Subnational Workshops for Knowledge Uptake
–
IPBES and IPCC knowledge uptake, and synergies between climate and biodiversity at the subnational policy level.

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1. Executive Summary

This report presents findings from a series of subnational workshops conducted as part of the RESPIN project (REinforcing Science-Policy INterfaces for integrated biodiversity and climate knowledge and policies). The focus is on understanding how global scientific assessments from the IPBES and IPCC are being used—or overlooked—by decision-makers at the subnational level, particularly in Spain (Catalonia), Colombia (Valle del Cauca), and Germany (Rhineland-Palatinate and Hesse). The goal of these workshops was to identify barriers and enablers of science-policy integration, and co-develop recommendations for strengthening science-policy interfaces (SPIs) at the subnational level.

Key findings: Shared Challenges. Across all three countries, participants identified several common barriers:

- **Scale and Applicability**: Global assessments are perceived as too abstract and not tailored for subnational realities.

- **Communication Gaps**: Scientific language and report formats (length, complexity) hinder practical use by policymakers.

- **Institutional Fragmentation**: Governance structures remain siloed, impeding coordination between biodiversity and climate agendas.

- **Knowledge Gaps**: Policymakers and local actors often lack the technical capacity to interpret or act on scientific findings.

- **Biodiversity-Climate Disconnection**: Though interlinked, these agendas are often treated separately due to differing mandates and funding structures.

Country-Specific Insights

- **Catalonia (Spain)**: Despite strong regional institutions and political will, the uptake of IPBES/IPCC knowledge is hindered by:
  - Lack of legal mandates for integrating scientific evidence.
  - Institutional fragmentation.
  - Weak cross-disciplinary communication.

- **Valle del Cauca (Colombia)**: Barriers are deeply structural, with:
  - Limited financial and human capacities.
  - Marginalization of Indigenous knowledge.
  - Corruption and overlapping governance roles.

- **Germany (Rhineland-Palatinate and Hesse)**: Despite access to robust scientific outputs, uptake is obstructed by:
  - Politicization of climate/biodiversity as "green" issues.
  - Limited public engagement and weak cross-party support.
  - Fragmented responsibilities at federal and local levels.

What can help overcome these barriers?

- **Institutional Strengthening**
    - Establish legal frameworks and mandates for regional SPIs.
    - Promote cross-sector coordination and reduce duplication of efforts.
    - Institutionalize hybrid roles (e.g., knowledge brokers) to bridge science and policy.

- **Communication and Capacity Building**
    - Translate IPBES/IPCC findings into locally applicable knowledge products using accessible formats such as infographics, short videos, and briefs.
    - Build technical capacity through training for policymakers, civil servants, and local communities.
    - Develop accessible formats for Indigenous and local knowledge systems.

- **Integration of Biodiversity and Climate**
    - Promote joint indicators and shared policy frameworks.
    - Integrate climate and biodiversity planning in all sectors (e.g., agriculture, infrastructure).
    - Elevate biodiversity to the same political and funding level as climate change.

- **Societal Engagement**
    - Enhance public understanding through campaigns, storytelling, and education.
    - Support local networks and knowledge platforms (e.g., Catalonia's OPNB).
    - Frame climate and biodiversity as societal—not partisan—priorities.

RESPIN's Role and Next Steps. The RESPIN project supports these efforts by:

- Developing region-specific synthesis reports and accessible communication products.
- Creating capacity building materials and a guide for replicating subnational workshops.
- Promoting cross-country learning and long-term institutionalization of SPIs.

Though RESPIN is a time-bound initiative, its outcomes provide a valuable foundation for systemic, long-term improvements in subnational science-policy integration—critical for achieving global environmental commitments such as the Paris Agreement and the Kunming-Montreal Global Biodiversity Framework.

2.   List of abbreviations

CBD	Convention on Biological Diversity
COP	Conference of the Parties
CREAF	Centre for Ecological Research and Forestry Applications
CVC	Regional Autonomous Corporation of Valle del Cauca
EU	European Union
IAMs	Integrated Assessment Models
IPBES	Intergovernmental Science-Policy Platform for Biodiversity and Ecosystem Services
IPCC	Intergovernmental Panel on Climate Change
NFP	National Focal Points
NGO	Non-governmental organization
OPNB	Observatory of Natural Heritage and Biodiversity
PIGCCT	Comprehensive Plans for Territorial Climate Change Management
RESPIN	REinforcing Science-Policy INterfaces for integrated biodiversity and climate knowledge and policies
SPI	Science-Policy Interface
UFZ	Helmholtz-Center for Environmental Research
UNEP	United Nations Environment Program
UNFCCC	United Nations Framework Convention on Climate Change
WMO	World Meteorological Organization

3. Introduction

Climate change and biodiversity loss are deeply interlinked global crises that will require effective coordinated policy responses at all levels of governance. Both the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) and the Intergovernmental Panel on Climate Change (IPCC) provide robust scientific assessments to inform evidence-based policymaking. However, the uptake of their findings remains uneven across governance scales, with significant barriers at the subnational level, where much of the implementation of environmental policy takes place.

While IPBES and IPCC were established to synthesize the best available knowledge in their respective domains, their outputs often remain siloed, with limited cross-referencing and missing contextualization and processing, making it difficult to integrate them in subnational and local realities. This fragmentation is reflected in policymaking, where synergies between climate and biodiversity objectives are frequently missed, and trade-offs insufficiently addressed (Shrivastava et al. 2024). In addition, IPBES and IPCC reports operate mostly on global scales and therefore may remain rather abstract to feed policy implementation processes. Without translating these general findings into national and subnational contexts, the findings might not be perceived as directly relevant for local realities and challenging to apply. Strengthening the science-policy interface (SPI) at the subnational level is essential to ensure that integrated knowledge from both platforms informs practical decision-making and contributes to the coherent implementation of the Paris Agreement and the Kunming-Montreal Global Biodiversity Framework.

The RESPIN project (REinforcing Science-Policy INterfaces for integrated biodiversity and climate knowledge and policies) seeks to address this challenge by fostering more effective knowledge flows between IPBES and IPCC and decision-makers at all levels. One of RESPIN's key objectives is to identify and overcome barriers to knowledge uptake and to support the cocreation of SPI formats that promote synergies across climate and biodiversity agendas. As part of Function 2 of the project—focused on empowering knowledge users at the national and subnational level—RESPIN has organized a series of subnational workshops in selected countries with strong decentralization frameworks, including Spain, Germany, and Colombia.

This report presents the results of those workshops. It explores how IPBES and IPCC outputs are currently used—or overlooked—by subnational policy actors, identifies key challenges and opportunities for more integrated knowledge use, and provides recommendations for enhancing the uptake of scientific findings in biodiversity and climate-related policy processes. The report builds on RESPIN's broader goals of fostering cross-sectoral collaboration, reinforcing inclusive and participatory SPI ecosystems, and ultimately contributing to more effective, coherent, and actionable climate and biodiversity governance across scales.

These findings align with calls for a stronger and more inclusive SPI ecosystem that responds to national and subnational realities, as highlighted in recent discussions around integrated climate-biodiversity strategies. By supporting subnational actors and strengthening their connection to global science-policy platforms, RESPIN contributes to generating a knowledge base that allows for informed and integrated decision making for a resilient, and nature-positive future.

3.1. Framing the challenge

A recurring challenge in global science-policy processes is the disconnection between knowledge production and its actual uptake by decision-makers (Sarkki et al., 2025) — particularly at the subnational level. Literature on IPCC describes this gap as a lack of dialogue "between those who study the IPCC, those who are involved in it, and those who read and rely on its reports, such as policymakers and other stakeholders" (Hermansen et al., 2023). Similarly, literature on IPBES points to the challenge of connecting and harmonizing a complex and diverse stakeholder group (Le Pestre and Compagnon 2016), which leads to a fragmentation of different understanding, concepts and narratives also referred to as "epistemic selective" (Vadrot 2023).

When communication and collaboration are difficult or absent—both within each platform and between them—ensuring coherence across climate and biodiversity policy advice becomes extremely difficult, despite the well-documented interlinkages between the two fields. The need for greater coherence has been highlighted repeatedly over the past years. In a joint IPBES-IPCC workshop it was emphasized that making different knowledge systems available for informed decision making as well as evaluation and learning is a key element for transformative governance (Pförtner et al. 2021). And more recently, during the 11th IPBES Plenary (Windhoek, Namibia, 2024), the EU called for joint assessments to close persistent knowledge gaps at the climate-biodiversity interface (IPBES, 2024, p. 119). Moreover, bridging these gaps requires more than just refining the content of assessments; it demands an understanding of how, where, and why IPBES and IPCC knowledge is—or isn't—integrated into national and subnational decisionmaking processes. Without connecting different knowledge systems to decision making can "prevent the recognition, adoption and implementation of locally appropriate management tools" (Frantzeskaki et al. 2024: 40). Uncovering the barriers to real uptake at different governance levels is essential for improving coherence between the two platforms and translating science into effective policy.

3.2. Case study selection

To assess how IPBES and IPCC knowledge and practices are taken up in practice. While national governments set broad priorities and make international commitments, subnational authorities have the often more specific mandates and responsibilities to implement policies and coordinate different territorial interests and policy sectors on the ground. This division of responsibilities is particularly relevant in decentralized and federal systems, where subnational governments play a central role with clear responsibilities in biodiversity and climate governance. The disconnection of political levels and the lack of integrating targets, language and knowledge exchange poses a core challenge to integrated decision making on subnational levels (Pröbstl et al. 2025).

This report explores three country case studies — Spain, Colombia, and Germany — to investigate barriers to the uptake of IPBES and IPCC knowledge at the subnational level. Among the countries involved in the RESPIN project, we selected the ones with stronger decentralization frameworks for biodiversity and climate related competences at sub-national levels.

Spain – Catalonia

The Spanish case focuses on Catalonia, an autonomous region with legislative and executive authority in environmental matters. At the national level, Spain's focal points for IPBES and IPCC are housed

within the Ministry for the Ecological Transition and the Demographic Challenge (MITECO), but in different bodies: IPCC engagement is managed from the Spanish Office for Climate Change (*Oficina Española de Cambio Climático*), and the Subdirectorate General for Terrestrial and Marine Biodiversity (*Subdirección General de Biodiversidad Terrestre y Marina*) manages involvement with IPBES. A similar structure exists within the Catalan Government, where both the Catalan Office for Climate Change (*Oficina Catalana del Canvi Climàtic)*, responsible for climate policy, and the Directorate-General for Environmental Policies and Natural Environment (*Direcció General de Polítiques Ambientals i Medi Natural)*, responsible for biodiversity and natural heritage, are part of the Department of Climate Action, Food and Rural Agenda (*Departament d'Acció Climàtica, Alimentació i Agenda Rural)*. These entities play key roles in developing and implementing regional environmental policy and engaging with international science-policy platforms.

Catalonia is particularly vulnerable to climate and biodiversity challenges due to its location in the Mediterranean Basin — widely recognized as a climate change and biodiversity loss hotspot. The Mediterranean region is warming 20% faster than the global average, and the impacts of climate change, such as extreme droughts, shifting species distributions, and rising sea levels, are already affecting both ecosystems and people. At the same time, the region faces high levels of biodiversity pressure, including habitat degradation and the spread of invasive species. As of 2020, wildlife populations in Catalonia had declined by an average of 25% (Brotons et al., 2020), reflecting broader ecological fragility.

This dual exposure makes the Mediterranean one of the most urgent arenas for integrated climate and biodiversity action. It also makes Catalonia a compelling case to examine how subnational governments engage with global science-policy processes, and whether knowledge generated by IPBES and IPCC is effectively informing regional decision-making

Colombia – Valle del Cauca Region

Colombia is particularly relevant due to its exceptional biodiversity — it is one of the world's most biodiverse countries — and strategic ecosystems. It has highly vulnerable communities to climate change, especially Indigenous, Afro-descendant, and rural populations, since they depend on ecosystem services for their well-being. The country also faces persistent socioenvironmental conflicts and land-use challenges.

Colombia is organized at the subnational level into departments, municipalities, and districts, each with elected authorities. Municipalities (alcaldías) have legal competencies in environmental matters, including land use planning and climate adaptation, and are required to develop territorial planning instruments (POTs). In the department of Valle del Cauca, which includes 42 municipalities, local governments coordinate with the regional environmental authority (CVC), making them key actors in translating IPBES and IPCC knowledge into locally relevant policies and actions. For Colombia's case study, we organized the data collection workshop in the region of Cali, but we invited representatives from different "alcaldías": Cali, Palmira, Buga, Yumbo and Jamundí.

Although Colombia has made international environmental commitments, such as the Paris Agreement and the Kunming-Montreal Global Biodiversity Framework, it still struggles with policy implementation. A better integration of knowledge from IPBES and IPCC at the regional level could support evidence-based decision-making, improve environmental governance, reduce social

inequalities, and enhance the country's ability to meet international goals and access climate finance for more sustainable and resilient development.

Germany – Federal Governance and Fragmentation

Germany presents a case of divided institutional responsibility. Climate policy is managed by the German Environmental Agency and was until recently coordinated by the Ministry for Economic Affairs and Climate Action, while biodiversity and IPBES engagement are led by the Federal Agency for Nature Conservation under the Ministry for the Environment. This split has led to siloed approaches, which were exacerbated in 2021 when climate responsibilities moved from the environment to the economy ministry—though recent political shifts in 2025 have reversed that move. Furthermore, the responsibility for several key biodiversity policies, such as the designation and management of protected areas, the implementation of rural development support (including pillar 2 payments for agri-environmental measures), land-use planning or the integration of biodiversity and climate in many infrastructural and industrial projects, is delegated to the 16 federal states, while fiscal tools like taxes and subsidies and projects of national importance (as major highways and energy grids) are handled at the national level. Although both IPBES and IPCC have national coordination offices within the same institution, they operate separately.

The German workshop aimed at subnational government representatives and ministries from Rheinland-Pfalz and Hessen and took place in Wiesbaden. These federal states are home to both energy-intensive industries and regions with high levels of biodiversity. Both federal regions or Länder (Bundesländer) have committed to taking actions on climate change and biodiversity by adopting a climate plan for Hesse and the sustainability strategy of Rhineland-Palatinate. Both states have a subnational biodiversity strategy.

4. Methods

4.1.   Workshop questions design

To guide the discussions in the subnational workshops, a set of key questions was developed under the umbrella of a central question: *What prevents greater adoption of IPBES and IPCC findings in public policymaking on climate change and biodiversity at the subnational level?* These questions were designed taking into consideration the diversity of stakeholders participating in the workshops— including subnational policymakers, scientists, and civil society actors— and aimed to explore both barriers and opportunities for the uptake of IPBES and IPCC knowledge.

In the workshops held in Spain and Germany, participants discussed the following three questions:

1. What prevents the results of IPBES and IPCC from being adopted in public policy formulation regarding biodiversity and climate change?

2. How can we improve the adoption of knowledge in relation to these identified barriers?

3. What should be the role of a Science Service/Science-Policy Interface (SPI) at the subnational level?

These questions aimed respectively to identify barriers, explore solutions, and envision improvements to SPI structures in subnational contexts.

In the Colombian workshop, the structure was slightly adapted to reflect the country's distinct socio-environmental and governance context. The discussion was organized around four questions, starting with a broader focus on existing challenges and policy practices before addressing knowledge uptake and SPI design:

1. What challenges exist for addressing climate change and biodiversity at the subnational and local levels?

2. What policies should be developed or adjusted to address climate change and biodiversity loss?

3. How is knowledge on biodiversity and climate change currently managed, and how should it be managed in terms of access to information and joint analysis?

4. What hinders greater uptake of IPBES and IPCC products in subnational policymaking, and what should a science-policy interface at the subnational level look like?

This approach allowed for a better understanding of the local context before addressing the specific integration of IPBES and IPCC findings and visions for a subnational SPI system. The first question directly appeals to barriers found at the subnational level. The second and third question aim to understand the possible solutions but makes a distinction between policies and knowledge management. This outlines that solutions, according to the Colombian context, can refer to specific policy barriers or can be part of how knowledge is accessed, shared or used. In the other workshops this distinction was not made in the solutions section but to better understand the particularities of Colombia the split of the question was necessary. Finally, the third question sets the context for knowledge uptake in subnational policymaking and focuses on how the local SPI in Colombia works and how it should be ameliorated.

4.2.   Workshop implementation and structure

The workshops gathered key SPI actors from the three case study locations—Cali, Colombia; Catalonia, Spain; Germany—to understand subnational dynamics, explore synergies, and codevelop ideas for a more integrated SPI system. Alongside RESPIN project members, who facilitated and participated in the sessions, each workshop hosted around 25 participants representing the following stakeholder groups:

*   **Government representatives from subnational ministries and agencies**, including technical staff and civil servants working on climate change and biodiversity.

*   **Senior departmental staff and policy advisors** with closer links to political decisionmaking processes at the subnational level.

*   **Members of subnational and local parliaments or political offices** involved in environmental governance.

- **Scientific experts**, including authors or contributors to IPBES and IPCC, as well as local researchers and academics familiar with the regional context.

- **Representatives from NGOs, civil society organizations, and other interest groups** engaged in environmental policy or knowledge dissemination.

- **Stakeholders from the private sector and other actors involved in local sciencepolicy interfaces**, such as consultancy firms or sectoral associations.

All workshops followed a shared structure, but small adjustments were made to reflect specific regional contexts and needs.

Each workshop consisted of three main sections, and ended with a short debrief:

- **Introduction** – An overview of the workshop objectives, a presentation of the RESPIN project, institutional welcome remarks, and a short icebreaker activity

- **Keynote Presentations** – Delivered by experts affiliated with IPBES and IPCC, providing insights into these global science-policy platforms and their relevance to subnational policymaking

- **Breakout Discussions** – Participants, including keynote speakers, were divided into three balanced groups (~10 participants each) to address the guiding questions

- **Joint overall reflections and outlook** – the group results were presented, and possible next steps were discussed

A round-robin format was used for the breakout sessions. Each group rotated through three discussion tables, and each table was dedicated to one of the workshop's core questions. At every table, two members of the organizing team were present: one facilitator, who introduced the topic and encouraged discussion, and one rapporteur, responsible for taking detailed notes. A large poster was placed at the center of each table, where both participants and facilitators could write down key messages and ideas using sticky notes. Discussions lasted 45, 30, and 25 minutes per table, allowing every group to contribute to each of the three discussions. In addition, a centrally located flipchart labeled the "parking spot" was available for participants to share comments, ideas, or reflections that did not fit within the ongoing table discussions but were relevant to the overall workshop theme.

To close each session, facilitators summarized the key messages, reviewed parking spot contributions, and led a final wrap-up on strengthening the local SPI system.

4.3.   Data collection

The workshops were designed as structured focus group discussions, in which participants collectively explored one guiding question per table. This format allowed for multiple perspectives to be shared, compared, and synthesized into a group-level understanding. Key messages were recorded on large posters at each table and reviewed by all group members, ensuring that the outputs reflected a shared interpretation rather than individual positions. Participants had the opportunity to validate or nuance these shared insights during the final wrap-up session, making it possible to flag points of

disagreement and reinforce consensus. The outcome of the workshop was presented in the following different sources of data:

- **Facilitator and rapporteur notes** from each breakout table, complemented by observations and conclusions from the plenary wrap-up.

- **Written content** from sticky notes posted on the central table posters and from the "parking spot" flipchart, which captured additional ideas or reflections beyond the focused discussions.

- **Recordings** of the IPBES and IPCC keynote presentations and Q&A sessions, which were reviewed to contextualize and complement the discussions.

- **Post-workshop survey responses** in which participants shared their evaluation of the workshop and provided additional insights or recommendations.

These sources were synthesized through a two-step process. First, the main results of the group discussions were structured according to the agreed themes and outputs captured during the workshops. Second, the notes, sticky notes, and recordings were used to elaborate on these group-level results, adding depth, examples, and nuance. This process helped filter out individual positions that were not broadly supported and strengthened the analytical reliability of the findings.

By focusing on consensus-building and cross-validation among participants, this method increased the quality of the data, ensuring that the results presented in this report reflect not just isolated views but collectively agreed observations from diverse subnational stakeholders.

4.4.   Data analysis

The analysis was based on the outputs of the structured focus group discussions conducted during the workshops. The thematic structure stems from the categories and insights codeveloped by participants during the group sessions. The materials collected—including handwritten notes, sticky notes, and, where possible, audio recordings—were first digitized. In some workshops (e.g., Colombia and Germany), only written notes and sticky notes were used due to the absence of audio recording. The analysis then built upon the shared outputs generated during the discussions, using a coding process that combined inductive and deductive reasoning to refine and organize participant-agreed themes. This method, informed by Miles, Huberman, and Saldaña (2014), allowed us to systematize the results while preserving their co-evaluative and transdisciplinary nature, with secondary codes inductively generated from the Catalonia workshop and applied deductively to the remaining two.

Coding system:

- **Primary code:** Corresponds to the three main workshop questions (or four, in the case of Colombia).

- **Secondary code:** Encompasses the main themes that emerged from participant responses to each question.

- **Tertiary code:** Captures more specific sub-themes or illustrative elements found within each secondary category when performing the analysis (see Annex A).

In our analysis we clustered the recurring patterns in overarching themes (reduction steps). Each theme became a secondary code. These secondary codes were developed inductively during the first analysis done, using the data collected in the workshop held in Catalonia, Spain. Then the structured coding tree was tested with the other workshops, Colombia and Germany, to see if the categories could be used with the other materials. The established categories fully embraced the results from Spain and thereby confirmed the coding schemes. Consequently, we applied the coding system deductively to the material from the other two workshops. These thematic categories—nine in total—are presented in Figure 1. The tertiary level was used to further explore the nuance of participant insights and to support the formulation of targeted recommendations.

Scale and Applicability	Other interest groups	Society
Communication, format and language (of the reports)	Lack of technical knowledge	Scientific
Connection biodiversity and climate change	Institutional	Mandate and structure

Figure 1. Secondary codes (tertiary codes found in Annex A

The coding system was applied consistently across all three workshops to analyze the data collected. This process resulted in a set of supporting materials, which are compiled in Annex A:

- A color-coded document compiling all notes and sticky notes from the workshops, coded according to the inductive system. These notes were cross-checked with the audio recordings and their transcriptions to ensure accuracy.

- An insights and patterns memo summarizing the main thematic observations that emerged during the coding process.

- A table for each workshop question, organizing the data using both secondary and tertiary codes to structure the responses.

- A comparative table showing the tertiary-level ideas across the three workshops, allowing for cross-case analysis.

The results presented in the following section are drawn from the themes and recurring patterns identified through this coding process.

5. Results

5.1. Spanish case: Catalonia

The Spanish workshop took place in Barcelona on November 8th, 2024, and was co-organized by CREAF and the Directorate-General for Environmental Policies and Natural Environment (*Direcció General de*

Polítiques Ambientals i Medi Natural), from the Department of Climate Action, Food and Rural Agenda (*Departament d'Acció Climàtica, Alimentació i Agenda Rural)*, from the Government of Catalonia *(Generalitat de Catalunya)*. With this joint collaboration we ensured a good turnout of participants since the invitations were sent formally by the Government. A total of 25 participants took part in the workshop, representing all the stakeholder groups listed in the methods section, and described in more detail in Annex B.

Although the workshop was ultimately successful, the political context in Catalonia presented some organizational challenges. At the beginning of 2024, early regional elections were called, which led to an extended transitional period within the administration. As a result, internal restructuring and changes in responsibilities delayed the planning process, and the workshop was rescheduled for November—falling between two major global environmental events, CBD COP16 and UNFCCC COP29. This overlap made it difficult for some participants to prioritize the workshop over international commitments. Despite these circumstances, the event achieved balanced stakeholder representation, and the information gathered provided a solid foundation for identifying barriers to knowledge uptake at the subnational level.

5.1.1.   Spanish case: Barriers identified

Scale and Accessibility: At the subnational level, one of the primary barriers is the mismatch between the scale of global scientific assessments and the local realities in Catalonia. In spite of recent improvements, scientific findings from platforms such as IPCC and IPBES often lack specific adaptations to the regional context. Policymakers need timely, place-based knowledge for short-, medium-, and long-term planning. Additionally, Catalonia lacks mechanisms for translating global insights into actionable regional policy, and there is insufficient infrastructure to evaluate how local conservation policies align with or diverge from global standards.

Communication, Language and Format: There is a disconnect between how science is produced and how it is communicated. Both global and local scientific outputs are often lengthy, technical, and hard to interpret. This is compounded by inconsistent use of language across disciplines, leading to misunderstandings between scientists, policymakers, and the public. Reports are rarely accompanied by executive summaries, infographics, or audiovisual content that would improve outreach. Also, results are difficult to locate and are not always communicated transparently.

Biodiversity and Climate Connection: Despite strong thematic overlap especially important regarding response implementation, biodiversity and climate change remain institutionally and politically siloed. Multidisciplinary integration is weak, with limited frameworks that unify indicators or joint assessments. This disconnection stems from differing timelines, policy priorities, and funding pathways. Without harmonized agendas, policies risk being contradictory, and biodiversity often receives less attention when bundled with climate issues.

Groups of Interest and Stakeholders: Powerful economic and sectoral interests exert influence over environmental policy, often to the detriment of scientific recommendations. Private sector engagement in biodiversity initiatives remains limited. The media's role is also underutilized in fostering public understanding. Civil society and citizen groups lack access to

synthesized, actionable knowledge. Participation mechanisms for non-scientific actors in science-informed decision-making are inadequate.

Technical Knowledge Gaps: There is a notable lack of scientific literacy among policymakers and insufficient capacity to interpret technical data. Additionally, communities and local institutions are unsure where to seek expertise. The absence of training programs and intermediary figures who can translate and contextualize information exacerbates this barrier.

Institutions: Fragmentation within and across governmental agencies impedes integrated policy design. Decision-making processes often occur in silos, with unclear mandates and little coordination between sectors. Professional profiles vary greatly within institutions, creating internal inconsistencies. Moreover, institutional inertia and entrenched bureaucracies slow progress toward innovation and integration.

Society: A gap exists between scientific outputs and public understanding. Eco-pessimism and low scientific culture weaken societal support for evidence-based policies. Local communities may not recognize how biodiversity loss and climate change affect their daily lives. Traditional ecological knowledge, especially from farmers, is often undervalued or overlooked.

Scientific Culture: Academic research is typically oriented toward publications rather than practical applications. The lack of applied research linked to policy needs, combined with limited incentives for knowledge translation, reinforces the science-policy divide. There is also limited collaboration across disciplines, especially between natural and social sciences.

Mandate and Structure: Catalonia lacks clear, structured mechanisms for integrating scientific knowledge into policymaking. There is no dedicated body with the legal mandate or authority to evaluate the environmental impact of policies. The roles and responsibilities of potential science-policy interface (SPI) actors are undefined, leading to fragmented or duplicated efforts.

5.1.2.   Spanish case: Solutions proposed

Scale and Accessibility: Participants proposed the regional adaptation of global scientific reports, supported by regional data centers or observatories that act as intermediaries. These bodies should contextualize findings for Catalonia and produce localized assessments. Scenarios should be developed to assess the potential impacts of policies at different temporal and spatial scales.

Communication, Language and Format: To make scientific information more accessible, it should be delivered in simplified formats such as infographics, videos, and short policy briefs. Communication strategies must be tailored to different audiences, ensuring clarity and relevance. Interdisciplinary "translator" roles (e.g., hybrid scientist communicators) should be institutionalized.

Biodiversity and Climate Connection: Efforts should focus on finding synergies between biodiversity and climate agendas. Tools and indicators that jointly address both issues must be developed. Cross-sectoral working groups and integrated information systems can support this goal. Strategic evaluations that reflect both agendas should be conducted to guide integrated policy design.

Groups of Interest and Stakeholders: It is essential to involve economic sectors and civil society in policy formulation through structured dialogues and incentives for sustainable practices. The role of journalism should be strengthened, with better access to scientific data and training. Synthesis reports tailored to societal needs can foster broader engagement and legitimacy.

Technical Knowledge Gaps: Annual training sessions and capacity-building workshops should be organized for both decision-makers and community leaders. These should focus on interpreting scientific reports and understanding practical implications. A formalized network of knowledge hubs should facilitate access to expertise and guide information-seeking behavior.

Institutions: Creating cross-departmental platforms or coordination mechanisms can help reduce institutional fragmentation and improve governance resilience. These should be based on clearly defined competencies and common methodologies. Hybrid professional roles that connect scientific and political functions (knowledge integrators) should be supported and assigned formal recognition.

Society: Promoting environmental education and scientific outreach is key to closing the gap between knowledge and action. Campaigns and community workshops should highlight the local relevance of biodiversity and climate issues. Traditional and local knowledge should be respected and incorporated into planning processes.

Scientific Culture: A shift toward applied, socially relevant science is needed. This involves incentivizing researchers to produce policy-relevant outputs and collaborate with practitioners. Platforms like Prismàtic and the Observatory for Natural Heritage and Biodiversity (OPNB) should be reinforced to support science translation.

Mandate and Structure: A legal framework should institutionalize a subnational sciencepolicy interface (SPI) with clear roles, independence, and continuity. This entity or initiative could oversee or coordinate knowledge integration, provide independent evaluations, and guide policymaking. Long-term planning should be embedded into its structure.

5.1.3.   Spanish case: Science Policy Interphase at the subnational level

Key Characteristics:

Bidirectionality: The SPI must facilitate ongoing dialogue between science and policy, ensuring mutual understanding of needs, constraints, and opportunities. This enables scientific findings to be more actionable and policymaking more informed.

International Interconnection: Linking the SPI to global networks such as IPBES and IPCC is essential to maintain relevance, foster learning, and avoid isolation from international standards and practices.

Legal Framework and Mandate: A strong legal foundation is critical to ensure continuity, legitimacy, and cross-sector engagement. This includes defining the SPI's authority to evaluate and advise on policy.

Independence: To preserve scientific credibility, the SPI should remain free from political and private sector pressures, while maintaining transparency and inclusivity in its operations.

Diversity and Inclusion: Interdisciplinary representation (natural and social sciences) and participation of civil society, Indigenous knowledge holders, and local communities are crucial for legitimacy and effectiveness.

Hybrid Roles: The creation and formalization of knowledge brokers who can translate and mediate between scientific and administrative cultures is key. These professionals should be properly trained and resourced.

Transparency and Open Access: Information generated by the SPI should be publicly available and clearly communicated to all stakeholders.

Main Functions:

Advisory Role: Provide evidence-based support to government policies and evaluate the coherence and effectiveness of current and proposed interventions.

Knowledge Synthesis: Produce synthesized and context-sensitive reports similar to IPCC outputs but tailored for the Catalan context.

Monitoring and Indicators: Develop clear indicators and periodic assessments to track progress and adapt strategies accordingly.

Capacity-Building: Train both policymakers and scientists on knowledge integration, communication, and policy processes to strengthen the interface over time.

Structural Reinforcement: Strengthen and expand existing institutions such as OPNB, creating a hub for environmental knowledge and policy alignment in Catalonia.

5.1.4. Spanish case: Workshop Conclusions

The workshop underscored the deep interconnections between science and policy, revealing both barriers and available solutions that must be addressed to enhance evidence-based decision-making. Notably, the discussion on barriers often led directly to proposed solutions and vice versa; highlighting a proactive approach among participants. While institutional barriers were perceived as more complex and difficult to overcome than scientific ones, solutions were largely focused on improving scientific communication and integration into policy. This might indicate participants perceive institutional barriers as more difficult to overcome. We hope recommendations might improve this situation.

Overall, there was strong consensus on the necessity of a well-structured, inclusive, and legally supported SPI ecosystem that ensures the effective translation of scientific knowledge into public policy while maintaining independence and adaptability. The importance of political will in applying scientific knowledge—despite potential short-term social or economic costs—was also emphasized. Although ultimately, the findings point to the need for stronger interdisciplinary collaboration.

Establishing specific SPI initiatives bridging these gaps, connecting to international networks, and integrating diverse perspectives remains a challenge. But participants offered valuable insights and ways forward on the mandate and the characteristics these structures could adopt in the subnational context.

5.2. Colombian case

The Colombian workshop took place on October 23rd in Cali, Valle del Cauca, Colombia, in the margins of CBD COP16. The workshop was organized by the Humboldt Institute in Colombia and brought together 25 participants representing the stakeholder groups listed below and described in more detail in Annex B:

- Representatives from the Mayor's Offices (including Cali, Palmira, Buga, Yumbo, and Jamundí)

- Representatives from the Departmental Government

- Representatives from Colombia's National Natural Parks

- Experts from IPBES and IPCC, local scientists, and other stakeholders involved in the SPI

- Government agencies, NGOs based in Colombia, indigenous communities, and interest groups linked to environmental policies.

Although the workshop was ultimately successful, the timing presented some challenges. It was scheduled to coincide with CBD COP16, which was also held in Cali, under the assumption that this would facilitate attendance from key stakeholders already planning to be in the city. This strategy was well justified, given the logistical and financial difficulties of convening subnational actors for a one-day event in a regional location. However, the scale and visibility of COP16 overshadowed the RESPIN workshop, and a number of initially confirmed participants were ultimately unavailable. Despite this, the workshop brought together a diverse and balanced group of 25 participants from all targeted stakeholder categories. The range of institutional representation and the quality of the exchanges during the breakout sessions provided robust data to assess the main barriers to knowledge uptake at the subnational level. These factors supported the reliability and relevance of the findings presented in this report.

5.2.1. Colombian case: Barriers identified

Important considerations: During the analysis, the concept of corruption was frequently mentioned. As perceived by participants, corruption is difficult to avoid, superseding proposals and funding allocations. Solving it requires structural, long-term institutional change. Even though it's a difficult challenge, many participants see it as more important than policy development or reform.

Scale and Applicability: One of the main challenges identified is the lack of localization of scientific reports to local and regional realities. The information presented on global platforms such as IPBES and IPCC is not always contextualized for subnational implementation. Furthermore, there is a lack of indicators to guide the effective integration of biodiversity and climate change into local policies, hindering territorial coordination and policy coherence across different spatial and temporal scales.

Communication, Language, and Format: A disconnect was identified between the language used by the scientific community and that of decision-makers, limiting the application of knowledge. Translating this information is essential, especially for Indigenous Peoples and local communities, who may require materials adapted to their languages and accessible

formats. Additionally, there is a lack of effective outreach strategies to ensure that scientific reports reach broader audiences, including rural and local communities.

Biodiversity and Climate Connection: There is fragmentation between the biodiversity and climate change agendas. At the subnational level, the lack of a clear theoretical framework and joint indicators prevents effective integration of these agendas. Additionally, it was observed that when both topics are combined in funding discussions, biodiversity tends to receive less attention compared to climate change, complicating the integration of actions addressing both issues.

Groups of Interest and Stakeholders: The pressure from economic sectors and other interest groups has been identified as a significant barrier to formulating and implementing environmental policies. In many cases, sectors like agriculture and industry prioritize their own interests over environmental goals, creating conflicts in decision-making. There is also a lack of participation from the private sector in the development of multisectoral solutions.

Technical Knowledge Gaps: There is a significant gap in technical knowledge available for managing biodiversity and climate change. Decision-makers often lack the technical training needed to interpret and apply scientific information. A lack of technical capacity was also identified among local communities to understand the impacts of climate change and biodiversity loss on their territories.

Institutions: Colombia's environmental institutional system faces problems of fragmentation and lack of coordination among sectors. There are overlapping responsibilities and duplicated efforts among national, regional, and local authorities, making effective policy implementation difficult. Additionally, subnational governments have limited financial and human capacities to manage scientific knowledge and information.

Society: Local and rural communities often do not understand how climate change and biodiversity loss affect their daily lives, leading to a disconnect from these issues. The lack of environmental education and low scientific culture in the country hinders public understanding and integration of knowledge into political decision-making. In contrast, Indigenous Peoples possess vast knowledge about nature, but the way they generate and apply this knowledge is often undervalued by traditional science and some decisionmakers.

Scientific Culture: A structural problem was identified in how scientific knowledge is produced and disseminated in Colombia. Research often remains in academic publications without reaching decision-making spaces. Furthermore, the lack of incentives for scientists to adapt their work to the needs of local governments exacerbates this disconnect.

Mandate and Structure: There are no clear mandates to ensure the integration of scientific knowledge in subnational management. While national focal points exist for platforms like IPBES and IPCC, and there is even an IPBES national Committee, there is no defined structure to guarantee that the knowledge generated translates into effective local policies. The lack of long-term planning scenarios (short-termism in governments) also hampers the implementation of sustainable environmental strategies.

5.2.2. Colombian case: Solutions proposed

Scale and Applicability: The creation of specific indicators to guide the integration of biodiversity and climate change into subnational policies is proposed. Additionally, developing joint scenarios is recommended to evaluate impacts and define effective adaptation and mitigation strategies.

Communication, Language, and Format: More effective communication strategies must be developed to translate scientific information into accessible formats. This includes producing booklets, videos, and materials in Indigenous languages, as well as conducting local workshops to raise awareness about the importance of biodiversity and climate change. Additionally, suitable and flexible formats must be developed to integrate Indigenous and local knowledge into political decision-making as a valid source of informed decisions.

Biodiversity and Climate Connection: It is essential to develop an inter-institutional work plan that connects both agendas and enables the establishment of joint policies to improve ecosystem resilience. Information systems integrating biodiversity and climate change data should be strengthened.

Groups of Interest and Stakeholders: It is recommended to include economic sectors in the design of environmental policies by promoting incentives that facilitate the adoption of sustainable practices. The participation of the private sector in conservation and sustainable development initiatives must also be strengthened.

Technical Knowledge Gaps: The technical capacities of decision-makers and local communities must be strengthened through training programs and environmental education. It is also recommended to create tools and methodologies to facilitate the integration of scientific knowledge into decision-making.

Institutions: Institutional fragmentation should be reduced through a clear definition of responsibilities and efficient resource allocation. Subnational governments' financial and technical capacities must also be strengthened to improve knowledge management.

Society: Environmental education and social participation in decision-making should be promoted. It is crucial to recognize and value the traditional knowledge of Indigenous and local communities, encouraging its integration into policymaking.

Scientific Culture: Mechanisms should be created to incentivize scientists to translate their knowledge into practical actions. It is also important to establish platforms for interaction between academia and local governments to facilitate knowledge transfer.

Mandate and Structure: A regulatory framework should be established to ensure the integration of scientific knowledge from IPBES and IPCC into subnational decision-making. Territorial planning mechanisms should also be strengthened to ensure effective implementation of environmental policies.

5.2.3.   Colombian case: Science Policy Interphase at the subnational level

Key Characteristics:

Bidirectionality: Dialogue between science and public policy to understand mutual needs and adapt scientific knowledge to administrative and social realities.

International Connection: The Science-Policy Interface should be linked to international panels and networks such as the IPCC or IPBES to avoid isolation at the subnational level and foster collaboration.

Interdisciplinary Approach: Interdisciplinary teams should be formed to integrate knowledge from various disciplines and sectors. Joint strategies between biodiversity and climate change should be developed, ensuring that all involved actors understand the benefits of integrated management.

Financing: Specific financing for biodiversity and climate change should be prioritized at the local government level, ensuring they have the resources and support needed to effectively manage knowledge in their territories based on an integrated vision of both agendas.

Diversity: Indigenous Peoples and local communities must be included in this interface to reflect the complexity of the challenges and ensure better integration of solutions.

Main Functions:

Clear and Formalized Institutional Structure: An institutional structure that ensures effective dissemination of information and its application in decision-making.

Knowledge Synthesis: Mechanisms to translate scientific knowledge into accessible formats adapted to local needs.

Monitoring: Creation of indicators and regular updates of reports on the state of scientific knowledge and emerging needs.

Capacity Building: Provide subnational governments with the tools needed for territorial planning and environmental policy implementation.

5.2.4.   Colombian case: Workshop Conclusions

The subnational workshop in Colombia highlighted the need to strengthen the coordination between the climate change and biodiversity agendas to achieve more effective environmental governance. Multiple challenges were identified, ranging from the lack of translation and contextualization of knowledge to structural barriers in decision-making and institutional fragmentation. The absence of integrated indicators and coordination mechanisms across sectors limits the response capacity of subnational governments.

To overcome these challenges, it is essential to improve the accessibility of scientific knowledge through communication strategies tailored to diverse audiences, including government actors, local communities, and Indigenous Peoples. Additionally, greater investment is needed in institutional strengthening, financial resources, and technical capacity to ensure effective knowledge management. Integrating environmental policies into other sectors, such as agriculture and territorial development, is key to avoiding contradictions and promoting sustainable solutions.

Finally, the active participation of all stakeholders involved was instrumental in developing the ideas presented in this document. However, the workshop took place on the sidelines of COP16, which limited the attendance of some previously invited actors and groups. Nevertheless, the outcomes of the workshop adequately reflect the current challenges, and the proposed solutions are essential for building inclusive and effective policies. This document aims to serve as a foundation for promoting concrete actions that strengthen environmental governance in Colombia when it comes to the integration of climate change and biodiversity agendas, ensuring a more sustainable and resilient future for its territories and communities.

5.3.   German case

The German workshop took place on May 5th, 2025, in Wiesbaden—the capital of the federal state of Hesse. Its location, near the border with Rhineland-Palatinate and just across the river from its capital city, Mainz, made it a convenient and strategic venue. This setting enabled participation from stakeholders representing both Hesse and Rhineland-Palatinate, allowing for a broader subnational perspective. The workshop was organized by the Helmholtz Centre for Environmental Research (UFZ) and brought together 10 participants from the following stakeholder groups (further detailed in Annex B):

- Representatives from government agencies
- Representatives from subnational (federal) government and elected officials
- Representatives from Intergovernmental Bodies and Coordination Centers
- Experts from IPBES and IPCC, local scientists, and research institutions
- Civil Society and Youth Representatives

Although the workshop was ultimately successful, the political context in Germany at the time posed challenges for securing attendance. The federal elections, held earlier than initially scheduled, led to a period of administrative transition. This required re-establishing communication channels and engaging with new representatives, which posed challenges in securing broader attendance. Nevertheless, the workshop convened 10 participants representing key stakeholder groups. The insights gathered provided valuable information to understand the barriers to knowledge uptake at the subnational level and considerations within the subnational science-policy interface system.

5.3.1.   German case: Barriers identified

Important considerations: The political climate in Germany (as in many western societies) has changed towards conservative to right-wing parties this creates an overarching barrier: the political context. Climate change and biodiversity loss are not very high on the agenda of the current government and are not being primarily addressed. Further, they are treated as "interests" of green movements and partires, and are rejected by other parties in the political competition. Consequently, biodiversity and climate are not regarded as universal societal problems. Thus, as not positioned as general political problems, the momentum for implementation is weak.

Scale and Applicability: Scientific outputs presented on an abstract, generic level and not contextualized for subnational implementation, as there is currently no designated entity responsible for translating them to that level. This weakens policy coherence and territorial coordination across the different levels of governance.

Communication Format and Language: There is a disconnect between how scientific knowledge is communicated and how it can be used by policymakers at the subnational level. Reports are often too long, too complex, and very technical. Local officials, especially those working on a voluntary basis or with limited resources, lack the time and tools to extract actionable information. Communication efforts often remain inside expert bubbles, failing to reach broader political and social audiences.

Connection Between Biodiversity and Climate: The agendas for biodiversity and climate action remain fragmented. Subnational actors often address them separately, lacking a clear conceptual and policy framework to align both themes. This fragmentation is reinforced when both are discussed together in funding debates, where climate action tends to receive more attention and prioritization. The lack of joint indicators and integrated messaging hinders efforts to implement synergistic measures.

Groups of Interest and Other Stakeholders: Economic sectors and other influential groups prioritize their own agendas over environmental goals, creating resistance to the formulation and implementation of biodiversity and climate policies. In some cases, local politicians avoid these issues altogether due to the political risk of losing voters or party-based ownership of environmental topics. Additionally, the participation of private and non-environmental stakeholders in shaping multisectoral solutions remains low.

(Technical) Knowledge Gaps: There is a notable gap in technical capacity among subnational decision-makers and local actors. Many lack the background or training needed to interpret and apply scientific data, despite having access to it. This barrier extends to communities, where knowledge of how climate change and biodiversity loss affect their territories is often superficial or absent. Although academic curricula are increasingly addressing climate and biodiversity topics, recent voting patterns suggest that these issues are not yet a high priority for much of the adult population. This may be because complex, interconnected knowledge about climate and biodiversity is not often part of people's everyday concerns or decision-making processes.

Institutions: The institutional landscape at the subnational level suffers from fragmentation and limited coordination across sectors. Policy makers are not fully aware of the designated coordination offices and who are the knowledge providers. Also, responsibilities for biodiversity and climate action are often dispersed and that leads to inefficiencies. Employees in other departments often do not see a direct connection between their work and environmental or climate issues. Consequently, they do not feel that related initiatives address them, and they perceive little relevance or consequence. Furthermore, subnational governments face staffing and budgetary constraints that prevent them from fully engaging with science-based policy design and in-depth learning or dialogue about it.

Society: Citizens often do not connect biodiversity and climate issues to their daily lives. This leads to low public pressure for action. As mentioned in previous codes, the gap is worsened by a

lack of environmental awareness by certain sectors of society and a lack of trust in the information given. As shown by recent voting patterns, climate and biodiversity issues are not given high priority. Societal fatigue, disillusionment, or populist narratives also reduce support for environmental policies.

Scientific World: Despite workshop participants affirming that there are enough scientific information available, scientific outputs are often not aligned with policy timelines and needs. Research tends to remain in academic circles, with few incentives for scientists to adapt their work for use in local governance. This disconnect undermines the relevance and visibility of science in political decision-making at the subnational level.

Mandate and Structure: Despite coordination offices existing both for IPCC and IPBES at the national level, the integration of scientific knowledge into subnational governance is still a challenge since there is no defined structure, funding, capacities, mandate or process for transferring knowledge or translating this knowledge into local-level policy. Short political cycles, lack of long-term vision, the lack of interest and felt ownership of the topic by specific political parties (e.g. "only green parties can talk about the environment") further complicate the implementation of sustainable environmental strategies. This perception of environmental issues as the sole responsibility of the green party or "green party issues" is exacerbated by the lack of societal awareness: if the voters don't care about the environment, local politicians from non-green parties can't be focusing on the topic because they still need voters support to take action.

5.3.2. German case: Solutions proposed

Scale and Applicability: Adapting and translating international scientific assessments to subnational realities is essential. This includes developing localized cost-benefit analyses and implementation tools to guide municipal action. Subnational experiences and pilot projects should be documented and shared to facilitate peer learning and build practical, place-based knowledge networks that can get support from the already existing national structures.

Communication Format and Language of reports: Scientific information should be translated into accessible language, using visuals and targeted formats such as explanatory brochures, short videos, and executive summaries. Communication strategies must go beyond the expert community and reach citizens, civil servants, and political actors using formats that resonate with their daily lives and priorities as well as emphasizing positive examples.

Connection Between Biodiversity and Climate: Efforts should be made to promote a unified sustainability narrative that links biodiversity and climate. This can be achieved through joint policy planning, integrated metrics, and cross-cutting workshops. Common indicators and targets should be developed to reinforce this connection. Elevating biodiversity conservation to the same political level as climate action can improve funding and action synergies.

Groups of Interest and Other Stakeholders: Inclusive participation is key. Dialogue spaces should be created where different sectors—public, private, and civil society—can contribute to environmental agendas. Highlighting success stories and showing tangible benefits of action can help engage less traditional actors and reduce polarization around climate and biodiversity issues.

(Technical) Knowledge Gaps: Training programs should be offered to local decision-makers, administrators, and community leaders. These programs should focus on practical interpretation and application of scientific data. The creation of intermediary roles (e.g., knowledge brokers or science translators) can help bridge the technical gap and ensure continuity of information flow. Ideally, each municipality should have designated personnel responsible for climate change and biodiversity issues.

Institutions: Cross-sectoral collaboration should be institutionalized through intersectoral working groups and formal environmental integration mandates. Strategic planning should include systematic public and scientific participation, as well as climate and biodiversity notions, particularly in large infrastructure or land-use decisions. Legal frameworks should also be adapted to elevate environmental considerations.

Society: Awareness campaigns must focus on making biodiversity and climate action relevant to citizens' everyday realities. Storytelling, viral content, and community events can increase societal support. Different formats should be developed for different groups (e.g., youth, rural residents, elderly populations). Environmental problems should be presented as a priority but not as a threat since unsolvable problems are not tackled. Actors without an explicitly green image or direct ties to biodiversity and climate change should be strategically engaged as messengers to help communicate and normalize these topics across broader audiences.

Scientific World: Science must be made visible and politically neutral to build trust. Transdisciplinary processes to evaluate the data can be an effective way of making complex climate and biodiversity information more relevant and actionable across different sectors. Local events such as guest lectures, public discussions, and policy dialogues involving scientists can help close the gap between knowledge production and use. Further, most information produced in projects is not transferred once the project ends. Bringing different interests together and trying to bring project insights to the institutions can be key in knowledge uptake processes. Alos, incentives should be created for researchers to tailor their work to governance needs. Science, e.g. local universities can translate knowledge into local contexts and needs.

Mandate and Structure: Despite political priorities, long-term environmental planning needs to be further embedded as a priority at the subnational level. Institutional continuity and a shared vision for sustainability should guide each level of government. Environmental indicators and timelines must be established to monitor progress and guide future action. Clear mandates for integrating science into local decision-making are essential.

5.3.3.   German case: Science Policy Interphase at the subnational level

Key Characteristics:

Providing Successful Best Practice Experiences: Centralizing information on pilot projects and successful implementations, particularly across municipalities, facilitates the sharing of best practices. By ensuring good monitoring and evaluation mechanisms, these experiences can be refined and disseminated widely, allowing other communities to adopt proven strategies.

Sustainability Ambassadors and Local Project Networks: Appointing these figures and creating such networks encourages collaboration and peer learning. These networks serve as platforms for exchanging knowledge, fostering the spread of effective environmental strategies.

Cost-Benefit Analysis for Prioritization: This can help prioritize projects when budgets are tight and can ensure that investments are directed towards initiatives that promise the greatest returns in terms of sustainability, making sure limited resources are used wisely. Functions:

Increasing the Involvement of Science in Politics: By translating international knowledge to local context for policy makers and guaranteeing information access. Promoting a direct exchange between Science, Administration, and Politics to facilitate communication and foster coordination and transparency. Enhancing the use of science and knowledge processes in subnational policy

Strengthening Capacities for Translation and Knowledge Transfer: By providing legitimate and independent information in national language. Make actionable recommendations that can be directly implemented at the local level.

Building Pressure for Action: By strengthening scientific advisory boards. Creating hybrid positions and knowledge transfer roles. Ensuring time scales and transparency for realistic implementation.

Institutionalizing Continuity in Science-Policy Interaction: By creating mandates and legal frameworks as well as long term funding for interface mechanisms.

Key Challenges and Considerations:

One of the major challenges is the complexity of communicating biodiversity issues, which are harder to quantify and compare to climate change. The difficulty in establishing clear indicators for biodiversity makes it challenging to prioritize actions for both issues simultaneously. Finding ways to communicate both climate and biodiversity efforts effectively remains a critical hurdle in aligning these two priorities.

5.3.4.   German case: Conclusions Workshop

The findings from the German workshop reveal similar results to the Catalan and Colombian workshop. First, despite the scientific knowledge being there, subnational governments experience significant challenges in integrating it into the local context and spur biodiversity and climate action. Similar to the other two workshops, a key issue is the disconnect between the scientific outputs and the practical needs of local policymakers, with reports often being too technical and difficult to apply at the municipal level. Moreover, the lack of clear coordination between climate and biodiversity agendas remains a critical barrier in all contexts and is exacerbated by fragmented institutions and the absence of integrated policy frameworks. Subnational decision-makers also face a gap in capacity and limited political will to prioritize these issues, leading to a lack of effective implementation despite the availability of scientific data.

One of the most pressing observations is the political context, where the recent shift in government towards prioritizing other issues over climate over biodiversity, coupled with the overall lack of cross-party commitment to environmental issues, has hindered broader engagement. The fragmentation of institutions and limited awareness of how to access already available knowledge (e.g. synthesized

knowledge produced by designated coordination offices) further impede local actors feeling targeted towards relevant climate and biodiversity information. Importantly, at the subnational level they felt that their hands were tied by the priorities of their voters, and that their local voters often did not really care about environment/biodiversity. Also, a lack of sense of urgency and polarization exacerbate these barriers.

To address these challenges, several solutions are proposed, including the development of local tools and the improvement of communication strategies. Encouraging cross-sectoral participation and creating spaces for dialogue among stakeholders can foster broader political and societal support. Furthermore, enhancing the capacity of local actors through targeted training programs and the creation of intermediary roles, such as knowledge brokers, can bridge the gap between scientific research and policy implementation.

Despite the barriers, we have identified clear points for improving the science-policy interface at the subnational level in Germany. Key to this is the establishment of continuous and structured mechanisms for knowledge exchange and the institutionalization of long-term environmental planning, supported by clear mandates. Ultimately, for biodiversity and climate issues to gain the necessary political prioritization and resource allocation, they must be made relevant to the everyday concerns of local communities.

6. Discussion

The comparative analysis of the subnational workshops held in Spain, Colombia, and Germany reveals a set of shared challenges, partial overlaps, and uniquely context-dependent barriers and solutions regarding the uptake of IPBES and IPCC knowledge at the subnational level. Despite the political, geographical, cultural and socioeconomic context of the three analyzed case studies being very different, we find broadly similar barriers across regions. Most of them centered around issues of accessibility for the subnational context, institutional fragmentation, communication gaps, and limited capacity. Nonetheless, the responses to these challenges reflect the specific political, socio-economic, and institutional contexts of each case.

6.1. Shared Barriers Across All Three Case Studies

Across all workshops, participants identified a core problem: **the scientific outputs of IPBES and IPCC are not sufficiently contextualized for subnational policymaking**. The reports are not integrated in the first place, making any further joint uptake at any lower scale difficult from the beginning. Furthermore, the reports are often viewed as too technical, too global in scope, and misaligned with the immediate priorities and administrative capacities of subnational actors. In Spain (Catalonia), Germany, and Colombia alike, there was a consensus that decisionmakers at the subnational level lack clear mechanisms, time, or training to engage with these scientific findings effectively.

Another widely shared concern is the **communication barrier**. Scientific language, length, and format impede the translation of global assessments into locally relevant, actionable knowledge. Participants in all three contexts called for simplified communication tools—such as infographics, videos, and localized policy briefs—as well as improved formats that speak directly to political and societal

audiences. The need for 'hybrid roles or knowledge brokers' to bridge the science-policy divide was repeatedly emphasized.

Moreover, **institutional fragmentation** was consistently identified as a structural impediment. In each context, responsibilities for climate and biodiversity policy are dispersed across sectors and governance levels. This fragmentation, paired with limited funding and weak mandates, undermines policy coherence and reduces the effectiveness of intersectoral collaboration.

Finally, all workshops highlighted **the challenge of siloed treatment of biodiversity and climate agendas**. Despite their interconnectedness, participants noted that these topics are often handled separately due to differing mandates, funding structures, and political priorities— resulting in missed opportunities for synergies.

6.2. Partial Similarities Among Pairs

There are notable parallels between the case studies of Catalonia and Germany in terms of political dynamics and institutional design. Both regions operate within complex federal or decentralized systems where subnational governments possess significant autonomy, especially in implementation capacities, but remain constrained by national-level priorities. Participants in both cases emphasized the specific challenges of creating subnational SPIs. Better coordination mechanisms and independent bodies that can synthesize knowledge, provide actionable recommendations, and support long-term environmental planning was emphasized as a need.

On the other hand, the case studies of Colombia and Catalonia both underscore the importance of integrating diverse knowledge systems, particularly Indigenous (in the case of Colombia) and community-based insights, into formal decision-making processes. This is key in designing local SPI structures and developing future actions at the subnational level. While Catalonia's emphasis is more on applied research and local scientific networks, Colombia uniquely stresses the value and marginalization of Indigenous knowledge. Both workshops, however, converge in calling for more inclusive and interdisciplinary approaches to knowledge governance.

Germany and Colombia, although institutionally distinct, share an acute concern with the political context and the political prioritization of climate and biodiversity issues. In both workshops, participants pointed to a societal and political disconnect: the voting population often does not prioritize environmental issues, which discourages local politicians from including them as part of their agenda. The German workshop further identified the rise of populist or conservative narratives that polarize environmental discourse, a concern less explicitly raised in Catalonia despite both countries being in Europe.

6.3. Context-Specific Differences

The Colombian case stands out due to its emphasis on structural barriers such as corruption, inequality, and lack of basic infrastructure for environmental governance. These issues go beyond technical knowledge gaps or communication problems and reflect deeper challenges in state capacity and legitimacy. Colombian participants emphasized the need for systemic reform, long-term institutional strengthening, and inclusive governance that prioritizes Indigenous and local voices.

Germany's unique barrier lies in its political climate. The workshop pointed to the politicization of climate and biodiversity as "Green Party issues," creating a partisan divide that hampers crossparty consensus and engagement. Additionally, German participants expressed concern about a lack of urgency and public support, despite widespread access to scientific knowledge. This was framed not as a deficit of information, but of social disconnection with climate and biodiversity issues leading to a lack of public pressure for environmental policies. Participants suggested a clear need for better storytelling and value-based communication at the subnational level.

Catalonia, by contrast, places less emphasis on social barriers and more attention to technical and procedural solutions. Participants proposed the development of regional observatories, legal mandates for knowledge integration, and coordination bodies to harmonize environmental data. The Catalan workshop reflects a context where political will and scientific capacity exist, but institutional tools for implementation and coordination remain underdeveloped.

6.4.   Unique Innovations and Proposals

Each workshop generated context-specific proposals that, while grounded in local realities, offer potential models for adaptation elsewhere:

Catalonia's key takeaways centered on enhancing institutional coordination and reinforcing the structure and mandate of existing SPI mechanisms. Participants advocated for the Observatory for Natural Heritage and Biodiversity *(Observatori del Patrimoni Natural i la Biodiversitat,* OPNB)— a public body of the Government of Catalonia tasked with monitoring the state of biodiversity and natural heritage, and promoting access to environmental data for decisionmaking and public awareness— to become an example for future regional reference bodies for knowledge integration. Translation and adaptation of IPBES/IPCC outputs, cross-disciplinary integration, and civil society engagement were prioritized. Legal clarity and accountability mechanisms for policy implementation were also highlighted as essential for durable SPI systems.

In Colombia, the integration of biodiversity and climate into subnational planning instruments (e.g., PIGCCTs) was identified as a critical need. Participants emphasized translating scientific outputs into accessible formats—visual, narrative, and multilingual—especially to support Indigenous and rural communities. Environmental education and technical training were proposed as foundational measures for enhancing local capacities. Notably, Colombia uniquely highlighted the inclusion of Indigenous knowledge as a legitimate basis for public policy. Incentivizing private sector participation and financing applied, community-based research was also considered key for sustainable and equitable governance.

Germany's workshop drew attention to systemic political challenges that constrain sciencepolicy integration, particularly the politicization of environmental topics. Framing biodiversity and climate action as exclusively "green party" issues hinder cross-party engagement. Key solutions proposed include leveraging universities as trusted intermediaries, showcasing local best practices with cost-benefit data, and reframing public communication. Importantly, Germany emphasized breaking down sectoral silos—especially in health, agriculture, and mobility—through issue-specific forums that integrate climate and biodiversity themes in nonconfrontational ways. Additionally, communication formats could be established for issuefocused forums, for example on topics such as health, agriculture or mobility, where climate and biodiversity issues are constructively integrated, but not

overly emphasized. Effective communication formats that promote these topics in engaging ways while ensuring that climate and biodiversity considerations are inherently embedded in the discussion are needed to support this.

Despite differences in context and emphasis, the workshops converge on several strategic priorities for improving the uptake of IPBES and IPCC findings at the subnational level. These include enhancing accessibility through tailored communication formats, building institutional structures that support coordination and integration, incorporating transdisciplinary and context-sensitive knowledge systems, and aligning policy planning with both scientific evidence and political realities. The diversity of barriers and proposed solutions across countries at the subnational level highlights the need for localized approaches but also reveals a shared foundation of challenges—and a strong potential for transnational learning and collaboration to support more effective subnational science-policy interfaces. In Annex C, we have outlined a visual comparison of the barriers and solutions of each country in detail.

7. Conclusions

The subnational workshops conducted in Catalonia (Spain), Colombia, and Germany have shown a range of recurring challenges in the uptake of IPBES and IPCC knowledge. Despite differences in institutional, political, and cultural contexts, all three cases converge around a core conclusion: current SPIs need improvement to enable coherent, inclusive, and actionable integration of global climate and biodiversity science at the subnational level. However, the RESPIN workshops also uncovered promising entry points and context-specific strategies to move in this direction.

- **Catalonia** proposed strengthening existing platforms like the Observatory for Natural Heritage and Biodiversity (OPNB), introducing legal tools and clear mandates to improve and support the role of SPIs, and tailoring global knowledge to regional needs through localized assessments.

- **Colombia** emphasized the importance of integrating Indigenous and local knowledge, creating multilingual communication materials, and reforming the institutional structures to reduce overlap and promote coordination.

- **Germany** suggested the creation of "sustainability ambassadors," municipal networks for sharing best practices, and cost-benefit analysis frameworks to justify biodiversity and climate action to resource-constrained local governments.

All three cases emphasized the urgent need to translate and adapt global scientific assessments to regional and local contexts. This involves not only summarizing findings in accessible formats for civil society and decision-makers, but also enabling contextualization through locally rooted institutions. The role of hybrid figures— individuals or teams that bridge science, policy, and communication, such as knowledge brokers — was widely acknowledged as critical to bridging disciplinary and administrative divides.

Institutional fragmentation and the siloed treatment of climate and biodiversity agendas are perceived as persistent challenges across the workshops. In response, participants recommended mechanisms for cross-sectoral coordination, development of joint indicators, and creation of

integrated planning tools. Strengthening SPIs through clear legal mandates, stable funding, and continuous stakeholder engagement was seen as essential to ensuring legitimacy, accountability, and long-term impact.

While these barriers are real and complex, the workshops demonstrated that they are not impossible to overcome. Advancing effective SPIs requires structural investment, strategic communication, legal clarity, and transdisciplinary engagement. In addition, local adaptation of scientific knowledge not only should focus on translating the content to local languages but should be an exercise of knowledge contextualization and accessibility, that enhances coordination amongst stakeholders and promotes a long-term vision in the fields of climate and biodiversity

The RESPIN workshops identified a wide range of context-sensitive solutions and ongoing initiatives that connect scientific and non-scientific knowledge to policymaking at the subnational level. Many of these efforts remain ad hoc or project-based. As such, long-term improvement will require more adaptive and collaborative structures—beyond individual initiatives—that can respond to evolving needs. Subnational governments often operate with limited capacity, and therefore require scientific information to be delivered in synthesized and action-oriented formats. This can only be sustained through the support of intermediary capacities—such as scientific service providers or knowledge brokers—backed by higher levels of government.

7.1.   RESPIN's contribution to addressing shared barriers

The RESPIN project is well-positioned to support the implementation of many of the insights and recommendations generated through the workshops. Its contributions toward addressing the shared barriers identified include:

- **On contextualization of knowledge**: RESPIN will support the development of tailored knowledge products, such as localized policy briefs and synthesis reports, drawing from IPBES and IPCC findings.

- **On communication barriers**: RESPIN is producing accessible formats—including infographics, short videos, and actionable briefs—designed for different stakeholders, including national and subnational decision-makers, IPBES and IPCC national contact points, and civil society.

- **On institutional fragmentation**: RESPIN is working to map existing SPI structures and foster cross-sectoral coordination through dialogue and exchange formats.

- **On the climate-biodiversity divide**: RESPIN aims to support the development of integrated narratives and joint indicators to strengthen coherence between climate and biodiversity policy.

- **On capacity gaps**: RESPIN is designing and delivering training courses and platforms to build the skills and networks of knowledge brokers and science-policy practitioners at all levels.

RESPIN will continue working with national and subnational partners to develop region-specific follow-up reports that summarize the workshop outcomes and outline recommended next steps

based on locally identified challenges. These reports will be shared with participants and other stakeholders originally invited to the workshops, as well as relevant public administrations and SPI actors in each country.

Additionally, the RESPIN team will explore opportunities to share the findings with other governments and institutions interested in strengthening subnational SPIs. To support this, RESPIN has developed a practical guide for organizing subnational workshops (Annex D, also available at the RESPIN website https://respin-project.eu/), which is available for replication and adaptation by other countries or regions.

While the RESPIN project is well-positioned to support the implementation of many of the insights and recommendations that emerged from the workshops, it is important to acknowledge its limitations. RESPIN is a time-bound initiative with a defined mandate and scope. As such, fully addressing and overcoming the structural barriers identified will require long-term, institutionalized efforts that extend beyond the lifespan of any single project. Sustained political commitment, dedicated funding mechanisms, and the integration of science-policy interface functions into the permanent architecture of governance systems will be essential to achieving lasting impact.

7.2.   Final reflections

The RESPIN workshop methodology proved effective in fostering cross-sectoral dialogue and surfacing both structural and context-specific barriers to knowledge uptake. By creating a participatory space for mutual learning, these workshops offered a blueprint for how localized, evidence-informed discussions can feed into broader science-policy processes.

We encourage other countries and regions to organize similar dialogues, using the RESPIN guide and lessons learned to foster greater coordination and alignment in the uptake of biodiversity and climate knowledge. Ultimately, strengthening subnational SPIs is not only necessary for the implementation of global environmental goals—it is also a crucial step toward building resilient, inclusive, and knowledge-informed governance systems for the future.

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9. Annexes

9.1. Annex A: Comparative tables of barriers and solutions by participants

Table 1. Catalonia

Thematic codes	Barriers Identified	Proposed Solutions
Scale and Applicability	Local - subnational (need for more information and connection)	Reach all levels of society and governance
	Adaptation of subnational reports	Adapt results to regional context
		Regional centers responsible for advice and delivery of information and data of the region
	Lack of global vision (how the subnational level relates to the world)	More evaluation of conservation polices. Make a report to compare with other realities
		Holistic vision/ multidisciplinary
	Time scale (mid, short and long term)	
Communication, format and, language	Results are very long and difficult to read	Visuals or infographics
		Synthetize and analysis of information
	Subjective language (depending on discipline and institution)	Hybrid pieces to translate information
		Constant communication between science and politics
	Use and of results/ limitations	Adapt discourse depending on the receptor
	Difficulty in language (too scientific, English)	Clearer messages with clear indicators
	Access of reports	Transparent knowledge transfer
	Contradictions	Neutrality and objectivity
Connection biodiversity and climate	Someone's solution can be someone else's problem (different agendas)	Environmental evaluations to make multidisciplinary reports
		Find common points in agendas/ work together
	Lack of contact/ communication channels/ spaces	Separate at regional level
		Organizations working both on climate and biodiversity (observatory)
	Different time, space and prioritization (Climate issues tend to be more advanced with differences at both national and subnational level)	
	Media	Understand how sectors are linked.

Groups of Interest and Stakeholders	Citizenship	Hybrid pieces + transdisciplinary
	Private Sector	Need to inform society with synthesized reports
Technical Knowledge Gaps	Lack of specialization (in politics)	Structures to interpret and analyze information
		Yearly courses and workshops
	How do you transmit information (scientists, media)	Use of policy briefs and direct recommendations
	Lack of information (quantity, priority, alternatives, global frameworks)	Key stakeholders (who to contact)
		Understand limitations
Institutions	Political agenda/ inertia/ status quo	Revising process for decision making and yearly evaluations of activities
	Professional intrusion	Variety of profiles and experts within institutions
	Institutional fragmentation	Create common spaces to work together and enhance coordination
	Gap between technical and political parts	Hybrid position for knowledge integration
	Internal barriers	Applied research (considerant problemes de gestió) direccionalitat
Society	Eco pessimism	Positive information
		Hybrid pieces for knowledge integration
		Variety of profiles and experts that can do the knowledge transfer
	Cultural rejection to science	Bidirectionality
		Applied research (considering problems in society)
Scientific world	Keep the exactitude (different scientific narratives)	Strengthen structures like Observatory/ Prismàtic and other tools/ Scientific board for Nature
	Rigidity (not knowing the impact or how to transfer knowledge towards policy making, lack of figure that do the interphase)	Applied research
		Bidirectionality for science outside academia (citizen knowledge and local studies)
	Relationship with other fields and disciplines	Variety of profiles and experts within institutions
		Hybrid pieces
	Scientific fragmentation	Scientific network

Format, mandate and structure	Leadership	Variety of actors
		Collaboration and participation
	Challenges relevant in society	Independent
		Scientific evaluation independent from policy
	Functions	Variety in reports
		Not only advice but other functions
		Assessments, monitoring and evaluations
		Legal framework
		Strengthen structures like observatory
		International connection + take example from IPCC, JRC a la UE, ONAC)

Table 2. Colombia

Thematic codes	Barriers identified	Proposed solutions
Scale and Applicability	Reports not grounded in local and regional realities (need contextualization and local/regional data).	Translate scientific information into the local context.
	Complex bureaucracy	Evaluate what is truly failing
	National/international management leads to subnational/local gaps	Create integrated indicators to guide policy
	Subnational SPI should address different needs	Assess regional elements with goals, accountability, and budgets
		Mechanism to transfer knowdldge across all levels niveles
	Poor contextualization of IPBES and IPCC	Improve translation and interpretation
Communication, format and language	Poor knowledge dissemination	Use platforms and media
	Lack of translations (including indigenous languages)	Develop efficient communication channels
	Science not accessible to decision-makers	Communicate beyond scientific language

	Disconnect between science and policy	Make information useful and applicable
	IPBES/IPCC reports too broad/difficult	Provide user guides
	No theoretical framework. No indicators to define integration which confuses the real objective	Create guiding indicators and merge climate, biodiversity, and desertification policies
Connection biodiversity and climate	Lack of planning tools. One-directional adaptation actions	Coordinate both agendas
	Segmented territorial articulation for policy integration	Align biodiversity management with climate policies
	Indicator coherence: Different spatial and temporal scales	Joint scenario development
Groups of Interest and Stakeholders	Sectoral integration: sectors not included in policy	Include sectors in workshops and activities
	Private sector inclusion: resistance from sectors defending own interests	Develop multi-sector strategies
	Lack of stakeholder presence (absence of actors9	Multisectoral proposals
	Social perspective missing and resistance to change	Create incentives and support for farmers
		Understating productive chains
		Assess sectorial environmental impact
		Knowledge management: provide relevant information
Technical Knowledge Gaps	Lack of monitoring systems and ineffective evaluation	Implement robust M&E systems
	Lack of technical knowledge and how politicians understand knowledge	Increase technical training
		Strengthen environmental education
	Language barriers (English)	Translate to local/indigenous languages
	Lack of knowsge on how to integrate Indigenous Knowledge	Tools to better understand managed territories
Institutions	Poor knowledge dissemination and limited academic staff	Assign responsibility for knowledge dissemination
	Institutional fragmentation and Lack of cross-cutting vision	
	Limited capacities and resources	Strengthen financial capacity of institution
	Short-term governance: No decisions based on long-term scenarios	Promote long-term vision and vulnerability plans
	Policy contradictions: conflicted sectoral policies, duplicated efforts and lack of coordination	Redesign and integrate policies
	Knowledge Management Weaknesses	Strengthen territorial planning

Category	Issue	Recommendation
	Other priorities for decision makers	Knowledge prioritization
	Corruption and Lack of Accountability:	Improve governance and transparency
	Centralized Government and excessive Bureaucracy	Identify key knowledge managers and knowledge brokers
	National-local disconnection (lack of evaluation)	Include indigenous authority decisions in national commitments CNDC
Society	Local communities do not understand how they are affected by climate change and loss of biodiversity	Promote social participation and awareness
	Farmers protect their lands regardless	Tailor information to all audiences
	Territorial conflicts over land rights	Use education laws to bolster environmental education
	It is challenging to work with communities	Recognize indigenous communities as valid knowledge holders.
	The environmental crisis is worst by the loss of indigenous knowledge	Including traditional and ancestral communities. And Address corruption and build trust.
	Political distrust due to corruption	
Scientific world	Scientific culture: research ends at publication	Provide incentives for knowledge dissemination
	Knowledge management gaps	Adapt information to policymakers and society
	Science-policy disconnect (different priorities)	Revise and Align research priorities with policy needs (including funding)
	Fear of error, risk of losing science credibility	Recognize limitations and diversify knowledge sources
	Different rhythm and time	Recognize limitations and diversify knowledge resources Centralize and share scientific findings
	Knowledge dispersal	
	Academic ownership: they can decide on knowledge	Disseminate values and role of IPBES
	Lack of implementation resources	Provide funding for application of knowledge
Mandate and structure	Lack of mandates to integrate knowledge (multidisciplinary)	Assign specific roles for disseminating IPBES/IPCC outputs beyond national focal points.
		Revise subsidies and harmful laws
		Create implementation and sustainability fund
		Develop monitoring and vulnerability laws for biodiversity
	How do we integrate to already existing structures	Policy integration: Avoid creating new structures; integrate into existing ones
		Create structures that can connect knowledge and policy
		Interdisciplinary collaboration: Shared questions, mixed teams, hybrid roles, and two-way dialogue.

		Joined agendas
	Lack of transparency	Use of laws to enforce action

Table 3. Germany

Themed codes	Identified barriers	Proposed solutions
Scale and applicability	No interest/ prioritization is exacerbated at local level	Subnational needs to be incorporated in higher levels of governance to identify entry points
	Other problems are more urgent at local level	Resource availability is dependent on prioritization. Climate and biodiversity need more attention
	No capacity to read and apply + too many topics	Cost-benefit breakdown to measure the best practices of pilot projects at local level, showing me, which measures have the greatest benefit at the lowest cost
		Establish a network of local projects to promote exchange
	Reports are too technical and global	Explanatory brochures + clear language + national language makes results usable at subnational level
		Use support system at national and international level
		Local actor such as universities to translate to local level
		Concrete recommendations for action are also needed, especially at local level
Communication format and language	Reports are too technical, and you can't get any shorter without it becoming too unscientific	Visuals, explanatory brochures (fact sheets) without diluting science, clear language, adapted to local specific context and German language translation

	What should be the narrative? Between trivialization and drama	Communicate positive options that can be integrated in everyday life + give German examples
	Traps and communication tricks	Avoid putting the climate protection label (e.g.: label it like health)
	Overwhelming people with too many platforms for engagement	Concrete steps for action broke down to a simple level
	Communication only in bubble (not presented enough)	Easy language and events + mass media
		Communication spaces and formats are important. Entry points that are closer to people/consumers are important
		well-functioning communication concept
Connection biodiversity and climate	Climate and Biodiversity are being scaled back because there is no interest	The various aspects of the good life / sustainable future should be considered as a package. And not separately.
		Biodiversity and climate should be more strongly integrated into the school curricula
	People don't realize climate change enough due to lack of knowledge about the interrelationships and the levers for change	Organize events where people come together to talk about assessments
		Intensive communication is needed to understand the interrelationships
		Coordinate timing, report publication, and related events
	Highly personalized	Climate change / loss of biodiversity must be shown more in the media and at the same time also positive examples
		Involve other stakeholders that are not yet "green" or connected to climate change or biodiversity issues to increase visibility and prioritization (e.g. NATO or ECB)

		Change reward systems to promote and incentivize cooperation and take biodiversity and climate into account
	No specific target for biodiversity sector	Tipping points
Other interest groups and fields	Understand the interrelationships across sectors	Organize an annual event where everyone on mailing list can attend to talk about assessment and interconnections
	How do you support groups that are not following discourse?	Utilize synergies at events, networking
		Offer solutions and make consequences tangible and context-specific
		Use lobbying: If you want to win people over, you have to allow a plurality of approaches
(Lack of) technical knowledge	People don't realize climate change enough	Visualize it (campaigns)
	Lack of technical background knowledge	Offer training and information opportunities (example: training on what and how to read documents
	Superficial knowledge, no true understanding	In depth understanding (example: via workshops)
		Capacity and responsible people are needed in every community
Institutions	Lack of time for reports and prioritization	invite psychologist/sociologist/experts to understand the bigger picture of what leads to current social challenges
		There are many employers that prepare summary documents

	Lack of capacity to read and apply (excessive workload)	Scientists are needed to inform ministries and administrations
	Climate and Biodiversity are being scaled back because there is no interest/popularity (other agenda)	Involve parties and stakeholders that might not be on climate and biodiversity to talk about it (more weight if they are involved)
	Lack of sense of urgency + only opportunistic policies	Invite psychologist/sociologist to understand the urgency= interdisciplinary pressure
	Withdraw people through accusations	Better communication
	People still try to find reasons to not get involved	Make it clear that the information comes from a neutral organization that is trustworthy
	Ownership of topics between parties (highly personalized)	Try to make climate and biodiversity issues mainstream agenda items, not only discussed by a specific political party
		Strengthen the bottom-up approach
		Legitimate and independent provision of knowledge (depoliticizing biodiversity and climate)
Society	Increasing Inequality: access to disadvantaged groups	Empower people by creating that access (education, seminars, ….)
	Citizens have other (more urgent) concerns	The psychological level is also very relevant. Problems that seem unsolvable are not tackled and people tend to push the problems away. Threat scenarios should be communicated, but fear should not be triggered.
	Underlying values in society	Campaigns and visual tools to educate (not only children but the old population)
		make a threatening scenario less threatening by offering solutionsand communicate why it is relevant (help of science)

	People affected by climate-induced events, still vote for parties that do not prioritize climate action	Communicate positive spin-off processes in everyday life
		Reach out to people who do not prioritize climate and biodiversity action despite available knowledge (mainstreaming)
		Identify contact persons for communities
Scientific world	Alternative facts and fake news: need for Neutral and trustworthy discourse	Scientists are trustworthy if not associated with other organizations
		Transdisciplinary processes to evaluate the data
		Exchange ideas with experts (stakeholder engagement)
		More widely communicated: Making scientific publications understandable for everyone as a basis for discussion
Mandate and structure		Invite psychologist/sociologist to understand the urgency= interdisciplinary pressure (more intense knowdldge transfer)
	Lack of competence or that someone else is responsible	Direct exchange between science, administration, and politics
		Coordination of centers/ cross-departmental policies and processes
		Provide direct recommendations for action, broken down to the individual level
	Legal bases for environmental impact assessments	Transdisciplinary processes to evaluate the data
		Consultation with scientists in mega-projects (advisory board)
		Legal significance: Continuity an institutionalism
		Indicators on how effective measures are and best practices
	Pressure to act	Make time scale clear

		Transparency regarding the realistic implementation of measures
		Tipping points
		Integrated vision of the future

9.2. Annex B: List of organizations and stakeholders that participated in the workshops

<u>Catalan Workshop</u>

- Subdirecció de Biodiversitat al Departament de Territori, Habitatge i Transició Ecològica - Subdirectorate of Biodiversity in the Department of Territory, Housing, and Ecological Transition
- Subdirecció de Canvi Climàtic al Departament de Territori, Habitatge i Transició Ecològica - Subdirectorate of Climate Change in the Department of Territory, Housing, and Ecological Transition
- Departament d'Agricultura, Ramaderia, Pesca i Alimentació - Department of Agriculture, Livestock, Fisheries, and Food
- Xarxa per a la Conservació de la Natura - Network for Nature Conservation
- Àrea Metropolitana de Barcelona - Metropolitan Area of Barcelona
- Consell de Protecció de la Natura / Fundació Catalunya La Pedrera - Nature Protection Council / Catalunya La Pedrera Foundation
- IPBES (expert) - CREAF
- IPCC (expert) - Basque Centre for Climate Change
- CREAF (Center for Ecological Research and Forestry Applications)
- Regions4
- Associació Renovem-nos - Let's Renew Ourselves Association
- Servei Meteorològic de Catalunya - Meteorological Service of Catalonia
- SEO/Birdlife
- Earth Science Department / Barcelona Supercomputing Center (BSC)

<u>Colombian Workshop</u>

- Gobernación del Valle del Cauca - Government of Valle del Cauca
- Alcaldía de Guadalajara de Buga - Mayor's Office of Guadalajara de Buga
- Alcaldía de Jamundí - Mayor's Office of Jamundí
- Alcaldía de Palmira - Mayor's Office of Palmira
- Alcaldía de Tuluá - Mayor's Office of Tuluá
- Corporación autónoma regional del Valle del Cauca CVC - Regional Autonomous Corporation of Valle del Cauca (CVC)
- Alcaldía de Cali - Mayor's Office of Cali
- Representante IPLC - IPLC Representative
- MEP IPBES
- IPBES author Lucas Garibaldi
- IPBES author Sofía López
- Generalitat de Catalunya - Government of Catalonia (Generalitat de Catalunya)
- Helmholtz Centre for Environmental Research (UFZ)
- CREAF (Center for Ecological Research and Forestry Applications)
- Parques Nacionales Naturales de Colombia - National Natural Parks of Colombia
- CIAT (International Center for Tropical Agriculture)
- Instituto Humboldt

<u>German workshop</u>

- Helmholtz Centre for Environmental Research (UFZ)
- IPCC Expert – Alfred Wegner Institue
- IPBES Secretariat
- IPCC German Coordination Centre
- IPBES German Coordination Centre
- Federal Agency for Nature Conservation
- Climate Unit- Ministry of Environment Hesse
- Head of Department Agriculture Ministry of Environment Hesse
- Ministry for Climate Action, Environment and Energy - Rhineland-Palatinate
- Ministry of Environment Rhineland-Palatinate
- MP Rhineland-Palatinate Social Democrats
- MP Rhineland-Palatinate Liberals
- MP Hesse Green Party

Civil Society – Green Youth

9.3. Annex C: Table of cross-comparisson of barriers and solutions of all case studies

Secondary code	Catalonia		Colombia		Germany	
	Barriers	Solutions	Barriers	Solutions	Barriers	Solutions
Scale and Accessibility	IPCC and IPBES adapted to regional context	Regional adaptation of global scientific reports, supported by regional data	Lack of localization of scientific reports to local and regional realities	developing joint scenarios is recommended to evaluate impacts and define effective adaptation and mitigation strategies	Scientific outputs are presented on an abstract, generic level and not contextualized for subnational implementation	Adapting/ translating international scientific assessments to subnational realities
	Need to translate global insights into actionable regional policy		Information in IPBES and IPCC not contextualized for subnational implementation		no designated entity responsible for translating them to that level	localized cost-benefit analyses and implementation tools to guide municipal action
	Insufficient infrastructure to evaluate policies	Scenarios developed to assess potential impacts of policies at different times and scales	lack of indicators hindering coordination and policy coherence across space and scales.	specific indicators to guide the integration into subnational policies	Weak policy coherence and territorial coordination across the different levels of governance	experiences and pilot projects should be documented and shared to facilitate peer learning
Communicatio n, Language and Format	Disconnection between how science is produced and communicated	Strategies must be tailored to different audiences, ensuring clarity and relevance	Lack of effective outreach strategies	local workshops to raise awareness	limited resources, lack the time and tools to extract actionable information	executive summaries and targeted communication
	Scientific outputs are lengthy, technical, and hard to interpret		Difficult for Indigenous communities (language and format)	booklets, videos, and materials in Indigenous languages	Communication efforts often remain inside expert bubbles, failing to reach broader political and social audiences	Communication strategies go beyond the expert community
	inconsistent use of language across disciplines = misunderstandings	Interdisciplinary "translator" roles (e.g., hybrid scientist communicators)	Different language between scientific community and that of decision-makers, limiting the application of knowledge	Develop formats to integrate Indigenous and local knowledge into political decision-making	Disconnect between how scientific knowledge is communicated and how it can be used	emphasizing positive examples and go beyond scientific community (citizens, civil servants, and political actors)

	Lack of executive summaries, infographics, or audiovisual content for outreach	Simplified formats such as infographics, videos, and short policy briefs	Need for different formats and materials	Translate scientific information into accessible formats	Reports are often too long, too complex, and very technical	accessible language, visuals, explanatory brochures, short videos
Biodiversity and Climate Connection	Institutionally and politically siloed	Cross-sectoral working groups and integrated information systems	Differences between biodiversity and climate (funding and attention)	Information systems integrating biodiversity and climate change data should be strengthened.	lacking a clear conceptual and policy framework to align both themes (funding and prirotization)	unified sustainability narrative that links biodiversity and climate (elevate biodiversity)
	limited frameworks that unify indicators or joint assessments	Develop Tools and joined indicators	lack of a clear theoretical framework and joint indicators		lack of joint indicators and integrated messaging	Common indicators and targets
	differing timelines, agendas, policy priorities (sometimes contradictory), and funding pathways	Finding synergies between biodiversity and climate agendas + Strategic evaluations	Different biodiversity and climate change agendas	inter-institutional work plan that connects both agendas	Agendas remain fragmented - lacking a clear conceptual and policy framework to align both themes	joint policy planning, integrated metrics, and cross-cutting workshops
Groups of Interest and Stakeholders	Private sector engagement in biodiversity limited	Synthesis reports tailored to societal needs	Pressure from economic sectors and other interest groups	include economic sectors in the design of environmental policies by promoting incentives	Economic sectors and other groups prioritize own agendas over environmental goals	Inclusive participation with dialogue spaces
	media's role is also underutilized in fostering public understanding	Role of journalism strengthened, with better access to scientific data and training	Lack of participation from the private sector in the development of multisectoral solutions		local politicians avoid these issues altogether due to the political risk of losing voters or party-based ownership of environmental topics	Reduce polarization around topics and in different sectors—public, private, and civil society
	Participation mechanisms for nonscientific actors are inadequate	Involve economic sectors and civil society in policy formulation			Low participation of private and non-environmental stakeholders in shaping multisectoral solutions	Highlighting success stories and showing tangible benefits of action can help engage
	Lack of scientific literacy among	Training for interpreting	Decision-makers often lack technical	training programs and	Lack of background or training needed to	raining programs to local decision-
	policymakers and insufficient capacity to interpret technical data	scientific reports and understanding	training to interpret and apply scientific information	environmental education	interpret and apply scientific data (same with communities)	makers, administrators, and community leaders

Technical Knowledge Gaps		practical implications				
	Absence of training programs and intermediary figures	capacity-building workshops	Also lack of capacities among local communities to understand the impacts of climate change and biodiversity loss on their territories.	create tools and methodologies to facilitate the integration of scientific knowledge into decision-making	knowledge of how climate and biodiversity loss affect their territories is often superficial or absent	creation of intermediary roles help bridge the technical gap and ensure information flow
	Local institutions are unsure where to seek expertise	Formalized network of knowledge hubs			Knowledge about climate and biodiversity is not often part of people's everyday concerns	municipal designated personnel for climate and biodiversity issues
Institutions	Fragmentation of agencies with no integrated policy design	clearly defined competencies and common methodologies	Fragmentation and lack of coordination among sectors	clear definition of responsibilities and efficient resource allocation	fragmentation and limited coordination across sectors – dispersed responsibilities that lead to inefficiencies	Cross-sectoral collaboration and intersectoral working groups and formal mandates
	silos, with unclear mandates and little coordination	crossdepartmental platforms or coordination mechanisms	overlapping responsibilities and duplicated efforts	financial and technical capacities must also be strengthened to improve knowledge management	not fully aware of the designated coordination offices and who are the knowledge providers	Legal frameworks adapted to elevate environmental considerations
	institutional inertia and entrenched bureaucracies slow progress	Hybrid professional roles supported and assigned formal recognition	limited financial and human capacities to manage scientific knowledge and information		Employees in other departments often do not see a direct connection between their work and environmental or climate issues	systematic public and scientific participation in large infrastructure or landuse decisions
	Gap between scientific outputs and public understanding	Promoting environmental education and scientific outreach	lack of environmental education and low scientific culture	Environmental education and social participation	Recent voting patterns suggest that these issues are not a high	Awareness campaigns that appeal to citizens' everyday realities
				should be promoted	priority for much of the adult population	(storytelling, viral content, and community events)

Society	Ecological knowledge, especially from farmers, is often undervalued	Traditional and local knowledge should be respected and incorporated into planning processes	Indigenous Peoples have vast knowledge, but the way they generate it and apply it is often undervalued	recognize and value the traditional knowledge of Indigenous and local communities, encouraging its integration into policymaking	lack of trust in the information given due to societal fatigue, disillusionment, or populist narratives	Environmental problems should be presented as a priority but not as a threat since unsolvable problems are not tackled
	No recognition of how biodiversity loss and climate change affect their daily lives	Campaigns and community workshops to highlight the local relevance of biodiversity and climate issues	Communities do not understand how climate change and biodiversity loss affect their daily lives		No pressure for action given the lack of prioritization by citizens	Actors without an explicitly green image should be strategically engaged to help communicate to broader audiences.
Scientific Culture	Low motivation to go beyond publication. No incentives	incentivizing researchers to produce policy-relevant outputs	Problem on how scientific knowledge is produced and disseminated = remains in publications	Mechanisms should be created to incentivize scientists to translate their knowledge into practical actions.	Resarch remains in academic circles with few incentives to adapt their work for use in local governance	guest lectures, public discussions, and policy dialogues to lose the gap between knowledge production and use
	lack of applied research linked to policy needs	shift toward applied, socially relevant science	lack of incentives for scientists to adapt their work to the needs		disconnect undermines the relevance and visibility of science in policy	transdisciplinary processes to evaluate the data
	limited collaboration across disciplines	Enhance crossdisciplinary teams		establish platforms for interaction between academia and local governments to facilitate knowledge transfer	Although enough scientific information available, scientific outputs are often not aligned with policy timelines and needs	bring project insights to the institutions + incentives for researchers to tailor their work to governance needs

Mandate and Structure	Lack of clear, structured mechanisms for integrating scientific knowledge into policymaking	Coordinate knowledge integration, provide independent evaluations, and guide policymaking	no clear mandates to ensure the integration of scientific knowledge in subnational management	regulatory framework should be established to ensure the integration of scientific knowledge	No defined structure, funding, capacities, mandate or process for transferring knowledge or translating this knowledge into locallevel policy.	long-term environmental planning + Institutional continuity + shared vision for sustainability at each level of governance
	No authority to evaluate the environmental impact of policies	Legal framework	No defined structure to guarantee that knowledge translates into effective local policies	Territorial planning mechanisms should also be strengthened to ensure effective implementation of environmental policies	Short political cycles, lack of long-term vision, the lack of interest and felt ownership of the topic by specific political parties	Environmental indicators and timelines to monitor progress and guide future actions
	Roles and responsibilities in SPI are undefined, leading to fragmentation and duplication	Clear roles, independence, and continuity + Longterm planning	lack of long-term planning scenarios		lack of societal awareness = lack of pressure for action	Clear mandates for integrating science into local decisionmaking

9.4. Annex D: Guide for workshops

A. INTRODUCTION

This protocol provides a framework for organizing subnational workshops on Science-Policy
Interfaces (SPI) in the context of the RESPIN project (Grant agreement No. 101135490), Reinforcing Science-Policy Interfaces for integrated biodiversity and climate knowledge and policies.

It offers practical guidance to ensure inclusiveness, contextual relevance, and outcome-oriented discussions. Covering logistical planning, stakeholder engagement, and facilitation strategies, it fosters effective knowledge exchange between science and policy communities at regional and local levels.

Designed for adaptability, the protocol outlines workshop structure, best practices, potential challenges, and recommendations for impactful SPI workshops. Additionally, it provides guidance on processing qualitative data collected during the workshop to derive scientific insights. The goal is to bridge the gap between science and policy, enhancing decision-making and addressing the question:

"What prevents greater adoption of IPBES and IPCC findings in public policymaking on climate change and biodiversity?

B. ORGANIZATION OF THE WORKSHOP

Agenda and format:

The workshop consists of three sections:

1. Introduction: Workshop overview, project presentation, institutional speeches, and icebreaker.
2. Keynote Presentations: Two short talks by IPBES and IPCC experts on governance structures and how their reports aid subnational policymakers.
3. Breakout Discussions: Participants, including keynote experts, split into three balanced groups (~10 participants each) to discuss three key questions:
   • What are the main barriers to knowledge uptake?
   • How can these barriers be addressed?
   • What role should an SPI service play at the subnational level?

Sample of the agenda:

Time	Program
8:30 – 9:30	Morning coffee and Registration
9:30 – 9:45	Welcome and introduction to the workshop
9:45 - 10:00	RESPIN project presentation and "ice breaker"
10:00 – 10:40	IPBES and IPCC experts/authors presentation
10:40 – 11:10	Coffee Break
11:10 – 12:50	Workshop: Explanation of the methodology, and questions 1. What are the main barriers for knowledge uptake? Which are the main barriers preventing IPBES and IPCC knowledge uptake in policy making processes at the subnational level? 2. How can we improve knowledge uptake in relation to the identified barriers? 3. What is the role or how should an SPI service be at the subnational level?
12:50 - 13:30	Debriefing, conclusions and next steps
13:30 – 15.00	Lunch

Discussion format:

Using a round-robin method, groups rotate across three tables, each focusing on one of the key questions. Facilitators introduce the topic, encourage discussion, and capture insights on sticky notes. Discussions last 45, 30, and 25 minutes per table, with key takeaways shared at each transition. A "parking spot" flipchart allows participants to note additional ideas.

At the end, facilitators summarize key messages, review parking spot contributions, and facilitate a final plenary discussion on strengthening the local SPI system.

To ensure accessibility, workshops should be conducted in the local language.

C.   INVITATIONS AND PARTICIPANTS

The identification and selection of key stakeholders will depend on the local context, but it needs to be balanced. The ideal number of participants will be around 30, including the organizing team. The participants of the workshop should include:

- Subnational representatives (technical policymakers in climate change and biodiversity).
- Department heads to increase policy awareness.
- IPBES & IPCC experts, local scientists, and stakeholders are involved in SPI.
- Government agencies, NGOs, and interest groups linked to environmental policies.

D.   LOGISTICS

To ensure effective participation by participants and meaningful outcomes of the workshops we need excellent logistical planning for the event. Key aspects include:

- • Venue: Centrally located, accessible, and adaptable for plenary and breakout sessions.
- • Equipment: Wi-Fi, audiovisual tools, recording capabilities, and workspace for facilitators.
- • Catering: Consider dietary preferences and sustainable options.
- • Stakeholder collaboration: Engage local institutions for support, venue, and participant outreach.
- • Invitation process: Send early invitations with a registration form. Follow up with confirmations and final details.

Materials

Three categories of materials are required:

- • Organizational materials: Registration lists, printed agendas, project leaflets.
- • Presentation materials: Visual aids for project and expert presentations.
- • Workshop materials: Flipcharts, posters with key questions, sticky notes, markers, and recording devices.

A post-workshop feedback form should collect insights on workshop effectiveness, key takeaways, and potential follow-up actions.

E.   ANALYSIS OF WORKSHOP INFORMATION

Data collection

Data sources include:

- • Facilitator notes from breakout sessions.
- • Written contributions (sticky notes and parking spot flipchart).
- • Audio recordings of expert presentations and group discussions.
- • Post-workshop survey for participant feedback and additional insights.

Data collection must adhere to privacy and data protection regulations and accommodate diverse needs through digital and paper-based options.

Methods and results

Processing involves:

1. Digitizing all collected data (notes, sticky notes, recordings, feedback forms).
2. Using AI tools for transcription of recorded discussions.
3. Applying qualitative analysis methods (e.g., thematic coding) to identify recurring patterns.
4. Clustering results to draw conclusions and recommendations.

F.   WORKSHOP CHECKLIST

Pre-Workshop:
- ✈   Secure venue, date, and partnering organizations.
- ✈   Assemble an organizing team (facilitators, note-takers, moderators).
- ✈   Finalize the agenda and confirm expert participation.
- ✈   Draft and distribute invitations with registration forms.
- ✈   Ensure catering (including dietary options).
- ✈   Conduct venue visit to check setup, Wi-Fi, and AV facilities.
- ✈   Prepare materials (printed questions, markers, flipcharts, name tags, etc.).
- ✈   Hold coordination meeting with facilitators.

During Workshop:
- ✈   Ensure smooth registration and material distribution.
- ✈   Facilitate discussions and record insights.
- ✈   Collect all written materials and participant feedback.

Post-Workshop:
- ✈   Compile and transcribe data.
- ✈   Conduct thematic analysis.
- ✈   Design and distribute post-workshop survey.
- ✈   Share results with stakeholders.