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Analysing Coherence in Policy for Multi-Functional Landscapes: An Exploratory Framework

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ABSTRACT

To address biodiversity loss and other negative environmental effects of land use, science and policy are increasingly recognising multi-functional landscape governance. This approach involves place-based policymaking across multiple governance levels, engaging various stakeholders and balancing multiple landscape values and functions. Due to the complexity involved, calls have been made for additional research addressing institutional challenges, policy coherence and practical tools and frameworks. This article introduces a novel framework for analysing coherence in multi-functional landscape governance, designed to be useful for both researchers and policymakers in land use contexts. The exploratory framework is inspired by multiple policy frameworks such as the European Landscape Convention and IPBES and draws from the two literatures on multi-functional landscape governance and policy coherence. By applying this framework, users can systematically analyse trade-offs and synergies between multiple, interacting policies, with a focus on landscape, multi-functionality and stakeholders throughout policy processes. The study includes an illustrative application of the framework to the EU Biodiversity Strategy and the Swedish Forest Strategy, revealing a lack of coherence on a series of parameters of relevance for biodiversity protection, including critical policy instruments. The article concludes by identifying areas that warrant further research to advance multi-functional landscape governance and thereby potentially improve biodiversity protection.

1 | Introduction

Anthropogenic destruction of biotopes causes serious problems in terms of biodiversity decline and losses of other ecosystem services (IPBES 2019). Multiple stressors cause multiple impacts, in turn motivating broad countermeasures to safeguard ecosystem multi-functionality, including landscape-based governance (Angelstam et al. 2020; Bostedt et al. 2021; IPBES 2019; Sayer et al. 2017; Solbär, Marcianó, and Pettersson 2019). Various landscape governance approaches have received increasing attention in both science and policy (Fors et al. 2024; Hölting et al. 2019; Mastrangelo et al. 2014; Song, Robinson, and Bardsley 2020; van Oosten, Runhaar, and Arts 2021) and generally concern

place-based and multi-level policies and measures that engage stakeholders in dialogue (Sayer et al. 2017; van Oosten 2021). They commonly span interacting administrations, policies, sectors, actors and disciplines (van Oosten 2021; Westerink et al. 2017). Nevertheless, governance research in the field is fragmented and still limited. First, there is no consensus in the literature on how to define various concepts of integrated landscape governance, which has caused confusion on how to interpret and apply the terms (Reed et al. 2020). This includes the concept of multi-functional landscape governance (Fors et al. 2024), which is often referred to by international bodies, such as the Organisation for Economic Co-operation and Development (OECD 2001) and the Intergovernmental Science-Policy

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Platform on Biodiversity and Ecosystem Services (IPBES 2019) to stress the importance of taking multi-functionality into account, in contrast to traditionally dominant monocultural practices. Despite the varying views on definitions, a commonality among them is the emphasis placed on managing synergistic and conflicting functions, which risks being overlooked in other approaches, for example, when ‘win-win’ outcomes are in focus (Brandt and Vejre 2004; Reed et al. 2017). Second, scholars call for studies on how to cope with different institutional challenges linked to multi-functional landscape governance (Ros-Tonen, Reed, and Sunderland 2018; van Oosten 2021), including how to prevent contradictory policies (Howard 2004; Reed et al. 2017; Ros-Tonen, Reed, and Sunderland 2018; Sandström et al. 2020; van Oosten 2021) and implementation gaps due to different views between those who set policies and those who apply them (Holl 2017; van Oosten, Uzamukunda, and Runhaar 2018).

At the same time, policy coherence has also gained increased attention in governance research and practice, including in the environmental field (Blicharska et al. 2023; Bocquillon 2018; Fopa Tchinda and Talbot 2023; Gottenhuber et al. 2023; Lenschow, Bocquillon, and Carafa 2018; Righettini and Lizzi 2022). By examining policy interactions, policy coherence analysis aims to identify trade-offs and synergies throughout policy processes (Nilsson and Weitz 2019). Among those calling for policy coherence, the IPBES (2019) underlines the need to implement cross-sectoral integrated governance at the landscape level to achieve transformative change. However, land use issues have received limited attention within the policy coherence literature (Fopa Tchinda and Talbot 2023). To our knowledge, no previous studies have linked policy coherence analysis to multi-functional landscape governance, nor has any framework for analysis in that context been presented.

Moreover, while policy coherence analysis often aims to guide the assessment and development of policies, studies show that policymakers seldom know how to promote coherence in practice (Blicharska et al. 2023; Browne et al. 2023; Nilsson and Weitz 2019). This has led to calls for tools and frameworks to aid policymakers (Bocquillon 2018; Fopa Tchinda and Talbot 2023). Additionally, criticism has been directed at previous policy coherence research for being methodological vague, and for neglecting normative dimensions, which has led to requests for, e.g., greater analytical transparency (Bocquillon 2018; Fopa Tchinda and Talbot 2023; Lenschow, Bocquillon, and Carafa 2018; Muscat et al. 2021).

To meet these calls for additional research, this study aims to develop a framework for exploring coherence in policy for multi-functional landscapes. By describing the framework as ‘exploratory’, we want to underline that it is designed to explore and investigate policies in a flexible manner rather than being rigid and fixed. Exploratory approaches are especially valuable when new perspectives are needed in areas that have received little attention or scrutiny to help generate new ideas and avenues (Stebbins 2001; Swedberg 2020). We base the framework on the main international agreement relevant to multi-functional landscapes - the European Landscape Convention (COE 2000) and the work of IBES (2019). Additionally, the framework was inspired by the two bodies of literature on multi-functional landscape governance and policy coherence. The framework

is designed to aid, foremost practitioners and policymakers but also researchers. The article makes three contributions: first, it presents a comprehensive overview of the two bodies of literature, which has so far been missing. Second, it helps to clarify the multi-functional landscape governance approach that previously has been contested. Third, it presents a novel framework for analysing coherence in multi-functional landscape governance. We moreover provide an illustrative example of how the framework can be used, by briefly applying it to the European Biodiversity Strategy for 2030 (European Commission 2020) and the Swedish Forest Strategy (Swedish Government 2018).

In order to identify key aspects to include in the framework, Section 2 introduces the literatures on multi-functional landscape governance and policy coherence analysis. Section 3 opens with an operationalisation of these two concepts with respect to the exploratory framework, which is then developed and described in detail. Section 4 presents an illustrative example of how the framework can be applied. The article ends with a discussion in Section 5 and a conclusion in Section 6.

2 | Literature Overview: Multi-Functional Landscape Governance and Policy Coherence

In order to identify critical aspects for constructing the framework, a snowball literature search was conducted (Wohlin 2014). This method departs from key studies and identifies additional publications using forward and backward tracing. One advantage of this approach is the ease of examining reference lists, allowing efficient identification of relevant studies. It may also provide a broader set of studies than what major databases do. However, focusing on a few publication clusters risks overlooking other clusters. This can be counteracted by selecting a strong initial set of studies that decreases bias (Wohlin 2014). In our study, the snowball search departed from well-cited articles on policy coherence (Nilsson et al. 2012; Kurze and Lenschow 2018) and systematic reviews (Fopa Tchinda and Talbot 2023; Righettini and Lizzi 2022). Regarding multi-functional landscape governance, initial sources were conceptual reviews (Hölting et al. 2019; Neyret et al. 2023; Reed et al. 2017), an editorial in a special issue (Ros-Tonen, Reed, and Sunderland 2018) and a doctoral thesis (van Oosten 2021).

2.1 | Multi-Functional Landscape Governance

The multi-functional landscape approach has become prominent in policymaking (Fors et al. 2024; Hölting et al. 2019; Song, Robinson, and Bardsley 2020). Historically, it was introduced in the late 1980s in order to counteract the negative impacts of monocultures and competing landscape interests (Brandt and Vejre 2004; Oostindie, Roep, and Renting 2006). It further gained importance after having been addressed in the Agenda 21 (UN 1992) and in OECD’s analytical framework for multi-functional agriculture (OECD 2001). The first international agreement in the field, ‘the European Landscape Convention (ELC)’—which focuses on landscape protection, management and planning, and emphasises public participation and collaboration—was initiated in 2000 by the Council of Europe (COE 2000).

Despite growing recognition in policy and practice of applying a multi-functional landscape governance approach, it has been considered under-theorised due to contested definitions (Fors et al. 2024; Reed et al. 2017). Studies have presented several frameworks, based on concepts such as ‘landscape approach’ (Sayer et al. 2017), ‘integrated landscape governance’ (Ros-Tonen, Reed, and Sunderland 2018; Reed et al. 2017), ‘landscape management strategies for multifunctionality and social equity’ (Neyret et al. 2023), ‘multifunctional agricultural landscapes’ (Song, Robinson, and Bardsley 2020) and ‘landscape governance’ (van Oosten 2021). This diversity has contributed to terminological confusion, allegedly inhibiting policy applicability (Fors et al. 2024; Reed et al. 2017). A key topic of debate concerns the interpretation and definition of the ‘landscape’ concept as such (Brandt and Vejre 2004; Hölting et al. 2019; Mastrangelo et al. 2014; Neyret et al. 2023; Song, Robinson, and Bardsley 2020). Furthermore, the term ‘multifunctionality’ is contested; some argue that it is merely a new term for sustainable development (Wiggering et al. 2003), while others criticise it for being too focused on ‘win-win’ outcomes, overlooking the management of conflicting interests (Reed et al. 2017). The concept ‘multifunctional landscape’ is intended to be spatially sensitive, incorporating biophysical, social and spatial characteristics of a landscape, as well as the interactions between them (Brandt and Vejre 2004; Duncan et al. 2020; O’Farrell and Anderson 2010; Reed et al. 2017; van Oosten 2021; Westerink et al. 2017). Another debate revolves around which governance aspects to include in the concept (van Oosten 2021). Since governance processes often focus on balancing multiple stakeholder objectives, as well as on addressing issues across different sectors and scales, participatory processes are being recognised as highly important. Such processes can facilitate knowledge exchange between local communities and policymakers. This local input can foster a more comprehensive view, which can help alleviate conflicts and trade-offs (Neyret et al. 2023; Reed et al. 2017; Sandström et al. 2023; van Oosten 2021). In addition, multi-sectoral cooperation between different governmental bodies is recognised as important for effective management, both on a horizontal level (at the same governance level) and vertically (at various governance levels such as national, regional and local) (IPBES 2019; Reed et al. 2017; van Oosten 2021).

In this study, we focus on the concept ‘multifunctional landscape governance’ to underline the importance and management of multiple functions within landscapes, functions that might otherwise be overlooked in broader landscape approaches. When using the concept, we refer to place-based policymaking, which typically involves multiple-level stakeholder dialogues aimed at balancing environmental and socioeconomic landscape functions, values and objectives.

2.2 | Policy Coherence

The quest for policy coherence reflects the need to prevent conflicts and promote synergies in public efforts to govern an increasingly complex world. Improved understanding of interactions between multiple goals and instruments can support more effective, equitable and transparent policymaking (Browne et al. 2023; Nilsson and Weitz 2019). Since policy

coherence gained attention in the 1990s, foremost in the EU, studies have presented various analytical approaches, mainly in development and environment policy (Fopa Tchinda and Talbot 2023; Pickering 2023). The interest in policy coherence increased following the adoption of Agenda 2030 and Sustainable Development Goal 17.14, which explicitly aims to enhance policy coherence for sustainable development (Fopa Tchinda and Talbot 2023; Pickering 2023). IPBES has recognised the importance of applying an integrated landscape perspective to foster policy coherence as a tool for achieving transformative change (IPBES 2019).

In policy coherence research, various policy levels are analysed. Most studies focus on vertical coherence, exploring the differences between varying levels of government, such as national and local, often resulting in multi-level analyses (Fopa Tchinda and Talbot 2023). Policy coherence can also be studied horizontally, across policy areas on the same government level. Finally, interactions can be examined either within one policy (internal) or between multiple (external) policies (Browne et al. 2023; Fopa Tchinda and Talbot 2023; Nilsson and Weitz 2019).

In the increasingly rich literature on policy coherence, the methods for analysing it differ (Fopa Tchinda and Talbot 2023). Two main approaches have emerged: the functionalist and normative branches, each attributing incoherence to different causes, either regulatory and institutional factors, or normative and ideological differences. Therefore, the approaches also differ in terms of their focus on the policy process. Studies on regulatory and institutional barriers often concentrate on the later stages of policy processes, such as implementation, while research on normative issues tends to focus on the initial stages, such as agenda setting.

In the functionalist branch, a well-cited analytical framework by Nilsson et al. (2012) focuses on rules and procedures, including the interplay between objectives, instruments and implementation practices. Objectives are considered as comparatively vague and therefore tend to exhibit greater coherence, whereas implementation is regarded as a critical stage and a locus of conflicts. To support the analysis, Nilsson et al. (2012) argue for involving combinations of experts, which has been done by e.g., Benson and Lorenzoni (2017) and Blicharska et al. (2023). The results point towards regulatory and institutional barriers to coherence, from overlaps to silo structures (Fopa Tchinda and Talbot 2023; Nordbeck and Steurer 2016).

The more recent normative branch instead emphasises political ideas, norms and power dimensions (Bocquillon 2018; Fopa Tchinda and Talbot 2023; Kurze and Lenschow 2018; Shawoo et al. 2023; Skovgaard 2018). Here, it is argued that a policy may appear coherent from one actor’s perspective but not from another, and calls are made for analyses that address inequality, power dynamics and distributional effects (Browne et al. 2023; Shawoo et al. 2023; Bocquillon 2018). Additionally, underlying interests and ideologies are recognised to influence goal selection, prioritisation and how trade-offs are managed, pointing to a need to consider norms, ideas and problem framings, particularly in initial policy stages (Kurze and Lenschow 2018; Pickering 2023; Shawoo et al. 2023;

Skovgaard 2018; Yunita et al. 2022). Claims are made that these political dimensions have often been overlooked, noting the importance of including ‘problem definition’ in the analysis, while reducing the focus on implementation (Kurze and Lenschow 2018; Lenschow, Bocquillon, and Carafa 2018). However, a common critique of this branch is that political factors, such as norms, are often embedded within complex institutional structures, making them challenging to unravel (Blicharska et al. 2023).

Some researchers argue that policy coherence research needs to integrate these dimensions (Benson and Lorenzoni 2017; Fopa Tchinda and Talbot 2023; Righettini and Lizzi 2022). Examples of holistic approaches include the system analysis framework for nature-based solutions by Castro (2022), and an analytical framework based on the three I’s—ideas, institutions and interests (Shawoo et al. 2023). The latter study highlights the importance of analysing how ideas influence policy coherence, including problem definition and goal formulation. A recent systematic review of policy coherence research presents a comprehensive framework, based on eight barriers and enablers to policy coherence, such as institutions, instruments, political reasons, negotiations and anchoring, but is not empirically tested yet (Fopa Tchinda and Talbot 2023). However, systematic approaches in turn face criticism for being too time-consuming to apply and too complex for policymakers to understand and implement. Nilsson and Weitz (2019) agree that reality is dynamic, non-linear and involves actors, ideas and interests affected by short-term needs, slow governance processes and shocks, but they still advocate a more streamlined model to improve clarity and practical applicability.

Methodological criticism has also been directed at policy coherence studies in general, claiming that results are not convincing due to insufficiently transparent analytical tools, making it unclear what perspectives are analysed (Fopa Tchinda and Talbot 2023; Muscat et al. 2021). This has spurred a demand for clarifications of contextual descriptions in assessments, particularly on which interactions are analysed (Blicharska et al. 2023). Another challenge is the temporal dimension, for instance when short- and long-term objectives are contradictory (Strambo, Nilsson, and Månsson 2015), as well as geographical perspectives that may affect policy interactions (Nilsson et al. 2012). Linked to the latter, only a fraction of studies focuses on land use issues compared to climate change and energy topics (Fopa Tchinda and Talbot 2023). Finally, there is an ongoing discussion about which method should be used to measure policy coherence. The majority use qualitative methods rather than quantitative ones, whereas some employ mixed methods (Fopa Tchinda and Talbot 2023).

3 | An Exploratory Framework for Coherence of Policy for Multi-Functional Landscapes

In the following section, we outline the exploratory framework. First, we operationalise the concepts ‘multifunctional landscape governance’ and ‘policy coherence’ and then integrate them into a framework. Finally, we describe how the framework can be applied in a three-step process.

3.1 | Operationalisation of Multi-Functional Landscape Governance

To operationalise the concept of multi-functional landscape governance through an iterative process, we depart from the ELC, where the three terms (multi-functional, landscape, governance) are partially defined and further enriched with detailed meaning, and additionally considering work by IPBES and academic scholars. The result is summarised and presented in Table 1, which forms the basis for analysis. The Council of Europe (2008) presented theoretical, methodological and practical guidelines for the implementation of the ELC. The ELC guide provides definitions and general principles that concern all authorities responsible for developing and implementing landscape policies, divided into seven themes: legal recognition of landscapes; rights and responsibilities; integrating the landscape dimension; public participation; knowledge, awareness raising, education and training; landscape policy; division of responsibilities and competences. With respect to landscape multi-functionality and governance, these can be summarised into three main aspects, as shown in Table 1. First, *landscape aspects* are identified. ELC defines ‘landscape’ as ‘an area perceived by people, resulting from natural and/or human factors’ (COE 2000, art. 1) and states that each Party shall recognise the significance of landscapes in law and promote awareness of their values among stakeholders. Second, different *multi-functional aspects* are suggested. The ELC and the IPBES highlight the landscapes’ multiple functions and diverse cultural, environmental, aesthetic, social and economic values (Council of Europe 2008; IPBES 2019). The ELC moreover identifies three actions: landscape protection, which focuses on conserving and maintaining landscape characteristics; landscape management, which guides regular protection of landscapes from changes following social, economic and environmental processes and landscape planning, which promotes forward-looking action to enhance and restore landscapes. IBES (2019) also recognises the importance of integrated planning and management at the landscape level, promoting conservation strategies that prioritise connectivity across multiple functions. Finally, general governance issues are identified in the ELC guide, among which we will focus on *stakeholder aspects*. The ELC and the IBES highlight the importance of increased collaboration between national authorities to integrate and manage multiple perspectives. They also emphasise public participation through, for example, stimulation of local and regional knowledge co-production, signifying a shift towards deliberative processes that may enhance legitimacy and inclusivity. For more details, see Table 1.

3.2 | Operationalisation of Policy Coherence

As a point of departure, a policy coherence analysis framework should serve as a practical tool for policymakers, enabling better-informed decisions (Nilsson and Weitz 2019). While frameworks may not lead to complete answers, they can complement other policy analyses and serve as a basis for political discussions and decisions. Transparency regarding the perspectives underlying the analysis is widely recognised

TABLE 1 | Multi-functional landscape governance aspects to include in the framework.

Aspects	Sub-themes	ELC	IPBES (2019)	Academic literature
Landscape aspects	Definition of landscape	<i>Article 1, 2 of the European Landscape Convention; ELC- implementation guide</i>		(Brandt and Vejre 2004; Hölting et al. 2019; Mastrangelo et al. 2014; Song, Robinson, and Bardsley 2020)
	Landscape policies	<i>Article 1 of the European Landscape Convention; ELC implementation guide</i>	IPBES	(Angelstam et al. 2020; Michanek et al. 2018; Solbär, Marciano, and Pettersson 2019; van Oosten 2021)
Multi-functional aspects	Definition of multi-functionality	<i>ELC implementation guide</i>	IBPES	(Brandt and Vejre 2004; van Oosten 2021; Westerink et al. 2017; Fors et al. 2024)
	Multi-functional landscape policies	<i>ELC implementation guide</i>	IPBES	(Brandt and Vejre 2004; van Oosten 2021; Westerink et al. 2017; Fors et al. 2024)
	Manage trade-offs/synergies	<i>ELC implementation guide</i>	IBPES	(Arts et al. 2017; Fors et al. 2024)
Stakeholder aspects	Collaboration	<i>ELC implementation guide</i>	IBPES	(Reed et al. 2017; Ros-Tonen, Reed, and Sunderland 2018; van Oosten 2021; Fors et al. 2024)
	Public participation	<i>Article 5 of the European Landscape Convention; ELC- implementation guide</i>	IBPES	(Sandström et al. 2023; van Oosten 2021; Fors et al. 2024)

Note: The colors are to distinguish the different aspects: Green - Landscape aspects; Yellow - Multifunctional aspects; Pink - Stakeholder aspects.

as crucial. Our framework builds on the functionalist definition of policy coherence by Nilsson et al. (2012), which views it as an attribute of policymaking that systematically reduces conflicts and promotes synergies both between and within different policy areas (see Table 2). In response to calls for considering normative aspects, we integrate political and ideological dimensions into the framework, in line with Kurze and Lenschow (2018) and Lenschow, Bocquillon, and Carafa (2018). Therefore, ‘*problem definition*’ is included in the framework, defined as the nature of the prevailing problem to be governed, linking to the ideological arguments of why the policy should be implemented. The problem definition specifies the issues to be governed and is connected to the policy adoption phase, helping to illuminate subsequent incoherence. In line with Nilsson et al. (2012), we also include policy objectives, instruments and implementation. *Policy objectives* reflect the main strategic policy priorities and directions. *Policy instruments* consist of regulatory, economic or informative means supporting the achievement of policy objectives. Analysing both objectives and instruments clarifies the conditions for implementation. When analysing *policy implementation*, governance actors are a key consideration. A variety of actors can be involved in policy processes on various levels, both within and outside governments. Key sites for policy development are ministries and agencies where public officials and expert advisors participate in detailed policy formulation (Boswell and Rodrigues 2016). Policies are often influenced and redesigned multiple times under the influence of additional actors, such as external stakeholders (Gofen et al. 2021). Finally, we include economic resource allocation in policy implementation, addressing a gap in the literature (Fopa Tchinda and Talbot 2023).

3.3 | The Framework

In this section, the two concepts are combined into a unified framework, presented in Table 3. The three Landscape, Multi-functional and Stakeholder aspects (rows) are to be explored in relation to the categories of Policy objectives, Instruments and Implementation (columns). Since the Problem definitions specify the overall issues to be governed, they are incorporated as an overarching row, intersecting all aspects of multi-functional landscapes. A table with more detailed guidance on the framework is presented in the Appendix A (Table A1).

The framework is to be applied in three steps: Mapping, Comparing and Concluding, as detailed in Figure 1. These steps are adapted from Nilsson et al. (2012) and are preferably iterated after input from expertise. The framework can be applied to policies focused on various environments and landscapes, such as forests and mountains, or on land use, spatial planning, nature protection and water management. Analysis can be done within a single policy (internal) or between policies (external) and across different levels of government, such as national and municipal (vertical), or on the same level of government (horizontal). While these steps can be carried out by an individual practitioner, Nilsson et al. (2012) suggest an expert group approach with both individual and collective components. Ideally, the group includes environmental and sectoral policy officers, as well as scientists, enabling in-depth analysis and avoidance of bias.

3.4 | Step 1: Mapping

This step involves mapping and analysing the problem definitions, and the objectives, instruments and implementation of a specific policy (by filling in Table 3), based on content analysis of policy documents (for details, see Table A1 in the Appendix A).

3.5 | Step 2: Comparing

In this step, the different policies are compared, using Table 4, to identify the interactions and assess internal, external, vertical and/or horizontal coherence. Internal coherence is analysed separately for each policy (and detailed in the final row in Table 4). External coherence is analysed by comparing both policies, aspect by aspect (the outer right column in Table 4). The table is to be filled with qualitative data on problem definitions, objectives, instruments and implementation, to determine whether interactions are synergistic, conflicting or both, based on the data gathered in Table 3 or the detailed guide in Appendix A (Table A1). In the framework,

a policy synergy refers to a positive or mutually beneficial connection of a policy component within or between policies, e.g., when a policy instrument helps to fulfil objectives in a different policy. Conversely, a policy conflict is defined as a negative interaction, i.e. where a policy component is undermining or leading to conflicts within or between policies (Paleari 2024). Therefore, key questions to consider are whether suggested instruments and implementation strategies help to achieve stated objectives or problem definitions, or if they counteract them and why. In addition, when analysing external coherence, an important question is to identify the differences and similarities between the various policies, to determine whether they are synergistic or conflictual. This comparison helps identify and map key interactions, contributing to the concluding step.

3.6 | Step 3: Concluding

The final step determines to what extent the studied policies are coherent or not, as presented in Table 5. Given our interest in

TABLE 2 | Operationalisation of policy coherence elements.

Problem definitions	The nature of the prevailing problem to be governed		
	Policy objectives	Instruments	Implementation
	The main strategic priority and direction of the policy	The regulatory, economic or informative instruments that support the achievement of policy objectives	The responsible authorities (e.g., national agency, regional/municipal level, private actors, companies) and economic funding allocated for implementation of the instruments

TABLE 3 | Analytical framework for coherence in multi-functional landscape governance.

Problem definitions	The nature of the prevailing problem to be governed		
	Policy objectives	Instruments	Implementation
	The main strategic priority and direction of the policy	The regulatory, economic, or informative instruments that support the achievement of policy objectives	The responsible authorities (e.g., national agency, regional/municipal level, private actors, companies) and economic funding allocated for implementation of the instruments.
Landscape aspects			
Definition			
Landscape policies			
Multi-functional aspects			
Definition			
Multi-functional land use policy			
Trade-offs and synergies			
Stakeholder aspects			
Collaboration			
Public participation			

Note: The colors are to distinguish the different aspects: Green -Landscape aspects; Yellow - Multifunctional aspects; Pink - Stakeholder aspects.

practical applicability, we adopt a qualitative approach, avoiding the need for statistical analysis and providing practitioners with opportunities for in-depth dialogue. Following Beland Lindahl et al. (2023) we consider coherence to be ‘high’ when interactions are predominantly synergetic, and ‘low’ if interactions are conflictual or synergies are absent. To diversify, we add ‘partial coherence’ for instances when a policy to some extent achieves synergies within or between other policies. When data is missing, or other factors hamper analysis, a policy may be deemed ‘inconclusive’. The concluding step thus summarises the interactions between problem definitions, policy objectives, instruments and implementation.

4 | An Illustrative Example: Biodiversity and Forest Policy in the EU and Sweden

To illustrate the framework, we return to the central issue at the beginning of the article—biodiversity decline and the potential of multi-functional landscape governance to counteract it. We provide an example of how to apply the framework to a vertical external policy relation, between the European Union and Sweden in the fields of biodiversity and use of forest landscapes. More specifically, we focus on the European Biodiversity Strategy for 2030 (European Commission 2020) and the Swedish Forest Strategy (Swedish Government 2018).

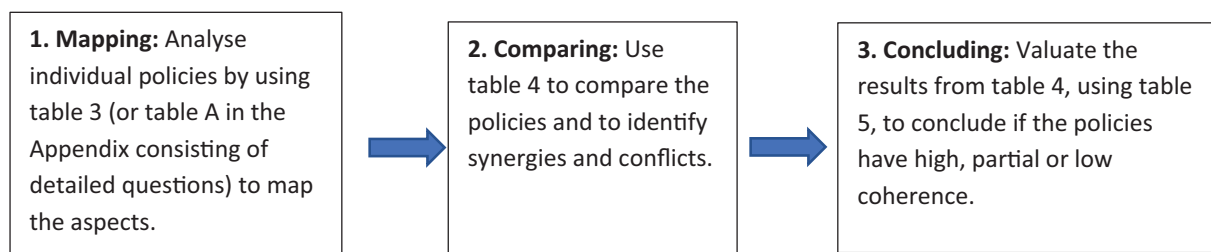


FIGURE 1 | Three steps of analysing the policies.

TABLE 4 | Comparisons of policies.

		Policy 1	Policy 2	External analysis
Problem definitions				Synergistic? Conflicting?
Landscape aspects	Definitions	Objectives Instruments Implementation	Objectives Instruments Implementation	Synergistic? Conflicting?
	Landscape policies	Objectives Instruments Implementation	Objectives Instruments Implementation	Synergistic? Conflicting?
Multi-functional aspects	Definitions	Objectives Instruments Implementation	Objectives Instruments Implementation	Synergistic? Conflicting?
	Multi-functional land use policy	Objectives Instruments Implementation	Objectives Instruments Implementation	Synergistic? Conflicting?
	Trade-offs/synergies	Objectives Instruments Implementation	Objectives Instruments Implementation	Synergistic? Conflicting?
Stakeholder aspects	Collaboration	Objectives Instruments Implementation	Objectives Instruments Implementation	Synergistic? Conflicting?
	Public participation	Objectives Instruments Implementation	Objectives Instruments Implementation	Synergistic? Conflicting?
Internal analysis		Synergistic? Conflicting?	Synergistic? Conflicting?	

Note: The colors are to distinguish the different aspects: Green -Landscape aspects; Yellow - Multifunctional aspects; Pink - Stakeholder aspects.

TABLE 5 | Concluding.

	Internal	External	Horizontal	Vertical
High coherence				
Predominantly synergy between problem definitions, policy objectives, instruments and implementation within or between policies				
Partial coherence				
Partial synergy between problem definitions, policy objectives, instruments and implementation within or between policies				
Low coherence				
Predominantly conflicts or lack of synergies between problem definitions, objectives, instruments and implementation within or between policies				
Inconclusive				
e.g., in cases of lack of data				

To put the European Biodiversity Strategy (EBS) into context, biodiversity protection has long been on the EU agenda, with the 1979 Birds Directive and the 1992 Habitat Directive as early examples. Despite this, biodiversity remains a critical issue for political efforts and debate. The EBS acknowledges that previous targets have not been met (European Commission 2020) and aims to ensure that biodiversity in Europe 'will be on the path to recovery by 2030 for the benefit of people, the planet, the climate and our economy...', thereby recognising multiple functions and benefits of natural landscapes for Europeans. From a governance point of view though, much of the implementation is assigned to Member States rather than EU institutions. Consequently, it is of interest to examine whether and how governance arrangements in a Member State correspond to the strategy. We focus on Sweden, considering its history of being a green frontrunner, but we limit the analysis to Swedish forest landscapes, where the threats to biodiversity are severe (SFA 2023).

In Sweden, forestry has long been a major industrial sector, and nearly all forest land is used for industrial production. The core legislation in place, the Swedish Forestry Act (1979:429), aims for a management that 'provides a valuable yield and at the same time preserves biodiversity', also taking other public interests into account. In practice though, the act clearly promotes intensive forestry at the expense of biodiversity, and conservation measures may never cause 'significant difficulties for current land use', i.e. for forestry (Forsberg 2012). Nevertheless, the Swedish government has adopted a forest strategy that specifies goals for the multi-functional use of forest land, including to achieve a 'diverse forest landscape for forest ecosystem services' (Swedish Government 2018).

The Swedish Forest Strategy (SFS), and the EBS, will serve as illustrative examples of how to apply the framework. The first step, the mapping of each of the two strategies, is shown in Tables A2 and A3 in the Appendix A, which illustrate the problem definitions, and the policy objective, instrument and implementation parameters for each policy. In the second step, shown in Table 6 below, the policies are compared.

In the final step, concluding, the analysis reveals that coherence between the two strategies is low on several parameters, foremost regarding instruments and aspects linked to implementation, such as responsible actors (see Table 7). One of the

main conflicts is that the SFS more or less entirely relies on a voluntary approach, meaning that the interests, options and measures of forest owners largely determine the outcome in practice. The EBS also recognises voluntary measures but is more specific on ways and means, and foremost holds Member States responsible for implementing various strategies such as regulations or monitoring. Coherence exists in that both strategies recognise multiple landscape functions, collaboration and inclusion of stakeholders but often differ in regards of instruments and implementation measures. A key reason for this is the Swedish government's long-standing position that the EU should not interfere in Swedish forest policy and the relatively limited governmental interventions in forest policies. The possibility to protect biodiversity in forests in Sweden instead lies in applying the Swedish Environmental Code (1998:808), which allows for the establishment of e.g., nature reserves, but such land-use decisions typically require economic compensation to forest owners, even above land market values, rendering conservation expensive. This helps explain why Sweden, despite the EBS, has not met its biodiversity targets for forest land (SFA 2023).

The EBS and SFS selected for this brief analysis serve to illustrate how the framework can be applied. While each strategy can be described in greater detail, and a full analysis of the relations between EU biodiversity protection and Swedish forest use would require including other policies and laws, such as the Environmental Code, this analysis nevertheless highlights existing tensions and demonstrates the usability of the framework (due to word limits we have not performed an internal coherence analysis, leaving this for future studies to explore).

5 | Discussion

This article presents a novel framework for analysing coherence in policy for multi-functional landscapes, addressing calls from previous research (Fors et al. 2024; van Oosten 2021) and international bodies (IPBES 2019) for greater clarity and guidance in assessment and policymaking concerning landscape multi-functionality. Integrating the relevant but distinct bodies of literature concerned with multi-functional landscape governance and policy coherence presented challenges, particularly due to definitional ambiguities and differing conceptual scopes, but the shared focus on identifying conflicts and synergies

TABLE 6 | Comparing EBS and SFS.

	Policy 1 – EBS	Policy 2 – SFS	External analysis
Problem formulations	EBS aims to address the main drivers of biodiversity loss through a new governance framework and full Member State (MS) law implementation.	SFS promotes equal production and biodiversity goals in the Forestry Act; and jobs, growth and bioeconomy in the whole country; by forest owners and agencies.	Conflicting: EBS prioritises restoring nature, and SFS balances biodiversity and production.
Landscape aspects	<p>Definitions</p> <p>Objectives: No definition but ‘landscape’ is often mentioned; landscape features are exemplified (e.g., fallow land, hedges and ponds).</p> <p>Instruments and implementation: No instruments or implementation practices are connected.</p>	<p>Objectives: No definition but ‘landscape’ frequently mentioned (natural and cultural), recognised to give an understanding of cultural and historical contexts.</p> <p>Instruments and implementation: No instruments or implementation practices are connected.</p>	Synergistic: No definitions but similar wording.
Landscape policies	<p>Objectives: No landscape strategies presented; MS should define clear conservation objectives, with site-specific targets, and describe old-growth forests. Mentions multiple landscape management objectives.</p> <p>Instruments: MS should restore at least 30% habitats and protected species; planning is mentioned and some funding is available.</p> <p>Implementation: MS urged improving implementation of directives; monitoring recognised</p>	<p>Objectives: No national landscape strategies presented; voluntary regional strategies recognised. ‘Ambition’ to preserve biodiverse forests, formally or voluntarily. Long-term planning and methods for varied forests recognised.</p> <p>Instruments: Focus on information, e.g., provision of data from inventories. Long-term collaboration recognised to manage wildlife, insects and plant pests. Laws will be reviewed. Funding for natural and cultural values mentioned.</p> <p>Implementation: Forest owners responsible.</p>	Synergistic and conflicting: Both EBS and SFS recognise data needs, regional planning and collaboration. EBS calls for more protection and green corridors, SFS does not. SFS opposes EU forest policy, favours voluntary measures and forest owner responsibility.
Multi-functional aspects	<p>Objectives: No definition of multifunctionality or similar concepts but multiple functions mentioned (e.g., provision of food, drinking water, clean air).</p> <p>Instruments and implementation: Not connected.</p>	<p>Objectives: ‘Multifunctional use’ equals ‘practice of using the forest for multiple purposes, both commercial and non-commercial’. Several functions recognised (jobs, health, tourism, recreation, cultural heritage, hunting).</p> <p>Instruments and implementation: Not connected.</p>	Synergistic: SFS defines multiple-use forestry, EBS does not, but lists several other functions.

(Continues)

TABLE 6 | (Continued)

	Policy 1 – EBS	Policy 2 – SFS	External analysis
Multi-functional land use policy	<p>Objectives: Recognises functions can co-exist, calls for society as a whole approach. Multiple functions recognised in the global context, including combined protection of biodiversity, gender, indigenous peoples' rights.</p> <p>Instruments: Several instruments are suggested to enhance multiple functions (e.g., larger network of protected areas on land and at sea). Regulatory instruments described include an EU nature restoration plan.</p> <p>Implementation: MS is responsible for creating green corridors that can connect protected areas; not clear how to coordinate MS though.</p>	<p>Objectives: Says 'forest potential is harnessed by strengthened multi-functional use', repeatedly recognises that a more varied forest landscape is needed and that formal protection is important for multiple-use.</p> <p>Instruments: Most instruments informative (e.g., providing advice), long-term ownership is considered key; economic instruments and small funding for continuous cover forestry; regional planning suggested.</p> <p>Implementation: Different agencies and universities are suggested to provide advice to forest owners, but no description of that is to be achieved.</p>	<p>Conflicting: Both EBS and SFS seek to balance values but list partly different functions. EBS contains several instruments, SFS is mainly based on voluntariness and funding.</p>
Trade-offs/synergies	<p>Objectives: Synergies are mentioned repeatedly (e.g., between offshore wind stations and fish stocks); trade-offs are not mentioned.</p> <p>Instruments: Coherence mentioned to foster synergies (e.g., CAP supports reforestation; Green Deal investments support biodiversity). Commission will assess EU and global biomass supply and demand.</p> <p>Implementation: Commission responsible for creating policy synergies.</p>	<p>Objectives: Recognises balancing all dimensions (production and conservation, spatially and temporarily) with consideration of public interests. Measures for production and biodiversity synergies should be particularly promoted.</p> <p>Instruments: Most instruments are informative (e.g., agency advice). SFS as such supposed to guide goal conflicts and calls for participatory approaches.</p> <p>Implementation: Agencies and universities recognised to advice forest owners.</p>	<p>Synergistic and conflicting: Both recognise balancing, trade-offs and synergies, however, hardly guide on how to cope with the former and foster the latter.</p>

(Continues)

TABLE 6 | (Continued)

Stakeholder aspects	Policy 1 – EBS		Policy 2 – SFS		External analysis		
	Collaboration	Objectives: Calls for local, regional, national and EU partnerships. Instruments: Informative and voluntary for funding collaboration. MS is responsible for initiating stakeholder collaboration (e.g., on management plans). Legally binding governance approach considered.	Objectives: Public participation, co-ownership, ‘whole-of-society approach’ for all stakeholders promoted. Public participation is linked to global biodiversity governance, based on equity and inclusiveness. Instruments and implementation: The Commission will provide administrative capacity building, transparency and stakeholder dialogue. A legally binding governance approach will be considered.	Objectives: Key to bring multiple stakeholders in and across sectors together in collaboration. Both national and regional dialogues are key in the SFS. Instruments: Regarding reindeer husbandry, the collaboration and dialogue between the Forest Agency and the Sami Parliament is recognised. Implementation: The responsibility for collaboration is unclear.	Objectives: Relies on broad dialogue and stakeholder exchange of experiences. Civil society, forest industry etc. seen as key to transition to a bio-economy. Established dialogue processes planned to continue. Instruments: No instruments for public participation are recognised in addition to the participatory approach of the SFS itself. Implementation: The responsibility for collaboration is unclear.	Synergistic and conflicting: Both value collaboration, but EBS is more specific on ways and means.	Synergistic and conflicting: Both value public participation, but EBS is more specific on ways and means.
	Public participation						

Note: The colors are to distinguish the different aspects: Green - Landscape aspects; Yellow - Multifunctional aspects; Pink - Stakeholder aspects.

TABLE 7 | Concluding table for comparing EBS and SFS.

	Internal	External	Horizontal	Vertical
High coherence Predominantly synergy between problem definitions, policy objectives, instruments and implementation within or between policies				
Partial coherence Partial synergy between problem definitions, policy objectives, instruments and implementation within or between policies				
Low coherence Predominantly conflicts or lack of synergies between problem definitions, objectives, instruments and implementation within or between policies		X		X
Inconclusive e.g., in cases of lack of data				

facilitated their integration into one analytical tool. The illustrative example indeed demonstrates that the framework can support the analysis of value for policy improvements. We want to point out though, that while some researchers, including Ostrom (2009), emphasise the value of incorporating complexity into analysis to reflect real-world interactions, we had to balance this call in the framework against practical applicability for practitioners (Nilsson and Weitz 2019), identified as important in prior research (Bocquillon 2018; Muscat et al. 2021). Additionally, the need for aggregation of policy analysis data has been recognised as important, especially for sustainability issues, due to the often-inherent complexity (Golobič et al. 2015; Radej 2011). Considering that, we included fewer variables than some previous studies (Fopa Tchinda and Talbot 2023) but still more than others (Nilsson et al. 2012). The result is a framework that is broad and comprehensive and that indicates where more in-depth analysis may be needed.

The framework now needs to be tested and calibrated in further studies, involving researchers, policymakers as well as practitioners. Future studies might also include, e.g., temporal aspects that are not an explicit part of the presented framework. The new EU Nature Restoration Regulation (EU 2024) offers an interesting case, and the EU Territorial Impact Assessment tool (CoR 2023) could benefit from the findings by applying the framework. The framework could also help in evaluating the ELC as such, for example in coherence analysis of national implementation, albeit all aspects of the ELC are covered.

Another topic deserving further inquiry concerns whether policy coherence is best measured qualitatively or quantitatively (Nilsson and Weitz 2019). While the use of point scales (Nilsson et al. 2012) offers transparency and a common language, it still remains difficult to determine an appropriate scale for the findings. Qualitative methods provide nuanced insights that numerical metrics might overlook but risk being overwhelming and vague. Departing from our qualitative approach, future studies could explore hybrid methods that combine quantitative rigour and qualitative depth.

When applying the framework to assess policy coherence, we also wish to highlight an issue not necessarily identified through the framework, while coherent policies can enhance

effectiveness, they may simultaneously exacerbate inequalities, disproportionately affecting marginalised groups (Browne et al. 2023; Shawoo et al. 2023). The framework incorporates a problem definition step to identify underlying normative and political factors influencing goal selection and prioritisation, but it may not fully capture dimensions of power and justice. This highlights the importance of complementing the analysis with considerations of e.g., power dimensions and distributional effects.

Moreover, we want to underline that achieving full policy coherence is unlikely, as policies are seldom designed to fully align with one another. The goal of policy coherence studies is to visualise and understand how policies interact, highlight synergies and conflicts and inform policymaking (Blicharska et al. 2023; Nilsson and Weitz 2019). Our framework aids in identifying areas of high and low coherence, which can inform deeper analyses where needed. This is visible in our illustrative comparison of the EBS and the SFS, which highlights tensions between EU ambitions for biodiversity protection and Sweden's prioritisation of forest production, a challenge also identified by Beland Lindahl et al. (2023). The finding underscores the need for in-depth studies that identify instruments that can better reconcile environmental and production goals, for example, economic compensation (Lidestav and Westin 2023; Michanek et al. 2018) that may counteract trade-offs and address governance imbalances, such as lack of involvement of small-scale forest owners (Beland Lindahl et al. 2023).

Additionally, the findings highlight the need to consider the actual output of instruments. An instrument may appear synergistic with the objectives stated on paper, but the output in practice may be the opposite. Policies are often reshaped under the implementation process, in which civil servants have interpretative agency, resulting in differences between the intentions among those who set the policy and those who implement them (Holl 2017; Peters 2019; van Oosten, Uzamukunda, and Runhaar 2018). An example is that the use of non-coercive forest policy instruments in Sweden has resulted in goal conflicts between biodiversity and forestry, pointing out an area in need of guidance (Beland Lindahl et al. 2023; Danley, Bjärstig, and Sandström 2021; Pokorny-Kindlman 2024), including on the role and agency of civil servants working on policy implementation.

Finally, future research should investigate how governance arrangements influence policy coherence efforts in practice, focusing on institutional challenges faced by public officials as they navigate complex interactions across different policy and governance areas and levels (van Oosten 2021). To provide valuable insights into addressing real-world governance challenges, future studies may focus on institutional coherence.

6 | Conclusion

Policy coherence in multi-functional landscape governance is called for in order to prevent biodiversity loss, but it commonly involves balancing challenging trade-offs and synergies in governance processes, often impeded by vague concepts and ambiguous analytical tools. This study presents a straightforward exploratory framework designed to help in this endeavour, recognising the value of conducting policy coherence analysis. While the quest for coherence may not necessarily simplify policymaking, it will most likely lead to better-informed decisions, thereby aiding multi-functional landscape governance, as a means to prevent biodiversity loss.

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Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

Data sharing not applicable to this article as no datasets were generated or analysed during the current study.

References

- Angelstam, P., M. Manton, M. Green, et al. 2020. "Sweden Does Not Meet Agreed National and International Forest Biodiversity Targets: A Call for Adaptive Landscape Planning." *Landscape and Urban Planning* 202: 103838. <https://doi.org/10.1016/j.landurbplan.2020.103838>.
- Arts, B., M. Buizer, L. Horlings, V. Ingram, C. van Oosten, and P. Opdam. 2017. "Landscape Approaches: A State-of-the-Art Review." *Annual Review of Environment and Resources* 42, no. 1: 439–463. <https://doi.org/10.1146/annurev-environ-102016-060932>.
- Beland Lindahl, K., C. Söderberg, N. Lukina, et al. 2023. "Clash or Concert in European Forests? Integration and Coherence of Forest Ecosystem Service-Related National Policies." *Land Use Policy* 129: 106617. <https://doi.org/10.1016/j.landusepol.2023.106617>.
- Benson, D., and I. Lorenzoni. 2017. "Climate Change Adaptation, Flood Risks and Policy Coherence in Integrated Water Resources Management in England." *Regional Environmental Change* 17, no. 7: 1921–1932. <https://doi.org/10.1007/s10113-016-0959-6>.
- Blicharska, M., R. J. Smithers, M. Kuchler, S. Munaretto, L. van den Heuvel, and C. Teutschbein. 2023. "The Water–Energy–Food–Land–Climate nexus: Policy Coherence for Sustainable Resource Management in Sweden." *Environmental Policy and Governance* 34, no. 2: 207–220. <https://doi.org/10.1002/eet.2072>.

- Bocquillon, P. 2018. "(De-)constructing Coherence? Strategic Entrepreneurs, Policy Frames and the Integration of Climate and Energy Policies in the European Union." *Environmental Policy and Governance* 28, no. 5: 339–349. <https://doi.org/10.1002/eet.1820>.
- Bostedt, G., J. de Jong, H. Ekvall, A. R. Hof, J. Sjögren, and A. Zabel. 2021. "An Empirical Model for Forest Landscape Planning and Its Financial Consequences for Landowners." *Scandinavian Journal of Forest Research* 36, no. 7–8: 626–638. <https://doi.org/10.1080/02827581.2021.1998599>.
- Boswell, C., and E. Rodrigues. 2016. "Policies, Politics and Organisational Problems: Multiple Streams and the Implementation of Targets in UK Government." *Policy and Politics* 44, no. 4: 507–524. <https://doi.org/10.1332/030557315X14477577990650>.
- Brandt, J., and H. Vejre. 2004. *Multifunctional Landscapes, Volume 1, Theory, values and History*. Southampton: WIT Press. 276.
- Browne, K., A. Dzebo, G. Iacobuta, et al. 2023. "How Does Policy Coherence Shape Effectiveness and Inequality? Implications for Sustainable Development and the 2030 Agenda." *Sustainable Development* 31, no. 5: 3161–3174. <https://doi.org/10.1002/sd.2598>.
- Castro, C. V. 2022. "Systems-Thinking for Environmental Policy Coherence: Stakeholder Knowledge, Fuzzy Logic, and Causal Reasoning." *Environmental Science & Policy* 136: 413–427. <https://doi.org/10.1016/j.envsci.2022.07.001>.
- COE. 2000. "ETS 176 – Council of Europe Landscape Convention. Council of Europe Landscape Convention as Amended by the 2016 Protocol." <https://rm.coe.int/16807b6bc7>.
- CoR. 2023. "Renewed Territorial Impact Assessment Strategy."
- Council of Europe. 2008. "Recommendation CM/Rec (2008) 3 of the Committee of Ministers to Member States on the Guidelines for the Implementation of the European Landscape Convention." https://search.coe.int/cm/Pages/result_details.aspx?ObjectID=09000016805d3e6c#globalcontainer.
- Danley, B., T. Bjärstig, and C. Sandström. 2021. "At the Limit of Volunteerism? Swedish Family Forest Owners and Two Policy Strategies to Increase Forest Biodiversity." *Land Use Policy* 105: 105403. <https://doi.org/10.1016/j.landusepol.2021.105403>.
- Duncan, J. M. A., B. Haworth, B. Boruff, N. Wales, E. M. Biggs, and E. Bruce. 2020. "Managing Multifunctional Landscapes: Local Insights From a Pacific Island Country Context." *Journal of Environmental Management* 260: 109692. <https://doi.org/10.1016/j.jenvman.2019.109692>.
- Forsberg, M. 2012. *Skogen som livsmiljö: En rättsvetenskaplig studie om skyddet för biologisk mångfald*. Uppsala University.
- EU. 2024. *Regulation (EU) 2024/1991 of the European Parliament and of the Council. Nature Restoration Law, Official Journal of the European Union*. https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=OJ%3AL_202401991.
- European Commission. 2020. "EU Biodiversity Strategy for 2030." https://eur-lex.europa.eu/resource.html?uri=cellar:a3c806a6-9ab3-11ea-9d2d-01aa75ed71a1.0001.02/DOC_1&format=PDF.
- Fopa Tchinda, A., and D. Talbot. 2023. "Barriers and Enablers of Environmental Policy Coherence: A Systematic Review." *Environmental Policy and Governance* 34, no. 1: 77–92. <https://doi.org/10.1002/eet.2057>.
- Fors, H., A. Berlin, U. Gottlieb, M. Kågström, J. Weldon, and J. Zhang. 2024. "Interdisciplinary Insights Into Navigating the Maze of Landscape Multifunctionality." *People and Nature* 6, no. 2: 519–534. <https://doi.org/10.1002/pan3.10610>.
- Gofen, A., A. Moseley, E. Thomann, and R. Kent Weaver. 2021. "Behavioural Governance in the Policy Process: Introduction to the Special Issue." *Journal of European Public Policy* 28, no. 5: 633–657. <https://doi.org/10.1080/13501763.2021.1912153>.

- Golobič, M., N. Marot, Š. Kolarič, and T. B. Fischer. 2015. "Applying Territorial Impact Assessment in a Multi-Level Policy-Making Context – The Case of Slovenia." *Impact Assessment and Project Appraisal* 33, no. 1: 43–56. <https://doi.org/10.1080/14615517.2014.938438>.
- Gottenhuber, S., B.-O. Linnér, V. Wibeck, and Å. Persson. 2023. "Greening Recovery – Overcoming Policy Incoherence for Sustainability Transformations." *Environmental Policy and Governance* 33, no. 5: 546–560. <https://doi.org/10.1002/eet.2049>.
- Holl, K. D. 2017. "Restoring Tropical Forests From the Bottom Up." *Science* 355, no. 6324: 455–456. <https://doi.org/10.1126/science.aam5432>.
- Hölting, L., M. Beckmann, M. Volk, and A. F. Cord. 2019. "Multifunctionality Assessments – More Than Assessing Multiple Ecosystem Functions and Services? A Quantitative Literature Review." *Ecological Indicators* 103: 226–235. <https://doi.org/10.1016/j.ecolind.2019.04.009>.
- Howard, P. 2004. "Spatial Planning for Landscape: Mapping the Pitfalls." *Landscape Research* 29, no. 4: 423–434. <https://doi.org/10.1080/0142639042000289055>.
- IPBES. 2019. *Summary for Policymakers of the Global Assessment Report on Biodiversity and Ecosystem Services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services*, edited by S. Díaz, J. Settele, E. S. Brondízio, H. T. Ngo, M. Guèze, J. Agard, A. Arneeth, P. Balvanera, K. A. Brauman, S. H. M. Butchart, K. M. A. Chan, L. A. Garibaldi, K. Ichii, J. Liu, S. M. Subramanian, G. F. Midgley, P. Miloslavich, Z. Molnár, D. Obura, A. Pfaff, S. Polasky, A. Purvis, J. Razzaque, B. Reyers, R. R. Chowdhury, Y. J. Shin, I. J. Visseren-Hamakers, K. J. Willis, and C. N. Zayas, 56. IPBES secretariat, Bonn, Germany.
- Kurze, K., and A. Lenschow. 2018. "Horizontal Policy Coherence Starts With Problem Definition: Unpacking the EU Integrated Energy-Climate Approach." *Environmental Policy and Governance* 28, no. 5: 329–338. <https://doi.org/10.1002/eet.1819>.
- Lenschow, A., P. Bocquillon, and L. Carafa. 2018. "Understanding Coherence Between Policy Spheres." *Environmental Policy and Governance* 28, no. 5: 323–328. <https://doi.org/10.1002/eet.1818>.
- Lidestav, G., and K. Westin. 2023. "The Impact of Swedish Forest Owners' Values and Objectives on Management Practices and Forest Policy Accomplishment." *Small-Scale Forestry* 22, no. 3: 435–456. <https://doi.org/10.1007/s11842-022-09538-4>.
- Mastrangelo, M. E., F. Weyland, S. H. Villarino, M. P. Barral, L. Nahuelhual, and P. Latorra. 2014. "Concepts and Methods for Landscape Multifunctionality and a Unifying Framework Based on Ecosystem Services." *Landscape Ecology* 29, no. 2: 345–358. <https://doi.org/10.1007/s10980-013-9959-9>.
- Michanek, G., G. Bostedt, H. Ekvall, et al. 2018. "Landscape Planning—Paving the Way for Effective Conservation of Forest Biodiversity and a Diverse Forestry?" *Forests* 9, no. 9: 523. <https://doi.org/10.3390/f9090523>.
- Muscat, A., E. M. de Olde, Z. Kovacic, I. J. M. de Boer, and R. Ripoll-Bosch. 2021. "Food, Energy or Biomaterials? Policy Coherence Across Agro-Food and Bioeconomy Policy Domains in the EU." *Environmental Science & Policy* 123: 21–30. <https://doi.org/10.1016/j.envsci.2021.05.001>.
- Neyret, M., S. Peter, G. Le Provost, et al. 2023. "Landscape Management Strategies for Multifunctionality and Social Equity." *Nature Sustainability* 6, no. 4: 4. <https://doi.org/10.1038/s41893-022-01045-w>.
- Nilsson, M., and N. Weitz. 2019. "Governing Trade-Offs and Building Coherence in Policy-Making for the 2030 Agenda." *Politics and Governance* 7, no. 4: 254–263. <https://doi.org/10.17645/pag.v7i4.2229>.
- Nilsson, M., T. Zamparutti, J. E. Petersen, B. Nykvist, P. Rudberg, and J. McGuinn. 2012. "Understanding Policy Coherence: Analytical Framework and Examples of Sector-Environment Policy Interactions in the EU: Understanding Policy Coherence." *Environmental Policy and Governance* 22, no. 6: 395–423. <https://doi.org/10.1002/eet.1589>.
- Nordbeck, R., and R. Steurer. 2016. "Multi-Sectoral Strategies as Dead Ends of Policy Integration: Lessons to be Learned from Sustainable Development." *Environment and Planning C: Government and Policy* 34, no. 4: 737–755. <https://doi.org/10.1177/0263774X15614696>.
- OECD. 2001. *Multifunctionality: Towards an Analytical Framework*. OECD Publishing. <https://doi.org/10.1787/9789264192171-en>.
- O'Farrell, P. J., and P. M. Anderson. 2010. "Sustainable Multifunctional Landscapes: A Review to Implementation." *Current Opinion in Environmental Sustainability* 2, no. 1: 59–65. <https://doi.org/10.1016/j.cosust.2010.02.005>.
- Oostindie, H., D. Roep, and H. Renting. 2006. "Definitions, References and Interpretations of the Concept of Multifunctionality in The Netherlands." European Series on Multifunctionality 10 – A Review of the Different Concepts of Multifunctionality and Their Evolution, 10.
- Ostrom, E. 2009. "Beyond Markets and States: Polycentric Governance of Complex Economic Systems." Prize Lecture, December 8, 2009.
- Paleari, S. 2024. "The EU Policy on Climate Change, Biodiversity and Circular Economy: Moving Towards a Nexus Approach." *Environmental Science & Policy* 151: 103603. <https://doi.org/10.1016/j.envsci.2023.103603>.
- Peters, B. G. 2019. *Institutional Theory in Political Science: The New institutionalism* (Fourth edition). Cheltenham, England: Edward Elgar Publishing.
- Pickering, J. 2023. "Can Democracy Accelerate Sustainability Transformations? Policy Coherence for Participatory Co-Existence." *International Environmental Agreements: Politics, Law and Economics* 23, no. 2: 141–148. <https://doi.org/10.1007/s10784-023-09609-7>.
- Pokorny-Kindlman, R. 2024. "Navigating EU-Sweden Forestry Disputes. Environmental." *Challenges* 15: 100927. <https://doi.org/10.1016/j.envc.2024.100927>.
- Radej, B. 2011. "Synthesis in Policy Impact Assessment." *Evaluation* 17, no. 2: 133–150. <https://doi.org/10.1177/1356389011403450>.
- Reed, J., A. Ickowitz, C. Chervier, et al. 2020. "Integrated Landscape Approaches in the Tropics: A Brief Stock-Take." *Land Use Policy* 99: 104822. <https://doi.org/10.1016/j.landusepol.2020.104822>.
- Reed, J., J. Van Vianen, J. Barlow, and T. Sunderland. 2017. "Have Integrated Landscape Approaches Reconciled Societal and Environmental Issues in the Tropics?" *Land Use Policy* 63: 481–492. <https://doi.org/10.1016/j.landusepol.2017.02.021>.
- Righettini, M. S., and R. Lizzi. 2022. "How Scholars Break Down "Policy Coherence": The Impact of Sustainable Development Global Agendas on Academic Literature." *Environmental Policy and Governance* 32, no. 2: 98–109. <https://doi.org/10.1002/eet.1966>.
- Ros-Tonen, M. A. F., J. Reed, and T. Sunderland. 2018. "From Synergy to Complexity: The Trend Toward Integrated Value Chain and Landscape Governance." *Environmental Management* 62, no. 1: 1–14. <https://doi.org/10.1007/s00267-018-1055-0>.
- Sandström, A., C. Söderberg, C. Lundmark, J. Nilsson, and D. Fjellborg. 2020. "Assessing and Explaining Policy Coherence: A Comparative Study of Water Governance and Large Carnivore Governance in Sweden." *Environmental Policy and Governance* 30, no. 1: 3–13. <https://doi.org/10.1002/eet.1871>.
- Sandström, C., I. Ring, R. Olschewski, et al. 2023. "Mainstreaming Biodiversity and nature's Contributions to People in Europe and Central Asia: Insights From IPBES to Inform the CBD Post-2020 Agenda." *Ecosystems and People* 19, no. 1: 2138553. <https://doi.org/10.1080/26395916.2022.2138553>.
- Sayer, J., C. Margules, A. K. Boedhihartono, et al. 2017. "Measuring the Effectiveness of Landscape Approaches to Conservation and

- Development.” *Sustainability Science* 12, no. 3: 465–476. <https://doi.org/10.1007/s11625-016-0415-z>.
- SFA. 2023. *Levande skogar: Fördjupad utvärdering 2023 (2022–12)*. Jönköping: Swedish Forest Agency (SFA).
- Shawoo, Z., A. Maltais, A. Dzebo, and J. Pickering. 2023. “Political Drivers of Policy Coherence for Sustainable Development: An Analytical Framework.” *Environmental Policy and Governance* 33, no. 4: 339–350. <https://doi.org/10.1002/eet.2039>.
- Skovgaard, J. 2018. “Policy Coherence and Organizational Cultures: Energy Efficiency and Greenhouse Gas Reduction Targets.” *Environmental Policy and Governance* 28, no. 5: 350–358. <https://doi.org/10.1002/eet.1821>.
- Solbär, L., P. Marcianó, and M. Pettersson. 2019. “Land-Use Planning and Designated National Interests in Sweden: Arctic Perspectives on Landscape Multifunctionality.” *Journal of Environmental Planning and Management* 62, no. 12: 2145–2165. <https://doi.org/10.1080/09640568.2018.1535430>.
- Song, B., G. M. Robinson, and D. K. Bardsley. 2020. “Measuring Multifunctional Agricultural Landscapes.” *Landscape* 9, no. 8: 8. <https://doi.org/10.3390/land9080260>.
- Stebbins, R. A. 2001. *Exploratory Research in the Social Sciences*. Thousand Oaks, CA: Sage Publ.
- Strambo, C., M. Nilsson, and A. Månsson. 2015. “Coherent or Inconsistent? Assessing Energy Security and Climate Policy Interaction Within the European Union.” *Energy Research & Social Science* 8: 1–12. <https://doi.org/10.1016/j.erss.2015.04.004>.
- Swedberg, R. 2020. “Exploratory Research.” In *The Production of Knowledge: Enhancing Progress in Social Science*, edited by C. Elman, J. Mahoney, and J. Gerring, 17–41. Cambridge: Cambridge University Press. <https://doi.org/10.1017/9781108762519.002>.
- Swedish Government. 2018. “Strategi för Sveriges Nationella Skogsprogram.” https://www-regeringen-se.ezproxy.its.uu.se/contentassets/34c919715e0b4285a5da5b51f38b28af/20180524_hela.pdf.
- UN. 1992. “United Nations Conference on Environment & Development Rio de Janeiro, Brazil, 3 to 14 June 1992 AGENDA 21.” <https://sdgs.un.org/sites/default/files/publications/Agenda21.pdf>.
- van Oosten, C. 2021. *Landscape Governance: From Analysing Challenges to Capacitating Stakeholders*. Wageningen: Wageningen University. <https://doi.org/10.18174/540838>.
- van Oosten, C., A. Uzamukunda, and H. Runhaar. 2018. “Strategies for Achieving Environmental Policy Integration at the Landscape Level. A Framework Illustrated With an Analysis of Landscape Governance in Rwanda.” *Environmental Science & Policy* 83: 63–70. <https://doi.org/10.1016/j.envsci.2018.02.002>.
- van Oosten, C., H. Runhaar, and B. Arts. 2021. “Capable to Govern Landscape Restoration? Exploring Landscape Governance Capabilities, Based on Literature and Stakeholder Perceptions.” *Land Use Policy* 104: 104020. <https://doi.org/10.1016/j.landusepol.2019.05.039>.
- Westerink, J., P. Oudam, S. van Rooij, and E. Steingröver. 2017. “Landscape Services as Boundary Concept in Landscape Governance: Building Social Capital in Collaboration and Adapting the Landscape.” *Land Use Policy* 60: 408–418. <https://doi.org/10.1016/j.landusepol.2016.11.006>.
- Wiggering, H., K. Müller, A. Werner, and K. Helming. 2003. “The Concept of Multifunctionality in Sustainable Land Development.” In *Sustainable Development of Multifunctional Landscapes*, edited by K. Helming and H. Wiggering, 3–18. Berlin, Heidelberg: Springer. https://doi.org/10.1007/978-3-662-05240-2_1.
- Wohlin, C. 2014. “Guidelines for Snowballing in Systematic Literature Studies and a Replication in Software Engineering.” <https://doi.org/10.1145/2601248.2601268>. Proceedings of the 18th International Conference on Evaluation and Assessment in Software Engineering, 1–10.
- Yunita, A., F. Biermann, R. E. Kim, and M. J. Vijge. 2022. “The (Anti-) politics of Policy Coherence for Sustainable Development in The Netherlands: Logic, Method, Effects.” *Geoforum* 128: 92–102. <https://doi.org/10.1016/j.geoforum.2021.12.002>.

Appendix A

TABLE A1 | Analytical framework with detailed questions.

Problem definitions <i>The nature of the prevailing problem to be governed</i> What were the reasons for introducing the policy? What institutional body is given the main responsibility for the implementation of the policy?		Instruments <i>The regulatory, economic or informative instruments that support the achievement of policy objectives</i>	Implementation <i>The responsible authorities (e.g., national agency, regional/ municipal level, private actors, companies) and economic funding allocated for implementation of the instruments</i>
Landscape aspects	Definition What definition of landscape or any similar expression of landscape or geographical perspectives (e.g. area, land, geographic) is presented in the policy? Landscape policies What landscape strategies are presented that are linked to landscape quality objectives? What objectives in the policy are set out, that aims to: Identify landscapes? Protect landscapes? Manage landscapes? Plan landscapes? Monitor changes in the landscapes?	What regulatory, economic or informative instruments that define landscape or any similar expressions of landscape or geographical perspectives are included in the policy? What regulatory, economic or informative instruments are included in the policy, with the aim to charge administrative levels (national, regional and local) to draw up specific and sectoral landscape strategies that are linked with landscape quality objectives? What policy instruments are set out, that aim to: Identify landscapes? Protect landscapes? Manage landscapes? Plan landscapes? Monitor changes in the landscapes?	Who is assigned the responsibility for the instruments? What economic funding is allocated to implement the instruments? Who is assigned the responsibility for the instruments? What economic funding is allocated to implement the instruments?

(Continues)

TABLE A1 | (Continued)

Multi-functionality aspects	<p>Definition What definition of multi-functionality or any similar expression is presented in the policy?</p> <p>Multi-functional land use policy What different functions are promoted? Environmental? Social? Economic? What objectives that aims to include and combine several functions simultaneously is presented in the policy?</p> <p>Trade-offs and synergies What objectives that aims to handle trade-offs and/or synergies between functions are presented in the policy?</p>	<p>What regulatory, economic or informative instruments in the policy define or recognise multi-functional land use?</p> <p>What regulatory, economic or informative instruments in the policy contribute to combining several functions simultaneously?</p> <p>What regulatory, economic or informative instruments of how conflicting/synergistic functions should be handled are included in the policy?</p>	<p>Who is assigned the responsibility for the instruments? What economic funding is allocated to implement the instruments?</p> <p>Who is assigned the responsibility for the instruments? What economic funding is allocated to implement the instruments?</p> <p>Who is assigned the responsibility for the instruments? What economic funding is allocated to implement the instruments?</p>
Stakeholder aspects	<p>Collaboration What objectives that aims to promote collaborations between the various bodies and the various levels of administration are presented in the policy?</p> <p>Public participation What objectives that aim to include the public in decision-making processes are presented in the policy?</p>	<p>What regulatory, economic or informative instruments in the policy aim to promote any form of collaboration between the various bodies and the various levels of administration?</p> <p>What regulatory, economic and informative instruments in the policy aim to include public participation?</p>	<p>Who is assigned the responsibility for the instruments? What economic funding is allocated to implement the instruments?</p> <p>Does the policy define who is responsible for the instruments?</p>

Note: The colors are to distinguish the different aspects: Green - Landscape aspects; Yellow - Multifunctional aspects; Pink - Stakeholder aspects.

TABLE A2 | EU Biodiversity Strategy 2030 (the EBS).

Problem definitions	The EBS aims to address the main drivers of biodiversity loss through a new enhanced governance framework and fill policy gaps while consolidating existing measures and ensuring the full implementation of EU law.	The nature of the prevailing problem to be governed	
Policy objectives	<i>The main strategic priority and direction of the policy</i>	<i>The regulatory, economic, or informative instruments that support the achievement of policy objectives</i>	<i>The responsible authorities (e.g., national agency, regional/municipal level, private actors, companies) and economic funding allocated for implementation of the instrument</i>
<p>Landscape aspects Definition Landscape policies</p>	<p>Definition: Landscape is not defined but landscape features are exemplified, e.g., buffer strips, fallow land, hedges, non-productive trees and ponds. Landscape is mentioned repeatedly, e.g. restoring agricultural land into 'high-biodiversity landscape features' that can 'provide space for wild animals, plants, pollinators and natural pest regulators'. Landscape strategies: No landscape strategies are recognised but it is stated that all EU Member States must define clear conservation objectives and measures for protected areas in management plans. Identify landscapes: This is mentioned in relation to protection, e.g., Member States are urged to be site-specific when setting objectives that correspond to the ecological requirements of the habitat and species present. Primary and old-growth forests should be defined and mapped. Protection of landscapes: Multiple objectives are formulated in order to protect land areas, e.g. legally protect at least 30% of EU's land area and 30% of its seas by 2030. All remaining primary and old-growth forests should be strictly protected and ecological corridors should be set up. Manage landscapes: Multiple management objectives for landscapes are mentioned, e.g. on sustainable forest management. All protected areas should be managed effectively, a Trans-European Nature Network should be established and 'high diversity landscape features' are to be restored. Another objective is to 'manage established invasive alien species and decrease the number of Red List species they threaten by 50%'.</p>	<p>No instrument is mentioned here and no landscape strategy is presented. Member States are urged though, to set clear conservation objectives and put measures in place by 2030 for protected areas. The share of forest areas covered by management plans should also increase to cover all public forests and more private forests. The plans should promote biodiversity, e.g. through nature-based solutions. Member States should implement the EBS and ensure that at least 30% of protected species and habitats are restored. Multiple voluntary instruments are presented e.g. on designating new protected areas, and integrating ecological corridors between protected these. However, it is not described in detail how this is to be performed. Informative instruments, such as guidance and definitions, play a central role. Among regulatory measures, the Commission will further consider whether stronger action, including legislation, is needed. The Member States are urged to improve the implementation of existing legislation e.g. the EU Birds and Habitats Directives, the Water Framework Directive and the EU Invasive Alien Species Regulation. Economic investments are seen as needed for green and blue infrastructure.</p>	<p>Member States are responsible for implementing the EBS, but it is unclear how this will be achieved in practice. Guidance is provided by the Commission. Some funding is available for e.g. green infrastructure and nature-based solutions. Statements are made that a significant proportion of the EU budget dedicated to climate action is invested in biodiversity and nature-based solutions.</p>
<p>Plan landscapes: Planning is mentioned in a few regards such as ensuring that habitats and species show no deterioration in conservation trends and to plant three billion trees. Member States should increase forest quantity, quality and resilience against fires, droughts, pests, diseases and other threats likely to increase with climate change. Monitor changes in the landscapes: Monitoring is mentioned foremost regarding the conservation objectives and measures. All of the EU's remaining primary and old-growth forests should be monitored. However, the strategy also points out that there does not exist any requirements for Member States to monitor or assess the health of ecosystem services or restoration efforts. Therefore, stronger monitoring is needed.</p>			

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TABLE A2 | (Continued)

<p>Multi-functional aspects Definition Multi-functional land use policy Trade-offs and synergies</p>	<p>There is no definition of multi-functionality or other similar concepts. However, many functions are mentioned in the EBS, e.g. provision of food, drinking water, clean air, carbon sink, economic income and biodiversity's meaning for human health, climate adaptation and resilience against e.g. forest fires. The EBS recognises that functions can exist simultaneously and calls for 'society as a whole approach'. Climate and biodiversity are recognised as interlinked. Multiple functions are also recognised in global context, including combined protection of biodiversity, human rights, gender, health and indigenous peoples' rights. Trade-offs and synergies: Trade-offs are not mentioned. But synergies are referred to repeatedly, e.g. between biodiversity, climate and the current economic crises. The EBS express that 'there is no choice between economy and the nature—they go hand in hand which benefits the whole society'. Protected areas are recognised to have potential synergies with other EU targets. The EBS prioritises win-win solutions for biodiversity and renewable energy, such as offshore wind stations that also protect fish stocks.</p>	<p>Several instruments are suggested for enhancing multiple functions e.g. establishing a larger network of protected areas on land and at sea. Regulatory instruments described include an EU nature restoration plan. Synergies and coherence with other policies are mentioned, such as reforestation supported by CAP and nature and biodiversity supported by the Green Deal investment plan A Commission assessment of the EU and global biomass supply and demand is to be set up.</p>	<p>It is up to the Member States to create green corridors that can connect protected areas, but it is not mentioned who is responsible for the connection between Member States. Creating synergies with other policies falls under the Commission.</p>
<p>Stakeholder aspects Collaboration Public participation</p>	<p>Collaboration: Strong partnership between local, regional, national and European levels is called for, as is Trans-European Nature Network cross-border collaboration. Participation: Public participation is recognised and a 'whole-of-society approach' is promoted, where all stakeholders are involved and where co-ownership by all relevant actors is achieved. It requires action by all stakeholders, citizens, business, research community. Public participation is also mentioned linked to the global biodiversity governance framework, which is based on equity and an inclusive approach.</p>	<p>Most instruments are informative and voluntary, often trusting Member States, e.g. to establish management plans based on stakeholder collaboration. The Commission will provide administrative capacity building, transparency and stakeholder dialogue. A legally binding governance approach will be considered. Funding for green and blue infrastructure is called for.</p>	<p>The Commission is responsible for funding that can increase collaboration, e.g. a European Biodiversity governance framework. Member States are responsible for management plans and to create green corridors. The Commission plans to invest in order to support cooperation between Member States. In order to improve compliance with existing environmental legislation, the Commission will collaborate with Member States, and European networks environmental agencies, inspectors, auditors, police, prosecutors and judges.</p>

Note: The colors are to distinguish the different aspects: Green - Landscape aspects; Yellow - Multifunctional aspects; Pink - Stakeholder aspects.

TABLE A3 | The Swedish Forest Strategy (SFS).

Problem definitions	The nature of the prevailing problem to be governed	Policy objectives	Instruments	Implementation
<p>Before the SFS, Sweden lacked a national forest programme. The goal of the SFS is based on the two equal production and biodiversity goals in the Swedish Forestry Act. The SFS encompasses the economic, social and environmental values of forests and expresses a vision that the 'forest, the green gold, shall contribute to job opportunities and sustainable growth in the whole country and to the development of a growing bio-economy'. It is a participatory, holistic and cross-sectoral instrument for policy planning, implementation, monitoring and evaluation at the national and regional levels. The responsibility for the policy is the Government Offices, supported by the Swedish Forest Agency and other authorities. Forest owners are recognised as key stakeholders.</p>	<p>The goal of the SFS is based on the two equal production and biodiversity goals in the Swedish Forestry Act. The SFS encompasses the economic, social and environmental values of forests and expresses a vision that the 'forest, the green gold, shall contribute to job opportunities and sustainable growth in the whole country and to the development of a growing bio-economy'. It is a participatory, holistic and cross-sectoral instrument for policy planning, implementation, monitoring and evaluation at the national and regional levels. The responsibility for the policy is the Government Offices, supported by the Swedish Forest Agency and other authorities. Forest owners are recognised as key stakeholders.</p>	<p><i>The main strategic priority and direction in the policy</i></p>	<p><i>The regulatory, economic or informative instruments that support the achievement of policy objectives</i></p>	<p><i>The responsible authorities (e.g. national agency, regional/municipal level, private actors, companies) and economic funding allocated for implementation of the instruments.</i></p>
<p>Landscapes aspects Definition Landscape policies</p>	<p>Definition: No definition but landscape is mentioned several times e.g. forest, natural and cultural landscapes with multiple functions. Landscape is recognised to contribute with understanding of cultural and historical contexts. Landscape strategies: No. Voluntary regional strategies are recognised.</p>	<p>Identify landscapes: Knowledge of all the values of the forest is considered important for sustainable management. Protection: Sweden is claimed as a forerunner in forest conservation, with a high proportion of strict protection. The government has the 'ambition' that biodiverse forests should be preserved formally or through voluntary set-asides. National parks and nature reserves are especially recognised to allow for more multiple use. Manage landscapes: Methods for creating a more varied forest landscape are recognised; efforts to reduce damage to cultural heritage sites and continuous cover forestry are called for.</p>	<p>No instruments for the landscape definition. Since Swedish forest policy is based on the principle of 'freedom under responsibility', most instruments are of informative character such as provision of data from inventories of all forest values, used for planning, monitoring and protection. Long-term collaboration is recognised in order to manage wildlife, insects and plant pests. A regulatory instrument mentioned is a review of existing laws such as the Species Protection Ordinance (2007:845). Economic instruments consist of funding for maintaining natural and cultural values, also increased outdoor recreation opportunities.</p>	<p>Due to the Swedish 'freedom under responsibility' principle in forestry, most measures are up to the forest owner. Governmental measures, e.g. formal protection, normally require substantial funding. Informative instruments thus often dominate. The responsibility for collaboration is often unclear.</p>
<p>Plan landscapes: Monitor changes in the landscapes:</p>	<p>Long-term planning is recognised. Data and inventories are called for.</p>	<p>Long-term planning is recognised. Data and inventories are called for.</p>	<p>Long-term planning is recognised. Data and inventories are called for.</p>	<p>Long-term planning is recognised. Data and inventories are called for.</p>

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TABLE A3 | (Continued)

<p>Multi-functional aspects</p> <p>Definition</p> <p>Multi-functional land use policy</p> <p>Trade-offs and synergies</p>	<p>Definition: 'Multifunctional use' is plainly referred to as 'the practice of using the forest for multiple purposes, both commercial and non-commercial'.</p> <p>Multi-functional land use policy: The policy states that the 'potential of the forest is harnessed by strengthening multifunctional use'. Several functions are recognised e.g., job opportunities, regional and rural development, public health, tourism, recreation, reindeer herding, biodiversity, cultural heritage, aesthetic values, hunting, timber recourses and carbon sequestration. It is repeatedly recognised that a more varied forest landscape is needed. Examples concern combining a profitable bio-economy with sustainable use of natural recourses, which may contribute to e.g. employment, emission reductions, carbon sinks and rural development.</p> <p>Trade-offs and synergies: Balancing all dimensions, e.g. productivity and conservation, spatially and temporarily, is called for, with consideration of public interests and long-term values. Measures giving synergies between production and biodiversity should be particularly promoted.</p>	<p>Since Swedish forest policy is based on the principle of freedom under responsibility, most instruments are of informative character, e.g. authorities providing advice. In addition, the SFS is in itself supposed to guide in goal conflicts, calling for participatory approaches that lead to balancing between interests. Stable and long-term ownership is held forward as the key to support forest owners to use forest in multiple ways. A variety of potential economic instruments is recognised, e.g. investments in the protection and management of forests and reduction of VAT on nature guides to promote ecotourism. Regional-level planning is suggested in order to increase combinations of functions.</p>	<p>Swedish Forest Agency, Municipalities, Swedish University of Agricultural Sciences' are suggested to provide forest owners with advice.</p> <p>Small funding is earmarked for continuous cover forestry.</p>
<p>Stakeholder aspects</p> <p>Collaboration</p> <p>Public participation</p>	<p>Collaboration: The core of the SFS is to bring multiple stakeholders together in collaboration and to open up opportunities for cross-sector collaboration. Both national and regional dialogues are integral parts of the SFS.</p> <p>Public participation: The SFS relies on broad dialogue, engagement and exchange of experiences between stakeholders. Civil society, the forest industry and stakeholders across the entire forest value chain are seen as needed in the transition to a bio-economy. The dialogue process that was established when developing the SFS is planned to continue.</p>	<p>Regarding reindeer husbandry, the collaboration and dialogue between the Forest Agency and the Sami Parliament (Sámediget) is recognised. No instruments for public participation are recognised in addition to the participatory approach of the SFS itself.</p>	<p>The responsibility for collaboration is often unclear.</p>

Note: The colors are to distinguish the different aspects: Green - Landscape aspects; Yellow - Multifunctional aspects; Pink - Stakeholder aspects.