflicts with other sectors, however, forest stakeholders (forest owners and stakeholders from and wood industry) still rate regulatory instruments favourably. This indicates a desire to protect traditional uses of forest resources and space from newly encroaching demands from other sustainable economy sectors. Such regulatory barriers are expected to have long-term effects by discouraging new actors from entering any forest-related markets. These findings fit general economic literature that actors favour regulation to ward off other actors' interests and competition (Tullock, 1967; Bailey and Thomas, 2017; Stigler, 1971; Peltzman, 1976). Although policy integration calls for an alignment between different sectoral goals and instruments, the question of whether policy integration would serve the long-term interests of the forest regarding qualitative and quantitative preservation is unclear in the Swiss context. The forest stakeholders' preference for regulatory instruments, in the case of conflict at the interface of other sectors, indicates a desire to isolate the forest from any other encroaching demands, which probably also relates to the fact that the forest sector is generally considered 'weak' compared to other economic sectors (Sotirov and Arts, 2018). Moreover, the literature also indicates that policy integration for environmental policy as such had negative or opposite effects on forest policy leading it to remain disintegrated (Winkel and Sotirov, 2016). Accordingly, isolation might be a strategy to protect forest actors' interests.

The Swiss case can be understood as a precursory case for other contexts in which the competition over different land uses increases and sustainable economy goals from different sectors seek to realise themselves utilising forest resources or area. From this case, which is highly regulated (some even argue overregulated) (Saurer, 2020), we can learn

that regulatory instruments remain important to forest stakeholders when outside economic interests seek to use forest resources or space. This does not stem from a general preference for command-and-control instruments but from forest stakeholders' perception that the forest needs to be protected from further demands. As land use competition increases globally, we expect demands on the forest to increase likewise, leading to conflicts. Deciding on which policy instruments are best suited to defuse such conflicts will have far-reaching implications.

Naturally, also this study has its limitations. While its findings may allow for future comparative studies, its results are ultimately linked to the specific case, namely the Swiss forest sector. Moreover, the study solely includes forest economic sectors with a financial and/or economic 'interest', thus excluding an issue such as biodiversity. Nevertheless, biodiversity is relevant: conflicts can – and often do – arise at the interface of sustainable economy sectors and biodiversity (Bryngemark, 2020; Söderberg and Eckerberg, 2013). Last, while the study has a broad focus, capturing different conflicts, they are first and foremost assessed by forest stakeholders. However, actors from other (economic) sectors can also be affected – and affect – conflicts related to the forest.

Nevertheless, the article can serve as a starting point for future research, as it gives a comprehensive overview of various sustainable economic goal conflicts. Both in the Swiss as well as in comparable contexts, future research should dig deeper into the question, as to how forests fare both from an ecological as well as an economic perspective when cross-sectoral integration with the goal of transitioning towards a sustainable economy is pursued.

## Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.forpol.2021.102553>.

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