

Linking throughput and output legitimacy in Swiss forest policy implementation

Policy scholars typically assume that implementing actors follow democratically decided rules in linear, predictable ways. However, this assumption does not factor in the operational challenges and multiple accountability relations facing policy implementers in contemporary, hybrid policy implementation settings. Shifting the focus to throughput (governance process) and output legitimacy (results), this paper explores how throughput dimensions affect the implementation of policy outputs. We study a hybrid policy – the Swiss Forest Policy 2020 – in a federalist, multi-level implementation setting. We find that accountability dilemmas have negative consequences for output implementation, particularly when professionalism clashes with rules. Accountability dilemmas are exacerbated by policy incoherence and interact with policy ambiguity. High issue salience can compensate for the negative effects of these factors. The role of implementing organizations in democratic countries goes beyond rule following: accountability relations and other throughput dimensions crucially affect output legitimacy.

Introduction

It is (...) rarely possible to separate politics from administration. Attempts to insulate an inherently political subject matter from politics do not necessarily lead to apolitical actions. They instead may lead directly to policy failure.

Matland (1995: 148).

This paper explores how throughput legitimacy of the policy implementation process affects policy outputs. In mainstream political science, public policies are often seen to be “automatically” legitimate, since state actors presumably closely follow democratically decided rules (Maynard-Moody and Musheno 2000; Schmidt, 2013). Implementing actors are expected to exclusively adhere to political-administrative rules and under a set of accountability mechanisms that limit their discretion (Bovens et al., 2014; Huber and Shipan 2002). However, this traditional, “technical” understanding of democratically legitimate performance as rule-following was criticized early on for insufficiently accounting for the political nature of policy implementation, as the above quote by Matland (1995) illustrates. Moreover, this understanding

of legitimacy and the mainstream political science focus on decision-making and elections has difficulties to capture the reality of contemporary governance (Hacker and Pierson 2014; May 2015). In hybrid settings involving a multitude of public and private actors, implementing actors respond to different pressures within various social relationships, such as market incentives or professional norms (Maynard-Moody and Musheno 2000).

The exercise of discretion during policy implementation can have consequences that threaten both democratic principles and policy effectiveness: For example in the case of an unjust treatment of clients (Cohen and Gershgoren 2016; Epp et al. 2017) or the neglect of public service goals in a context of contracting-out (Thomann and Sager 2017). What is more, implementing actors are also confronted with issues of policy incoherence and ambiguity, particularly in hybrid settings, which might affect output implementation (Chun and Rainey 2005; Thomann et al. 2016). There are potential conflicts between different sectoral goals and measures as well as within sectors (Baier et al. 1994; Knill 2015), such as maintaining biodiversity in forests through deadwood versus using wood for producing energy (Gerber et al. 2009). Policy goals and measures can also be imprecise (Chun and Rainey 2005) and roles assigned to implementing actors may be unclear (Matland 1995). Also, procedures of information dissemination affect policy implementation (Finkelstein 2000; Heritier 2003), where for example inadequate information has been found to lead to implementation problems in agricultural policies (Mengistie et al. 2015). However, this aspect remains largely understudied in the implementation literature. The question thus arises about how legitimate policy and implementation occurs. Specifically, we ask: how do throughput dimensions of accountability, incoherence, ambiguity and issues of transparency, interact to affect the implementation of policy outputs (output legitimacy)?

Our focus in this article is on contributing to this debate by bridging the political systems with the implementation literature and linking the throughput with the output dimension of legitimacy. In line with May (2015: 278), we combine perspectives on policymaking and output delivery to address the “political aspects of implementation success or failure.” Empirically, we address new environmental governance approaches and specifically those in forest policy, which provide fruitful grounds for analysing hybrid implementing organizations where actors face increasing pressure (Howlett and Rayner 2006). Indeed, demands on environmental resources, such as forests, have increased in recent years, with a multitude of potentially competing interests. For example, there is pressure to use forests for fuelwood or leisure purposes, but also to preserve biodiversity; multiple goals exist and may be in conflict with

each other (Humpenoder et al., 2018). For the actors who manage forests, these often competing demands may be very difficult to reconcile.

The paper proceeds as follows. We first differentiate between dimensions of legitimacy and develop expectations linking throughput and output legitimacy. After outlining our methods, we report the results of our case study of the implementation of the Swiss Forest Policy, using throughput legitimacy to explain the implementation of outputs. Finally, we conclude that 1) accountability dilemmas a) can have negative consequences for output implementation, b) are part of and interact with other elements of the throughput dimension of the governance process (particularly with policy incoherence and ambiguity) and 2) high issue salience can, in part, compensate for the potential negative effects of accountability dilemmas, ambiguity, and/or policy incoherence.

Policy legitimacy and expectations on throughput and output legitimacy

In general terms, policy legitimacy can mean that policy goals, measures and their implementation are considered appropriate and just by the governed (May 2015). For example, since 1876, the goal of sustainable forest management in Switzerland is in the national Forest Law and bans clear-cutting; politicians have loosened the strict clear-cutting over time, forest practitioners and stakeholders widely accept that the forest policy strongly protects forest cover, which remains priority goal until today (Zabel and Lieberherr 2016).

As the notion of legitimacy cuts across different stages of the policy cycle, scholars have proposed a systemic perspective, taking the input of the policymaking process, the throughput machinery of the governance process and finally the outputs of state action into consideration (Easton 1965; Scharpf 1999). *Input legitimacy* is a quality of policymaking. It focuses on ‘what to do’ and ‘how’ to produce legitimate and hence acceptable policy outputs. Principles of democracy and participation legitimize institutions. For instance, National Forest Programs might not always produce legitimate strategies for sustainable forestry. Studies have analysed how to foster stakeholder participation (input legitimacy) to improve legitimate policy outputs (Johansson 2016).

In contrast, *output legitimacy* focuses on ‘what to obtain’ and assessing whether results are legitimate in terms of acceptance rather than focusing on the process (Pierre 2009). This can occur via the state or through non-state market-driven governance systems, like for example the case of sustainable forestry certification, which has focused on compliance through incentive instruments (Cashore 2002). In principle, output legitimacy is concerned with the

degree that outputs delivered by policy implementers are legitimate through such indicators as successful contracting, compliance with contracts, efficient and effective service delivery.

Political systems theorists have arguably under-theorized the intermediary dimension of *throughput legitimacy*, relating to the quality of a governance process, has by to understand what happens between policy inputs and outputs (Schmidt 2013). The focus of political theorists is on throughput as the interactions of actors in decision-making processes (Geeraert 2014; Risse and Kleine 2007; Van Meerkerk, Edelenbos and Klijn 2015; Schmidt, 2013). In our application, we focus on the interactions in the context of implementation, situating implementers' actions in the throughput dimension and thus analysing the process of how policy inputs are implemented to achieve certain outputs.

According to Schmidt (2013: 6), throughput legitimacy refers to the “quality of the [governance] processes as established by their efficacy, accountability, transparency, inclusiveness and openness to interest intermediation.” For example, high throughput legitimacy could refer to government agencies allocating contracts in a transparent and non-corrupt way. Implementing actors' actions regarding these standards—for example, when contracts are allocated based on informal payments – have implications for the implementation of outputs but analytically this is a procedural aspect and not itself an output. Our main causal assumption is that how implementing actors perceive pressures and policy design issues, has implications for how they implement outputs and hence output legitimacy as a whole, as we now outline. Following Schmidt (2013) we delineate multiple dimensions of throughput legitimacy. In line with previous research, we take the interaction between the different throughput legitimacy dimensions into consideration (Lieberherr 2016).

We start with accountability as the first dimension of throughput, as this is central in the analysis of policy implementation and subsequently formulate expectations on how the other dimensions might affect accountability. Especially in contemporary governance, standards for accountability do not only come from the “state” or the “democratic principal.” Under the heading of “accountability regimes”, an operational perspective emphasizes that implementing actors operate within organizations, professional communities and markets, which create multiple pressures, beyond formal, democratically decided policies, but also responsiveness to clients, shareholders and customers, professional judgment and societal needs (Brodin 2008; Hupe and Hill 2007; Lieberherr and Thomann 2019; Thomann et al. 2018). For example, foresters in Switzerland do not only implement environmental goals; they also need to contribute to the competitiveness of the wood sector, as the Swiss Forest Policy 2020 includes goals on wood mobilization and economic performance. Similarly, the Swiss foresters have

also undergone professional training and hence face pressure to comply with professional norms and standards; hence facing vocational pressure. Finally, society imposes its expectations on the recreational potential of forests, particularly in urbanized areas, leading to societal pressure.

The intensity with which policy implementers identify with particular pressures arguably influences the implementation of policies. Key in this link is the prevalence of so-called accountability dilemmas or conflicting pressures between multiple demands (Thomann et al. 2016, 2018; see also Dias and Maynard-Moody 2006 and Sager et al. 2014). While potentially many different accountability dilemmas may exist, we focus on three different types, following Thomann et al. (2018): *dilemmas* between rule pressure on the one hand and incentive, vocational and societal pressure on the other hand:

- *Rule and incentive pressure*: when an implementing actor cannot simultaneously achieve the goals of policy and minimize costs and engage in competition; when for example inspection duties, lengthy decision-making paths and complicated standards decrease profits or frustrate customers (Thomann et al. 2016, 2018).
- *Rule and vocational pressure*: entails a clash when implementing actors perceive the demands of the policy to be incongruent with their professional values and norms, such as best practices in the field (Tummers et al. 2012).
- *Rule and societal pressure*: the perceived incongruence between the policy and societal needs and expectations. For example, implementing actors might think that some of their activities do not align with societal interests.

If rule pressure requires measures to be implemented that the actors regard as inefficient due to their felt incentive pressure, not cohering with best practices or societal needs, and the actors feel a strong obligation toward the incentives, professional norms or society, then they might prioritize efficiency, professional judgment or societal needs over implementing the measures as intended (Deleon 1998; Dias and Maynard-Moody 2006; Sager et al. 2014; Thomann et al. 2016, 2018). Our first and general expectation (E1) is thus that *the presence of accountability dilemmas, by forcing the implementing actors to choose sides between different, conflicting accountabilities, can adversely affect the implementation of policy measures. Conversely, we expect that if there are no dilemmas then the policy measures are “on-track.”*

Second, a further dimension of throughput legitimacy – efficacy – relates to the “adequacy of the rules” (Schmidt 2013: 6). Key aspects of policy design are coherence and ambiguity. Ideally, policy design should be coherent if policies in one sector such as forestry are compatible with policies in another sector such as energy (external coherence) and if the policies are internally complete and compatible with the existing rules and regulations within a

sector (internal coherence) (Baier et al. 1994; Knill 2015; Knoepfel et al. 2011; Thomann 2019). For this paper, we focus on internal coherence. Moreover, we adopt a procedural perspective as we are interested in how the implementing actors perceive and apply the policies. We acknowledge that there is an objective degree of how coherence can impact policy success beyond actors' perceptions. If a policy there is poor policy design, then this can trigger policy failure. Yet arguably actors' perception within the context of poor design exacerbates policy failure. Previous research indicates that if there are gaps or incompatibilities between measures in a policy, then implementing actors are more likely to face conflicts. And in turn, implementation may suffer, as a contradiction between forest protection and forest production measures can make the implementation of the measures irreconcilable (Gerber et al. 2009). Based on this literature, our second expectation (E2) is that *if implementing actors perceive policy design to be incoherent, then the implementing actors are also more likely to experience accountability dilemmas which may have negative consequences for the implementation of policy measures.*

Ambiguity emphasizes the degree of clarity of goals, instruments and procedures. Matland (1995: 157-158) distinguishes between the ambiguity of goals versus ambiguity of means:

“Goal ambiguity is seen as leading to misunderstanding and uncertainty and therefore often is culpable in implementation failure [...] Ambiguity of means appears in many ways, perhaps most obviously in cases where the technology needed to reach a policy's goals does not exist. Policy means also are ambiguous when there are uncertainties about what roles various organizations are to play in the implementation process, or when a complex environment makes it difficult to know which tools to use, how to use them, and what the effects of their use will be.”

We address both the clarity of goals and means. As already indicated in the above quote, ambiguity has implications for implementation. However, its role for successful implementation is an empirical question and may vary: on the one hand, ambiguity can lead to uncertainty and misunderstandings; on the other hand, ambiguity is an important means to reduce conflict (Matland 1995). We therefore do not formulate an expectation on ambiguity.

The last dimension from Schmidt (2013) that is relevant for our study is the transparency of the governance process: “Transparency is generally taken to mean that citizens have access to information about the processes [...]” In this article, we focus on information dissemination toward national implementing actors. For implementation to follow a smooth process, the

communication of policy measures and means is critical. Indeed, information and knowledge is a key actor resource that affects policy implementation (Finkelstein 2000; Heritier 2003; Knoepfel et al. 2011; Matland 1995). For example, incomplete or inaccurate information directed toward policy targets has been linked to the unsuccessful implementation of EU food safety policy (Thomann 2019) and inadequate information about pesticides led to deficient implementation of agricultural policy in Ethiopia (Mengistie et al. 2015); however, this remains a largely understudied factor in the implementation literature. Our third expectation (E3) is hence that *incomplete information directed toward implementing actors can trigger accountability dilemmas, which may have negative consequences for the implementation of policy measures.*

Table 1 summarizes our expectations. Note that our second and third expectations posit mutually non-exclusive, alternative causes of accountability dilemmas. Thus, they are expectations about what happens in the *presence* of incoherent policy design or incomplete information respectively, rather than about their absence. The reason that we do not assume that the reverse expectations are true here is that this would imply that policy design or incomplete information are respectively the only source of accountability dilemmas. Yet we argue that both incoherent policy design and incomplete information can be mutually non-exclusive causes of dilemmas.

Table 1: Summary of throughput dimensions and expectations

<i>Throughput dimension</i>	<i>Expectation</i>
Accountability Dilemmas	E1: dilemmas = negative consequences on the implementation of policy measures
Policy Design Incoherent	E2: perceived incoherence = can trigger accountability dilemmas with negative consequences on the implementation of policy measures
Transparency Incomplete information	E3: incomplete information = can trigger accountability dilemmas with negative consequences on the implementation of policy

Source: own representation

Research design, data and methods

We explore these expectations based on the case of forest governance and more specifically, the implementation Swiss Forest Policy, as we outline below.

New environmental governance and the case of the Swiss Forest Policy

Inspired by sustainable development initiatives, countries around the world have experimented with new governance approaches in resource and environmental policy (Howlett and Rayner

2006; Schulz et al. 2018). National Forest Programs (NFP) count as one of these new governance forms, as they incorporate a wide range of actors meant to collaboratively contribute to the formulation, planning and implementation of forest policy at national and subnational levels, intended to lead to increased effectiveness in comparison to conventional, more hierarchical governance forms (Howlett and Rayner 2006; Johansson 2018). Accordingly, forest policy and more specifically NFPs serve as fruitful grounds for studying the dynamics of legitimacy dimensions.

To address complex, real-world situations with many uncontrollable variables (Yin 2018), we conduct a case study of the policy legitimacy of the Swiss NFP “Forest Policy 2020.” Switzerland serves as a good case to study policy legitimacy and particularly the aspect of throughput legitimacy, as it is a federalist country where policies at the federal level have to be implemented at the subnational level. What is more, forest policy is a joint competence between the national and sub-national levels. This means that the success of a policy is highly contingent on the implementation of subnational actors, where multiple procedural issues and challenges of accountability can arise (Knoepfel et al., 2011; Sager et al., 2017). The aim of the NFP Swiss Forest Policy 2020 is to regulate and coordinate the environmental, economic and societal demands on forests and increase participation (FOEN 2013). We aim to provide analytic explanations about the relationship between throughput and output legitimacy in the Swiss NFP.

For several reasons, the Swiss NFPs raise questions of policy legitimacy and intrinsically provide a playing field for implementing actors to experience conflicting pressures vis-à-vis the state, the profession, the market and society. The Swiss NFPs set a broad agenda at the federal level to guide forest policy and practices. Besides the aim to improve sustainability, the objective of the Swiss NFPs is to broaden the participation in forest policymaking (Zabel and Lieberherr 2016). Their goals, measures and defined roles of subnational public and private implementing actors are not binding, that is, they reflect the expectation of the Confederacy rather than a legal mandate. This makes them a good case to look at informal mechanisms.

There have been two NFPs in Switzerland: The first began in 2004 and served as a basis for the federal Swiss forest policy up until 2012. This programme was expected to run until 2015. However, the Confederacy halted this programme and substituted it with the second programme, namely the Swiss Federal Forest Policy 2020, in 2012. Our empirical focus is on the second programme, the Forest Policy 2020. The Forest Policy 2020 includes two phases: from 2012 to 2015 and from 2016 to 2020. We conduct a formative evaluation, as we analyse

the first phase (2012-2015). The main objective of the Forest Policy 2020 is “guaranteeing of sustainable forest management and the creation of favourable conditions for an efficient and innovative forestry and timber sector” (FOEN 2013: 13). Eleven goals concretize this overarching objective. For each goal, the Forest Policy 2020 defines strategic directions and concrete measures (see Figure 1 for an over of the Forest Policy 2020). Goals 1 to 5 are the priority goals.

The Forest Policy 2020 addresses both public and private implementing actors. Concretely, it specifies that the implementation of the federal measures is carried out with the subnational governments (public actors) and coordinated with the central stakeholders (private actors from the forestry and wood sectors, as well as from the environmental and educational sectors), who play a key role in the implementation of many measures. Appendix 1 lists all implementing actors. For an example of the roles, as specified in the policy, see Figure 1. In hybrid settings, private actors can also be considered policy implementers (Sager et al. 2014).

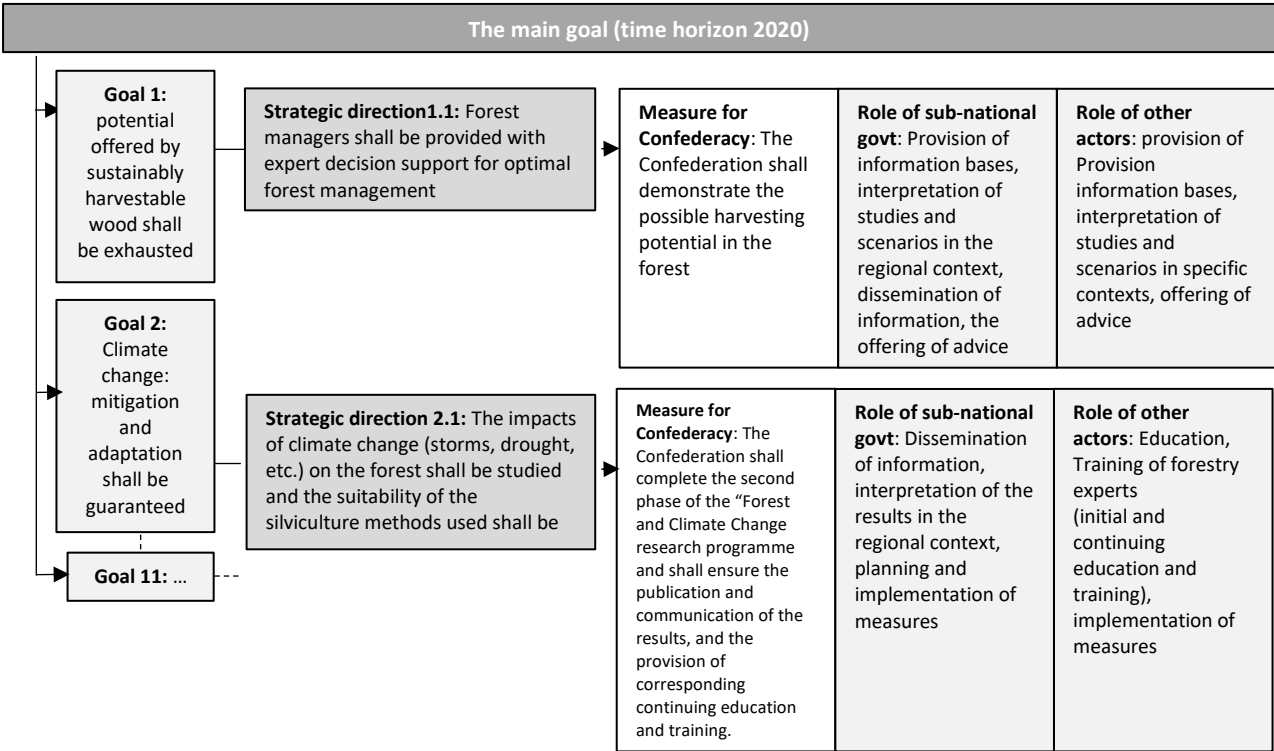


Figure 1: Structure of Forest Policy 2020

Source: adapted from Wilkes-Allemann et al., 2017.

This hybrid nature makes the case a likely candidate for observing all types of accountability regimes mentioned above, where the actors face rule, incentive, vocational and societal pressure, as well as other procedural issues under throughput legitimacy. For example, our forest managers have a legal obligation to protect soil, drinking water, and the vitality of

the trees. Also, as the forest managers have a mandate to improve the economic viability of the forestry sector, this makes them amenable to incentive pressure. Moreover, the Swiss forest managers have undergone professional training in how to best take care of the forest, and the government's policies may or may not contribute to good forest management in their professional judgment. There may be public scrutiny on forest managers and media coverage on the health of forests. There are inherent tensions between the different goals within the Swiss NFP, where compatibility with existing rules and regulations within the forestry sector may arise. Moreover, the NFP is a federal policy where the subnational public and private actors have simply been assigned roles with which these actors might not identify with. The Federal Law on Forests has been revised recently (in 2016), amending certain measures to tackle climate change and harmful organisms (Zabel and Lieberherr 2016).

The implementing actors of the NFPs are part of public and private *organizations*. Following Sevä (2015) implementing organizations in the field of environmental management do not necessarily have direct daily contact with target groups. Besides, the individuals working in these organizations are usually not professionals homogeneously trained like for example police officers or teachers, as they tend to have different educational backgrounds. Yet, according to Sevä and Jagers (2013: 1062) “It is nevertheless reasonable to assume that also environmental bureaucrats at the frontline have more or less discretionary power and autonomy”.

Important to note is that the institutional accountability mechanisms (oversight, monitoring, enforcement) remain low and are generally the same for both public and private actors. Hence, we do not focus on this formal aspect of accountability.

Finally, we focus analytically on output legitimacy in a top-down way, as the extent to which these actors have implemented the policy measures relating to forest management at the level of *outputs*. In the implementation process, this focus comes before the question of whether there is a behavioral change among the societal actors or impacts of a policy, which we do not address in this paper (Thomann 2019).

Data collection and analysis

We collected the data as part of a mandate for the Swiss Federal Office for the Environment. The throughput and output data at the subnational public as well as the private implementing actor level include online surveys conducted at the level of the subnational governments, the cantons (from 19. July 2016 until 17. August 2016) and private actors (from 21. July 2016 until 17. August 2016). See appendix 1 for a list of the surveyed actors. We sent the surveys to the subnational public actors (the cantonal foresters) and the directors or heads of the private organizations. We derived the sample from the Forest Policy 2020 itself. We sent the survey to all implementing actors of the policy, that is, to all 26 subnational governments and all 20 private actors named in the policy document. Our response rate was high: 96% (25 of 26) of the subnational governments and 80% (16 of 20) of the private actors responded to the survey. We created one survey for all the subnational public actors (cantonal foresters), as they are addressed uniformly in the Forest Policy 2020 (see Appendix 2). As the private actors only have certain tasks in the Forest Policy 2020, we tailored the questionnaires to include only those measures that are assigned to them (for an example survey see Appendix 3).

Table 2 outlines the rules we applied for the survey questions. The reason for the different response options is that the private actors are assigned different roles than the public actors.

Table 2: Rules of survey questions and analysis

	Public subnational actors	Private actors
Survey questions	Based on the roles allocated in the Forest Policy 2020 and using the language of the forest policy, we asked about the degree to which the actors have implemented the measures, Direct text on each measure from the policy and asked if the actor has implemented the measure on for instance wood mobilization	
Response options	yes/no/do not know/no If yes, then asked has been done (e.g. provided the necessary information on wood mobilization, utilized the federal studies on wood mobilization).	Yes completely/plenty, yes partly/little, in planning/ no / do not know / not applicable
Analysis: aggregated the results at the level of policy goals	The measures under each goal were summarized in a categorical variable: All measures implemented = “completely” 99%-50% = “mostly” implemented 49%-1% = «few» 0% = “none.”	Simply aggregated the responses, as these already provided categorical variables

Source: Own representation

In addition to multiple-choice questions about the degree to which actors have implemented the measures, we provided space for comments. These qualitative inputs provide

the main basis for the analysis of the accountability dilemmas as well as the implementation factors in the results section. We sorted the comments by goal, interpreted them based on the throughput dimensions and then translated them. The responses indicating whether and what goals subnational actors have implemented serve as the data for output performance.

Analytic approach

In providing analytic explanations about the relationship between throughput and output legitimacy in the Swiss NFP, our units of analysis are the goals of the Forest Policy 2020 and to what extent the responsible actors are implementing the measures for each goal. Following Gerring (2004), our research design does not focus on temporal variation, but on spatial variation both within (between implementing actors) and across units of analysis (between goals). Our explanatory analysis combines the advantages of different approaches to case study research, by integrating both inferences on co-variation and the governance process and linking these patterns with theoretical expectations (Bennett 2004; Blatter and Blume 2008). We, for instance, identified accountability dilemmas if the implementing actors stated that they experience competing pressures that potentially inhibit them from implementing a measure. Then, in our analysis of the outputs, we looked for patterns between the presence of throughput dimensions and the degree of the implementation of outputs (*co-variation*). Moving beyond a purely co-variational analysis, we then used the qualitative comments in the surveys as the basis to link throughput *processes*—specifically, the interplay of the different hypothesized throughput dimensions--and output legitimacy. However, we only assess our first expectation with a straight-forward co-variational design, as this expectation is symmetrical. As noted above, our second and third expectations are asymmetrical, as they posit mutually non-exclusive, alternative causes of accountability dilemmas. This implies that not all cases (goals) will be equally relevant for all expectations because the occurrence of an explanatory factor is not expected to have the exact opposite effect than the non-occurrence.

Without triggering the respondents with questions, the comments serve as a realistic indicator for the throughput dimensions, as the implementing actors made comments to explain their output (degree of implementing measures) responses. However, a limitation of this bottom-up approach is that we were unable to systematically elicit the throughput dimensions across all actors. Finally, we assessed the extent to which these observations align with our *theoretical expectations*. At the same time, and in line with the iterative logic that characterizes all case-oriented research, our analysis has an exploratory element: we remain open to new and unexpected insights when analysing our cases (Blatter and Blume 2008).

Explaining the implementation process with throughput legitimacy

We first give a descriptive overview of output implementation before linking throughputs with outputs. Table 3 summarizes the results on the output and throughput dimensions. While we collected data at the level of the measures, we present these results aggregated at the level of goals.

Table 3: Summary of all goals concerning implementation factors and throughput of the Swiss Forest Policy 2020 (2nd programme)

Forest Policy 2020 goals

	Accountability dilemma	Incoherence	Ambiguity	Incomplete Information	Implementation of measures
Goal 1: The potential offered by sustainably harvestable wood shall be exhausted	rule versus incentive	Yes	Yes (goal)	No	On-track
Goal 2: Climate change: mitigation and adaptation shall be guaranteed	rule versus incentive	No	No	Yes	On-track
	rule versus vocational				
Goal 3: The protective forest service shall be guaranteed	None	No	No	No	On-track
Goal 4: Biodiversity shall be conserved and improved in a targeted way	rule versus vocational	Yes	Yes (means)	No	Not on-track**
	rule versus societal				
Goal 5: Forest area shall be conserved	rule versus vocational	No	No	No	Not on-track
	rule versus societal				
Goal 6: The economic viability of the forestry sector shall be improved	rule versus vocational	Yes	Yes (means)	No	Not on-track
Goal 7: Forest soil, drinking water and the vitality of the trees shall not be endangered	rule versus vocational	Yes	Yes (means)	No	Not on-track
Goal 8: The forest shall be protected against harmful organisms	rule versus vocational	No	No	Yes	On-track
Goal 9: A balance shall exist between the forest and wildlife	None	No	Yes (means)	No	Not on-track**
Goal 10: The use of the forest for leisure and recreation shall be respectful	rule versus societal	No	Yes (means)	No	On-track
Goal 11: Education, research and knowledge transfer shall be guaranteed	None	No	No	No	On-track

(Source: own representation)

* For a detailed overview of the output data see Figures 2 and 3 below. ** Only private actors not on-track

Implementation of outputs

We first present the (aggregated) degree to which the subnational public actors (cantonal foresters) and the private actors have implemented the outputs under each goal.

Figure 2 shows the implementation by the subnational public actors.

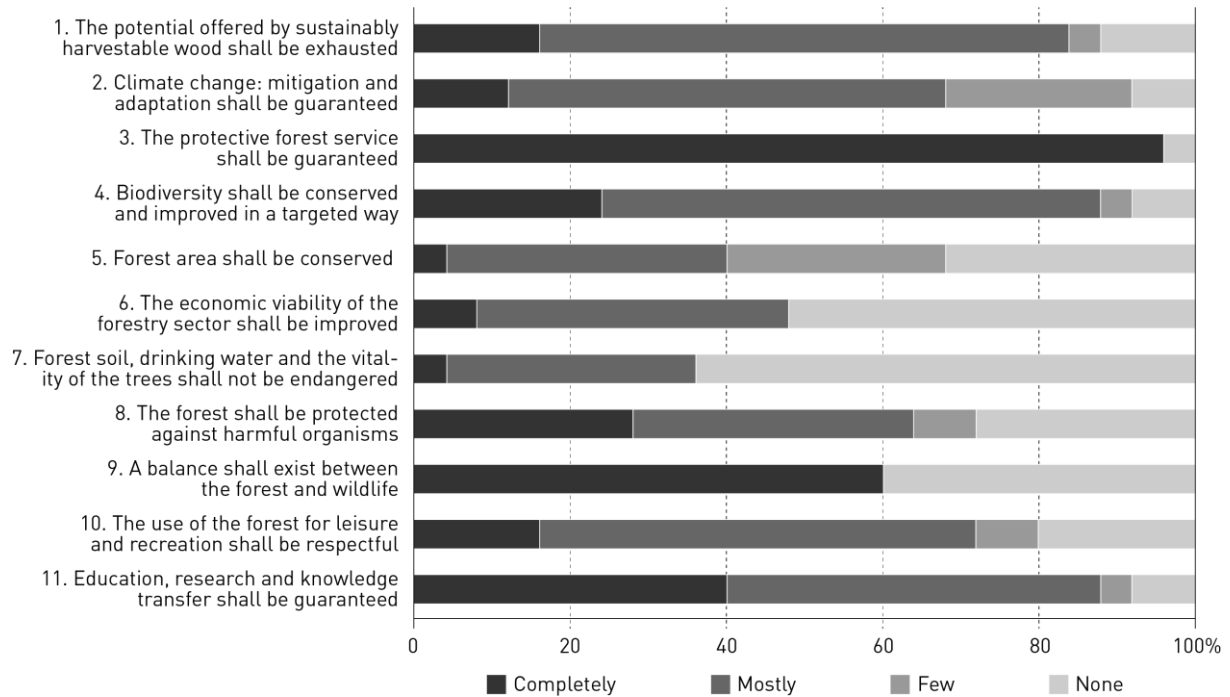


Figure 2: Responses on the implementation of measures per goal across 25 subnational public actors
 Source: adapted from Wilkes-Allemand et al., 2017.

We find that for the majority of goals, 60% or more of the public actors have either completely or mostly implemented the measures and are hence on-track. Three exceptions are goals 5 on conserving the forest area where over 60% are either only implementing few or no measures, goal 6 on economic viability where over 50% of the public actors have not implemented any measures and goal 7 (forest soil, drinking water and vitality) where over 60% of the public actors have not implemented any measures.

Not all the private actors have a role in each goal and even within a goal, the actors may be responsible for different measures. For example, in Figure 3, under goal 8 only one actor has a role, and for goals 3 and 5 the private actors have no role and goal 9 only relates to one measure.

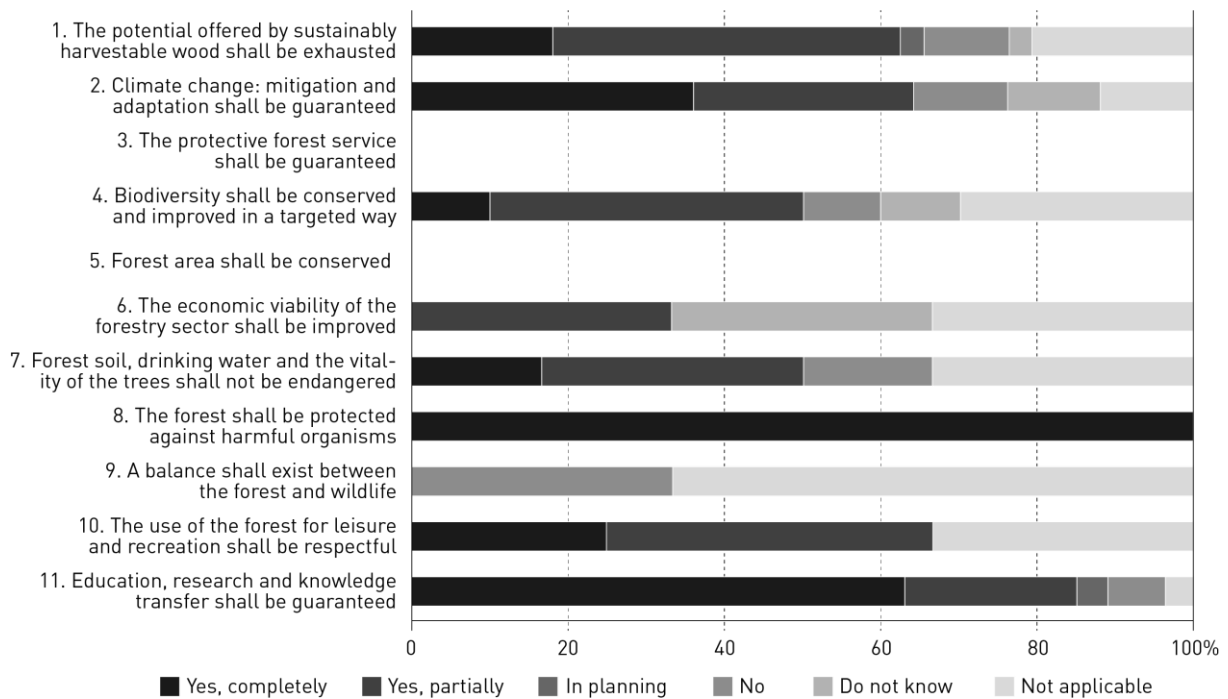


Figure 3: Responses on the implementation of measures per goal across 16 private actors
 Source: adapted from Wilkes-Allemand et al., 2017.

The results indicate that for seven goals, 50% of the actors are either completely or partially implementing measures. Here it is particularly goals 6 (economic viability) and 9 (forest-wildlife) that are not on-track. But also for goals 4 (biodiversity) and 7 (forest soil, drinking water and vitality) 50% of the respondents are either not implementing, do not know if they are implementing, or say that these measures do not apply to them.

Linking throughput and output legitimacy

We now provide explanations for the above outputs by addressing the procedural aspects of throughput legitimacy. We do so in two steps: first, we present a co-variational analysis of the results and compare them to our expectations. Second, we describe, for the different goals, how the interplay of the different hypothesized factors resulted in the observed outputs.

Variation between goals

Table 4 summarizes how the different hypothesized factors co-vary with implementation outputs concerning our expectations.

Table 4: Summary of throughput dimensions and expectations

Throughput dimension	Expectations	Degree of support from results
Accountability Dilemmas	E1: dilemmas = negative consequences on the implementation of policy measures	Supporting – goal 3, 4, 5, 6,7, 9 (partially), 11 Not supporting – goals 1,2,8,10
Policy Design Incoherent	E2: perceived incoherence = can trigger accountability dilemmas with negative consequences on the implementation of policy measures	Supporting – goals 3,4,6,7, 11 Not supporting – goals 1 Not relevant – goals 2,5,8,9,10
Transparency Incomplete information	E3: incomplete information = can trigger accountability dilemmas with negative consequences on the implementation of policy	Supporting – goals 3,9 (partially),11 Not supporting – goals 2, 8 Not relevant: goals 1, 4,5,6,7,10

Source: Own representation.

By simply analysing co-variation of factors between goals, we find that our data provide more evidence to support our **first expectation** on accountability dilemmas than not: for 4 of the 5 goals that have lower output implementation the implementing actors experience dilemmas, which provides support that accountability dilemmas have negative consequences for output implementation (see table 4). Particularly the dilemma of rule versus vocational pressures is the most dominant (compare table 3 above). However, while problems in outputs seem to be linked to the presence of dilemmas, the picture is less clear-cut for those goals where outputs were achieved. On the one hand, further strengthening our first expectation, we find that 2 goals do not have dilemmas and the implementation of measures is (mostly) on-track.¹ On the other hand, 4 goals seem to contradict our first expectation (see table 4): despite the dilemmas, the actors are active and outputs are on-track.

We find good co-variational evidence for our **second expectation** stating that incoherent policy design can trigger accountability dilemmas and lower outputs, as 6 goals seem to support it: 3 goals show policy design incoherence linked to the dilemmas and output implementation, and 3 show no coexistence of incoherence, dilemmas or output implementation that is not on-track (see table 4). Only 1 goal diverges from our expectation: for goal 1 (wood potential) we find incoherence, dilemmas but still, implementation is on-track.

Five other goals are not directly relevant for assessing this expectation since they are cases of coherent policy design where output implementation cannot be explained by the posited configuration. For goals 2 (climate change), 8 (harmful organisms) and 10 (leisure and recreation) we find coherence, but also dilemmas and that implementation is on-track. This indicates that dilemmas can occur independently from incoherence. We might also infer that

¹ We discuss goal 9 below, here the outputs for the public actors are on-track (see figure 2).

the coherence can contribute to the “on-track” implementation. In contrast, goal 5 (forest area) is also coherent, has dilemmas but is not on-track. Finally, goal 9 (forest and wildlife) is coherent and has no accountability dilemmas.

We find partial, but not comprehensive evidence in support of our **third expectation** on incomplete information: we find 3 goals that support it, goals 3 (protective function) and 11 (research and education) have complete information, no dilemmas and the implementation is on-track (see table 4), and goal 9 (forest and wildlife) only partially supports our expectation, as we find complete information and no dilemmas, but still the implementation is not on-track (for private actors). Conversely, we find two goals that do not support our expectation: for goal 2 (climate change), we find incomplete information and dilemmas, but implementation is nonetheless on-track and similarly, goal 8 (harmful organisms) has incomplete information, dilemmas, but the implementation that is on-track. Finally, six goals are not directly relevant for assessing this expectation, as information is complete and accountability dilemmas might have other explanations. Similar to what we found for incoherence, accountability dilemmas can be due to other factors than incomplete information.

Finally, concerning **ambiguity**, which we left open as an empirical question, our results support the ambivalent role asserted to ambiguity in the policy implementation theory. Findings suggest that the role of ambiguity is not clear-cut and depends on other factors (see table 3). Notable is that we primarily find the ambiguity of means rather than goals. We elaborate on the context-specific role of ambiguity for the different goals below.

The interplay of different dimensions within goals

Moving beyond a co-variational analysis, we now discuss the complex, qualitative interplay of the different throughput dimensions for each goal.

For goal 1 on **wood mobilization** we find that implementing actors face rule versus incentive accountability dilemma, as the actors experience a conflict between market pressure and measures set forth by the Confederacy: they feel pressure from the market estimates of the wood processors, which are not in line with those of the Federal Office for the Environment. We also find incoherence and ambiguity: several actors regard the Forest Policy 2020 as superfluous or even incompatible with already existing practices because either the wood use potential has been exploited anyway, or implementing actors specify their related measures in regional policies. The implementing actors thus view the measures of the federal forest policy as creating additional transaction costs. Furthermore, implementing actor says that federal, bureaucratic measures specified in the same policy inhibit competitiveness. Finally, an

implementing actors notes that it is unclear whether the goal is the highest exploitation of the resource wood or optimal management. However, despite these throughput issues, the implementation of output is nonetheless on-track. An implementing actor's comment helps to explain this finding, as he says that the wood use potential has been exploited in his jurisdiction, regardless of the federal policy. This lends an explanation for why less than 20% of the (public) actors completely implement the measures but that roughly 65% mostly implement the measures. Hence, even though we find incoherence and ambiguity – some actors even commented that the measures here are useless – these actors seem to continue to do "business as usual" which is not so far off from the measures that the Confederacy has put in place.

The goal of **adaptation to climate change** (goal 2) involves a rule versus incentive dilemma, due to a perceived conflict between inefficient practices promoted by the policy and a competitive forest sector. As addressing climate change is a relatively new goal, the Confederacy is still in the process of establishing remuneration schemes. Implementing actors are hence trying to cope with their limited budget, but find that the current policy lacks entrepreneurial strategies and that the governance structure is inefficient. Beyond this, particularly actors from the wood sector experience rule versus vocational pressure. The wood sector is sceptical of the measures, fears ideological influence (for example attitudes against pinewood and Douglas fir), self-interest (significance for the forest service and forest research) and making things more complicated and expensive for timber harvesting. Finally, goal 2 suffers from incomplete information: some actors were not familiar with certain terminology (for example "Cleantech") in the policy and were also not informed about certain measures. However, despite these throughput issues, output implementation is above average, while slightly lower than goal 1. On the one hand, several implementing actors state that they are hoping for pragmatic suggestions about how to address climate change aspects. On the other hand, they are starting to make such suggestions themselves to promote "climate fitness" via more and regular interventions in the forest and shorter turnover time, as this is what they regard as critical for a well-functioning forest and wood sector. This latter comment helps to explain the on-track output implementation. However, some implementing actors do question the formal rules promoting conventional management of young forests in the context of climate change, as this hinders cost-effective strategies: "conventional young forest management is promoted. This is generally questionable. A serious evaluation would probably show its low direct use and the high negative side-effects (upkeep of inefficient structures)." Indeed, the actors see a central need to adapt the policy to mitigate their perceived conflict between inefficient practices promoted by the policy and a competitive forest sector. They see the

management of young forests not as an end in itself, but rather as part of the business concept. Yet these conflicting pressures have not detrimentally impacted the implementation of outputs. One explanation here could be that this goal enjoys coherence and is not ambiguous.

Goal 3 on the **protective function of forests** aims to keep society safe from avalanches and floods – one of the key reasons why Swiss forest policy was initiated in the 19th Century. Given its long-standing nature, we are not surprised about the lack of any hindering implementation factors. Simultaneously, the implementation of outputs is the highest across all the goals (over 90% of the public actors are implementing measures).

In contrast, goal 4 on **biodiversity** experiences several throughput issues. Implementing actors face rule versus vocational pressure as they explain that some of their perimeters are too small for implementing biodiversity measures. Besides, actors also face rule versus societal pressure when implementing protected areas, when there are many private forest owners; there seems to be a conflict between the policy measures and the private owners' needs. Furthermore, goal 4 suffers from incoherence: Some implementing actors say that information and measures on biodiversity have already been provided since 1996 and hence regard the Forest Policy 2020 as largely superfluous and even incompatible with existing practices. We also find the ambiguity of means, as the actors do not feel that they are the target group of the measure. Particularly forest associations note that their role is to advise and network and not to implement measures set by the Confederacy; hence, there seems to be a discrepancy regarding the perceived role of actors. Despite these throughput issues, the implementation of outputs is nonetheless on-track. Indeed, the results on outputs on goal 4 are very similar to those on goal 1 concerning implementing actors, who say that they have been providing basic information, or implementing biodiversity rationalization, irrespective of the federal policy. Or they say that the biodiversity measures have already been implemented since 1994 and that the subnational government did not have to implement any additional measures set by the forest policy. In line with this, an implementing actor notes that he is active in this domain due to interests at the subnational government since 1996 and not due to the biodiversity goals of the Confederacy. This helps to explain why more (public) actors “mostly” but not “completely” implement the measures and respectively roughly 50% of (private) actors (partially) implement measures; a key explanatory factor is ambiguity of means, as implementing actors did not perceive themselves to be the target group of the policy.

Goal 5 - **conserving the forest area** – is one of the core pillars of Swiss forest policy. We find several dilemmas. First, the implementing actors face rule versus vocational pressure, as the rules conflict both with best practices in the field as well as with regional specificities in

certain areas, where for example, static forest perimeters are not deemed feasible by implementing actors. They also experience rule versus societal pressure, as certain measures clash with societal interests in agglomerations, where land is under intensive agriculture use or in mountainous areas. According to this actor, the new decisions on clearance compensation do not allow for the necessary leeway of manoeuvre to successfully implement clearance permits. Not surprisingly given the throughput issues, we find the implementation of outputs to be off-track. One actor explains that creating static forest perimeters does not make sense in certain regions and would lead to competency issues, as ingrown forests would no longer be legally defined as forest. Also, the application of clearance compensation is seen as simply not feasible in certain areas such as in highly populated areas, given societal interests.

The **economic viability** of forests (goal 6) involves a rule versus vocational dilemma, as implementing actors note that measures conflict with best practices. Moreover, actors express that this goal is, on the one hand, not compatible with existing practices (incoherence) and on the other hand “not applicable” to them, as it is not in line with their competences, which is an indication of the ambiguity of means. Again, given the throughput issues, it is not surprising to find that the implementation of outputs is not on-track. Indeed, several actors say that their perimeter is too small for implementing measures to improve the economic viability of the forestry sector or they say that they need implementation assistance that fits with best practice. An implementing actor explains that “We should rather focus on making the current wood processing more economically competitive” instead of specifying the economic viability of the forestry sector. According to this actor, “a state-directed economy has hindered forest cultivation and is counter-productive” for achieving economic viability.

For goal 7 – **preventing the endangerment of forest soil, drinking water and of the vitality of the trees** – the implementing actors face rule versus vocational pressure, as they find that the measures conflict with best practices given certain biophysical conditions. For instance, actors say that the measure related to nutrient balance is not applicable given the biophysical characteristics in their jurisdiction. Similar to goal 6, actors again note incoherence, as they regard the measures under goal 7 to be incompatible with existing practices and they find it unclear as to whether this goal even applies to them, as they say that it does not fit with their competences (ambiguity of means). Given these issues, it is again not surprising to find that the outputs are not on-track.

For goal 8 – the **protection against harmful organisms** – we find the dilemma rule versus vocational pressure, as some implementing actors find that the measures specified by the Confederacy are either outdated or that they only work in theory. Moreover, we also find

incomplete information, as actors were not informed about the task-force on national forest damage. Yet despite these throughput issues, the implementation of outputs is on-track. Moreover, the implementing actors already seem to be implementing their measures, as they recognize the outdated measures of the Confederacy and are up to date with the state of the art. Like for goal 2 (climate change), one explanation here could be that this goal enjoys coherence and is not ambiguous.

Balancing forest and wildlife (goal 9) is a new goal in Swiss forest policy. While we find no dilemmas, incoherence or transparency issues here, we do find the ambiguity of means, as implementing actors find that the measures related to this goal do not apply to them, which explains the off-track output implementation for some actors (the private ones).

Under goal 10 on **leisure and recreation**, the growing leisure and recreational uses conflict with other forest functions, such as conservation areas and wildlife zones. The actors face rule and societal pressure, as they explain that society does not accept the implementation of the measure related to protection zones for wild animals in the Swiss plateau. Indeed, we find that the protection zones for wild animals clash with societal needs: in two subnational jurisdictions, regional laws implementing it were rejected by voters. We also see the ambiguity of means, as implementing actors seem to see their function concerning leisure and recreation differently than the Confederacy, and delegate aspects like the valorisation of forest services directly to the forest owners or the promotion of wood use to private companies or associations. Implementing actors also note a discrepancy between their function in the sector and their role specified in the forest policy, as the latter is not in line with their official competences (ambiguity of means). Despite these throughput issues, the implementation of outputs is on-track.

Finally, goal 11 on **education, research and knowledge transfer** serves more as a supporting goal for the other goals. It neither faces any implementation challenges nor do we note any dilemmas. Consequently, we are not surprised that output implementation is on-track.

Discussion

We find that throughput dimensions (accountability dilemmas, incoherence, ambiguity and issues of transparency) contribute to explaining the implementation of outputs of Swiss forest policy in several ways. In line with the extant literature (Brodkin 2008; Hupe and Hill 2007; Lieberherr and Thomann 2019; Thomann et al. 2018), we find that the implementing actors in Swiss forest policy face multiple pressures that lead to diverse accountability dilemmas. The finding that the dilemma between rule and vocational pressure is the most predominant,

indicates the dominant role of the profession as an important standard of accountability. This can be indicative of hybrid settings (Sager et al. 2014), such as the implementation of the Swiss forest where both public and private actors play a role. Our finding that accountability dilemmas can occur independently from other throughput dimensions demonstrates the central nature of accountability during implementation and coheres with the accountability literature (Bovens et al. 2014; Brodtkin 2008; Hupe and Hill 2007; Thomann et al. 2018).

We also see an interplay between accountability and the throughput dimensions of incoherence and issues of transparency, which then contribute to poor outputs. We find slightly more evidence for the interplay between incoherence and accountability dilemmas than issues of transparency. Following the literature, incoherence can make policy measures irreconcilable (Gerber et al. 2009; Thomann 2019). Conversely, issues of transparency, in terms of information dissemination can certainly also lead to implementation problems (Finkelstein 2000; Heritier 2003; Knoepfel et al. 2011; Mengistie et al. 2015), but the nature of transparency is not inherently as conflictive as incoherence. Hence, it is not surprising that we find more linkages between incoherence and accountability dilemmas, on the one hand, and the unexpected effect that for the two goals where we find transparency issues, the goals are on-track. The only two goals where we find transparency issues are goal 2 (climate change) and goal 8 (harmful organisms), both of which are new (with the revision in 2016) in the Federal Law on Forests (Zabel and Lieberherr, 2016). With such nascent goals, we are not surprised to find ineffective information communication. Overall, transparency does not seem to play a pivotal role in explaining output implementation as policy incoherence.

Moreover, we find that ambiguity can work both ways – as hindering and fostering accountability dilemmas and output implementation. This finding is very much in line with the existing literature, i.e. that ambiguity can lead to uncertainty and misunderstandings, but is also an important means to reduce conflict (Baier et al. 1994; Knill 2015; Matland 1995). In our qualitative analysis on the implementation process, we find the ambiguity of means to link more predominantly with poor policy implementation (for goal 2 on biodiversity, goal 6 on economic viability goal 7 on forest soil, drinking water and vitality and 9 on forest and wildlife) than with on-track implementation. This finding shows how particularly ambiguous roles can lead to output implementation challenges, as actors do not feel “addressed” by the policy and hence do not implement measures (Baier et al. 1994; Knill 2015). Conversely, we also find it interesting that ambiguity can help reduce conflict for two goals (goal 1 on wood mobilization and goal 10 on recreation) as this shows on the one hand, that ambiguity of goals (for wood mobilization it is ambiguity of goals) might be fostering rather than hindering for output implementation

(Matland 1995). On the other hand, for the instance of recreation, the implementing actors (who do not feel addressed by the policy) simply delegate the competences. Hence, actors might still implement policy measures despite ambiguity. This contrasts with the above four goals where the ambiguity of means seems negative for output implementation, as we do not find evidence that the actors delegate the tasks. These findings shed light onto the nuanced interplay between policy design and procedural aspects: Beyond the objective degree of ambiguity (and coherence) impacts on policy success, we find that actors' perceptions also play a role (positive or negative) in terms of goal achievement.

Beyond this evidence that largely supports our theoretical considerations, we cannot explain some of our results through the expected interplay between throughput legitimacy dimensions. This holds for the following goals and respective expectations (see also table 4):

- goal 1 on wood mobilization for expectations 1 and 2,
- goal 2 on climate change for expectations 1 and 3,
- goal 8 on harmful organisms for expectations 1 and 3,
- goal 10 on leisure and recreation for expectation 1.

What is interesting here is that all the above goals do not support our expectation 1 on the accountability dilemmas and the negative consequences for the implementation of policy measures. Despite dilemmas, policy implementation is on-track for these goals. Here future research could explore if an explanation for the positive implementation could be a potential synergistic relationship between some of the other throughput dimensions, which might compensate for the accountability dilemmas. For instance, could the dilemmas be offset by coherent, non-ambiguous or transparent policies? A synergistic interplay between dilemmas and other throughput dimensions would fit well with the existing literature (Lieberherr 2016; Schmidt 2013).

What is more, all the goals that contradict our expectations have a potential explanatory factor in common: they are all goals of high salience. The literature defines salience as high visibility of and importance attached to a topic, as indicated by public attention—either because a policy is highly important, or politically contested (Versluis 2003; Versluis and Spendzharova 2013). Research on EU member state implementation finds that high issue salience is associated with higher levels of compliance, as implementing actors put more attention and efforts into how the policy is implemented (ibid; Thomann 2019).

The goals have high salience for varying reasons. Goal 1 on wood mobilization is highly contested, as Swiss wood is struggling to compete with the international market (Oswald et al. 2004). We thus find that the actors remain active despite the throughput constraints: we see that

the actors continue to do business as usual and implement measures despite issues of rule versus incentive dilemma, incoherence and ambiguity. Indeed, it seems that many of the implementing actors have a genuine interest in wood mobilization and have been involved in the implementation activities independently from the federal policy. Goal 2 on climate change receives a tremendous amount of public attention due to storms and droughts that are damaging forests, not to mention the public protests. Similarly and as noted above, goal 8 on harmful organisms has recently come on the political agenda due to invasive species being imported through wood cartons from abroad (Zabel and Lieberherr 2016). The saliency of these issues seems to trigger the implementing actors to become very active in implementation, despite the incomplete information and dilemmas. Finally, leisure and recreation (Goal 10) is also a new goal with high salience, not yet embedded in the national legislation: This is a pressing issue for the implementing actors to solve to avoid societal conflict in their jurisdictions. Similar to goal 8, we find that the implementing actors have become active on their own accord, irrespective of the Confederacy's policy.

In sum, for the four goals that contradict our expectations, we see that despite throughput issues, actors do actively implement measures for the goals with high salience, such as climate change and harmful organisms. We thus find that saliency is a key intervening factor with throughput legitimacy dimensions. This finding aligns with research on policy implementation in the EU: implementing actors dedicate more attention to salient issues, which makes a timely and correct implementation more likely (Thomann 2019; Versluis 2003; Versluis and Spendzharova 2013).

Conclusion

Our starting point was that traditional notions of policy legitimacy as rule-following within hierarchical relationships might not do justice to a context of contemporary environmental governance, with implementing actors experiencing multiple roles. These multiple roles become particularly prominent in hybrid settings such as the context of forest policy, which encompasses environmental and economic aspects with public and private implementing actors. In such contexts, policy legitimacy faces challenges in practice. We thus focused on the procedural aspect of legitimacy, in terms of how actors experience accountability dilemmas, incoherence, ambiguity and issues of transparency during the policy implementation process (throughput legitimacy) and what this means for policy outputs, that is, the degree of implemented measures (output legitimacy) of the Swiss Forest Policy.

Our study suggests three key findings. First, accountability dilemmas have negative consequences for output implementation—this points to the central importance of a widened perspective on accountability in policy implementation, taking into account professionalism and social norms (Brodkin 2008 2011; May 2015). Second, these accountability dilemmas are part of and interact with other elements of the throughput dimension of the governance process, specifically with policy incoherence and ambiguity, where the role of the latter can be positive or negative for policy outputs. This finding shows how the interlinkage between throughput and the output dimension of governance. Third, we find that high issue salience can, in part, compensate for the potential negative effects of accountability dilemmas, policy incoherence and/or ambiguity. This finding of saliency as a key intervening factor resonates with insights on multilevel policy implementation more generally (Thomann 2019; Versluis 2003; Versluis and Spendzharova 2013).

When combining these three findings, we suggest that researchers could generate a ranking or weighting for the throughput dimensions, by initially considering which goals are salient. In the absence of salience, researchers could emphasize analysing the role of accountability dilemmas, incoherence and ambiguity, given that accountability and then incoherence seems to have the strongest link with poor output implementation. In contrast, incomplete information (issues of transparency) seems to be the least detrimental for policy outputs.

Our findings shed light on diverse implementation challenges, which in turn points to fruitful areas for future research. Beyond saliency as an important intervening factor, the input legitimacy aspect, which we did not address in this analysis, could play a pivotal role in affecting policy outputs (Schmidt 2013; Lieberherr 2016). Future research could focus on linking this input dimension with a detailed analysis of throughput and output legitimacy. While several articles have focused on the input, throughput, output legitimacy interplay, these have addressed throughput as the quality of the decision-making process than as the implementation process, which we propose (cf. Geeraert 2014; Risse and Kleine 2007; Van Meerkerk, Edelenbos and Klijn 2015; Schmidt 2013). We might also go one step further and touch on EU implementation literature. Newig and Koontz (2014) have, for example, shed light on the value of including input legitimacy – involving actors through participatory processes – not only in the drafting of legislation but also during implementation. Given the multi-level nature of the EU and federal countries, involving a “second loop” of input with the implementing actors to co-formulate measures and monitoring programs could be an interesting avenue to explore. There are indeed many open questions about what a “new” politicization of policy from the top (as it is mandated by e.g. EU legislation or national governments) means for traditional input

legitimacy and what actual effect this has on throughput and output legitimacy (Newig and Koontz 2014). Finally, in our analysis, we have limited our study of output legitimacy in terms of the implementation of outputs. Future studies could go much further in terms of also addressing outcomes and impacts. Moreover, given the limited generalizability of our case study findings, future research should test the mechanisms we found on a broader set of countries and policies.

Our research contributes to the "policy-focused political science" (Hacker and Paulsen 2014: 643) which looks at state action at the throughput and output level to gain a better understanding of policy legitimacy. By honing in on the procedural aspects of policy implementation we have followed Rothstein (2014) who argues that political scientists focus too much on the input side of the democratic process, on 'who wins elections' and on party competition, and not enough on the state machinery and its performance or lack thereof. Our work focuses specifically on "how particular policies are carried out in studying their translation into practice by intermediaries [...]" (May 2015: 296). This is also in line with H eritier (2016: 17) who points to the importance of output legitimacy: "empirical findings [...] indicate that in public opinion good governance of the state is a more important source of democratic legitimation than the correct and fair democratic procedures as such." Indeed, a recent study found that output performance is the key driver for citizens' choice of a governance arrangement (Strebel et al. 2018), which echoes Scharpf's (1999) argument that problem-solving capacity is the cornerstone for policy legitimacy. Our contribution sheds light on the explanatory role of throughput legitimacy for output legitimacy and explains how procedural dimensions play a role in the politics of implementation. Returning to Schmidt (2013: 14), disentangling throughput from input and output legitimacy "[...] has explanatory power about the legitimization (or lack thereof) of the other two dimensions." The role of implementing organizations in democratic countries goes beyond rule-following. Our article is a step in the direction to understand how and why implementing actors react to different throughput factors during the implementation process and what this means for policy outputs.

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Appendix 1
List of actors surveyed

Public administrative actors (federal and subnational public level)
Federal Office for the Environment
Aargau
Appenzell Ausserrhoden
Appenzell Innerrhoden
Basel-Landschaft
Basel-Stadt
Bern
Fribourg
Genf
Glarus
Graubünden
Jura
Luzern
Neuenburg
Nidwalden
Obwalden
St. Gallen
Schaffhausen
Schwyz
Solothurn
Thurgau
Tessin
Uri

Waadt
Wallis
Zug
Zürich
Conference of cantonal foresters
Private actors
Forestry sector
Swiss forest economy association (forest owners)
Swiss forest manager association
Swiss forest employee association
Wood sector
Lignum Swiss wood economy association
Swiss wood energy
Swiss timber
Swiss wood industry
Swiss carpentry master and furniture producer association
Agricultural sector
Conference of agricultural offices
Environmental sector
Pro Natura
Research and education
WSL – Swiss federal institute for forest, snow and landscape
HAFL – Bern university of applied sciences, school of agriculture, forest and food sciences*
Forestry school Lyss*
Further education forest and landscape

Leisure and recreation
Swiss hunter association*
Swiss tourism association
Additional associations and organizations
Swiss forestry association
Insurance
Swiss insurance association*
Suva – Swiss national accident insurance
Transport
Association of road traffic offices

*Sent survey, but no response.

Appendix 2

Example questionnaire sent to the subnational governments (translated from German)

Welcome to the questionnaire "Interim report 2016 on the forest policy 2020"

On behalf of the Swiss Federal Office for the Environment (FOEN), ETH Zürich and the higher education institution for agricultural, forestry and food science (HAFL) we are carrying out the project „**Interim report 2016 on the forest policy 2020**“, which aims to provide an assessment on the implementation of the measures in the forest policy 2020 between the years 2012 and 2015. The objective of this project is to inspect the degree of implementation of the forest policy 2020 to identify a potential need for adaptation for the second stage 2016 - 2020 as well as the forest policy after 2020. Within the project, a survey on implementation of measures in the **cantons** is carried out.

Interviews with section managers and experts of the Swiss Federal Office for the Environment were carried out in the first part of the project. The structure of the questionnaire and the numbering of the questions follows the forest policy 2020. The questions are sorted by objectives and strategic directions. Gaps in numbering are due to the fact that not all measures mentioned in the forest policy 2020 are relevant for the cantons at this point in time.

We kindly request you to fill in the questionnaire regarding the **implementation of the forest policy 2020 between 2012 and 2015** for your canton by **August 17th, 2016**.

The survey will be anonymized, which means without mentioning your canton. Therefore, only national results will be displayed without an option to draw conclusions to individual cantons.

Your assistance is an important contribution to the success of our project as well as the second stage and further development of the forest policy 2020.

For any questions, XXX will be to you gladly at the disposal

Implementation of measures of the forest policy 2020 in the cantons

Objective 1

Taking local conditions into account, the wood harvest potential of the Swiss forest that can be harvested sustainably shall be exhausted.

Strategic direction 1.1 *Forest managers shall be provided with expert decision support for optimal forest management (maximum possible exploitation of wood increment).*

1.1a Did the canton implement measures in the subject of wood usage potential?

Yes/ No/ Don't know

If so, which:

- Provision of information
- Interpretation of studies and scenarios in the regional context
- Dissemination of information
- Offering of advice

1.1b Did the canton further processed information bases provided by the Confederation on wood harvesting, wood processing, wood trading and wood end use, potential demand, and value creation potential?

Yes/ No/ Don't know

If so, how:

- Dissemination of information
- Interpretation in the regional context
- Offering of advice

Additional comments on the Strategic direction 1.2

Strategic direction 1.2 *New processing and marketing options for hardwood shall be sought*

1.2a Did the canton disseminate information on market studies on hardwood sales?

Yes/ No/ Don't know

Additional comments on the Strategic direction 1.2

Strategic direction 1.3 *The demand for wood shall be increased inter alia through the dissemination of information and raising of awareness among the population and institutional end users(see Wood Resource Policy)*

1.3a Did the canton disseminate information on the further development of energy-efficient (large-volume) timber construction systems and building in existing structures (Bauen im Bestand)?

Yes/ No/ Don't know

If so, on which of the topics mentioned above?

- Energy-efficient (large-volume) timber construction systems
- Building in existing structures (Bauen im Bestand)

1.3b	<p>Did the canton disseminate information on raising awareness among institutional end users of the advantages of timber structures, wood components and the use of wood energy?</p> <p>Yes/ No/ Don't know</p> <p>If so, on which of the topics mentioned above?</p> <ul style="list-style-type: none"> • Timber structures • Wood components • Use of wood energy
Additional comments on the Strategic direction 1.3	

Objective 2

For the mitigation of climate change, forest management and wood use (substitution) shall contribute to attaining the maximum possible reduction in CO₂ emissions (reduction). The Swiss forest shall be conserved as a resilient ecosystem that is capable of adaptation and shall continue to provide the services required by society under altered climate conditions (adaptation)

Strategic direction 2.1	<i>The impacts of climate change (storms, drought etc.) on the forest shall be studied and the suitability of the silviculture methods used shall be examined</i>
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2.1a	<p>Did the canton already implement measures based on the research program “Forest and Climate change”?</p> <p>Yes/ No/ Don't know</p> <p>If so, what:</p> <ul style="list-style-type: none"> • Dissemination of information • Planning • Implementation of measures
Additional comments on the Strategic direction 2.1	

Strategic direction 2.2	<i>The resilience of the forest shall be improved through adapted young forest maintenance with stable young stands suited to their locations. Targeted measures shall be carried out to adapt forest stands with insufficient or unsuitable regeneration and unstable stands, and stands in climate-sensitive locations.</i>
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2.2a	<p>Has the canton already implemented measures based on the federal climate strategy in the forest sector?</p> <p>Yes/ No/ Don't know</p> <p>If so, what:</p> <ul style="list-style-type: none"> • Implementation of local measures • Interpretation of the national strategy in the regional context
Additional comments on the Strategic direction 2.2	

Strategic direction 2.3	<i>Measures for prevention, removal and reforestation following events involving disturbance or damage shall be supported.</i>
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2.3c	Did the canton implement measures in accordance with the Alarm Ordinance
	Yes/ No/ Don't know
	If so, what: <ul style="list-style-type: none"> • Planning • Implementation of measures
	Additional comments on the Strategic direction 2.3

2.4a	Did the canton implement measures regarding the federal strategy on the “Ressource Policy Wood” and the actionplan wood?
	Yes/ No/ Don't know
	If so, which: <ul style="list-style-type: none"> • Dissemination of information • Interpretation in the regional context • Offering of advice
	Additional comments on the Strategic direction 2.4

Objective 3

The services provided by the forest for the protection of human life and infrastructure (settlements, railways, roads etc.) shall be guaranteed sustainably on a comparable level throughout Switzerland.

Strategic direction 3.1	<i>Protective forest areas shall be designated in spatial planning terms in accordance with a national strategy developed jointly by the Confederation and the cantons (SilvaProtect-CH)..</i>
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3.1a	Did the canton conduct activities regarding the harmonised criteria for protective forest designation?
	Yes/ No/ Don't know
	If so, which: <ul style="list-style-type: none"> • Planning measures • Implementing measures
	Additional comments on the Strategic direction 3.1

Objective 4

The species living in the forest and the forest as a near-natural ecosystem shall be conserved. Aspects of biodiversity in which deficits exist shall be improved

Strategic direction 4.1	<i>Management of all forest area shall be carried out in accordance with the legal requirements for near-natural silviculture.</i>
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4.1a	Do basics on near-natural silviculture exist in the canton?
	Yes/ No/ Don't know
	Additional comments on the Strategic direction 4.1

Strategic direction 4.2	<i>Program agreements shall be concluded with the cantons for the designation of protected areas (10% forest reserves by 2030 in accordance with agreement with the cantons) and upgrading of priority habitats (also known as priority areas; forest margins, wooded pastures etc.).</i>
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4.2b	<p>Did the canton implement measures regarding the federal statistics on the designated forest reserves?</p> <p>Yes/ No/ Don't know</p> <p>If so, which:</p> <ul style="list-style-type: none"> • Provision of basic information • Interpretation of basic information • Dissemination of information
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4.2c	<p>Did the canton implement measures regarding basic information on the designation of forest reserves and other biodiversity promotion areas ?</p> <p>Yes/ No/ Don't know</p> <p>If so, which:</p> <ul style="list-style-type: none"> • Dissemination of information • Interpretation in the regional context • Planning and implementation
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Additional comments on the Strategic direction 4.2	
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Strategic direction 4.3	<i>Regional biodiversity objectives shall be defined and a finance system developed to compensate the services provided by forest managers in the fulfilment of the objectives..</i>
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4.3a	<p>Did the canton implement measures regarding the federally developed regional biodiversity objectives in the forest?</p> <p>Yes/ No/ Don't know</p> <p>If so, which:</p> <ul style="list-style-type: none"> • Cooperation • Planning and implementation • Dissemination of information
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Did the canton implement measures regarding the system developed by the Confederation for the valorisation of special services for biodiversity?

Yes/ No/ Don't know

If so, which:

- Cooperation
- Planning and implementation
- Dissemination of information

Additional comments on the Strategic direction 4.3	
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Objective 5

The forest shall be fundamentally conserved in its spatial distribution and shall not decrease in its area. The further development of forest area shall be coordinated with landscape diversity (including connectivity) and targeted spatial development (including agricultural priority areas).

Strategic direction 5.1	<i>The prohibition on deforestation with the possibility for the granting of exceptional permits shall be upheld, and the discretion for the granting of exceptional deforestation permits shall be exhausted.</i>
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5.1a	<p>Did the canton implement measures in the area of implementation guides concerning deforestation?</p> <p>Yes/ No/ Don't know</p> <p>If so, which:</p> <ul style="list-style-type: none"> • Dissemination of information • Interpretation in the regional context • Implementation
5.1b	<p>Did the canton implement measures concerning deforestation processes?</p> <p>Yes/ No/ Don't know</p> <p>If so, which:</p> <ul style="list-style-type: none"> • Implementation • Monitoring
5.1c	<p>Did the canton disseminate information on deforestation statistics?</p> <p>Yes/ No/ Don't know</p> <p>If so, to whom?</p>
5.1d	<p>Did the canton implement measures concerning possible legal discretion of exceptional deforestation permits compiled by the Confederation?</p> <p>Yes/ No/ Don't know</p> <p>If so, which:</p> <ul style="list-style-type: none"> • Dissemination of information to project sponsorship(applicants) • Interpretation and application in the regional context • Implementation
5.1e	<p>Did the canton take measures concerning the incorporation of regional settlement planning into the assessment of exceptional deforestation permits?</p> <p>Yes/ No/ Don't know</p> <p>If so, which:</p> <ul style="list-style-type: none"> • Information • Planning • Implementation
Additional comments on the Strategic direction 5.1	

Strategic direction 5.2	<i>In certain cases (e.g. to protect agricultural priority areas and for the rehabilitation of watercourses), it shall be possible to dispense with compensation in kind or compensation for deforestation.</i>
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5.2a	<p>Did the canton implement measures concerning expert information (supra-communal planning, approaches to be adopted in the case of undesired forest increase etc.)?</p> <p style="text-align: center;">Yes/ No/ Don't know</p> <p>If so, which:</p> <ul style="list-style-type: none"> • Provision of information to project sponsorship (applicants) • Planning • Implementation
5.2b	<p>Did the canton implement measures concerning the policy and legislation processes (Spatial Planning Act SPA, Forest Act ForA) at national level?</p> <p style="text-align: center;">Yes/ No/ Don't know</p> <p>If so, which:</p> <ul style="list-style-type: none"> • Information • Implementation <hr/> <p>Additional comments on the Strategic direction 5.2</p>

Strategic direction 5.3	<i>Static forest boundaries can be designated in relation to the open land on the basis of overall planning (in particular structural planning).</i>
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5.3a	<p>Did the canton implement measures concerning the adaptation of the Forest Act in relation to static forest boundaries?</p> <p style="text-align: center;">Yes/ No/ Don't know</p> <p>If so, which:</p> <ul style="list-style-type: none"> • Dissemination of information to the cantonal expert bodies (agriculture and traffic) and municipalities? • Implementation of adapted options
5.3b	<p>Did the canton implement measures in relation to the expert information bases and methodology of the Confederation on static forest boundaries?</p> <p style="text-align: center;">Yes/ No/ Don't know</p> <p>If so, which:</p> <ul style="list-style-type: none"> • Dissemination of information • Implementation <hr/> <p>Additional comments on the Strategic direction 5.3</p>

Objective 6

The efficiency and performance of the Swiss forestry sector and, therefore, the structure of forestry operations and cooperation beyond ownership structures shall improve. The additional expenses incurred by managers for the provision of the desired forest services, or corresponding losses in income, shall be compensated.

Strategic direction 6.1 *Programme agreements shall be concluded with the cantons for the optimisation of management units and improvement of wood logistics.*

6.1b	Did the canton implement measures regarding data of the structure, economic efficiency and natural production bases of management units by the Confederation? Yes/ No/ Don't know Falls ja, was: <ul style="list-style-type: none">• Dissemination of information• Interpretation in the regional context <hr/> Additional comments on the Strategic direction 6.1
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Strategic direction 6.2 *Information bases shall be developed and conditions established so that forest services provided by the forest owners can be valorised (e.g. for recreation, drinking water, CO2 sink services).*

6.2c	Did the canton compile own measures on the regional or cantonal scale for dealing with land-use conflicts in the forest? Yes/ No/ Don't know <hr/> Additional comments on the Strategic direction 6.2
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Objective 7

Forest soil, drinking water and tree vitality shall not be endangered by substance inputs, inappropriate management and corresponding physical impacts..

Strategic direction 7.3 *The nutrient balance shall be conserved or improved through the examination of the consequences of substance withdrawals from the forest (e.g. full tree harvesting) or measures for the compensation of nutrient losses (e.g. through the spreading of wood ash).*

7.3a	Did the canton implement measures concerning the clarification by the Confederation on the extent of the threatened forest stands and locations particularly at risk from nitrogen inputs? Yes/ No/ Don't know If so, which: <ul style="list-style-type: none">• Interpretation in the regional context• Dissemination of information
7.3b	Did the canton compile its own measures for the improvement of the nutrient balance in the forest? Yes/ No/ Don't know

Additional comments on the Strategic direction 7.3

Objective 8

The forest shall be protected against the introduction of particularly hazardous harmful organisms. The infestation and spread of organisms shall not exceed an acceptable level from the perspective of forest services.

Strategic direction 8.1 *Gaps in the prevention and control of biotic hazards shall be identified and filled. Effective crisis management, including the necessary infrastructure (e.g. laboratory), shall be developed.*

8.1a Did the canton take measures concerning the Confederation's strategy for the prevention and control of biotic hazards?

Yes/ No/ Don't know

If so, which:

- Dissemination of information
- Implementation of the strategy

8.1d Did the canton disseminate information in case of extraordinary events about new biotic hazards?

Yes/ No/ Don't know

Additional comments on the Strategic direction 8.1

Strategic direction 8.2 *Prevention, remediation and reforestation measures in the case of disturbance or damage shall also be intensified outside of protective forests.*

8.2a Did the canton implement measures in the area of organism-specific control strategies for hazardous harmful organisms?

Yes/ No/ Don't know

Falls ja, was:

- Implementation of measures for protection against hazardous harmful organisms
- Implementation of measures for protection against especially hazardous harmful organisms (organisms under quarantine)
- Coordination of measures

8.2c Did the canton take measures related to the task force «Nationale Waldschäden» (national forest damage)?

Yes/ No/ Don't know

Additional comments on the Strategic direction 8.2

Objective 9

The forest shall provide sufficient living space and quiet for wild animals. Game stocks shall be adapted to their habitats and have a natural age and gender distribution. The natural regeneration of forests with tree species suited to their locations shall not be hindered by wild ungulates.

Strategic direction 9.1 *In the context of program agreements on the protective forest and forest management, the cantons shall be given financial support for the production and implementation of forest wildlife strategies.*

9.1a Did the canton take measures in relation with forest-wildlife strategies?

Yes/ No/ Don't know

Falls ja, was:

- Planning and base regulation of wildlife
- Implementation of measures in accordance with forest-wildlife strategy
- Control and Monitoring

Additional comments on the Strategic direction 9.1

Objective 10

Leisure and recreation activities in the Swiss forest shall be respectful. Forest visitors shall be satisfied with the services provided.

Strategic direction 10.1 *The public shall be informed and made aware of the correlations and interconnections in the forest ecosystem.*

10.1a Did the canton disseminate information and raise awareness about the correlations and interconnections in the forest ecosystem and about forest and wood?

Yes/ No/ Don't know

10.1b Did the canton implement measures in the forest to raise awareness regarding leisure and recreation use of the forest?

Yes/ No/ Don't know

Additional comments on the Strategic direction 10.1

Strategic direction 10.2 *Information bases shall be developed and conditions created for the valorisation of forest services provided by forest owners (see also Chapter 3.6).*

10.2a Did the canton implement adequate measures for the planning, management and valorisation of recreational forests?

Yes/ No/ Don't know

If so, which:

Additional comments on the Strategic direction 10.2

Strategic direction 10.4 *"Rest areas for wild animals" (wildlife rest areas) shall be designated, insofar as necessary.*

10.4b Did the canton implement measures in the area of rest areas for wild animals? (FOEN-Publication "Wald&Wild - Grundlagen für die Praxis")?

Yes/ No/ Don't know

If so, which:

- Planning and designation of rest areas for wild animals according to the guidelines for designation of rest areas for wild animals
- Implementation and control

Additional comments on the Strategic direction 10.4

Objective 11

The forest education system shall ensure high-quality expert and management skills of those working in and for the forest at all times. Research shall develop scientific information bases and effective methods for the resolution of problems.

Strategic direction 11.2 *The continuing education and training of experts in the forest sector shall be ensured.*

11.2b-c Did the canton take measures in the area of continuing education and training?

Yes/ No/ Don't know

If so, which:

- Raising awareness of forestry experts
- Dissemination of information
- Support of voluntary practical work placements
- Ensuring practical work experience of university graduates

Additional comments on the Strategic direction 11.2

Strategic direction 11.4 *The work safety and health protection of forestry workers and the raising of awareness of these requirements shall be ensured.*

11.4b Did the canton take measures in the area of raising awareness among forestry workers of work safety and promotion of courses for forestry workers?

Yes/ No/ Don't know

If so, which:

- Dissemination of information
- Implementation or participation in awareness-raising measures

Additional comments on the Strategic direction 11.4

Strategic direction 11.5 *The awareness of the forest and its sustainable development shall be strengthened.*

11.5a Did the canton disseminate information on sustainable management according to the Confederations awareness-raising measures?

Yes/ No/ Don't know

Additional comments on the Strategic direction 11.5

Strategic direction 11.6 *The research requirement shall be recognized and communicated to the responsible research actors.*

11.6a Did the canton articulate research requirements?

Yes/ No/ Don't know

General Remarks

If you have general remarks you can write them down here

Are you interested in the results of the questionnaire and want to be informed at a later point in time?

Many thanks for your participation in the project «Interim report on the forest policy 2020» !

Appendix 3

Example questionnaire at private actor level (translated from German)

Welcome to the questionnaire "Interim report 2016 on the forest policy 2020"

On behalf of the Swiss Federal Office for the Environment (FOEN), ETH Zürich and the higher education institution for agricultural, forestry and food science (HAFL) we are carrying out the project „**Interim report 2016 on the forest policy 2020**“, which aims to provide an assessment on the implementation of the measures in the forest policy 2020 between the years 2012 and 2015. The objective of this project is to inspect the degree of implementation of the forest policy 2020 to identify a potential need for adaptation for the second stage 2016 - 2020 as well as the forest policy after 2020.

The structure of the questionnaire and the numbering of the questions follows the forest policy 2020. The questions are sorted by objectives and strategic directions. Gaps in numbering are due to the fact that not all measures mentioned in the forest policy 2020 are relevant for all the actors at this point in time.

We kindly request you to fill in the questionnaire regarding the **implementation of the forest policy 2020 between 2012 and 2015** for your canton until **August 17th, 2016**

Your assistance is an important contribution to the success of our project as well as the second stage and further development of the forest policy 2020.

Objective 1

Taking local conditions into account, the wood harvest potential of the Swiss forest that can be harvested sustainably shall be exhausted

Strategic direction 1.1 *Forest managers shall be provided with expert decision support for optimal forest management (maximum possible exploitation of wood increment)*

1.1a	<ul style="list-style-type: none"> Have you provided the necessary information bases to the Confederation for demonstrating the possible harvesting potential? 	Yes, plenty	Yes, little	In planning	No	Don't know	Not applicable
	<ul style="list-style-type: none"> Regarding this, have you interpreted studies and scenarios in your specific context? 	Yes, completely	Yes, partly	In planning	No	Don't know	Not applicable
	<ul style="list-style-type: none"> Did you offer advice in this relation? 	Yes, plenty	Yes, little	In planning	No	Don't know	Not applicable
1.1b	<ul style="list-style-type: none"> Have you disseminated information on wood processing, wood trading and wood end use according to the information bases of the Confederation? 	Yes, completely	Yes, partly	In planning	No	Don't know	Not applicable
	<ul style="list-style-type: none"> Did you offer advice in this relation? 	Yes, plenty	Yes, little	In planning	No	Don't know	Not applicable

Additional comments on the Strategic direction **1.1**

Strategic direction 1.2 *New processing and marketing options for hardwood shall be sought*

1.2a	<ul style="list-style-type: none"> Did you take the decision-making information of the Confederacy into consideration in your promotion of hardwood? 	Yes, completely	Yes, partly	In planning	No	Don't know	Not applicable
	<ul style="list-style-type: none"> In relation to the above, did you disseminate the relevant information? 	Yes, completely	Yes, partly	In planning	No	Don't know	Not applicable

Additional comments on the Strategic direction **1.2**

Strategic direction 1.3 *The demand for wood shall be increased inter alia through the dissemination of information and raising of awareness among the population and institutional end users (see Wood Resource Policy 18).*

1.3a	<ul style="list-style-type: none"> In your activities, have you taken further development of energy-efficient (large-volume) timber construction systems and building in existing structures («Bauen im Bestand»), research and development, innovation promotion and knowledge transfer into account? 	Yes, completely	Yes, partly	In planning	No	Don't know	Not applicable
	<ul style="list-style-type: none"> Have you disseminated information in that context? 	Yes, completely	Yes, partly	In planning	No	Don't know	Not applicable

1.3b	<ul style="list-style-type: none"> Have you disseminated information for raising awareness among institutional end users, especially with regard to advantages of timber structures, wood components and the use of wood energy? 	Yes, plenty	Yes, little	In planning	No	Don't know	Not applicable
	<ul style="list-style-type: none"> Have you taken decision supports of the Confederation into account in this context? 	Yes, completely	Yes, partly	In planning	No	Don't know	Not applicable

Additional comments on the Strategic direction **1.3**

Objective 2

For the mitigation of climate change, forest management and wood use(substitution) shall contribute to attaining the maximum possible reduction in CO2 emissions(reduction). The Swiss forest shall be conserved as a resilient ecosystem that is capable of adaptation and shall continue to provide the services required by society under altered climate conditions(adaptation).

Strategic direction 2.1 *The impacts of climate change (storms, drought etc.) on the forest shall be studied and the suitability of the silviculture methods used shall be examined.*

2.1a	<ul style="list-style-type: none"> Are you planning to implement measures according to the «Forest and Climate change» research program in the future? 	Yes	No	Don't know	Not applicable
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Additional comments on the Strategic direction **2.1**

Strategic direction 2.4 *The use of wood shall be boosted as a contribution to clean technologies (cleantech).*

2.4a	<ul style="list-style-type: none"> Have you disseminated information regarding the wood resource policy and the plan of action for wood? 	Yes, completely	Yes, partly	In planning	No	Don't know	Not applicable
	<ul style="list-style-type: none"> Have you offered advice regarding the implementation of the wood resource policy and the plan of action for wood? 	Yes, plenty	Yes, little	In planning	No	Don't know	Not applicable

Additional comments on the Strategic direction **2.4**