

This is the accepted manuscript version of the contribution published as:

Pröbstl, F. (2025):

Biodiversity Policy Integration at the sub-national level: Insights from the German *Länder* in the context of sub-national biodiversity strategies and action plans

J. Environ. Pol. Plan. **27** (4), 329 - 342

The publisher's version is available at:

<https://doi.org/10.1080/1523908X.2024.2446478>

Biodiversity Policy Integration at the sub-national level: Insights from the German *Länder* in the context of sub-national biodiversity strategies and action plans

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Abstract: The uptake of biodiversity along different political levels and into sector policies remains a major global challenge. Sub-national governments hold crucial institutional competencies for enabling this Biodiversity Policy Integration (BPI). However, these political levels are largely overlooked in international agreements and the BPI literature. Using the example of the German states (*Länder*), this study aims to widen the debate through a sub-national perspective. Therefore 16 interviews with representatives of all German state environmental ministries have been conducted about the implementation of sub-national biodiversity strategies and action plans. The study identifies key barriers and levers to BPI from the perspective of these actors and relates them to underlying causes. State biodiversity policies appear to be trapped in institutional lock-ins, manifested in weak coordination and evaluation mechanisms. Policy change is inevitably linked to integrative leadership of individual policy-makers or the external interference of public or European initiatives. To avoid merely symbolic policy making, national and international processes should emphasize the joint, cross-level coordination, as incoherencies at higher political levels can only be resolved to a limited extent at lower administrative levels.

Keywords: environmental policy integration, administrative coordination, multi-level governance, nature conservation, biodiversity mainstreaming

Introduction

In December 2022, the 196 members of the Convention on Biological Diversity (CBD) agreed on the new Global Biodiversity Framework. With this agreement, the international community has once again set itself ambitious goals for global biodiversity protection in face of urgently needed transformative change (IPBES 2019). Despite their indispensable importance, these overarching policies will not be successfully implemented without support of sub-national governments (Pattberg et al. 2019). Particularly in federal countries, states and municipalities hold institutional competences regarding the legislation, monitoring, and financing of biodiversity policies, making them a crucial, however, often overlooked, bottleneck for implementing biodiversity policies (Hildebrandt and Wolf 2016).

For effective implementation, horizontal and vertical Biodiversity Policy Integration (BPI) represents an important precondition (Giessen 2011; Zinngrebe 2018). BPI can be defined as a process of incorporating biodiversity concerns in non-environmental policy sectors (horizontal) and across all levels of policymaking (vertical) (Persson and Runhaar 2018; Xie et al. 2022). For example, low BPI can be represented if the cross-cutting issue is addressed only by the environmental ministry without any exchange with other land user ministries as “siloe policy making”. Strong policy integration instead, is indicated if all relevant subsystems (e.g., environmental, and non-environmental ministries) are involved in the development and implementation of goals, perceive biodiversity as a cross-cutting issue and set coherent sector targets and measures guided by an overriding instrument (e.g. phase out of perverse incentives guided by a biodiversity strategy) (Candel and Biesbroek 2016). Policy integration thus ideally leads to policy coherence and the inclusion of different stakeholders for enabling transformative governance (IPBES 2019; Nilsson et al. 2012). However, the question if and to what degree policy integration is always desirable and how a certain degree of policy integration can be assessed, is still the subject of debate (Candel and Biesbroek 2016). For this article, BPI is perceived as a process (a set of measures) and as a rational concept, without aiming for an absolute assessment of the status of BPI. Supposedly “initial integration steps” towards biodiversity protection (e.g. *setting* conservation targets) are thus also seen as levers, even if the overall orientation of a sector may still not be in favour of biodiversity conservation (Persson 2004). By its nature, policy integration causes trade-offs and conflicting goals as ministries, stakeholders and other decision-makers face different sectoral demands and loyalties (Nunan et al. 2012). Thus, BPI is far easier to justify normatively on a global level, than on the sub-ordinated implementation levels where trade-offs arise (Persson 2004).

The literature on policy integration has shown that it is a challenging process due to institutional (e.g. inter-ministerial coordination), political (e.g. leadership, sectoral interests) and cognitive (e.g. framing) factors (Candel 2019; Jordan and Lenschow 2010). Studies in the context of biodiversity governance have also observed several of these factors. For example, Sarkki et al. (2016) emphasizes coordination and accountability to overcome siloe-policy making in the context of the Finnish national biodiversity strategy; Karlsson-Vinkhuyzen et al. (2018) found lack of knowledge and leadership as important barriers for transnational biodiversity policies; and Cardona Santos et al. (2023) identify different visions as barriers in non-environmental policy sectors. However, to date empirical analyses of policy integration

specific to biodiversity remain scarce (Zinngrebe et al. 2022). Furthermore, the BPI literature to date has identified several barriers to BPI mainly from a horizontal and national or international perspective. In consequence, it remains to be seen whether these or other factors have a similar impact at the sub-national level and how causal mechanisms behind these factors can be explained.

Thus, this article examines which mechanisms intervene in BPI processes at the sub-national level and which structures support a horizontal and vertical policy integration of biodiversity. To answer this question, the study focuses on the German *Länder* (state governments), specifically on the experiences of the state environmental ministries in implementing the German sub-national biodiversity strategies and action plans (SBSAPs). Similar to their national counterparts, SBSAPs represent the main instrument for implementing the CBD's mandate and guiding BPI within sector policies at sub-national levels (United Nations 1992). Despite some political shortcomings (e.g. non-binding character), biodiversity strategies provide a profound reference as an overarching planning instrument for analytical purposes (Bornemann 2014). The instrument (ideally) addresses all relevant biodiversity policies, reflecting the sectoral barriers and levers and provides links to national and international goals. Germany, in particular, provides an interesting European reference, as the country is both perceived as highly ambitious in terms of environmental policies, while at the same time several EU infringement proceedings are pending against the country (Grotz and Schroeder 2021).

This paper contributes to BPI research by unravelling mechanisms of policy integration and understanding the role of sub-national actors in biodiversity governance (Trein et al. 2021). It employs a framework developed by Candel (2019), which will be explained in the next section along with the study's methods. Following that, a brief overview of the case study on the German states will be provided. The article will then discuss the barriers and levers to BPI from the perspective of state environmental ministries, connecting these to underlying causes identified in previous research. Finally, the last section will summarise the main findings.

Analytical framework

Against this background, this study uses the analytical framework of Candel (2019). The author emphasizes *integrative capacities* and *integrative leadership* as central analytical factors. In the discourse, the provision of sufficient capacities (Jacob and Ekins 2020; Nunan et al. 2012) and the personal commitment of stakeholders (Jordan and Lenschow 2010; Persson and Runhaar 2018) are two central, recurring factors supporting policy integration. While the prior mainly relates to the institutional context of the integration process, the latter encompasses the politics of integration (Candel 2019).

Following Wu et al. (2018) *integrative capacities* are defined as *analytical, operational and political* capacities. A governance system with sufficient capacities is able to adapt to challenges, learn from them and utilise synergies (Innes and Booher 2003). *Analytical* capacities refer to the ability to access and use technically sound knowledge. Given the increasing complexity of today's environmental problems and the need for evidence-based policy making, the ability to absorb and process complex information across all phases of the policy cycle is becoming increasingly important (Wu et al. 2015). In addition, a shared problem understanding and the exchange of knowledge are important for developing context-specific

solutions (Zinngrebe et al. 2022). *Operational* capacities comprise the joint alignment of resources and measures to enable implementation (Wu et al. 2018). A robust governance system, enables regular interactions among subsystems and fragmented decision-making processes, thus addressing the challenges of multilevel governance systems, by building structures for boundary spanners and cross-sectoral interaction (Edelenbos and Teisman 2013). Thus, coordination, participation and evaluative mechanisms provide a certain degree of exchange and accountability (Nordbeck and Steurer 2016). Thirdly, *political* capacities serve “to obtain and sustain political support for actions” (Candel 2019:6). Capacities like trust, legitimacy or political willingness to learn, are crucial for positioning issues on the political agenda and enabling a longer-lasting implementation (Jordan and Lenschow 2010). The ability to anticipate political trade-offs and actively influence the framing of an issue are further important political capacities (Wu et al. 2015).

As a second central factor, *integrative leadership* plays a critical role in environmental policies as trade-off decisions appear frequently and specific actors are often needed to mobilize resources (Candel 2019; Jordan and Lenschow 2010). To look specifically at BPI processes this study – like Candel (2019) - follows the definition of Crosby and Bryson (2014:57), who summarize integrative leadership as „the work of integrating people, resources, and organizations across various boundaries to tackle complex public problems and achieve the common good.” As collaboration is often a voluntary task, building societal and institutional capacities, as well as learning relationships requires collaborative planning and interaction (Innes and Booher 2003). Actors such as boundary spanners become important prerequisites for building governance capacities across different sectors and political levels (Edelenbos and Teisman 2013).

These two factors are particularly important when looking at soft instruments such as SBSAPs. Experience with multi-sectoral sustainability strategies has shown that resources are often made available but are not effectively implemented due to conflicts of interest within and across political levels (Bornemann 2014). Partly, influential actors may be present, but the overall prioritisation is against increased sustainability (Prip et al. 2010). On the other hand, however, Nordbeck and Steurer (2016) also criticise regular lofty promises of goals without the provision of corresponding resources. Several studies focussing on national biodiversity strategies and action plans (NBSAPs) show that this is also the case in the biodiversity context. Table 1 summarizes known hurdles in the NBSAPs literature and relates them to the analytical framework of Candel (2019). It shows that all factors have their counterparts in the (national) BPI literature. However, it remains to be seen whether they also appear from a sub-national perspective.

Tab. 1: Identified hurdles of NBSAPs in the literature compared to the elements of integrative capacities and integrative leadership.

Elements of integrative capacities & integrative leadership (Candel 2019)			Identified counterparts of implementation deficits in the NBSAP literature		
Integrativ	Analytical	▪ Availability and exchange of knowledge	↔	• Lack of cross-sectoral knowledge sharing	(Sarkki et al. 2016)
		▪ Common understanding of problems		• No joint development	(Whitehorn et al. 2019)

Integrative Leadership	Operational	<ul style="list-style-type: none"> ▪ Coordination mechanisms and cross-sectoral working structures 	↔	<ul style="list-style-type: none"> • No cross-sectoral coordination mechanisms 	(Whitehorn et al. 2019)
		<ul style="list-style-type: none"> ▪ Flexible, strategic management processes (involving all relevant actors) 		<ul style="list-style-type: none"> • Lack of legislative alignment 	(Prip and Pisupati 2018)
		<ul style="list-style-type: none"> ▪ Coordinated evaluation processes 		<ul style="list-style-type: none"> • Lack of effective evaluation structures 	(Whitehorn et al., 2019)
		<ul style="list-style-type: none"> ▪ Availability of sufficient resources 		<ul style="list-style-type: none"> • Lack of funding mechanisms 	(Prip and Pisupati 2018)
	Political	<ul style="list-style-type: none"> ▪ Public and political learning processes 	↔	<ul style="list-style-type: none"> • Low public involvement 	(Prip and Pisupati 2018)
		<ul style="list-style-type: none"> ▪ Trust and legitimacy 		<ul style="list-style-type: none"> • Low political support and non-binding character 	(Whitehorn et al. 2019)
		<ul style="list-style-type: none"> ▪ Political openness to holistic approaches 		<ul style="list-style-type: none"> • No joint elaboration 	(Whitehorn et al. 2019)
		<ul style="list-style-type: none"> ▪ “Integrating people, resources, and organizations across various boundaries to tackle complex public problems and achieve the common good.” (Crosby and Bryson 2014:57) 	↔	<ul style="list-style-type: none"> • High dependency on strong and devoted individuals, particularly in planning phase and for mobilising stakeholders 	(Prip et al. 2010)

Methods

As the literature specifically on BPI and sub-national biodiversity governance is scarce, this study aims to provide a first overview of BPI barriers and levers at the German state level from the perspective of a central group of actors. State environmental ministries are chosen as central focal points, as these institutions lead the connection of biodiversity targets and policies with other sectors and across political levels. As such, the views presented below are primarily those of environmental, administrative personnel. Despite a certain bias that must be taken into account, the selected individuals represent an important broker perspective on BPI (both horizontally – e.g. as members of inter-ministerial working groups; and vertically – e.g. as members of the *Länderforum*) and capture key experiences of the *Länder*. All interviewees are higher ranking officials and have been chosen – as done in comparable studies (Sarkki et al. 2016) - for their long-lasting experience in biodiversity politics and sectoral interaction; their leadership or involvement in the development and implementation of the SBSAPs; as well as their access to related political processes. The interviewees were selected explicitly for their representative role in the *Länderforum*, which serves as a central coordination format between the national and state level for the implementation of biodiversity goals. The strategies themselves represent the central instrument for cross-sectoral and cross-level policy integration (United Nations 1992). Further, especially when dealing with multi-sectoral environmental strategies, it is crucial to look beyond the mere text of the documents as these often primarily contain lip service and vague goals (Bornemann 2014).

A total of 16 interviews were conducted representing all *Länder*. The interviewees included eight department heads and 11 department members (two interviews were organised as group interviews with two persons). The guideline-based interviews were conducted digitally via video conference with a duration of 45 to 90 minutes. The interview guideline was divided

into three topics, covering the development process of the SBSAP, experiences in implementing the targets and impressions of the exchange with other political levels (see Appendix A1). The transcription and analysis were carried out according to the schema of a qualitative content analysis (Mayring 2010) in the sense of a summarised interpretation. The formation of categories for the preceding coding was deductively based on the two aforementioned dimensions by Candel (2019). Intercoding agreements between the two coding persons were used to avoid inconsistencies. The following main section is organised according to the applied coding scheme and analyses the barriers and levers to BPI from the perspective of the state environmental ministries. This results section begins with a brief introduction to the German *Länder* case study.

The institutional framework of the German *Länder* regarding BPI

Germany is a federal state, with each of the 16 states (*Länder*) having its own nature conservation law and individual SBSAP processes. The Deviation competence of the concurrent legislation allows the states to adopt their own deviating regulations if specific federal principles are not affected. The competences for implementing nature conservation laws - including federal laws - lie within the states. Despite some administrative heterogeneity, implementation at the state level is generally carried out by “supreme” (e.g. state ministries of the environment), “higher” (e.g. state offices, state administrative offices, regional councils) and “lower” nature conservation authorities (e.g. county and city councils) (Hildebrandt and Wolf 2016). The so-called *Ressortprinzip* regulates that each minister manages his or her portfolio independently, resulting in a high degree of ministerial independence. According to Jordan and Lenschow (2010), this proves an obstacle for integrating cross-cutting issues such as biodiversity, especially as the Chancellor’s prerogative does not have an equally strong influence on sectoral ministries. In consequence, state environmental ministries are generally perceived as weak ministries.

Official coordination with the federal level (besides the Federal Council) takes place primarily through the Conference of Environment Ministers (*UMK*), its sub-working group (*LANA*) and the so-called “*Länderforum*”. The *UMK* forms a coordinating body of the federal and state environmental ministers, seeking for consensual solutions on various environmental topics without having a direct legal effect. The so-called “*Bund/Länder-Arbeitsgemeinschaft Naturschutz, Landschaftspflege und Erholung*” (*LANA*) functions as expert sub-working group to the *UMK*, consisting of representatives of the highest state authorities for nature conservation and federal representatives (Böcher and Töller 2012). The *Länderforum* consists of one representative from each of the state environmental ministries and one representative from the Federal Environment Ministry. The annual forums serve to exchange information on the implementation of the SBSAPs, the NBSAP and related international objectives (Schubert et al. 2021).

In response to the German National Strategy on Biological Diversity adopted in 2007, 15 out of 16 states have established their own SBSAPs, with the sixteenth currently being in development. The German SBSAPs vary widely in scope, process design and institutional anchoring (e.g. evaluation intervals range from annual to every 5 years - for a detailed comparison see Schubert et al. 2021). In most states, the strategies have been developed by the environmental ministries and adopted by the state government. Four SBSAPs were developed and adopted solely by the environmental ministry (Schubert et al. 2021). In Saxony-

Anhalt the SBSAP was adopted by the state parliament. However, the goals of almost all strategies were also coordinated with non-environmental stakeholders during the development process. According to Schubert et al. (2021), both the federal states and the federal government are adhering to the instrument by moderately increasing funding for the implementation and the renewal of their strategies.

Thus, on paper, the German state environmental ministries have a solid institutional framework in the context of SBSAPs, which fans out as a network of coordination across different political levels and sectoral policies. Nevertheless, a deeper look at the issue beyond the mere existence of such structures is needed to gain insights into the barriers and levers to BPI.

Barriers and levers to Biodiversity Policy Integration from the perspective of the German state environmental ministries

Growing awareness but limited exchange of knowledge - Analytical capacities

The consulted state representatives argued that biodiversity loss is by now increasingly recognized as a cross-cutting issue by sectoral stakeholders and non-environmental ministries, fuelled by the risen public awareness. Information about countering biodiversity loss is accessible and the overall trends are clear. However, discussions would still be held partly oversimplified, as this knowledge has not trickled down to all stakeholders. Further, specific information (e.g. local trends of species) is often lacking due to insufficient monitoring. In terms of knowledge transfer from other state departments, the representatives mainly mentioned formal requests for reporting on the SBSAP and unofficial exchanges. For vertical information exchange, the representatives emphasized the *Länderforum*. The forum enables a direct formal exchange with state colleagues and the Federal Environmental Ministry, thus, focussing on the mutual exchange of experiences and information (e.g. discussion of new subject areas). A regular exchange of experience is otherwise mainly practised with geographically neighbouring state colleagues, but without high frequency. In addition to unofficial exchanges, information is exchanged on an irregular basis at conferences or workshops and through enquiries to the environmental department (e.g. in the context of the EU 30% restoration target).

Poor vertical cooperation, weak accountability and lacking resources - Operational capacities

In line with these impressions, state representatives described the *coordination and cross-sectoral structures* with non-environmental departments as poor. SBSAPs and the biodiversity topic itself are often too complex and wide ranging for non-environmental actors. Greater willingness to cooperate is achieved primarily through individual communication and when sectoral actors are legally bound to the issue (e.g. state development plan; action plans). Cross-level coordination is mainly institutionalized through the *Conference of Environment Ministers (UMK)*. The *UMK* was described as a highly formal process, in which political parameters (e.g. party affiliation) can have a decisive influence. Apart from this format, direct access to the federal level was described as difficult due to a lack of staff or missing personal contacts. Direct communication with the European level was noted mainly in cooperation with

the federal level. There is partial coordination with selected municipalities through model regions or regional conferences, however, SBSAPs themselves are not perceived as essential for the municipal level. Several representatives explicitly criticized that local decision-makers are widely left out of biodiversity politics, despite their importance for implementation. In general, SBSAPs were perceived as contributing to national and international strategies, but without being a close coupling or operationalisation. Also, the German NSBAP serves primarily as a thematic orientation and argumentation aid, although it brings about some harmonisation of the SBSAPs. In individual cases, SBSAP processes have even been initiated as active counter-processes to the NBSAP in order to avoid the adoption of certain national objectives. Only the current European Biodiversity Strategy for 2030 was described as easier to link due to its greater ambition and more concrete scales. However, several persons explicitly stressed that, overall, there is „no direct logic of action for European goals at the sub-national level” (head of department; Hesse).

With regard to the *strategic management* of the SBSAPs, the state representatives described the development of the strategies as a multi-stage, iterative process involving both environmental and non-environmental stakeholders in appropriate numbers. However, they labelled non-environmental ministries, land user departments or land user associations mainly as classic „Veto-Powers” striving for low ambition targets. They highlighted a trade-off between the ultimate ambition of the goals and the extent of non-environmental stakeholder participation. Thereby two strategic approaches of the environmental administration emerged: Either stakeholders were involved from an early stage and jointly developed a baseline document, with the risk of early entrenchment of a low level of target ambition at an early stage. Or, as the vast majority preferred, non-environmental stakeholders were involved at a late stage in the hope of maintaining ambitious goals longer. However, no clear differences in the resulting implementation were reported. To strengthen sectoral implementation, the representatives emphasized the need to develop topic-focused action plans, regional conferences, and interdepartmental working groups.

For providing feedback to the political sphere, all SBSAP processes have regular *evaluation* mechanisms. In most cases, information is requested from the non-environmental departments or state agencies and are supplemented with indices from other surveys. The final reports are usually discussed and acknowledged in the state parliament. Representatives criticized vague goal formulations, the imbalance between the number of goals and the provided monitoring resources, as well as a lacking temporal amortisation of biodiversity related reports. Also, the lacking legal entitlement of the SBSAPs undermines its enforcement in non-environmental sectors. In consequence, many measures are simply declared as „in progress” and final reports as „taken note of” without adapting policies. Only one person reported increased political attention and strong arguments for budget negotiations as a result of these evaluations. However, these gains were strongly supported by the personal commitment of the environmental minister.

All state representatives stressed lacking *financial and human resources*, especially in the aftermath of long-term administrative savings. In consequence, departmental processes have to be prioritized, with biodiversity currently being subordinated to climate or energy issues, and strategic processes (e.g. SBSAPs) being subordinated to money-related processes (e.g. processing of funding). Certain structurally weak states (e.g. parts of Eastern Germany) are

particularly affected by this lack of resources. They further criticized the weak role of nature conservation in many sector-dominated funding instruments and the chronically underserved SBSAP processes. However, some representatives also highlighted positive trends in more recent SBSAPs (e.g. accompanying funding programmes) and introduced federal funding programmes.

Sectoral obligations, competition in the discourse and public pressure - Political capacities

Despite biodiversity protection being more present in the political debates by now, substantial progress is hampered by institutional and *political factors*. According to the state representatives, sectoral stakeholders still perceive themselves primarily responsible to their own interest groups, neglecting the need for holistic solutions. Based on the high degree of ministerial independence, sectoral ministries hardly participate in the implementation, if no additional funds are provided. Further, stronger vertical support has primarily been reported through EU legislation (e.g. Natura2000) and national initiatives regarding climate protection (e.g. funding scheme for natural climate protection). However, the majority of interviewed persons argued that the issue of climate change currently pushes aside biodiversity in the political debates. Several persons also reported a generally low relevance of SBSAPs in day-to-day work and that they were practically replaced by more concrete sectoral agreements. "As long as there are no accompanying, more binding resolutions, it is always difficult to implement, because then a lot simply depends on the judgement of the administrative staff or the respective state government" (head of department; Hamburg). Two persons argued that, nevertheless, even by aiming for an SBSAP in the coalition agreement minor commitment from the whole government is provided.

In five states, the representatives reported that public pressure in form of public referendums (cf. Tosun and Koch 2021) played a key role in promoting legitimacy and political attention. All referendums were related to the context of agriculture and nature conservation and arose in the aftermath of the so-called *Krefeldstudie* (cf. Hallmann et al. 2017). In several states, the government started dialogue with the initiators and sectoral stakeholders to defuse the ambitious demands of the referendum. According to one person, some state governments have also subsequently weakened approved sector agreements by passing subsequent ordinances. However, despite being of different extent and actor constellations, all public movements led to more public attention, resources, and the partly binding inclusion of ambitious sector targets. In two financially stronger states staff positions were created at the lower administrative level.

Instead, changes of government during a SBSAP implementation phase were viewed critically. One person reported that a newly elected centre-right party had ordered to revise the two-year old SBSAP and had targeted specific areas for adjustment. However, the administrative body convinced the head of the department that a revision of such a recent strategy was not technically tenable. As a compromise, both sides agreed not to revise the SBSAP, but to focus implementation efforts on those targets that had not been criticized. Especially right-of-centre parties have been labelled as unbeneficial for the political prioritization of biodiversity. However, according to some interviewees, even a green-coloured house line is no guarantee for strong BPI.

Fluctuating cross-level commitment, partially compensated by individuals and the European level – Integrative leadership

At the level of individual actors, the state representatives emphasized the state environmental ministers and the heads of their own department as important. These actors have access to the financial negotiations within and between the ministries and can support the internal and public attention by actively addressing the topic. In one state, the environmental minister prioritized the development of the SBSAP as his personal political goal, thereby strengthening the provision of internal resources and the willingness of other ministries to cooperate. In the context of two public referendums, it was reported that the state environmental ministers actively entered dialogue with sectoral stakeholders and mediated between them.

Several persons also emphasized specific individuals (“Kümmerer” / caretaker) from non-environmental departments for anchoring the topic of biodiversity within non-environmental departments. These administrative staff can act as important multipliers due to their general interest in the topic and their willingness to highlight the issue in their departments, despite not having biodiversity on their main administrative agenda. Personal contacts, inter-ministerial exchange structures and opportunities for strategic cooperation (e.g. action plans) were emphasized as crucial for mobilizing these multipliers. In several cases, also NGOs took a mobilizing role by stimulating the referendums and leading the subsequent negotiations.

From an institutional perspective, the EU was particularly emphasized as an impetus level. Through the adoption of binding regulations, ambitious goals and reporting obligations, the supranational union positions biodiversity on the political agenda and pushes lower levels to mobilize resources. However, according to state representatives, new goals are sometimes adapted too quickly, leading to frustration among stakeholders and a critical attitude towards new proposed targets. While welcoming these European ambitions, several persons questioned if higher political levels realize the amount of administrative resources needed for implementation.

In contrast, the state representatives attributed more of a strategic, coordinating role to the federal government, which primarily passes on European legal requirements. "The strongest impetus is currently coming from the EU, the federal government reacts to this and passes it on to the federal states" (head of department; Saarland). Despite its institutional powers to formulate declarations of goals and reinforce them with funding, the federal government was only partially ascribed an overriding integrative role. However, it still provides some kind of leadership by organizing different exchange formats (e.g. round tables on marine plastics) and by mobilizing resources (e.g. four billion funding schemes for natural climate protection). Also, the state political level was described as primarily concerned with implementing „external orders” (e.g. Natura2000) rather than taking on strategic leadership. At the local level, the state representatives argued that municipalities and local actors (e.g. dedicated mayors, landscape conservation associations) can act as “initiators” and create important small-scale networks. However, these local structures have not been mobilized extensively so far. Table 2 summarizes the main barriers and levers mentioned by the representatives of the state environmental ministries.

Tab. 2: Identified barriers and levers to BPI at the German state level. Note: barriers [-], levers [+], neutral/ambivalent factors [~].

Biodiversity Policy Integration			
		Barriers	Levers
Integrative Capacities	Analytical		+ Increasingly recognised as cross-cutting issue ~ Regular provision of information (e.g. evaluation reports) ~ Limited exchange of information (e.g. <i>Länderforum</i>)
	Operational	- Weak coordination & cross-sectoral structures - Low strategic management - Ineffective evaluation mechanisms - Lacking financial & human resources	
	Political	- Institutional distribution of power - Low public attention	+ Public referendums at state level + Vertical policy support by European initiatives
Integrative Leadership		~ Ambivalent commitment of the federal and state governments	+ Personal commitment of individual policy makers & administrative staff + European Union as impetus level

Discussion

Similar patterns between the states with subtle differences

The aim of this study was to identify barriers and levers to BPI at the sub-national level, to explain the mechanisms behind them and to compare them with national experiences. Thereby, the state representatives presented widely overlapping impressions between the states, despite their earlier mentioned room for manoeuvre. Common issues included increased awareness; lacking political priority; low sectoral interest; low impact of the SBSAP evaluations; and a weak role of state and national governments. Differences between the states may be blurred by larger socio-political trends (e.g. Covid-19 pandemic; Russia-Ukraine war), general institutional structures (e.g. the weak mandate of state environmental ministries; highly Europeanized environmental legislation) and the fact that many sectoral decisions are made by other institutions and political levels. However, of course, at a higher analytical resolution several patterns emerge:

Firstly, disparities in financial (and hence human) capacities between the states were noted. States facing structural change and population decline (such as East Germany and Saarland) reported significant financial constraints, especially at the local implementation level, while wealthier states (such as Bavaria and Rhineland-Palatinate) could develop better-funded SBSAPs and related programmes (e.g. *Aktion Grün* - Rhineland-Palatinate; local biodiversity officers - Bavaria). As a result, the former are also more reliant on European and federal funding. Secondly, in consequence, the policy mix surrounding the SBSAPs varied between the states. States with additional development plans, sectoral action plans or model regions

seemed to perform better as these instruments often had stronger binding effects and improved communication with local stakeholders (e.g. local landowners). The third main difference has been the presence of integrative leaders in some states, especially in combination with public referendums. More comprehensive policy mixes were named more frequently in states with these levers. In two states in particular, these actors managed to take up the public mandate, engaged sector stakeholders through agreements, and secured initial funding during budget discussions.

Integrative leadership as a decisive factor in preventing institutional lock-ins

Thus, the case of the German SBSAPs emphasizes that weak political capacities and lacking leadership form major barriers to BPI also on a sub-national level. In principle, federations that allow their sub-national levels a certain amount of leeway in policy design (e.g. Germany, United States) have the potential to develop innovative EPI instruments in a decentralised manner. However, Germany has always struggled with weak policy coordination, while other countries such as Sweden or the UK have stronger traditions in this respect. In Germany, periodic or sector-specific niches of high EPI have traditionally relied heavily on individual policy makers and the composition of the government (Jordan and Lenschow 2010). Without the external interference from the European Union, public initiatives or individual policy makers, state government efforts seem trapped in institutional lock-ins (Simoens et al. 2022). These lock-ins manifest themselves as evaluation mechanisms are undermined by the weak institutional mandate given to the SBSAP processes and the environmental ministries themselves. Staff shortages hinder to compensate the resulting power imbalance with unofficial exchanges, leading to an ineffective process design that fails to mobilize additional resources. These interpretations as institutional lock-ins will probably remind German readers of longstanding debates on federalism (cf. Scharpf 1988) and are reflected in the lacking assertiveness of the state environmental ministries since they have to settle for either unambitious targets or lacking implementation. At its core, BPI thus becomes primarily a question of power and agency rather than process design. Since environmental and sectoral interests are by nature diametrically opposed, the main objective of BPI processes in this case is to empower environmental policy-making to shift from an opposed model to a new cooperative interaction (Hertin and Berkhout 2003). Thereby, policy windows, time and synchronicity become important parameters for enabling policy formulation in favour of biodiversity (Kingdon 1984). These dynamics are mirrored in the importance of integrative leaders, who build on power and momentum to provide agency for the corresponding objectives. In the case of the German SBSAPs, these integrative leaders emerged not only in the form of senior decision-makers (e.g. department heads), but also as lower-level civil servants. The latter presented themselves as kind of subtle policy entrepreneurs (Kingdon 1984; Petridou and Mintrom 2021) and boundary spanners (Neumann and Holzmüller 2007) by promoting (allegedly) new ideas in non-environmental departments, bridging administrative groups and translating across languages. These people are particularly important in the transdisciplinary context of sustainability and for the inclusion of scientific knowledge into political processes (Goodrich et al. 2020). They may not be visible at first glance and rely on basic interdepartmental coordination structures. However, they support policy change by setting biodiversity on the departmental agenda and strengthening stakeholder networks (Mintrom and Norman 2009). These findings partly contrast to the

literature (cf. Cejudo and Trein 2022), which primarily focus on issue specialists and actors in key positions. However, they support Peters' (2015) claims that policy entrepreneurs may also exist at lower administrative levels. Thus, policy integration can - especially in the absence of a strict top-down management - take on the character of a "hidden" policy integration process, driven by individual staff members in public policy.

Lacking cross-level integration reinforces horizontal integration challenges

Compared to experiences at the national level (see Tab. 1), both subnational and national strategy processes are frequently hampered by weak institutional mandates, lacking resources and low political priority of biodiversity. In consequence, siloed policy making continues across and between political levels, with sectoral state ministries feeling significantly more beholden to their federal counterparts than to the state environmental ministry (Molenveld et al. 2021). Missing cross-level policy integration, thus, can significantly undermine horizontal integration efforts and reinforce sectoral silos on different political levels. Weak mandates for biodiversity at both federal and state levels inevitably hinder effective coordination and accountability in the vertical direction (Bornemann 2014). In consequence, trade-off decisions are shifted - intentionally or unintentionally - to lower implementation levels, increasing resource demands and creating uneven BPI cost distribution for sub-national governments (Fernández-I-Marín et al. 2023). This raises the question of whether the development of the European and national biodiversity strategies, reflecting the primary top-down logic of several European biodiversity policies, could not be enriched by greater mutual alignment with SBSAPs or by bringing together representatives of all three national levels (federal – state – municipal) in a strategic format.

When looking at these findings, it is important to consider that these are based on the statements of one specific group of actors (environmental; civil servants) at one political level (state level) causing a conservation biased perspective. Different state or non-state actors (e.g. state ministry for economy; agricultural lobby groups) as well as actors from different political levels (e.g. majors) are likely to have different views on the barriers and levers to BPI. For example, lower administrative levels often feel overburdened by demands from higher departments, while higher departments often accuse downstream levels of inertia and inefficiency (Peters 2015). Further, the data is based on the subjective perceptions of individuals. Therefore, it has not been empirically proven whether changing the aforementioned barriers and levers would actually lead to a change in the degree of policy integration. Despite these limitations of generalisability, the picture of barriers and levers given by the state representatives aligns with broader studies consulting different stakeholders and the environmental policy integration literature (Persson and Runhaar 2018; Pröbstl et al. 2023). The primary aim of this study was to open up the sub-national level to the analyses of BPI. Considering the low attention given so far, future research can build up on these insights in the context of SBSAPs by analysing the perceptions of other sub-national stakeholders and actors across different political levels regarding biodiversity.

The applied analytical framework by Candel (2019) has been chosen as it enables to analyse both horizontal and vertical aspects of policy integration. It covers a wide array of potential influential factors beneficial for explorative approaches, and builds up on a processual

understanding of policy integration beneficial for analysing SBSAPs. However, it could benefit from a further differentiation of integrative leadership and individual-level capacities, emphasizing individuals in the political process of policy integration and distinguishing more precisely between different types and roles of these actors (e.g. knowledge brokers; policy entrepreneurs). Future BPI research needs to look more closely at the dynamics of vertical integration across different political levels (e.g. exchange with the municipal level); potential trade-offs with horizontal integration efforts; and different types of federal systems (e.g. more centralised versus more decentralised systems). Furthermore, it will be interesting to examine whether the relatively young BPI discourse has its own characteristics compared to overarching environmental policy integration debates (e.g. climate policy integration).

Conclusion

Although increasing parts of the environmental decision making is now taking place at the European and international level, the sub-national level can quickly become a bottleneck for implementation. As the example of the German SBSAPs shows, sub-national levels feel anything but automatically committed to integrate national or international biodiversity targets. Without the support of integrative leadership by department members, public referendums or EU initiatives, state governmental efforts countering biodiversity loss seem increasingly caught in institutional lock-ins. In order to avoid merely symbolic policy-making, both in a cross-sectoral and cross-level perspective, biodiversity governance should focus on the joint, strategic development of common goals and the provision of sufficient resources for implementation. This is particularly important as incoherencies at higher political levels can only be resolved to a limited extent at lower administrative levels (Fernández-I-Marín et al. 2023).

Also, the concept of SBSAPs needs to avoid getting stuck in a "functional lock-in", where the content may change, but its functionality and political impact do not improve. Properly designed, SBSAPs can provide valuable platforms for bringing together various stakeholders around a common goal. The structure of SBSAP processes (e.g. the timing of involvement of non-environmental stakeholders) is important, however, it does not appear to be decisive, especially as these processes hardly address existing power relations. The current approach of either patronizing sectoral stakeholders or collaborating with them in unbalanced power dynamics will be ineffective unless there is a shared agreement on prioritizing biodiversity. Integrative leadership and hidden integration processes surrounding these SBSAP processes seem more suitable to create agency in other organisational units, thus, shifting from an opposed model to a new cooperative one, despite established institutional structures.

From a theoretical perspective, the study, thus, underlines the need for further attention towards individual leaders and the political dimension of policy integration. In particular, it supports recent claims by Trein et al. (2023), that the question of why certain actors promote policy integration in different stages of the policy cycle is crucial. In this context, the findings ascribe an important role to boundary spanners and knowledge brokers, especially regarding "hidden" integration processes. The study also emphasizes the need to consider vertical and

horizontal processes together, as a lack of cross-level integration can significantly hamper sectoral integration at a specific political level. It reveals similar patterns for national and sub-national policy integration, suggesting similar political dynamics (at least in the German federal context) and highlighting the importance of accountability for policy integration.

It is precisely these aspects of increased political prioritisation and consistent accountability that are needed at sub-national, national and international level, to strengthen the steps towards transformative biodiversity governance. If the new Global Biodiversity Framework wants to initiate a trend reversal, the sub-national levels must be at the heart of consideration. Instead of repetitive changes to the content of goals, all CBD members must strive for more concerted action to avoid unnecessary resource consumption, in face of the urgency of biodiversity loss.

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