Final Exploitation Plan

WP 5 Dissemination, Communication and Exploitation

T 5.6 Sustainability of results and consolidation of post-project exploitation

D5.5 Final Exploitation Plan

Authors: Chiara Bartolacci (ICONS), Giovanni Amigoni (ICONS)

Funded by the European Union

Technical references

Project Acronym	BioValue
Project Title	Biodiversity value in spatial policy and planning leveraging multi-level and transformative change
Project Coordinator	Maria Rosario Partidario University of Lisbon - Instituto Superior Técnico mariapartidario@tecnico.ulisboa.pt
Project Duration	July 2022 – Sept 2025 (39 months)

Deliverable No.	D5.5
Dissemination level*	PU
Work Package	WP 5 Dissemination, Communication and Exploitation
Task	T 5.6 Sustainability of results and consolidation of post-project exploitation
Lead beneficiary	ICONS
Contributing beneficiary/ies	All
Due date of deliverable	30 Sept 2025
Actual submission date	30 Sept 2025

* PU = Public

SEN = Sensitive

v	Date	Beneficiary	Author
1.0	09/04/2025	ICONS	Giovanni Amigoni (ICONS), Chiara Bartolacci (ICONS)
2.0	20/05/2025	ICONS. Contributors: CoKnow, CM Mafra, Comune Trento, IST-ID	Giovanni Amigoni (ICONS), Chiara Bartolacci (ICONS). Contributors: Margarida Barata Monteiro (IST-ID), Jenny Schmidt (CoKnow), Sofia Santos, Cesar Marques (CM Mafra), Federica Podetti, Francesco Matteo Marchese (Comune Trento)
3.0	20/07/2025	ICONS. Contributors: IST-ID, AAU, UFZ, UniTrento	Giovanni Amigoni (ICONS). Contributors: Ana Paula Rosa Silva Soares (IST-ID), Sanne Vammen Larsen (AAU), Lia Borges Laporta (UniTrento), Karla Estela Locher Krause (UFZ)

4.0	18/08/2025	ICONS	Chiara Bartolacci (ICONS)
5.0	05/09/2025	ICONS	Giovanni Amigoni (ICONS), Chiara Bartolacci (ICONS)
6.0	30/09/2025	ICONS. Contributors: CoKnow, UniTrento, UFZ.	Giovanni Amigoni (ICONS), Chiara Bartolacci (ICONS). Contributors: Jennifer Hauck (CoKnow), Lia Borges Laporta (UniTrento), Davide Geneletti (UniTrento), Karla Estela Locher Krause (UFZ).

Table of contents

List of Tables

List of Figures

Disclaimer

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or REA. Neither the European Union nor the granting authority can be held responsible for them.

Abbreviations

Table 1: List of abbreviations

Acronym	Definition
AESOP	Association of European Schools of Planning
AUU	Aalborg University
CDE	Communication, Dissemination and Exploitation
CMM	Mafra Municipality
CTN	Comune di Trento
DCEA	The Danish Centre for Environmental Assessment
EAIs	Environmental Assessment Instruments
EC	European Commission
E&FIs	Economic and Financial Instruments
EIA	Environmental Impact Assessment
ES	Ecosystem services
EU	European Union
GBO-5	Global Biodiversity Outlook 5
GDPR	General Data Protection Regulation
GHG	Greenhouse gas
HE	Horizon Europe
IAIA	International Association for Impact Assessment
IP	Intellectual property
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
IPR	Intellectual property rights
ISOCARP	International Society of City and Regional Planners
IST-ID	Associação do Instituto Superior Técnico para a Investigação e Desenvolvimento
IST-UL	Instituto Superior Técnico – Universidade de Lisboa
KER	Key Exploitable Result

MV	Mecklenburg-Vorpommern
NBS	Nature-based solutions
NGOs	Non-governmental organisations
PES	Payment for Ecosystem Services
REA	European Research Executive Agency
SEA	Strategic Environmental Assessment
SP&MIs	Spatial Planning and Management Instruments
TAWs	Transformation Action Workshops
UFZ	Helmholtz Zentrum für Umweltforschung
UNESCO	United Nations Educational, Scientific and Cultural Organization
UniTrento	Trento University
WP	Work Package

Executive summary

The BioValue project (2022-2025) has developed innovative approaches to embed biodiversity into spatial planning and policy: this Final Exploitation Plan (D5.5) sets out how the project's results – including analytical frameworks, tools, and practices tested in real-world contexts – will continue to **deliver impact** beyond the project's lifetime. The consortium's strategy for ensuring that BioValue's Key Exploitable Results (KERs) are adopted, scaled, replicated and sustained by diverse stakeholders across the EU is detailed throughout the document.

While European territories face mounting pressures from biodiversity loss, climate change, and competing land uses, planning decisions too often treat biodiversity as a constraint rather than a driver of resilience and quality of life. This Plan provides policymakers, planners, practitioners, and researchers with actionable strategies for mainstreaming biodiversity, supporting policy frameworks such as the **EU Biodiversity Strategy 2030** and the **European Green Deal**.

Throughout the project, the consortium developed **three Key Exploitable Results (KERs)**, which have already been tested and applied within BioValue's **Arenas for Transformation** (Trento, Italy; Mafra, Portugal; and Mecklenburg-Vorpommern, Germany).

Table 2: BioValue's Key Exploitable Results

KER1	Analytical framework for biodiversity transformative change in spatial policy and planning
KER2	A set of tools for spatial planning transformations
KER3	Guidelines on the pathways to include these tools in spatial planning

This process generated two types of **implementation outputs**, outlined in the table below: (i) concrete specific outputs in the Arenas, tailored to their specific contexts; and (ii) a set of enabling tools designed to support post-project exploitation and knowledge transfer. These tools will facilitate wider uptake of BioValue's methodologies, fostering replication and scalability across other territories and future EU-funded initiatives.

Table 3: Implementation outputs

Specific outputs	Enabling tools
• Methodological foundations (regulatory integration, integration of ESs) • Operational outputs (exploration of tools and instruments, guidelines, database) • Strategies, visions & narratives (video documentaries, manifesto, vision)	• Policy briefs (white paper, MV policy brief) • Recommendations and catalogue of instruments • Planning Game • Oppla Platform group • Dissemination tools (Technical Brochure, Final Video, Project Resources Section)

Key findings from this Plan are linked with concrete **recommendations** for exploitation in the following table, ensuring that insights inform the next steps in policy, practice, and research.

Table 4: Key findings and recommendations for exploitation

Key findings	Recommendations for exploitation
Biodiversity can act as a structuring principle and driver of resilience in spatial planning	Systematically embed biodiversity criteria in planning policies and instruments at all levels
KERs are practical and transferable, as demonstrated in the Arenas	Promote replication of KERs by integrating them into planning and policy processes
Co-creation with municipalities and local actors proved decisive for transformative change	Maintain and expand collaboration, capacity-building, and cross-sector dialogue in Arenas
BioValue's approaches hold European-wide relevance and replication potential	Leverage knowledge platforms and networks to scale uptake and connect to EU initiatives
Integration into education, training, and professional practice is key to long-term impact	Embed KERs into academic curricula, training, and planning guidelines for upskilling

By advancing robust tools, tested methodologies, and actionable guidance, BioValue has laid the foundations for embedding biodiversity into planning at multiple governance levels. This Final Exploitation Plan provides clear pathways for ensuring that the project's results continue to shape European policy, practice, and research, driving transformative change.

1. Introduction

1.1. Introduction to BioValue

BioValue – Biodiversity value in spatial policy and planning, leveraging multi-level and transformative change[1] is a research and innovation project funded in 2022 by the European Research Executive Agency (REA) under Horizon Europe.

BioValue aims to safeguard and enhance biodiversity through transformative change in spatial policymaking, planning practices and infrastructure development, upscaling opportunities to increase the value of biodiversity in support of EU strategic actions on biodiversity, particularly the EU Biodiversity Strategy 2030[2]. Taking the definition provided by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), transformative change is a fundamental, system-wide reorganisation across technological, economic and social factors, including paradigms, goals and values[3]; it holds the potential to address biodiversity loss and foster the development of new ways to reach sustainable development goals.

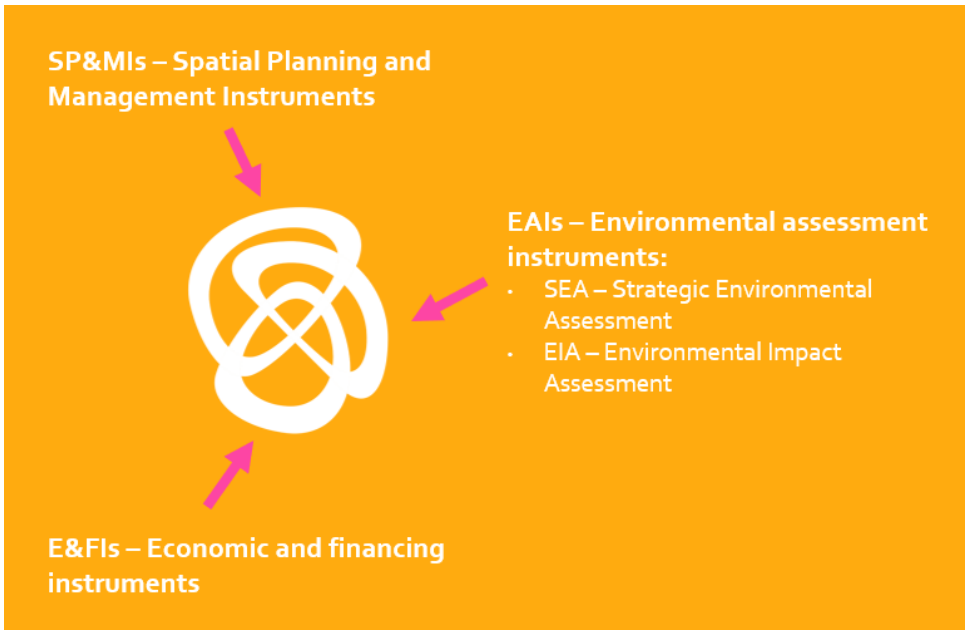
Three main ambitions guided the project's development, as shown in the figure below.

Figure 1: BioValue key ambitions

BioValue's research logic was anchored in participatory research, thereby strengthening the connection between science, policy, and society. The project considered three complementary instrumental perspectives to support different sectors and actors in taking ownership of biodiversity concerns: these are outlined in the figure below.

[1] https://biovalue-horizon.eu/
[2] https://environment.ec.europa.eu/strategy/biodiversity-strategy-2030_en
[3] https://zenodo.org/records/6417333

Figure 2: BioValue instrumental perspectives



The integration of these instruments into the planning process was directed towards enhancing biodiversity and the values it provides to society. Spatial planning processes are within the competence of public administrations – at multiple levels and through various stages – with a high degree of uncertainty and different and overlapping ways of dealing with them. What most approaches share, however, is a reactive way of proceeding, resulting in failure to actively enhance biodiversity.

The project's interdisciplinary team brings together three universities (University of Lisbon - Instituto Superior Técnico – IST-ID, Aalborg University – AUU, Trento University – UniTrento), one research institute (Helmholtz Zentrum für Umweltforschung – UFZ), one non-profit organisation (Fondazione ICONS – ICONS), one small international consulting agency (CoKnow Consulting – CoKnow), and two municipalities from two different European countries(Mafra Municipality – CMM, Comune di Trento – CTN). This collaboration has ensured comprehensive, robust, and capable activities throughout the lifespan of the project.

Three "Arenas for Transformation"[4] acted as practical case studies, bringing to BioValue different angles to explore the transformative potential of spatial planning processes. They served as dialogue hubs and as sites for implementation and validation:

1. The Municipality of Trento ("The Fersina, regenerating an urban river", in Italy);
2. The Municipality of Mafra ("Municipal Spatial Planning", in Portugal);
3. The Mecklenburg-Vorpommern Federal State ("Rewetting Peatlands and Reforestation", in Germany), often shortened as MV or Meck-Pomm.

[4] https://biovalue-horizon.eu/arenas-for-transformation/

1.2. Scope of the document

Developed under Task 5.6, this Final Exploitation Plan (D5.5) outlines the pathways for the use and long-term impact of BioValue's results beyond the end of the project. It provides a structured framework for deployment, replication, post-project sustainability, and use in scientific research, policy development and advocacy, as well as post-project knowledge dissemination of the results developed by the consortium partners. The Plan also defines a tailored roadmap for each Arena, built on the progress achieved within the project and on its specific needs and characteristics, offering a strategic summary that can serve both as a compass and as a basis for preparing pitches and funding requests, and even identifying potential post-project upscaling pathways. In addition, the document summarises the Eklipse process, anticipating recommendations for replicating the project's results in other territories across Europe and beyond.

1.3. Structure of the document

The structure of this deliverable reflects its aim of providing a comprehensive overview of how BioValue's results will be sustained, replicated, and further exploited beyond the project's lifetime. The document is organised into the following upcoming chapters:

- **chapter 2 – The concept of exploitation:** defines exploitation in the Horizon Europe framework and outlines BioValue's methodological approach to identifying, managing, and monitoring Key Exploitable Results (KERs), including intellectual property considerations;
- **chapter 3 – BioValue's Key Exploitable Results and implementation outputs:** presents the three consolidated KERs and their sub-results, highlighting their innovation potential, applications within the Arenas for Transformation and resulting implementation outputs, as well as target end-users;
- **chapter 4 – Arenas for Transformation:** provides an in-depth analysis of the Arenas, detailing the outputs achieved, the post-project sustainability plan, and the opportunities for replication in other territorial contexts, including the Eklipse assessment;
- **chapter 5 – Academic, scientific and research exploitation:** outlines how BioValue results will be further developed in academic and scientific contexts, including integration into curricula, MSc/PhD theses, research agendas, and scientific publications;
- **chapter 6 – Policy advocacy and knowledge transfer:** presents partners' strategies to influence policy frameworks at multiple levels and transfer knowledge to professionals, describing enabling tools developed, their relevance, and synergies with other Horizon Europe projects.

2. Exploitation in BioValue

2.1. The concept of exploitation

Within Horizon Europe, exploitation refers to activities aimed at ensuring that the results developed during the project generate tangible and intangible impacts beyond its duration. It is grounded in the mapping and prioritisation of Key Exploitable Results (KERs), encompassing any outputs generated within the project. KERs are the most significant outcomes, with potential for use and further development beyond the project (as described in the following chapter), and their identification takes into account also the intentions and ambitions of consortium partners.

Exploitation of BioValue's results can drive transformative change for biodiversity and contribute to positively impacting society by integrating biodiversity and ecological connectivity in spatial processes. In particular, it can:

- Ensure long-term sustainability through actionable steps;
- Enable broad replication of the results and approach across the EU;
- Guide further research and academic and scientific exploitation;
- Inform policy development through advocacy efforts and knowledge transfer.

2.2. Exploitation methodology and process

The activities carried out for the effective exploitation of BioValue's results are outlined in the following table. Continuous monitoring and updating of results, along with the related exploitation intentions, guided the entire process. Partner engagement in iterative feedback cycles further informed the collaborative development of post-project exploitation strategies.

Table 5: Description of the exploitation process

Steps	Description	Timing
Set up of BioValue approach	Definition of BioValue's integrated Communication, Dissemination and Exploitation (CDE) strategy to effectively promote and exploit results – with a first mapping of KERs, sub-KERs, and exploitation strategies – in D5.1 Plan for the Exploitation and Dissemination of Results.	M1-M6
Introductory Exploitation Webinar	Introduction to the main concepts related to exploitation and intellectual property in EU projects; their application to BioValue project; overview of the exploitation process and upcoming activities.	M5, online
Exploitation Questionnaire	File distributed after the Webinar to collect from all partners preliminary information on Key Exploitable Results and exploitation intentions, to be fed into D5.1.	M5-M6

Stakeholder Mapping	Identification and analysis of stakeholder groups that can be interested in or impacted by BioValue and its KERs. The analysis was carried out at two levels: the BioValue project and the Transformative Change for Biodiversity Cluster. Outcomes were summarised in D5.4 Stakeholder Mapping Report.	M6-M14
Stakeholder Analysis Workshops	Two online sessions with project partners (one for the Arenas for Transformation and one for Research Partners) aimed at validating the stakeholder groups identified, profiling them and providing granular examples to include in D5.4.	M13 - Online
Exploitation Workshop	Hands-on brainstorming on exploitation of BioValue's KERs for both Arenas for Transformation (focusing on upscaling, replication, and opportunities and threats) and research partners (exploring replication, sustainability, research exploitation and policy advocacy).	M15, Trento (IT)
Consolidation of inputs and continuous monitoring	Continuous monitoring of BioValue's advancements to align KERs and exploitation intentions to define next steps in line with project progress and with the initial strategy.	M16-M30
MS11 Final Exploitation Workshop	Validation of the project results' list and creation of an Exploitation Canvas for each Arena to identify ambitions, key activities and contributions from BioValue in the post-project phase.	M31, Ericeira (PT)
Validation and consolidation of strategies	Direct involvement of partners in 1-to-1 interviews and structured questionnaires to consolidate post-project exploitation strategies for all BioValue's Key Exploitable Results and development of D5.5 Final Exploitation Plan.	M32-M36

2.3. Management of Intellectual Property (IP)

As set out in the Grant Agreement, BioValue partners have emphasised the importance of openness, ensuring that all results were made accessible in a timely manner through the project's communication and dissemination channels (News and Resources sections on the BioValue website, the Zenodo platform, BioValue social media, etc.). This approach to managing outputs is in line with the consortium's commitment to open science and the broad accessibility of research results, fostering accessibility and facilitating knowledge exchange to maximise the uptake and societal impact of project outcomes. As foreseen, no significant Intellectual Property (IP) or intellectual property rights (IPR) issues have arisen during the project's lifecycle, confirming the soundness of the approach.

IP generated within BioValue remains with the partners directly involved in the specific research activities from which it originates. Pre-existing knowledge (IP background) and knowledge developed jointly during the project (IP foreground) have been managed according to the

Consortium Agreement. No additional formal agreements or restrictions were required beyond this framework. In BioValue, ownership of results is therefore closely tied to authorship, ensuring clarity, transparency, and recognition of individual and institutional contributions.

Regarding scientific publications, partners have been requested to share an advanced draft with the consortium prior to submission, allowing 14 days for potential objections. Adherence to the European Code of Conduct and Research Integrity has also been instrumental in promoting transparency and fairness in the recognition of contributions: BioValue has applied clear authorship and co-authorship guidelines, appropriately crediting involvement in research design, data collection, analysis, interpretation, and writing. These rules and guidelines were developed by the Project Coordinator in a dedicated project policy on publications.

As set out in D5.1 Plan for the Exploitation and Dissemination of Results, the IP protection measures adopted in BioValue have primarily focused on ensuring openness of results:

- **Copyright protection**: scientific publications resulting from BioValue's research and activities are protected through copyright. Whenever possible, all publications are submitted to Open Access journals, ensuring free and unrestricted access for the research community, policymakers, practitioners, and other stakeholders.
- **Confidentiality prior to publication**: in a limited number of cases, certain research outputs (e.g. raw data, draft analyses, or preliminary findings) were kept confidential until publication, in order to safeguard the integrity of the research process.

3. BioValue's Key Exploitable Results (KERs) and implementation outputs

3.1. Introduction and process

KERs identified at the proposal stage have been detailed, characterised, and updated throughout the duration of the project, with sub-results already included in D5.1 Plan for the Exploitation and Dissemination of Results. The final set of Key Exploitable Results – consolidated through the Final Exploitation Workshop and subsequent validation phase – is presented in the table below, together with the owners of the IP foreground related to the result. It comprises a total of 3 KERs and 9 sub-KERs, some of which are further broken down into additional pieces. The following paragraphs describe the 3 KERs, outlining their innovation potential, their application within the Arenas for Transformation (as documented and reported in D4.3 Arenas for Transformation Synthesis Report), the end-users they are targeted to, and the related potential use of results. This analysis represents the basis for the subsequent chapters.

3.2. KER1: Analytical framework for biodiversity transformative change in spatial policy and planning

Table 6: BioValue KER1

KER1. Analytical framework for biodiversity transformative change in spatial policy and planning	UFZ, IST-ID, AAU, UniTrento
KER1 description: A conceptual and analytical framework developed to assess the transformative potential of planning and assessment instruments in promoting biodiversity value. Grounded in the Wittmer et al. (2021) model, this KER supports a systemic understanding of how spatial planning can enable transformative change through existing instruments, policies, and processes.	
1A – Adaptation of existing conceptual and analytical framework for spatial planning, to explore the transformative potential of the three instrumental perspectives	
1B – Guidance document on assessing the transformative potential of instruments, both individually and in combination	
KER1 innovation potential: • Introduces a shared conceptual lens for evaluating how planning systems can trigger systemic, biodiversity-positive change • Enables a shift from fragmented, reactive biodiversity policy to integrated, forward-looking spatial strategies • Integrates multi-level governance and agency analysis across different national contexts • Scalable and adaptable across diverse planning cultures and governance settings	
Arenas' application within the project:	

• Trento: Used to evaluate spatial redesign along the Fersina river and integrate ecological connectivity in General Regulatory Plan revisions • Mafra: Informed inclusion of biodiversity value in planning instruments and the Municipal Master Plan • Mecklenburg-Vorpommern: Anchored SEA experimentation in land-use decisions supporting rewetting and peatland restoration		
End-users:		**How they can use it:**
• Policy analysts and spatial planning researchers	→	• To assess transformative potential of planning systems and policies
• Public administrations involved in designing planning reforms or evaluating policy instruments	→	• For diagnosing readiness for biodiversity-oriented reforms and strategic alignment
• Strategic planners working at regional or national levels	→	• As a diagnostic tool for evaluating policy mixes from a biodiversity perspective
• Academics and research community in planning and environmental governance	→	• As a transdisciplinary framework for analysing system-level change in spatial governance • For inclusion in MSc/PhD courses and thesis supervision on planning, SEA/EIA, and biodiversity
• European bodies and initiatives	→	• Apply framework for policy evaluation, strategic reviews, and alignment with EU Biodiversity Strategy 2030

3.3. KER2: A set of tools for spatial planning transformations

Table 7: BioValue KER2

KER2. A set of tools for spatial planning transformations	**IST-ID, AAU, UFZ, UniTrento**
KER2 description: A practical collection of tools and measures drawn from the BioValue research, tested in the three Arenas and classified by type and function. These tools enhance the capacity of planners and public authorities to integrate biodiversity into spatial policies and decisions.	
2A – Integration of BioValue's outputs on Oppla's interactive platform to share data, information and knowledge and to co-produce new knowledge on spatial planning	
2B – Analysis and selection of innovative tools, measures and actions for innovative policy and planning development, including:	
Spatial Planning and Management Instruments (SP&MIs):	
Assessment of the current capacity gap for implementing a transformative planning practice for biodiversity	IST-ID
SP&MIs with the most potential for transformational change for biodiversity, selected from actual planning documents, existing platforms and initiatives	UniTrento, IST-ID
Framework for the integration of Ecosystem Services (ES), ecosystem mapping and assessment in spatial planning decisions	UniTrento

Environmental Assessment Instruments (EAIs):	
Environmental Assessment Instruments that proved to be the most effective in including and valuing biodiversity	AAU, IST-ID
Causal loop tool to improve the identification of causal connections in environmental assessment, promoting a system thinking approach	AAU
Economic and Financial Instruments (E&FIs):	
Economic and Financial Instruments selected to promote biodiversity conservation and enhance ecosystem value during the spatial planning process	UFZ, IST-ID
Summary of potentials for spatial planning related to the EU renewed Sustainable Finance Strategy	UFZ

2C – Catalogue/taxonomy of tools, providing a mapping by type and function

KER2 innovation potential:

- Bridges the gap between biodiversity policy aspirations and operational tools in spatial planning
- Introduces system-thinking approaches to instrument design and use (especially in EIA/SEA)
- Provides a ready-to-use reference set for practitioners, easily adaptable across contexts
- Introduces tested, arena-based examples of how tools can be customised and integrated

Arenas' application within the project:

- Trento: Toolset supported ES-based zoning and biodiversity overlays; supported participatory redesign processes
- Mafra: Tools applied in land-use strategy for Ericeira; indicators embedded in local planning reports
- Mecklenburg-Vorpommern: Tools guided the design of value chains for rewetted peatland biomass and local incentives

End-users:		**How they can use it:**
• Municipal and regional planners	→	• For practical application in biodiversity-sensitive plans, zoning, overlays
• Environmental & planning consultants	→	• For advising public authorities and preparing EIA/SEA or biodiversity assessments
• NGOs & civil society organisations	→	• For advocating evidence-based instruments in land-use and conservation planning
• Research community and academia	→	• As a reference for instrument performance and interaction analysis • For applied studies, course materials and planning toolkits
• European bodies and initiatives	→	• Use tested tools to inform EU-wide guidance and capacity-building programmes

3.4. KER3: Guidelines on the pathways to include these tools in spatial planning

Table 8: BioValue KER3

KER3. Guidelines on the pathways to include these tools in spatial planning	**UniTrento, IST-ID, AAU, UFZ, MC Mafra, Comune Trento, CoKnow**
KER3 description: This KER offers strategic guidance on how to apply and scale the tools from KER2, grounded in real-world insights from the Arenas. It outlines pathways for integrating biodiversity-enhancing instruments into spatial planning systems, adapting to local governance structures, and overcoming institutional and technical barriers.	
3A – Working methodologies and projects from the arenas for transformation, to be employed as guidelines for integrating biodiversity into spatial planning local practices that enable the regeneration of biodiversity:	IST-ID, CM Mafra, Comune Trento, CoKnow
Pathways to improve EAIs' transformative potential based on case study evidence and research activities	AAU
Provision of economic, social, and environmental data to provide evidence of biophysical, economic, and socio-cultural impacts of ES, and explore opportunities in spatial planning	AAU
Proposal/recommendations for improving the transformative potential of Economic and Financial Instruments to enhance biodiversity in spatial planning	UFZ
Guidance on selecting, designing, and implementing Economic and Financial Instruments within spatial planning processes	UFZ, UniTrento
Catalogue of enhancement and mitigation measures for biodiversity	UniTrento, IST-ID, AAU, UFZ, MC Mafra, Comune Trento, CoKnow
Significance of biological principles for spatial planning and environmental assessment	AAU
3B – Decision tree for guiding the selection of tools based on context-specific characteristics	IST-ID with collaboration from AAU, UniTrento, UFZ, CM Mafra, Comune Trento, CoKnow
3C – Pilot version of a collaborative game (a deck of cards based on the catalogue of tools) to facilitate/educate planning teams in the use/implementation/selection of BioValue's tools for enhancing biodiversity in spatial planning	IST-ID with collaboration from AAU, UniTrento, UFZ, CM Mafra, Comune Trento, CoKnow

<table>
<tr><td colspan="3">3D – Replication/transferability insights for the BioValue framework and tools in other EU countries/contexts, from the Eklipse platform</td><td>UFZ with collaboration from IST-ID, AAU, UniTrento, UFZ</td></tr>
<tr><td colspan="4">KER3 innovation potential:
Enables strategic, scalable implementation of tools tested in BioValue Arenas
Supports cultural and organisational shifts within planning institutions
Provides a flexible and replicable model for multi-actor governance and participation</td></tr>
<tr><td colspan="4">Arenas' application within the project:
Trento: Creation of an interdepartmental biodiversity unit and participatory mechanisms within municipal planning
Mafra: Institutional uptake of BioValue indicators and evidence-informed SEA reform
Mecklenburg-Vorpommern: Strategic coordination among stakeholders for peatland rewetting, and innovative policy brief</td></tr>
<tr><td>End-users:</td><td></td><td>How they can use it:</td><td></td></tr>
<tr><td>• Local authorities and public administrations</td><td>→</td><td>• To navigate which tools to use in which context via the decision-tree
• To implement the tools from KER2 in a sequenced and practical way</td><td></td></tr>
<tr><td>• Spatial planners and other professionals</td><td>→</td><td>• To replicate the Arena methodology in new territorial contexts with similar challenges
• To train planning teams using the collaborative game and guidelines</td><td></td></tr>
<tr><td>• Research Community and other EU projects</td><td>→</td><td>• Frameworks and tools to inform further Horizon Europe proposals, national calls, and peer-reviewed publications</td><td></td></tr>
<tr><td>• Academia</td><td>→</td><td>• Integration in curricula and MSc or PhD thesis; used in doctoral seminars, summer schools, and labs</td><td></td></tr>
<tr><td>• European bodies and initiatives</td><td>→</td><td>• Disseminate guidelines to local authorities across Member States</td><td></td></tr>
</table>

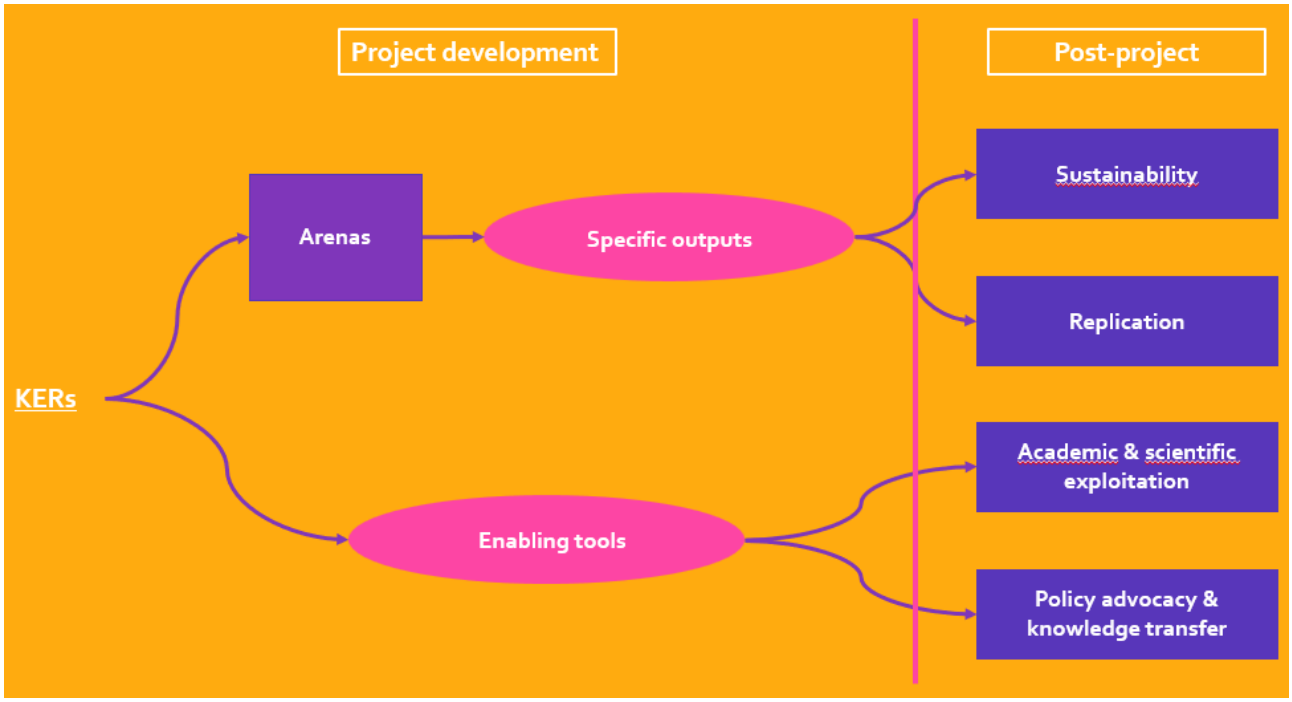
3.5. Implementation outputs

The development and application of KERs led to two distinct types of implementation outputs:

1. First, within the Arenas for Transformation, they generated **context-specific outputs** tailored to the local governance, policy, and planning challenges addressed in each case. For each BioValue Arena, these outputs are detailed in the *Arena outputs* paragraphs within the *Arenas for Transformation* section, as crucial outputs towards sustainability and replication of BioValue results.
2. Second, they gave rise to **enabling tools** that transcend the Arenas' scope, supporting post-project exploitation and facilitating the transfer of the knowledge developed throughout the entire project. These tools are further described in the sections on *Academic, scientific and research exploitation* and *Policy advocacy and knowledge transfer*, as key vehicles for ensuring BioValue's long-term impact.

The figure below displays graphically the linkages between the three BioValue KERs, implementation outputs, and the exploitation pathways through which they drive effective utilisation and impact of project results, as pointed out in the above.

Figure 3: BioValue KERs, implementation outputs, and exploitation pathways



4. Arenas for Transformation

4.1. Framework and methodological approach

BioValue's Arenas for Transformation were intended as areas for action and territorial expression of the three instrumental perspectives – SP&MIs, EAIs, and E&FIs – supporting empirical investigation on their role and capacity to generate transformative change that values biodiversity in spatial policy and planning processes. The Arenas functioned as spaces of interaction, where these processes unfolded, and co-creation of knowledge and learning was promoted by BioValue partners with core local actors.

The three Arenas are presented in the figure below, together with their guiding principles. Further details can be found in D4.3 Arenas for Transformation Synthesis Report, which provides a comprehensive overview of the Arenas' methodological approach, development, and outcomes.

Figure 4: BioValue's Arenas for Transformation and guiding principles

To achieve BioValue's ambitions (chapter 1.1), each Arena applied the analytical framework for biodiversity transformative change in spatial policy and planning (KER1), which enabled reflection and dialogue with stakeholders and decision-makers and led to results tailored to their specific context, needs, and scale. These outcomes were not limited to tangible results alone, but also encompassed the methodologies and processes initiated during the project.

As introduced in chapter 3.5, KERs' implementation in the Arenas led to the development of specific outputs: these can be further subdivided into 3 categories, shown in the following table.

Table 9: Specific outputs sub-categorisation

	Methodological foundations	Operational outputs	Strategies, visions & narratives
Trento's outputs	▪ Regulatory integration of biodiversity value		▪ Manifesto Fersina ▪ Video documentary ("La Fersina: il percorso del torrente nel Comune di Trento. Un ambito di possibile rigenerazione")
Mafra's outputs	▪ Integration of ESs into spatial planning instruments	▪ Guidelines for green-blue infrastructure ▪ Exploration of E&FIs ▪ SMOT-MM Portal	▪ Shared vision for Ericeira (biodiversity-sensitive coastal development)
Meck-Pomm's outputs	▪ Policy Brief: "Integration des Biodiversitätsschutzes in Klimaschutzgesetze mittels Strategischer Umweltprüfung (SUP)"	▪ Exploration of spatial planning tools ▪ Application of SEA ▪ Exploration of economic and financial incentives	▪ Video documentary ("Navigating Transformation – Perspectives on Peatland Futures")

Building on these specific outcomes, the strategy for the post-project phase centres on helping Arena actors continue implementing what has been developed, while doing so with a strategic, long-term perspective. The remainder of this chapter presents each Arena's context, post-project sustainability action plan, and potential for replication. The information was gathered through workshops with all partners – including the Final Exploitation Workshop (MS11, M34) – and fed into the Exploitation Canvas developed towards the end of the project, provided in the dedicated sub-chapters.

Derived and adapted from the template of the Business Model Canvas[5], the Exploitation Canvas was co-created to consolidate the outcomes achieved in each Arena and translate them into a realistic four-year action plan. It serves both as a practical guide for sustaining and scaling transformative practices beyond the project's lifetime, and as a communication and dissemination tool to share these strategies with external audiences, especially key enablers.

[5] https://www.strategyzer.com/library/the-business-model-canvas

For each Arena, the Canvas captures:

Table 10: Exploitation Canvas sections

Arena ambition	Contextualises BioValue's ambitions within the specific context of each Arena, detailing the Arena's post-project ambition
Key stakeholder and main actors	Outlines the stakeholders which are expected to be most relevant in the post-project phase
Policy and spatial planning framework	Reports the spatial planning law and regulations impacting the Arena and elaborates on how the regulatory environment is expected to affect post-project exploitation
Implementation activities and roadmap	Presents (i) the activities transformative change may be achieved through and (ii) the exploitation roadmap envisioned to reach the intended post-project ambition
Key instruments and tools	Details the instruments which are expected to be employed for post-project exploitation
Key resources	Collects the resources expected to be crucial for post-project exploitation, including those which are not currently present and will have to sourced or developed
Contribution and results from BioValue	Describes the role of Key Exploitable Results in the Arena, BioValue's contributions during the project, and post-project potential for exploitation of project results
Value proposition	Explains what motivates the intervention in the specific Arena context, what transformations will be achieved, and how these relate to and build towards the post-project ambition
Barriers and challenges	Summarises the main barriers and challenges foreseen for post-project exploitation
Environmental, social, and economic value loss and value creation	Outlines (i) the negative impacts and costs and (ii) the positive impacts and benefits that could result from the activities envisioned for post-project exploitation, from an environmental, social, and economic point of view

4.2. Trento (IT) – The Fersina, regenerating an urban river

4.2.1. Introduction to the Arena

The Municipality of Trento, in the Alps in northern Italy, served as a dynamic Arena for embedding biodiversity considerations directly into local planning processes at the urban level. Trento Municipality faces the dual challenge of managing urban growth while preserving its rich ecological landscape. Long recognised for proactive and integrated planning strategies, the Municipality

joined BioValue to shift biodiversity from being a constraint to a strategic driver of urban resilience and adaptive development.

The Arena focused on the Fersina River corridor – a natural and historical axis a natural and historical axis that flows from the ecologically and culturally rich Canyon area, through the urban core, and downstream to the Delta, a strategic site for the city's development that will host Trento's new hospital and Faculty of Medicine – as a pilot for integrating biodiversity, urban quality of life, and ecosystem services (ES) into urban planning.

4.2.2. Arenas' specific outputs

Key tangible outputs achieved during the project development include:

- **Regulatory integration of biodiversity value** – Thanks to the Municipality team directly involved in the project, BioValue principles have been embedded into the revision of the Urban Masterplan (Piano Regolatore Generale, PRG), the Buildings Regulation, and the Urban Greenery Masterplan (Piano del Verde Urbano)- PRG Art. 86 New regulation for river biodiversity enhancements. These revisions introduce explicit biodiversity-sensitive design criteria, require the preservation and strengthening of ecological corridors, and promote the integration of nature-based solutions into urban and peri-urban projects. In the case of the Urban Greenery Masterplan, the update enhances connectivity between green areas, prioritises native species, and incorporates multifunctional blue–green infrastructure to deliver ecosystem services. Collectively, these changes institutionalise biodiversity as a structural parameter in urban planning, ensuring its long-term uptake in municipal decision-making.
- **The "Manifesto Fersina"** – Co-created through participatory workshops with 144 stakeholders, including municipal officials, planners, local associations, researchers, and citizens, the Manifesto articulates a shared vision for redeveloping the Fersina corridor into a multifunctional blue–green infrastructure. It divides the river into three strategic zones – the Canyon, the Urban Segment, and the Delta – and proposes targeted actions such as riverbed redesign for biodiversity enhancement, creation of a linear ecological–cultural park, and implementation of nature-based solutions. Publicly presented and endorsed by the Mayor as "a vision of what our Fersina could be"[6], the Manifesto is already guiding feasibility studies and interdepartmental agreements, with some proposals, such as improved river access near the Salè confluence, under technical review.
- **Strategic communication through video documentary** – Early in the project, the Municipality produced "La Fersina: il percorso del torrente nel Comune di Trento. Un ambito di possibile rigenerazione", a video documentary showcasing the ecological, cultural, and urban value of the river. The BioValue-edited version (Dive into Trento Municipality Arena) has been disseminated via both municipal and project channels, serving as a long-term advocacy tool.

[6] https://biovalue-horizon.eu/news-events/trento-arena-for-transformation-plan-to-redevelop-the-fersina-from-canyon-to-mouth/

Figure 5: Manifesto Fersina. Designed by Comune Trento within BioValue

Funded by the European Union

Beyond these tangible outputs, the Arena strengthened participatory governance, building durable collaboration between the Municipality, the University of Trento, and local stakeholders. This collective approach produced a shared urban vision centred on ecological connectivity and adaptive governance, positioning Trento as a reference point for other medium-sized European cities seeking to translate biodiversity awareness into biodiversity-led planning.

4.2.3. Post-project sustainability of the Arena

The longer-term sustainability of the Trento Arena builds on BioValue's achievement of reframing the Fersina River as a socio-ecological infrastructure rather than a residual urban space. Post-project exploitation focuses on consolidating these gains within the city's planning framework, ensuring that biodiversity and ecosystem services remain structuring elements of urban development.

Sustainability rests on three pillars:

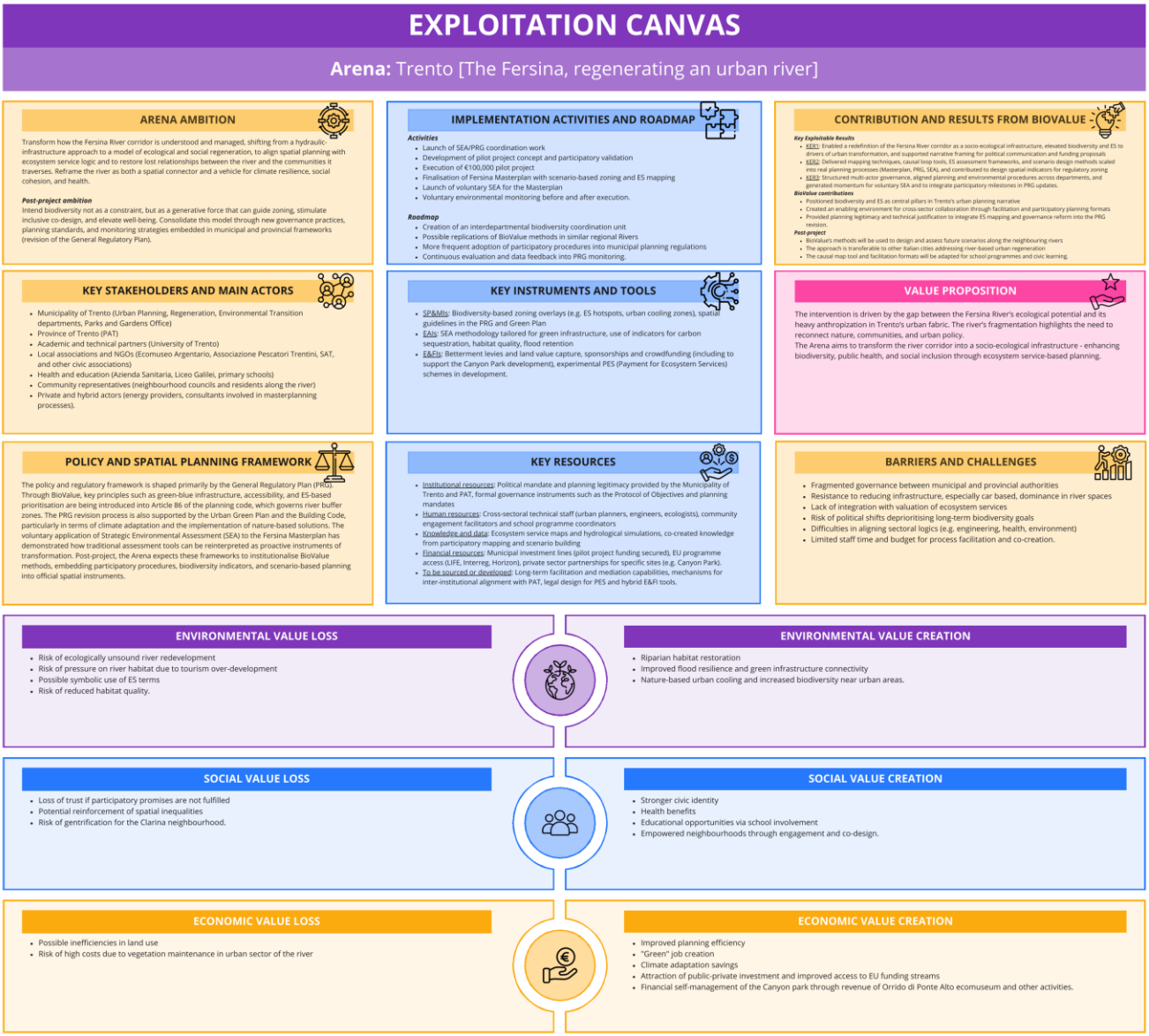
- **Institutionalisation of governance:** building on the 2024 Protocol of Objectives, the Municipality will formalise interdepartmental coordination and embed participatory procedures into municipal planning routines, ensuring continuity beyond project cycles.
- **Operationalisation of tools and instruments:** biodiversity-based zoning, the voluntary use of SEA as a design and coordination tool, and experimental economic instruments (e.g. betterment levies, PES schemes) will be integrated into the revision of the PRG and related planning documents.
- **Mobilisation of resources:** combining institutional authority, scientific expertise (University of Trento), and civic engagement with new funding streams and monitoring systems to sustain implementation.

Opportunities for demonstration and replication are already visible. The redevelopment of the hospital area at the river delta and the creation of the River Park will act as demonstration sites, showing how ecosystem services and biodiversity-sensitive planning can be effectively embedded into urban transformation projects. These pilots are expected to inspire further application of BioValue's methodology along other corridors (e.g. the Avisio River) and in comparable urban contexts across the province and beyond.

4.2.3.1. Exploitation Canvas

The Arena's Exploitation Canvas below summarises this post-project roadmap, for which a more detailed commentary is provided next.

Figure 6: Exploitation Canvas for the Trento Arena



4.2.3.2. Commentary

1. ARENA AMBITION: The ambition of the Trento Arena is to reframe the Fersina River not as a constraint to urban growth or as a residual space for infrastructure, but as an active agent in spatial transformation. The project challenges the historical engineering-dominated approach that has fragmented the river corridor, seeking instead to restore its ecological function, cultural meaning, and social accessibility.

The motivation is multifold: to address biodiversity loss, improve public health and well-being (especially near the future hospital site), and link underutilised spaces with broader green-blue infrastructure. This ambition aligns with BioValue's dual focus on restoring biodiversity (Ambition

1) and addressing spatial and social inequalities (Ambition 3). It also reflects a pragmatic understanding of institutional timing, as an opportunity to embed in the city's General Regulatory Plan (PRG) an ecosystem service logic, participatory procedures, and scenario-based planning into the legal backbone of the city.

2. KEY STAKEHOLDERS AND MAIN ACTORS: The Arena's governance ecosystem is shaped by multi-level and cross-sectoral coordination. At the core is the Municipality of Trento, specifically its Urban Planning, Urban Regeneration, and Environmental Transition offices. The Province of Trento (PAT) plays a crucial complementary role, particularly in relation to water management and infrastructure.

Academic support has been instrumental, especially from the University of Trento, which has helped operationalise ecosystem service assessments and supported scenario development. Local associations (e.g. Ecomuseo Argentario, SAT, Associazione Pescatori Trentini) and citizens' representatives from river-adjacent districts have contributed diverse. Schools and public health actors added long-term social value by embedding river restoration into educational programmes and health-environment dialogues.

Notably, the signing of the Protocol of Objectives (2024) created a formal alliance among public institutions, increasing credibility and accountability for long-term action.

3. POLICY AND SPATIAL PLANNING FRAMEWORK: Trento's spatial policy framework is shaped primarily by the PRG, which is currently under revision. This institutional context has allowed the Arena to directly influence planning logic, regulatory instruments, and design standards. The most notable innovation is the proposed revision of Article 86, which governs river buffer areas and now includes specific references to biodiversity and public accessibility.

Complementing the PRG are the Urban Green Plan and Building Regulations, both of which reflect a growing emphasis on climate adaptation and nature-based solutions. The introduction of a voluntary SEA for the Fersina Masterplan represents a significant cultural and procedural shift, turning SEA from a regulatory obligation into a forward-looking design and coordination tool.

BioValue's contribution to this process is visible in both narrative and technical shifts. Workshops, facilitated by WP2 and WP5 teams, helped build internal consensus around the role of ecosystem services, and tools such as the causal map and ES indicators helped legitimise biodiversity as a planning priority.

4. IMPLEMENTATION ACTIVITIES AND ROADMAP: The implementation pathway for the Trento Arena has been structured to deliver transformative outcomes both during and beyond the project's lifecycle. While early activities focused on ES scoping and cross-stakeholder coordination, the Arena's real ambition lies in the continuity and institutional embedding of these actions post-project.

The post-project roadmap involves several key priorities:

- Expansion of the Masterplan logic: applying the ES-based zoning, participatory protocols, and voluntary SEA used for the Fersina to other urban corridors such as the Avisio River.
- Institutionalisation of co-creation practices: formalising multi-actor engagement formats and integrating them into municipal planning routines.
- Monitoring and adaptive management: embedding ES indicators in the PRG and linking them to data collection routines managed jointly by city departments and local universities.
- Strategic replication and scaling: using the Protocol of Objectives and outcomes from the pilot project to mobilise funding, foster policy innovation, and inspire similar models in other Italian cities.

- Cross-sector governance innovation: continuing to align planning, infrastructure, and environmental transition logics at both the municipal and provincial levels.

5. KEY INSTRUMENTS AND TOOLS: The Arena integrates a wide range of instruments, reflecting the BioValue architecture of SP&MIs, EAIs, and E&FIs. The update of Trento's PRG is being used to operationalise several of these instruments, particularly biodiversity-based zoning (e.g. ES hotspots) and revised design criteria in Article 86.
SEA was reinterpreted not just as a procedural formality but as a scenario-based design and coordination tool, especially in the Fersina Masterplan process.
On the economic front, the Arena explored betterment levies, hybrid instruments, and early-stage PES schemes. While some instruments remain in pilot phase, they have generated strong institutional interest and laid the groundwork for regulatory experimentation.
6. KEY RESOURCES: The Arena has mobilised institutional legitimacy, scientific capacity, and community engagement. The Municipality and PAT bring governance authority; the University of Trento ensures academic depth; and citizen associations ensure grounded perspectives. ES data, hydrological models, and participatory outputs are already integrated into GIS infrastructure.
However, human capacity remains limited. Facilitation, monitoring, and intersectoral mediation require long-term funding and political will. Future resources will need to support expanded technical capacity, cross-silo dialogue, and civic learning. The Arena has initiated these efforts but recognises the need for sustained investment beyond the BioValue lifecycle.
7. CONTRIBUTION AND KERs FROM BIOVALUE: BioValue's contribution to the Trento Arena can be summarised across three levels. First, it enabled biodiversity and ES to be treated not as constraints but as structuring components of spatial governance. Second, it provided instruments and methods that were tailored to the local context and scaled into real planning processes. Third, it supported institutional innovation and collaborative capacity-building.
The three KERs have played a key role:

- KER1 allowed biodiversity to be reframed as a design principle within planning frameworks, notably in Article 86 and in the Masterplan narrative.
- KER2 provided tools (causal mapping, ES frameworks, scenario workshops) that built legitimacy and transparency into planning.
- KER3 helped institutionalise multi-actor engagement through the Protocol of Objectives, influencing both the PRG revision and the future Masterplan.

Post-project, the causal map tool, participatory formats, and data infrastructures are expected to be reused across planning domains, school curricula, and replication efforts in other river systems.
8. VALUE PROPOSITION: The Trento Arena demonstrates that integrating biodiversity into spatial planning can catalyse urban regeneration while reinforcing health, education, and community well-being. What motivates this intervention is a long-standing mismatch between the ecological potential of the Fersina River and the infrastructural and administrative frameworks that have historically marginalised it. The river's fragmentation and undervaluation are emblematic of broader challenges in reconnecting people, nature, and planning practices.
The transformation sought involves reimagining the river corridor as a socio-ecological infrastructure: a space that enhances urban quality, connects green areas, supports ecological functions, and serves social inclusion and care functions. It shifts planning from sectoral logic to integrative, participatory approaches rooted in ecosystem services. This ambition is being anchored in the PRG and SEA processes and consolidated through funding, governance innovations (e.g. the Protocol of Objectives), and stakeholder alliances.

9. BARRIERS AND CHALLENGES: Despite its potential, the Arena faces several structural constraints. Fragmentation between municipal and provincial jurisdictions can delay implementation. Sectoral mindsets – especially in engineering and permitting – often resist scenario-based or participatory approaches. Time and funding limitations constrain staff continuity, and political change may deprioritise biodiversity in favour of short-term development. To mitigate these barriers, the Arena is exploring light-touch facilitation models, distributed leadership among departments, and long-term partnerships (e.g. with schools and NGOs) that transcend electoral cycles.
10. VALUE CREATION AND LOSS: The Trento Arena has the potential to create tangible environmental, social, and economic value. Environmentally, it will enhance biodiversity, reduce climate vulnerability, and reconnect fragmented green areas. Socially, it will strengthen local identity, foster health co-benefits, and empower communities. Economically, it will enable better infrastructure design, attract funding, and reduce future adaptation costs.
Conversely, failure to follow through would result in missed opportunities for funding, planning coherence, and civic trust. Symbolic use of ES language without real integration could undermine legitimacy. Avoiding this outcome requires anchoring the Arena's tools and protocols within legal and institution.

4.2.4. Replication of Arena's framework

Building upon the implementation of the BioValue framework within the Municipality of Trento, significant opportunities have been identified for replication neighbouring municipalities along the Adige and Fersina rivers. These include Lavis, Mattarello, and Rovereto on the Adige, and Pergine Valsugana and Civezzano along the Fersina. These areas share ecological, hydrological, and administrative contexts with Trento, presenting favourable conditions for becoming future Arenas for Transformation.
The two valleys host diverse ecosystems:

- **Adige valley** (Lavis, Mattarello, and Rovereto): marked by intensive agriculture and viticulture, which are economically crucial yet challenge biodiversity conservation and ecosystem connectivity;
- **Fersina valley** (Pergine and Civezzano): comprising alpine woodlands and mixed rural-urban mosaics, where strategic spatial planning must balance ecological preservation with sustainable urban growth.

Replication of BioValue's ecosystem services mapping could support the identification of critical ecological networks, such as riparian corridors essential for species movement and habitat connectivity, ES hotspots critical for flood risk management, water purification, and recreation, and highlight trade-offs in land-use planning.

From a governance perspective, municipalities along the Adige and Fersina operate within the institutional framework of the Autonomous Province of Trento. This offers a robust foundation for coordinated biodiversity strategies, harmonised spatial datasets, and integrated planning. Advancing replication will require multi-level collaboration among municipal authorities, provincial departments, and regional actors, as well as cross-sectoral governance arrangements.

Each municipality benefits from active community structures – environmental NGOs, famers' associations, agricultural cooperatives, and civic groups – which provide fertile ground for the

participatory methodologies central to the BioValue framework. Local ownership and acceptance will be pivotal in co-developing biodiversity-sensitive spatial planning solutions. Possible engagement strategies inspired by BioValue implementation, include:

- Locally tailored community workshops;
- Participatory mapping to integrate community knowledge with ES assessments;
- Dialogue with local businesses and farmers to embed biodiversity-supportive practices into economic activities.

This approach would enable a regionally integrated application of the BioValue framework, fostering biodiversity valorisation and resilience while embedding sustainable development pathways along the Adige and Fersina valleys.

4.3. Mafra (PT) – Municipal Spatial Planning

4.3.1. Introduction to the Arena

The Mafra Arena, in the Lisbon metropolitan area, covers a diverse territory stretching from the Atlantic coastline to inland agricultural valleys. The municipality combines coastal biodiversity, UNESCO heritage landscapes (Tapada Nacional de Mafra), and tourism-driven growth in Ericeira, recognised both for its natural and cultural heritage and as a World Surfing Reserve. At the same time, Mafra faces mounting pressures from urbanisation, tourism, and changing land-use patterns. Within BioValue, Mafra' transformation pathway revolved around managing competing demands on land while preserving and ESs and biodiversity. The Arena sought to transform biodiversity from a regulatory constraint into a strategic driver of resilience, land management, and community well-being. The ambition centred on two complementary pathways:

1. Enhancing green infrastructure connectivity by linking natural and agricultural areas through ecological corridors and buffer zones to improve habitat integrity and ecosystem resilience;
2. Nature-based urban planning in Ericeira, integrating green and blue infrastructure into urban growth plans (especially in tourism-affected zones), including restoring natural watercourses, coastal dunes, and traditional agricultural mosaics.

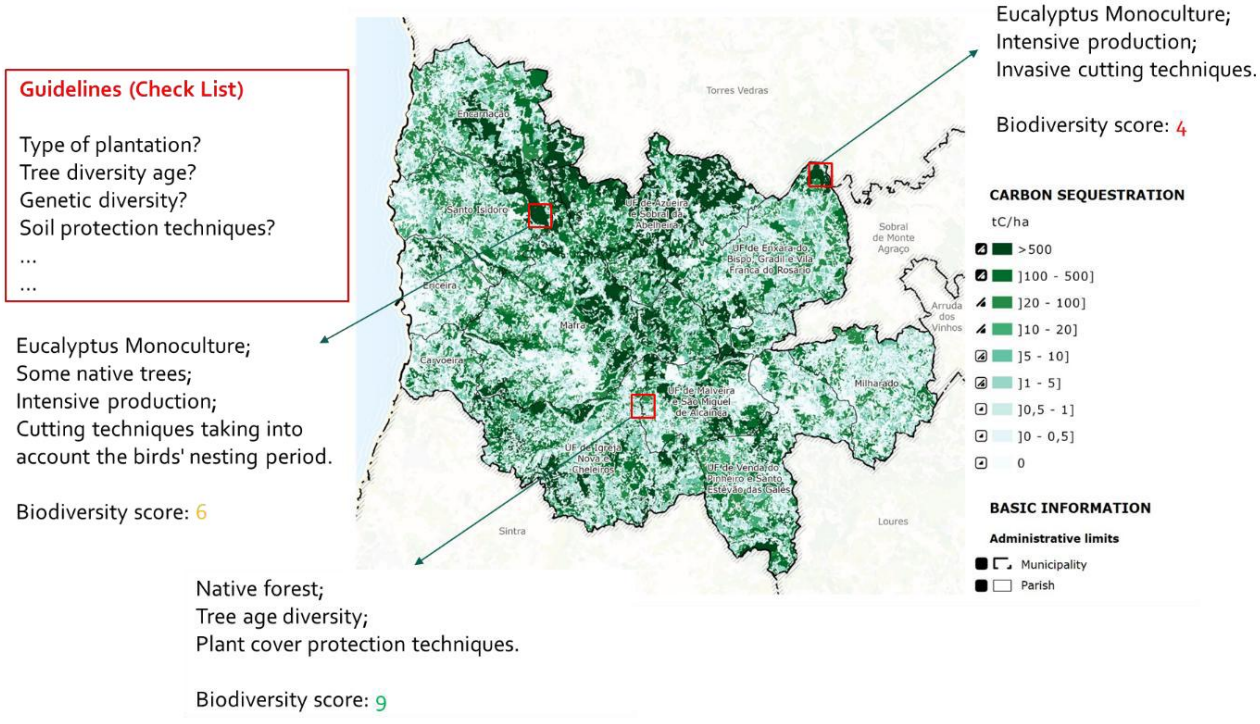
4.3.2. Arena's specific outputs

Key tangible outputs achieved during the project include:

- **Integration of ESs into spatial planning instruments** – BioValue contributed to the revision of Mafra's Municipal Master Plan (PDM), embedding ecosystem service mapping, biodiversity indicators, and recommendations into planning instruments. These contributions were also incorporated into the 2024 *State of Land-use Planning Report*, which now includes ES layers to inform land-use decisions and move beyond compliance-based approaches, reinforcing their weight in policy monitoring.
- **Operational guidelines for green-blue infrastructure:** Through participatory workshops, the Arena co-developed design principles for ecological corridors and buffer zones aimed at reconnecting coastal, agricultural, and urban spaces. These guidelines strengthen the multifunctionality of green infrastructure, integrating biodiversity, recreation, and resilience functions.

- **Shared vision for Ericeira as a model of biodiversity-sensitive coastal development:** Stakeholders – including municipal officials, planners, local associations, and citizens – contributed to a common vision for Ericeira as a pilot for biodiversity-sensitive coastal development. This vision includes biodiversity in future growth strategies and balances tourism demands with ecosystem restoration and cultural heritage, proposing concrete measures such as dune rehabilitation, watercourse restoration, and the preservation of traditional agricultural mosaics.
- **Exploration of Economic and Financial Instruments (E&FIs):** The Arena piloted discussions on green credit schemes, biodiversity-linked incentives for farmers, and sustainable tourism funding models. While still exploratory, these instruments laid the groundwork for diversifying biodiversity financing options.
- **SMOT-MM**[7] **Portal**: BioValue supported the development and operationalisation of a dedicated open-data platform for territorial planning monitoring in Mafra, designed for both data access and interactive analysis. As part of a larger spatial planning monitoring system, the Portal provides broader geospatial capabilities, together with which if offers powerful tools and datasets for exploring the municipalities geographic and planning data, including data on biodiversity-related indicators. It supports urban planners, municipal staff, researchers, and citizens by granting them open access to structured geographic data focused on land use, planning, and territorial development, guiding evidence-based decisions for sustainable territorial development. The Portal thus positions the Mafra Arena as a frontrunner to mainstream and scale-out BioValue's results.

Figure 7: Biodiversity and ecosystem services mapping for carbon sequestration in the Mafra Arena



Beyond these tangible achievements, the Mafra Arena strengthened participatory governance dynamics. It expanded stakeholder networks to include municipal departments, regional agencies, schools, farmers' associations, NGOs, and tourism actors, creating a more integrated approach to

[7] https://smot-cmmafra.opendata.arcgis.com/

land-use management. Participatory methods piloted under BioValue helped overcome institutional silos and created a shared culture of collaboration around biodiversity, positioning Mafra as a reference for other Portuguese municipalities facing similar pressures from tourism and urban expansion.

4.3.3. Post-project sustainability of the Arena

The longer-term sustainability of the Mafra Arena builds on BioValue's contribution to embedding biodiversity objectives into local planning and governance instruments, particularly through the revision of the Municipal Master Plan (PDM). By introducing explicit biodiversity-sensitive criteria into land-use regulations, biodiversity is positioned not as an exception but as a structuring principle of spatial development. These advances provide a foundation for mainstreaming nature-based planning in a municipality facing pressures from urbanisation, tourism, and fragmented land ownership.

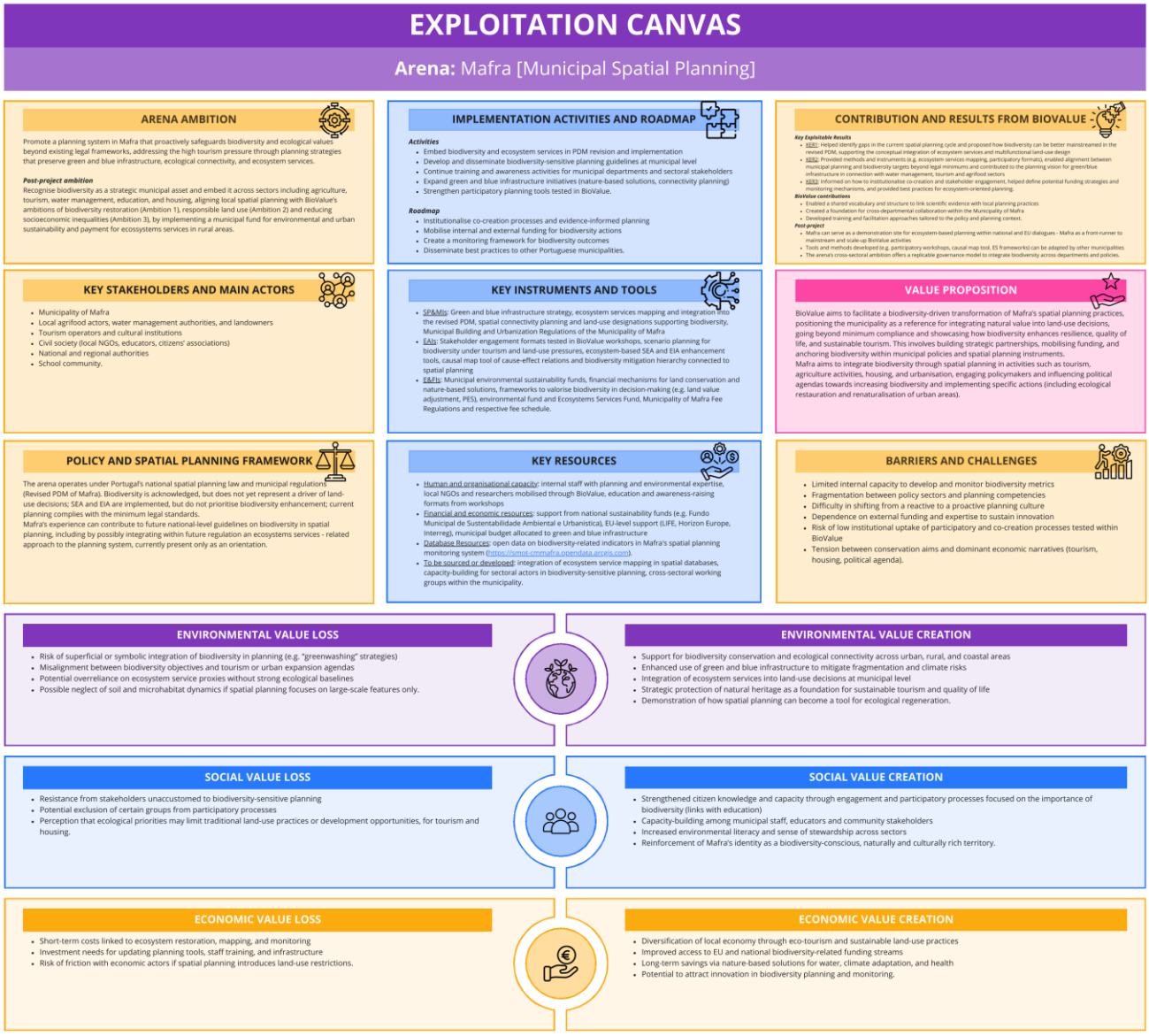
Post-project sustainability rests on three pillars:

- **Integration into planning instruments** – consolidating the uptake of ecosystem services mapping, Strategic Environmental Assessment, and biodiversity indicators into the PDM and related regulations
- **Capacity-building and professional engagement** – ensuring that local planners, architects, and consultants continue to apply BioValue methodologies through training, awareness, and technical guidance.
- **Institutional ambition and continuity** – maintaining the political commitment expressed during BioValue, with the Municipality and local stakeholders investing in participatory processes, cross-departmental coordination, and new financial instruments for sustainable land management.

Together, these elements ensure that the legacy of the Mafra Arena extends beyond the project lifecycle, anchoring biodiversity as a driver of ecological resilience, community well-being, and sustainable territorial development.

4.3.3.1. Exploitation Canvas

Figure 8: Exploitation Canvas for the Mafra Arena



4.3.3.2. Commentary

1. ARENA AMBITION: The ambition of the Mafra Arena is to integrate biodiversity as a structural principle in spatial planning, transforming it from a regulatory constraint into a strategic enabler of resilience, land management, and community well-being. The vision is to embed green infrastructure and ecosystem services into planning decisions, particularly through the revision of the Municipal Master Plan (PDM). The overarching goal is to move beyond legal compliance, making biodiversity a driver of identity, cohesion, and ecological function.

This ambition also reflects local pressures: the municipality must balance rural land uses, seasonal tourism demand, and fragmented ecological corridors. Biodiversity is therefore framed not only as a conservation challenge, but also as a solution to spatial inefficiencies and an opportunity to strengthen place-based governance. The Mafra Arena aspires to build planning systems that serve

both ecological and cultural landscapes, grounded in scientific evidence and community engagement.

2. KEY STAKEHOLDERS AND MAIN ACTORS: Key actors include Mafra's urban planning, environmental and civil protection departments, supported by technical expertise from academic and research institutions. Regional authorities such as CCDR-LVT and ICNF ensure alignment with national biodiversity strategies and regulatory frameworks.

A broad set of stakeholders contributed to shaping the Arena, including representatives from agriculture, food production, tourism, and water management. Local parish councils and schools served as community anchors, while NGOs and environmental educators reflected the growing civic interest in biodiversity and spatial justice. Across all contributions, the need to overcome interdepartmental fragmentation and ensure continuity of engagement mechanisms emerged as a key priority.

3. POLICY AND SPATIAL PLANNING FRAMEWORK: The Arena is structured around the Portuguese Municipal Master Plan (PDM), which operates within national spatial planning law. While biodiversity is acknowledged as a value, its integration into land-use decisions has traditionally remained limited to compliance. SEA and EIA processes are in place but are not yet biodiversity-driven.

The Arena provides an opportunity to transform the PDM revision process into a platform for mainstreaming ecosystem services. Current planning instruments, such as zoning and green space planning, lack biodiversity enhancement mandates and are hampered by institutional fragmentation and limited interdisciplinary practice. BioValue introduced frameworks to move beyond this baseline, particularly through ecosystem service mapping and participatory planning tools. Consolidating these approaches will depend on coupling legal instruments with operational tools and sustained capacity-building.

4. IMPLEMENTATION ACTIVITIES AND ROADMAP: The post-project strategy follows a phased approach. In the short term, the priority is to embed biodiversity indicators and ecosystem service layers into planning routines, supported by training activities for municipal staff. In the medium term, the focus shifts to the creation of cross-sectoral working groups, supported by scenario planning and co-design methods. In the longer term, the Arena seeks to consolidate governance structures, strengthen monitoring systems, and secure diversified funding sources to sustain transformation.

5. KEY INSTRUMENTS AND TOOLS: The Arena integrates regulatory (SP&MIs), procedural (EAIs), and economic/financial (E&FIs) instruments. Key tools include ecosystem service mapping, biodiversity scoring for land-use decisions, and SEA-integrated planning cycles. Instruments under development comprise biodiversity-sensitive zoning, green–blue infrastructure planning, proactive use of SEA for visioning, sustainability funds, and other financial mechanisms. Strong emphasis is placed on ensuring interoperability of these tools and alignment with national and EU policies.

6. KEY RESOURCES: Resources mobilised include technical expertise, spatial datasets, and human capacity within the municipality. The planning and environment departments have taken the lead in biodiversity mapping and ecosystem services integration into the PDM, supported by scientific partners.

Datasets covering habitat condition, land cover, and service provision enable the municipality to visualise synergies and conflicts across land uses and to support scenario development. Institutionally, the Arena has initiated collaborative routines across departments, though coordination remains fragile. Staff turnover, limited training, and the absence of biodiversity

mandates in municipal procedures pose ongoing risks. Sustaining innovation will require consolidation of interdepartmental groups, dedicated budget lines, and pairing of financial instruments with technical protocols.

7. CONTRIBUTION AND KERs FROM BIOVALUE:

- KER1 identified structural gaps in existing planning, enabling the conceptual integration of ecosystem services into the revised PDM and creating entry points for multifunctional land-use planning.
- KER2 provided a toolbox of methods tailored to Mafra, including ecosystem service mapping, participatory scenario planning, and causal loop tools. These allowed the municipality to set biodiversity targets beyond minimum legal requirements and link ecological infrastructure with tourism, agriculture, and water management.
- KER3 strengthened institutionalisation of co-creation and stakeholder engagement, offering templates for funding strategies, monitoring indicators, and best practices for policy cycles.

More broadly, the Arena fostered a shared vocabulary between scientific actors and decision-makers, created new communication flows between departments, and reinforced local capacities through training and participatory approaches. Post-project, Mafra is positioned as a demonstration site for biodiversity-inclusive governance, with tools and methods transferable to other Portuguese and European municipalities.

8. VALUE PROPOSITION: Mafra demonstrates how biodiversity can serve as a lever for spatial coherence, ecological resilience, and territorial identity. It shows that municipal planning can achieve environmental and socio-economic goals simultaneously, using tools that are locally relevant and institutionally feasible.

For policymakers and funders, Mafra acts as a pilot site for biodiversity-based planning. For local actors, it enhances quality of life and fosters a shared environmental culture. The Arena's approach is not about compliance with biodiversity rules, but about generating value from them.

9. BARRIERS AND CHALLENGES: Challenges include limited administrative capacity, siloed governance, and funding continuity. While BioValue enabled experimentation, sustainability requires formal structures, supportive regulation, and staff training. Participatory tools must be institutionalised to prevent stakeholder fatigue, and stronger mandates from national policy will be needed to ensure biodiversity does not remain a secondary priority.

10. VALUE CREATION AND LOSS: The activities planned in Mafra are expected to generate:

- **Environmental value creation**: improved ecological connectivity, enhanced biodiversity protection, restoration of degraded areas;
- **Social value creation**: increased environmental literacy, civic participation, and interdepartmental cooperation;
- **Economic value creation**: diversification through eco-tourism, access to new funding streams, cost efficiency in land-use planning.

Risks of value loss include superficial application of ecosystem service tools, exclusion of marginalised groups from participatory processes, and limited alignment with development priorities. Careful management of these trade-offs will be essential for successful exploitation.

4.3.4. Replication of Arena's framework

As in the case of Trento, the experience of Mafra within BioValue offers valuable lessons and a practical blueprint for replication in neighbouring municipalities, such as those of Sintra and

Loures, among others. These share ecological, environmental, socio-economic, and governance characteristics with Mafra, providing favourable conditions for scaling up the BioValue approach to spatial planning and mainstreaming ecosystem services across the Lisbon Metropolitan Area.

Sintra and Loures bring diverse yet complementary ecological profiles:

- **Sintra**, immediately south of Mafra, encompasses the Sintra-Cascais Natural Park, a UNESCO World Heritage site renowned for its biodiversity, Atlantic forests, coastal dunes, and productive lowlands. Replication here would focus on aligning biodiversity conservation with tourism and agricultural development.
- **Loures**, to the southeast of Mafra near the Tagus Estuary, includes wetlands, farmland, and rapidly expanding urban areas. Replication would concentrate on biodiversity-sensitive urban and peri-urban planning to manage growth while protecting critical wetland habitats for migratory birds and flood regulation.

Institutionally, both municipalities operate within the Lisbon Metropolitan Area (Área Metropolitana de Lisboa) framework, which provides an enabling context for harmonising biodiversity strategies, aligning spatial planning tools, and facilitating data sharing across municipal boundaries. Civil society involvement would be pivotal: in Sintra through environmental associations, cultural institutions, and tourism operators; in Loures through agricultural cooperatives, community groups, and local biodiversity advocates.

4.4. Mecklenburg-Vorpommern (DE) – Rewetting Peatlands and Reforestation

4.4.1. Introduction to the Arena

The Mecklenburg-Western Pomerania (Mecklenburg-Vorpommern, MV) Arena operates within the North German Peatland Belt, one of Europe's largest peatland regions, covering more than 1.8 million hectares. With drained peatlands responsible for around 30% of the state's greenhouse gas emissions, rewetting has become a central pillar of MV's climate policy. The state's **Climate Protection Law, aiming for carbon neutrality by 2040**, provides the legislative backdrop for this transformation.

Unlike the municipal-scale Arenas in Trento and Mafra, this Arena addresses regional-scale challenges involving climate mitigation, land-use transformation, and ecosystem restoration. It seeks to embed biodiversity as a strategic guide for rewetting efforts, aligning climate objectives with socioeconomic dimensions like paludiculture, overcoming fragmented land ownership, and leveraging multi-level planning mechanisms. In doing so, the Arena reimagines peatlands not as degraded remnants but as multifunctional landscapes essential to biodiversity, climate resilience, and sustainable regional development.

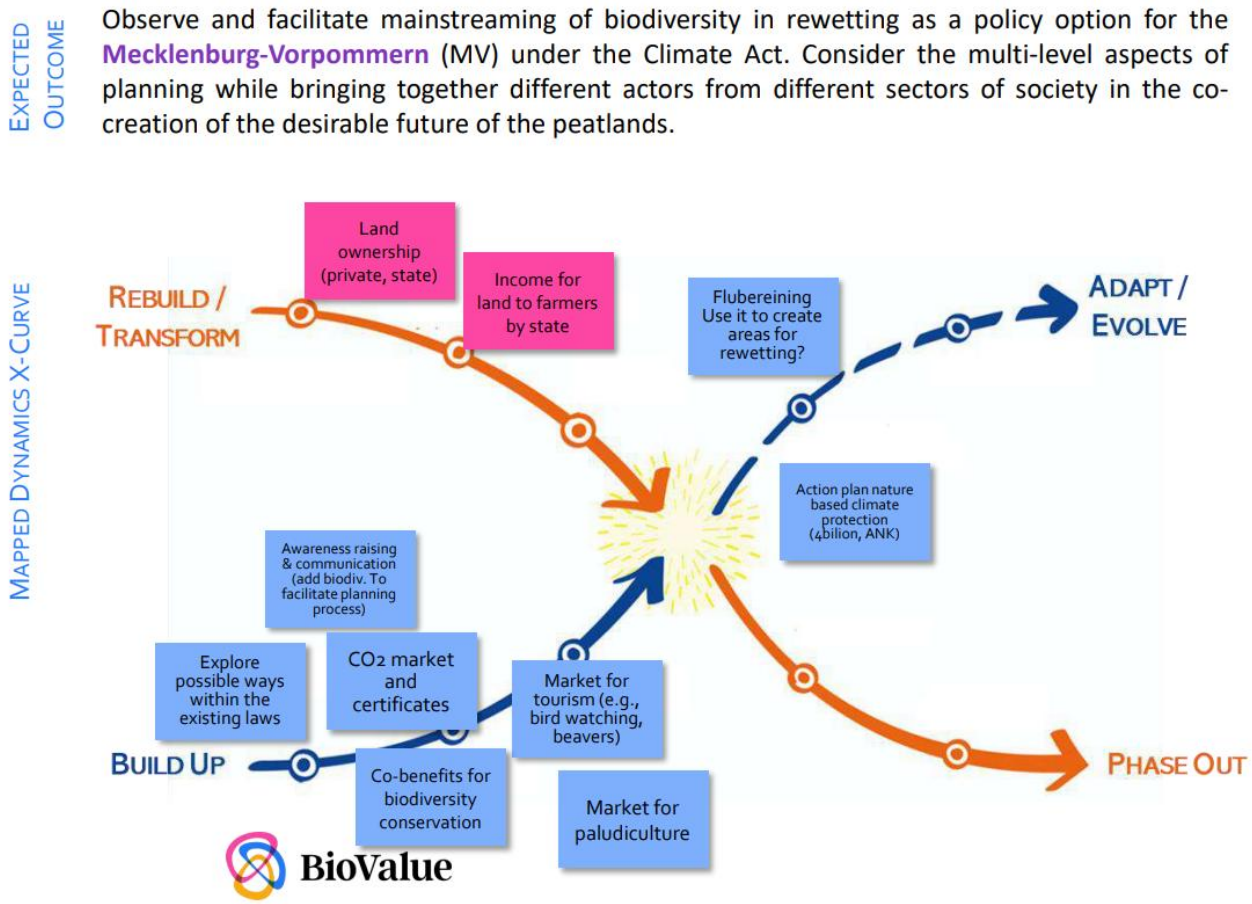
By connecting climate protection goals with biodiversity enhancement and sustainable production, MV could represent a prototype for multifunctional land-use transitions in Europe's wetland regions.

4.4.2. Arena's specific outputs

Key tangible outputs achieved by the Arena within BioValue include:

- **Policy Brief on Peatland Futures: "Integration des Biodiversitätsschutzes in Klimaschutzgesetze mittels Strategischer Umweltprüfung (SUP)"** – Consolidating analytical findings and providing strategic recommendations on how to embed peatland rewetting and paludiculture in spatial planning and climate strategies. The brief addresses challenges of fragmented land ownership, financial instruments, and multi-level governance, providing concrete proposals for embedding the mitigation hierarchy (avoid–minimise–restore–offset–enhance) into the forthcoming MV Climate Protection Law.
- **Exploration of spatial planning tools** – The Arena piloted the use of instruments such as designated climate protection areas and land consolidation programmes. These were tested as mechanisms to overcome fragmented land ownership, enable coordinated rewetting, and integrate biodiversity and carbon objectives into strategic land management.
- **Application of SEA** – Demonstrated how SEA can serve as a forward-looking instrument to embed biodiversity and climate objectives into scenario-building and policy cycles, moving beyond compliance and enhancing transparency, systemic evaluation, and stakeholder involvement.
- **Exploration of economic and financial incentives** – Initial assessment of mechanisms to support paludiculture and nature-based land management, including targeted subsidies, regional development funds, and ecosystem service payments, laying the foundation for future biodiversity-friendly value chains
- **Video documentary: "Navigating Transformation – Perspectives on Peatland Futures"** – Showcasing local perspectives on peatland management, climate mitigation, and sustainable futures in Mecklenburg–Western Pomerania. Disseminated through project channels, it provides a long-term communication tool to raise awareness among local stakeholders, policymakers, and the broader public.

Figure 9: MV results from Transformation Action Workshop I (source: BioValue Transformation Action Workshop I Final Report)



Beyond these tangible outputs, the Arena also generated important intangible results. It strengthened cross-sectoral dialogue between climate, agriculture, and spatial planning communities, building trust among actors that often operate in silos. The Arena contributed to a shared narrative that reframes peatlands from being perceived as degraded or economically marginal lands into multifunctional landscapes central to climate neutrality, biodiversity, and rural development.

At the institutional level, it fostered a common vocabulary and coordination routines between environmental, agricultural, and spatial planning administrations, paving the way for more integrated governance. At the societal level, the participatory process and communication activities supported greater awareness and acceptance of peatland rewetting as both a climate and biodiversity solution, easing the way for future implementation.

4.4.3. Post-project sustainability of the Arena

Central to the sustainability of the MV Arena's efforts is the structured continuation and further institutionalisation of the tools, insights, and governance processes developed during the BioValue project.

Engagement with federal-level stakeholders has laid the groundwork for broader systemic change, which can now be carried forward through advocacy, capacity-building, and knowledge transfer.

The outputs of the Arena serve as a bridge between policy, science, and practice, providing practical references that can help align local actions with wider biodiversity and climate objectives.

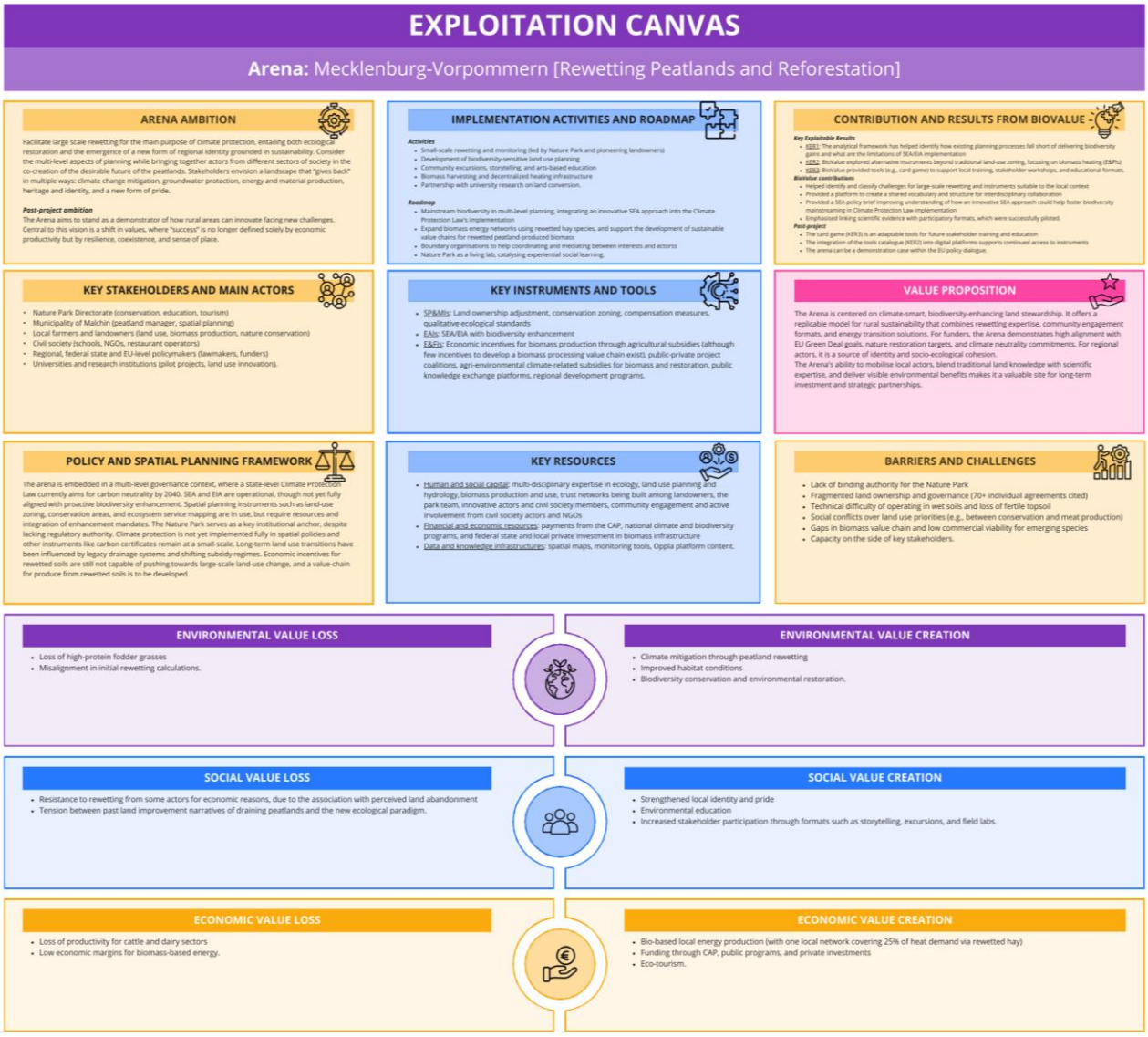
Post-project sustainability rests on three pillars:

- **Institutionalisation of governance**: strengthening coordination between local actors, the Nature Park, and state-level institutions, with boundary organisations playing a key role in connecting stakeholder interests and embedding participatory routines into planning processes.
- **Operationalisation of tools and value chains**: advancing the use of spatial planning instruments, biodiversity-sensitive SEA procedures, and economic incentives for paludiculture and biomass utilisation, thereby linking rewetting to both ecological and economic objectives.
- **Mobilisation of resources**: combining financial schemes, technical expertise, and social capital to sustain implementation, while expanding monitoring and knowledge-sharing infrastructures to support adaptive management.

Possible pilots – such as small-scale rewetting initiatives, the development of biomass heating networks, and biodiversity-sensitive land-use plans – could showcase the multifunctional value of rewetted peatlands, while education and community formats may foster public ownership of change. The findings and outputs of the Arena can also be leveraged by other projects funded at national and EU levels, amplifying their reach and embedding biodiversity-led land use into wider policy agendas. These experiences position Mecklenburg–Vorpommern as a reference point for other European peatland regions seeking to mainstream biodiversity and climate goals into spatial planning.

4.4.3.1. Exploitation Canvas

Figure 10: Exploitation Canvas for the Mecklenburg-Vorpommern Arena



4.4.3.2. Commentary

1. ARENA AMBITION: The shared ambition among local actors is large-scale rewetting for the main purpose of climate protection, which does not only entail ecological restoration but also the emergence of a new form of regional identity grounded in sustainability. Stakeholders envision a landscape that "gives back" in multiple ways: climate change mitigation, groundwater protection, energy and material production, heritage and identity, and a new form of pride. This ambition positions the arena as a demonstrator of how rural areas can innovate when facing new challenges. Central to this vision is a shift in values, where "success" is no longer defined solely by economic productivity but by resilience, coexistence, and sense of place.

2. KEY STAKEHOLDERS AND MAIN ACTORS: Stakeholder analysis shows a multi-actor setting with a decentralized, horizontal structure. At the same time, different administrative levels and respective planning instruments play a role and are all incremental for the proposed change. Core

actors on the local level include the Nature Park Directorate (facilitator and knowledge holder), the Municipality of Malchin (public authority), and landowners engaged in biomass production and/or nature conservation. The Nature Park's role extends far beyond education – it acts as a memory institution, building landscape identity and community cohesion, connecting actors and different interests.

Notably, local pioneer farmers – early adopters of rewetting – emerged as key actors in activating systemic change, often in collaboration with researchers. Hybrid actors such as NGO–academic partnerships and local cooperatives play an important role as boundary-spanners between regulation, implementation, and innovation. On the local level, support is needed from regional and federal state actors such as planning authorities, both to provide political backing and to connect local ideas with larger-scale initiatives and funding opportunities.

3. POLICY AND SPATIAL PLANNING FRAMEWORK: The policy framework in Mecklenburg-Vorpommern is structured around the ambition to achieve carbon neutrality by 2040, as embedded in its Climate Protection Law. However, while key instruments such as SEA and EIA are formally in place, their integration with proactive biodiversity enhancement remains limited. Moreover, traditional spatial planning tools – zoning, conservation area designation, ecosystem services mapping – lack resources or are circumvented by sectoral objectives such as wind energy planning. Enforcement is often difficult where local conservation institutions like the Nature Park authority have no regulatory power. This highlights a disconnect between transformative ambition and practical authority.

Climate protection is not yet fully implemented in spatial policies, and other instruments such as carbon certificates remain small-scale due to legacy systems. The tradition of land drainage and the influence of past agricultural intensification programmes also remain culturally important. Economic incentives to change land use towards rewetted soils are not yet sufficient to push large-scale transformation. There is a clear call from both practitioners and experts for stronger biodiversity integration as well as feasible value-chain development for products from rewetted soils.

4. IMPLEMENTATION ACTIVITIES AND ROADMAP: Implementation activities follow a pattern of experimental governance. Rather than top-down imposition, the transformation process has been marked by pilots, testing, and civil-society coalition-building. Political will for climate neutrality is articulated at higher levels, and incentive programmes have been initiated accordingly. Innovative pilots include peatland rewetting projects, co-developed planning strategies, and educational or participatory formats such as arts-in-the-landscape, school programmes, and public storytelling. The Nature Park, together with civil society partners and land users, acts as a living lab, catalysing experiential social learning. Still, the arena would benefit from scaling these activities through policy recognition and durable funding streams. Additional mainstreaming of biodiversity is needed, as the strong focus on climate protection risks pushing biodiversity objectives into the background.

The roadmap for this arena involves both institutional reforms and grassroots actions. Recommended actions include integrating an innovative SEA approach into the Climate Protection Law implementation phase, advancing multi-level planning that combines biodiversity and climate protection, and funding the development of sustainable value chains for rewetted peatland-produced biomass. The need for boundary organisations to help coordinate and mediate between different interests and actors has also been recognised.

5. KEY INSTRUMENTS AND TOOLS: The tools used or proposed in the arena span three dimensions: regulatory (SP&MIs), procedural (EAIs), and economic/financial (E&FIs). Regulatory

instruments like zoning and land readjustment have clear potential but lack transformative reach unless explicitly designed to integrate biodiversity and climate protection, supported by political will and sufficient resources.
Procedural tools such as SEA/EIA are widely known, but their potential for biodiversity outcomes – especially when applied at an early stage – is not yet fully utilised. E&FIs show promising directions, including climate-related subsidies for biomass and restoration. However, these mechanisms face barriers related to bureaucratic complexity, insufficient climate and biodiversity targets, small scale, and difficulty in aligning environmental values with agricultural productivity goals. Another key barrier is that value chains are not being addressed in their entirety. For example, while there are incentives for biomass production through agricultural subsidies, few incentives exist to develop the biomass processing part of the value chain.
6. KEY RESOURCES: The arena relies on a mix of tangible and intangible resources. Financial resources include payments from the CAP (Common Agricultural Policy), national climate and biodiversity programmes, and federal state and local private investment in biomass infrastructure. Human resources consist of multi-disciplinary expertise in ecology, land use planning, hydrology, biomass production and use, and community engagement, provided by institutions like the Nature Park, civil society actors, and NGOs.
Social capital is also vital, with trust networks among landowners, the park team, innovative actors, and civil society members still being built. Data and knowledge infrastructures – including spatial maps, monitoring tools, and Oppla platform content – provide an important basis for continuity and scale-up.
7. CONTRIBUTION AND KERs FROM BIOVALUE:

- **Key Instruments & Tools**
  - SP&MIs: land ownership adjustment, conservation zoning, compensation measures, qualitative ecological standards
  - EAIs: SEA/EIA with biodiversity enhancement
  - E&FIs: public-private project coalitions, agri-environmental subsidies, public knowledge exchange platforms, regional development programmes
- **Contribution from BioValue during the project:**
  - Helped identify and classify challenges regarding large-scale rewetting and instruments suitable to the Mecklenburg-Vorpommern context, including E&FIs that matched the local ambition to expand biomass-based heating and ecological restoration.
  - Created a shared vocabulary and structure (KER1) for interdisciplinary collaboration, improving local understanding of how biodiversity protection could be mainstreamed in large-scale rewetting.
  - Produced a SEA policy brief emphasising how the early inclusion of an innovative SEA approach could foster biodiversity mainstreaming in climate protection law implementation.
  - Fostered links between scientific evidence and participatory formats (KER3), including storytelling and excursions, which were successfully piloted.
- **Post-project potential:**
  - The card game and decision tree (KER3), though not fully implemented, remain adaptable tools for future stakeholder training and education.
  - Integration of the tools catalogue (KER2) into digital platforms supports continued access to relevant instruments.

- The Arena has the potential to serve as a demonstration case within wider EU policy dialogue, particularly in relation to biodiversity-proofing spatial planning.

8. VALUE PROPOSITION: The Mecklenburg-Vorpommern arena presents a compelling value proposition centred on climate-smart, biodiversity-enhancing land stewardship. It offers a replicable model for rural sustainability that combines rewetting expertise, community engagement formats, and energy transition solutions. For funders, the arena demonstrates high alignment with EU Green Deal goals, nature restoration targets, and climate neutrality commitments. For regional actors, it is a source of identity and socio-ecological cohesion. Its ability to mobilise local actors, blend traditional land knowledge with scientific expertise, and deliver visible environmental benefits makes it a unique site for long-term investment and strategic partnerships.

9. BARRIERS AND CHALLENGES: The complexity of transforming drained peatlands into climate assets is exacerbated by multi-layered governance. With over 70 landowners involved and diverse interests at play, coordination is slow and fragile. Technical barriers also persist: machinery must be adapted for wet conditions, and there is limited market demand for new biomass types. Moreover, many instruments lack the financial robustness to compensate for long-term productivity losses, and legal mandates for cross-sector planning integration are weak or fragmented.

10. VALUE CREATION AND LOSS: On the positive side, the arena demonstrates gains in environmental restoration, educational participation, and clean energy production from biomass. One local network already covers 25% of heat demand via rewetted hay. Participatory formats such as storytelling, excursions, and field labs have increased civic involvement and given voice to alternative future visions.

However, challenges persist: forage species with economic value were replaced by less productive wetland grasses; some actors resist rewetting for economic reasons, associating it with land abandonment; and economic margins remain low for biomass-based energy. Symbolically, there is also a tension between past land improvement narratives of draining peatlands and the new ecological paradigm.

4.4.4. Replication of Arena's framework

The replication opportunities of the Mecklenburg–Vorpommern Arena primarily lie at the strategic and institutional level, reflecting the fruitful engagement with federal stakeholders and its position within the North German Peatlands. Building on the institutional relationships developed during BioValue, replication may be pursued through:

- **Integration of ES assessment** into regional biodiversity and environmental policy frameworks – ensuring that biodiversity becomes a structuring element of climate and land-use policies – as well as in policy frameworks beyond biodiversity and environmental policy.
- **Capacity-building** for federal and regional institutions, enabling the adoption of innovative, participatory, and integrated environmental assessment methodologies.
- **Harmonisation of biodiversity policies** across regional and national levels, informed by evidence-based tools and approaches piloted in MV.

Such replication would support structured knowledge exchange, promoting federal guidelines, best practice documents, and collaborative networks that facilitate continuous learning and policy development.

Although no specific actions or plans have been made until this point, beyond MV, other German regions with similar ecological and socio-economic features could serve as Arenas for Transformation:

- **Brandenburg** – with its wetlands, forests, and agricultural landscapes, suitable for applying ecosystem valuation instruments and biodiversity-sensitive land-use planning.
- **Lower Saxony (Niedersachsen)** – combining coastal ecosystems, river basins, and intensive agriculture, where participatory approaches could strengthen biodiversity management in sensitive areas such as the Wadden Sea and Elbe basin.
- **Schleswig-Holstein** – with comparable coastal and agricultural environments, where participatory frameworks and policy instruments could support sustainable coastal management and flood risk reduction.

In this way, the findings and outputs of the Arena can be leveraged by future projects funded at national and EU levels, extending their relevance well beyond the regional context.

4.5. Opportunities and threats for long-term sustainability and local replication

During an exploitation workshop dedicated to the Arenas for Transformation, local partners identified the main opportunities and threats to sustaining BioValue's results and promoting replication. These factors, stemming from the broader context in which the Arenas operate, are outlined below.

4.5.1. Opportunities

Opportunities relate to favourable conditions and enabling factors that can support the continuity and scaling of BioValue's results:

- **Natural assets**: valleys, river systems, and other ecologically valuable landscapes offer strong potential for embedding biodiversity into local development strategies, ensuring continuous relevance beyond the project's lifecycle.
- **Economic and financial drivers**: the availability of local financial support and incentives linked to biodiversity can secure long-term investment and stakeholder commitment, fostering durable engagement.
- **Governance and property frameworks**: approaches to land ownership and property rights, adapted to local and regional characteristics, can facilitate effective implementation and sustainable management of biodiversity-oriented interventions.
- **Partnerships and networks**: established collaborations and potential new partnerships with institutions at multiple levels provide channels for knowledge sharing, policy integration, and coordinated biodiversity strategies.

4.5.2. Threats

Threats are potential barriers and obstacles that may hinder post-project sustainability and replication:

- **Cultural and behavioural barriers**: varying stakeholder attitudes toward biodiversity, especially among private landowners, risk limiting long-term commitment and engagement.

- **Economic and competing priorities**: biodiversity may face competition from other urban or rural development priorities, with uncertainty over the weight of its economic valuation in decision-making.
- **Institutional and governance barriers**: fragmented land ownership, conflicting stakeholder interests, and restrictive regulatory or institutional frameworks may slow down or block cooperative action.
- **Awareness and engagement challenges**: maintaining active stakeholder involvement requires sustained communication, continuous engagement practices, and effective governance processes to avoid stakeholder fatigue.

4.6. Recommendations for long-term sustainability and local replication

Building on the above opportunities and threats – as well as on the synthesis of the achievements, innovations, and lessons learned from the three Arenas offered by D4.3 – several cross-cutting insights can guide long-term sustainability in the Arenas and instances of local replication. These highlight strategic directions to strengthen biodiversity-led planning beyond the BioValue project:

- **Continuous stakeholder engagement and dialogue** – Institutionalising ongoing forums and participatory mechanisms can sustain the diversity of interests and expertise involved, as demonstrated in Trento's participatory mapping and workshops.
- **Demonstrating socio-economic value** – Economic valuation tools and evidence of social benefits are crucial to ensure biodiversity is recognised as a driver of local development, as shown in the MV Arena through economic instruments that influenced decision-making.
- **Strengthening institutional partnerships** – Structured agreements (e.g. Memoranda of Understanding) across governance levels enhance credibility, resource pooling, and policy alignment, such as Mafra's coordination with regional and national institutions.
- **Adaptive governance and regulatory alignment** – Flexible governance structures are needed to accommodate biodiversity-centred spatial planning and enable innovation, illustrated by Trento's integration of biodiversity strategies into local planning documents.
- **Capacity building and knowledge transfer** – Dedicated training programmes and knowledge-sharing initiatives reinforce stakeholder competencies and increase local implementation capacity, building on experiences piloted across all Arenas.
- **Evaluating opportunities for establishing a "BioValue Replication Cluster"** – Bringing together multiple municipalities at regional level can support knowledge exchange, shared biodiversity goals, and coordinated use of instruments. This may enhance ecological connectivity and reinforce the sustainability and transferability of BioValue results, as well as resilience and sustainability across wider regions, especially in the Trento and Mafra Arenas.

4.7. Preliminary recommendations for wider replication

The above recommendations provide concrete entry points at the local level. Yet, BioValue's results could have a wider scope, informing broader, cross-context replication and upscaling. BioValue's broader potential across Europe will be shaped by aligning its framework with local

realities in policy and planning, and several strategic recommendations can support this transition, based on the Arenas' experiences and insights:

- **Strengthening policy relevance** – ensure that BioValue's methods and outputs are presented in formats aligned with planning practice, such as operational guidelines, monitoring indicators, and decision-support tools.
- **Adapting to context** – recognise national and sub-national differences in institutional, legal, and cultural frameworks, adapting tools (e.g. SEA-based instruments, financial incentives, ecosystem service mapping) to ensure their uptake.
- **Fostering cross-sectoral coalitions** – promote collaboration between biodiversity actors, spatial planners, economic sectors, and civil society, positioning biodiversity as a driver of socio-economic and territorial development.
- **Leveraging EU and national projects** – the replication of BioValue outputs will be reinforced by ongoing and future projects funded under Horizon Europe and other programmes. These initiatives, even when not focused directly on biodiversity, can leverage BioValue's findings and outputs to address interconnected challenges such as climate adaptation, sustainable land management, and regional development. In this way, BioValue's legacy can be mainstreamed and scaled up through synergies with complementary initiatives (see chapter 6.3).
- **Building capacity and knowledge exchange** – structured training, peer learning, and transnational knowledge networks should be established to ensure that expertise developed in the Arenas is disseminated and adapted to new contexts.

4.8. Eklipse assessment

BioValue partners engaged Eklipse[8] – a European **science-policy interface platform** supporting evidence-informed policymaking on biodiversity and ES through rigorous and transparent expert knowledge synthesis – to assess the applicability and adaptability of the project's tools and recommendations. The specific objective of this request was to have an independent, expert-mediated assessment of:

- **Relevance and adaptability** of BioValue's catalogue of instruments and recommendations across EU and accession country planning systems.
- **Barriers and enabling conditions** (legal, institutional, economic, governance, capacity-related) which shape the adoption and transformative potential of these outputs.
- **Opportunities for refinement** to enhance usability, legitimacy, and alignment with EU priorities such as the Nature Restoration Regulation (NRR) and the Territorial Agenda 2030 (TA2030).

This required assessing both differences in regulatory and planning frameworks that might call for adaptation, and the potential for BioValue outputs to foster collaboration between biodiversity-focused stakeholders and other actors involved in spatial planning.

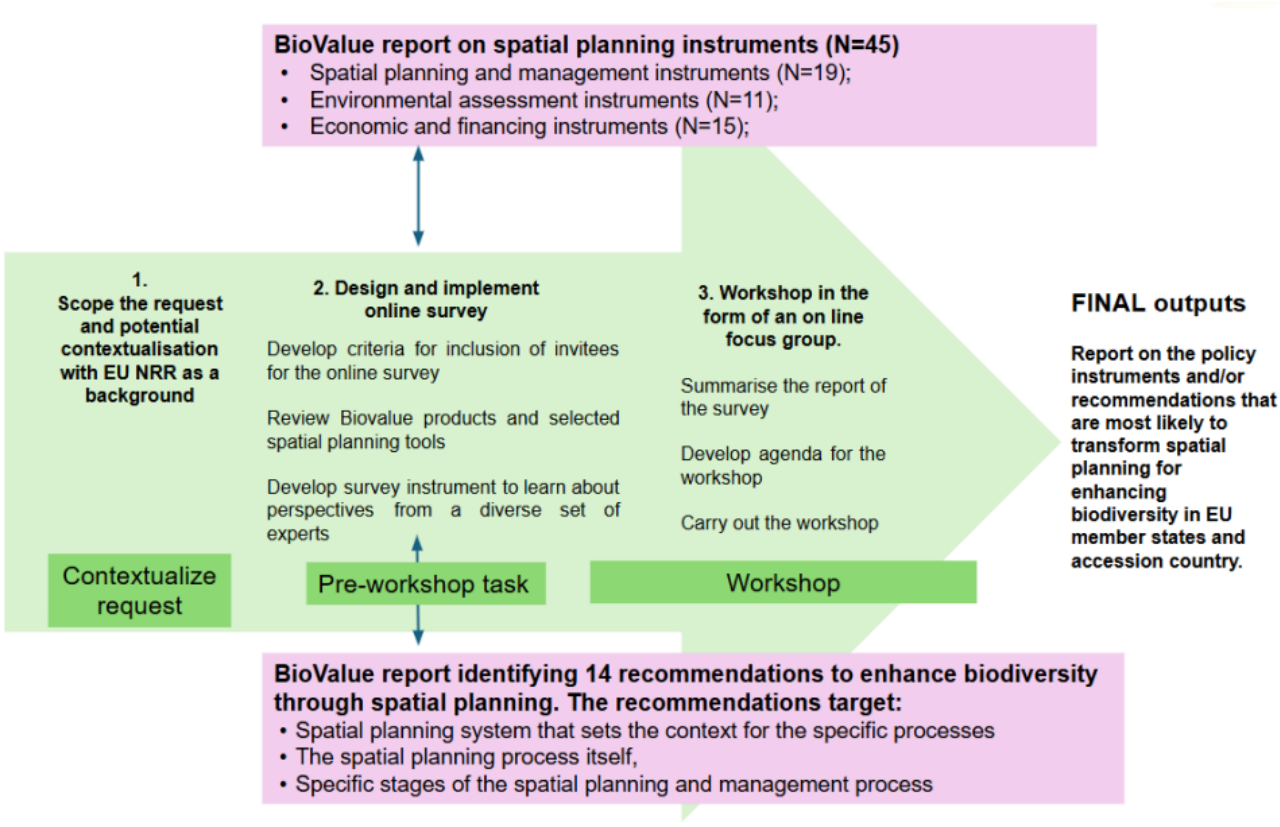
BioValue partners put forward a formal request to Eklipse on February 20th, 2025, and on February 24th Eklipse had an initial kick-off meeting. The Eklipse Scoping Group – constituted by members of the Knowledge Coordination Body, Methods group, and Eklipse Management Body – received a

[8] https://eklipse.eu/

draft of the catalogue of tools and recommendations (May 19th) and reformulated the request-question as follows, after a meeting with project partners: *Which individual or combined instruments and recommendations identified by the HEU BioValue project are most likely to increase the transformative potential of the spatial planning process in each EU focal country, to effectively enhance biodiversity e.g. in the context of the Nature Restoration Regulation (NRR), and why?*

Information on BioValue's request is available on a dedicated page on the Eklipse website [9], together with the Document of Work[10] and Method Protocol[11] developed.
The process involved the design, deployment, and analysis of both a survey and a workshop (held on September 19th), to inform the preparation of a **final report**[12] (shared on September 30th). This provides recommendations on how governance frameworks might evolve to unlock transformative potential, possibly envisaging the creation of a community of practice as part of BioValue's legacy and assessing the extent to which the catalogue and recommendations can be applied or adapted to existing spatial planning regulatory contexts. An outline of key steps follows.

Figure 11: Eklipse tasks' overview, including a description of the envisaged output (from Method Protocol)



Taken together, these recommendations position BioValue not as a stand-alone methodology, but as a flexible framework that can be embedded into ongoing European policy processes, collaborative projects, and local-to-national planning reforms. Eklipse's report provides significant

[9] https://eklipse.eu/request-biovalue/
[10] https://eklipse.eu/wp-content/uploads/2025/07/Document-of-Work_BioValue.docx.pdf
[11] https://eklipse.eu/wp-content/uploads/2025/07/BioValue_Method-Protocol.pdf
[12] https://eklipse.eu/wp-content/uploads/2025/09/Workshop_BioValue_Report_30092025.pdf

insights that, together with these recommendations and other insights contained in this deliverable, will be key to sustaining and amplifying BioValue's long-term impact.

5. Academic, scientific and research exploitation

5.1. Academic exploitation

Academic exploitation entails leveraging research findings for academic purposes, including scientific publications, teaching, and thesis work. A key focus is on embedding BioValue's KERs, methods, and findings into higher education curricula at BSc, MSc, and PhD level across partner universities (IST-ID, AAU, UFZ, and UniTrento). This not only sustains the project's legacy but also supports the education of future professionals trained in biodiversity-enhancing spatial planning.
Partners are also committed to expanding curricular integration into additional courses, while fostering MSc and PhD theses linked to real-world case studies. Such activities ensure that BioValue's insights remain a living resource for academic communities, shaping future research and professional practice in spatial planning and biodiversity.
The following table details the specific exploitation intentions of project partners.

Table 11: Partners' academic exploitation intentions

IST-ID	KER1 will be integrated in three IST-UL (Instituto Superior Técnico – Universidade de Lisboa) courses: Environmental and Territorial Management and Policy (MSc in Environmental Engineering), Environmental Assessment and Strategic Assessment, Monitoring and Public Decision in Spatial Planning (MSc in Territorial Management and Urban Studies). The Mafra Arena will moreover be employed as a case study in the last two courses.
	KER2 will be used to expand teaching material in three IST-UL courses: Strategic Assessment, Monitoring and Public Decision in Spatial Planning (MSc in Territorial Management and Urban Studies), Strategic Environmental Assessment and Environmental and Territorial Management and Policy (MSc in Environmental Engineering).
	KER3 will feed into the MSc thesis "Value of Biodiversity in Portuguese Spatial Planning – Integrating the Nature Restoration Law", currently under development in the context of the MSc in Environmental Engineering.
AAU	Project results – KERs 2 and 3, in particular – will be leveraged in an existing Bachelor course on EA, as well as in ongoing continuing education of professionals within EIA and SEA.
UFZ	Specific elements within both KERs 1 and 3 will be employed in the Master Program "Sustainable Land Management and Conservation", in the courses Sustainable Land Use Management and Global Environmental Problems and International Nature Conservation.

UniTrento	KER1 will be used to update the content of two courses on spatial planning: Urban Planning with Studio (MSc in Building Engineering /Architecture) and Nature based Solutions for Urban Sustainability (MSc in Environmental Engineering). Application of the analytical framework to additional countries and scales may be developed within a Master level dissertation.
	KER2's catalogue of tools will be included in the best practices of the courses in Digital Urban Planning (MSc in Civil Engineering), and Ecological Planning (MSc in Environmental Engineering). The case study of Trento Arena, and the successful instrument implementation and combination achieved, will be showcased with field visitations as part of the study programme. Some tools (e.g. design-based instruments, corporate sponsorships, interim use permits of vacant lots, etc.) are planned to be further investigated in future PhD/MSc research, particularly in connection with mainstreaming NBS in urban environments.

5.2. Scientific and research exploitation

This strategy involves carrying out further scientific and investigative studies to deepen understanding, address knowledge gaps, and explore new directions in relation to biodiversity and spatial planning. Building on BioValue's outputs, partners will use the project's findings as a foundation for continued scientific inquiry.

To maximise impact, partners are committed to aligning their research agendas with EU policy priorities on biodiversity and nature restoration, while actively pursuing targeted funding opportunities at both national and EU levels. Existing collaborations and case studies provide a strong basis for continuity and expansion of this work.

All academic institutions involved in BioValue are currently evaluating and applying for further research opportunities, including through collaborations with the Arenas for Transformation. These arenas represent valuable platforms for co-design, testing, and validation of instruments and approaches in real-world contexts, and hold strong potential to continue serving as living laboratories for future projects.

The following table details the fields and topics in which project partners intend to carry forward research exploitation.

Table 12: Partners' scientific and research exploitation intentions

IST-ID	Further research on KER1 will focus on the methodological aspects of the Arenas for Transformation, including the role of collaborative laboratories of experimentation, and on how different instruments can be effectively integrated to allow spatial planning to enhance biodiversity value. The goal is to support the implementation of the EU Nature Restoration Law and the Territorial Agenda.
	KER2 offers potential to further explore how instruments can be effectively combined, based on empirical outcomes, to strengthen the integration of biodiversity into spatial planning.
	Regarding KER3, the collaboration with Mafra Municipality will continue through i) a research proposal submitted to Portuguese National Funds titled "Local Strategic

	Pathways to Integrate Nature Restoration in Spatial Planning"; and ii) planned work towards strategic environmental assessment of the revision of Mafra's Municipal Master Plan. Future research endeavours are also expected to be pursued within transformative change, nature-based solutions, collaborative approaches, and spaces of experimentation.
AAU	The Danish Centre for Environmental Assessment (DCEA, established by the university's Research Group on Environmental Assessment and Governance) is partner and WP leader in an application seeking EU Biodiversa funding, which builds in part on results from BioValue. The application has been chosen for phase 2 consideration. In addition, DCEA is applying for a Danish-funded research project on spatial planning and societal energy transition, within which BioValue's results – KERs 2 and 3, in particular – will be part of the outset.
UFZ	Possible collaboration with the Leibniz Institute of Agricultural Engineering and Bioeconomy is under discussion to apply BioValue's guidance on selecting, designing, and implementing E&FIs for peatland rewetting in the context of the Horizon Europe project MarginUp![13]. Further opportunities are being considered to deepen exploration of BioValue's results through funded research, potentially leveraging outputs from the Eklipse process. In parallel, internal synergies within UFZ on spatial planning and rewetting are being explored to maximise the uptake of lessons learned.
UniTrento	Future research on KER1 will focus on advancing the integration of knowledge on ecosystems, ecosystem services, and ecosystem conditions to inform different stages of the planning process and contribute to transformative spatial planning. This will be pursued both theoretically – i.e., by refining the list of indicators developed in D1.3 and linking them to specific planning tools – and empirically, through case studies addressed in ongoing research projects. The role of the mitigation hierarchy will be further examined as a lever for transformative planning, particularly in connection with current policy initiatives such as the Italian Biodiversity Credit pilot projects, the EU Nature Restoration Regulation (NRR, Regulation 2024/1991), the European Green Deal, and the EU Biodiversity Strategy 2030. In addition, selected case studies will be monitored longitudinally against the analytical framework developed in BioValue, to assess how national and EU biodiversity targets are progressively integrated into spatial planning.
	KER2's catalogue of tools and KER3's recommendations present opportunities for further testing in future case studies and living labs, building on the successful example of the Trento Arena. Initial contacts with local authorities in Italy, within the Italian Community of Practice for spatial planning, are being explored as potential avenues for co-design. The capacity gaps identified in D1.4 provide useful entry points for strengthening the implementation of planning instruments aimed at biodiversity enhancement. In parallel, some of the tools and recommendations will be further analysed within the framework of a recently funded research project

[13] https://margin-up.eu/

	(Green Talent), offering the possibility to tailor them to different geographical contexts. Planned seminars for PhD students will also serve as a platform to discuss research directions and potential applications in real-world case studies.

5.3. Post-project scientific dissemination

After the end of the project, BioValue's partners are committed to continuing the strategic sharing and dissemination of findings, outcomes, and results to relevant audiences and stakeholders through a variety of channels and platforms. The aim is to increase awareness, strengthen understanding, and maximise impact over time. Post-project dissemination will particularly focus on two complementary strands:

- **Dissemination across scientific and policy communities**: planned dissemination through high-level conferences (i.e., AESOP, ISOCARP, IAIA), national planning forums, and other events will be essential to promoting BioValue's outcomes and their visibility. Expanding these efforts through practitioner networks, policy advisory groups, and continuing education initiatives will further support the project's ambition to shape governance practices and planning standards.
- **Strengthening collaborative dissemination channels**: BioValue's multi-country and multi-planning levels structure has proved a key strength in capturing diverse planning cultures and ecological contexts. Sustaining and expanding these collaborations – especially with institutions and networks beyond the immediate consortium – will ensure that tools and findings are at the same time tailored, transferable, and scalable across the EU.

Partners' efforts will involve the production and sharing of publications, as well as active participation in conferences, symposia, academic events, and other scientific forums.

5.3.1. Participation in scientific conferences and events

The following table summarises the conferences and events targeted by project partners to continue disseminating BioValue results within relevant research communities.

Table 13: Partners' participation in scientific conferences and events

IST-ID	All KERs will be disseminated through conferences, in particular those organised by the IAIA (International Association for Impact Assessment), the International Conference of Sustainability Transitions, and AESOP (Association of European Schools of Planning).
AAU	BioValue's results are planned to be presented at the annual Danish EA conference in 2026.
UniTrento	KER1 will be disseminated in the AESOP annual congress, ISOCARP (International Society of City and Regional Planners) World Planning Congress, and Italian national conferences of urban planning associations.
	Specific recommendations from KER3 will be presented in conferences and forums dedicated to spatial planning researchers and practitioners, including AESOP,

Società Italiana degli Urbanisti, Planning Law and Property Rights, and Instituto Nazionale di Urbanistica.

5.3.2. Pipeline of upcoming scientific publications

38 resources produced by partners during the project are openly available on the Zenodo[14], with the "Resources" section of the BioValue website[15] also being used to share project deliverables, graphics kit, infopacks, milestones, newsletters, policy briefs and notes, posters, and practice notes with practitioners and stakeholders. These add to the article "Beyond compliance: Enhancing biodiversity through transformative mitigation strategies in spatial planning related SEAs and EIAs", published on Environmental Impact Assessment Review[16].

BioValue's partners are committed to furthering their efforts in producing open access scientific publications after the end of the project, to maximise visibility and impact of the results. This will also contribute to meeting the foreseen target number of publications.
Hereafter is the summary of each Work Package's remaining publications in high-impact, peer-reviewed journals or books, for a total of additional 19 scientific publications. Each entry indicates the provisional title, institutions involved as authors, type of output (full article, guidance note, etc.), potential target journals, current status (in progress, submitted, accepted), and expected submission date.

5.3.2.1. Post-project scientific publications on WP1 - led by UniTrento

Table 14: Upcoming scientific publications on WP1

	Provisional title	Authors	Type	Targeted journal(s)	Status	Expected submission date
1	Mapping urban ecosystems and assessing their condition to support spatial planning	UniTrento	Full article	Ecological Indicators / Landscape and Urban Planning	In progress	October / November 2025
2	A Multi-level Participatory Approach for Integrating Biodiversity and Ecosystem Services in Urban Planning Practice: Trento, Italy	UniTrento, CTN, IST	Full article	Planning Practice and Research	Submitted, under review	
3	Are we there yet? Addressing capacity gaps to strengthen spatial	UniTrento	Full article	TBD	In progress	Mid-2026

[14] https://zenodo-rdm.web.cern.ch/communities/biovaluehorizoneurope/records?q=&l=list&p=1&s=10&sort=newest, number as of September 18th
[15] https://biovalue-horizon.eu/resources/
[16] https://doi.org/10.1016/j.eiar.2025.107960

	planning for biodiversity in Italian cities					

5.3.2.2. Post-project scientific publications on WP2 - led by AAU

Table 15: Upcoming scientific publications on WP2

	Provisional title	Authors	Type	Targeted journal(s)	Status	Expected submission date
1	How transformative are spatial plans for biodiversity and ecosystem services? Testing a conceptual framework in seven Europe	AAU, UniTrento, IST-ID, UFZ	Full article	European Planning Studies	Accepted	NA
2	Integration of biodiversity in environmental assessment against best practice benchmark	AAU, UniTrento, IST-ID, UFZ	Full article	IAPA	Submitted, under review	NA
3	Setting the Standard: A tool for Biodiversity Benchmarking in Environmental Assessment	AAU, IST-ID	Full article	IAPA	In progress	December 2025
4	Unpacking a tiering typology: delegation, direction and strength	AAU	Full article	EIA Review	Submitted, under review	NA
5	Why every environmental assessment needs guidance from biological principles for effective biodiversity conservation	AAU	Full article	IAPA	In progress	December 2025
6	Biodiversity principles in the driver's seat: Promoting eco-centric spatial planning through systems thinking	AAU	Full article	TBD	In progress	November / December 2025

5.3.2.3. Post-project scientific publications on WP3 - led by UFZ

Table 16: Upcoming scientific publications on WP3

	Provisional title	Authors	Type	Targeted journal(s)	Status	Expected submission date
1	Understanding the transformative potential of spatial planning to enhance biodiversity: using the concept of ambitions in continuous planning efforts	UFZ	Full article	Ambio / Environmental Science & Policy	In progress	November 2025
2	Transformative change potential of different instruments	UFZ	Guidance document	UFZ Publication Series	In progress	December 2025
3	Enhancing Biodiversity along the Mitigation Hierarchy: Instrumental Implications for Sustainable Development	UFZ, AAU	Full article	TBD	In progress	November 2025
4	Exploring Biodiversity and Ecosystem Service Opportunities with Economic and Financial Instruments in Spatial Planning	UFZ, AAU	Full article	TBD	In progress	November 2025

5.3.2.4. Post-project scientific publications on WP4 - led by IST-ID

Table 17: Upcoming scientific publications on WP4

	Provisional title	Authors	Type	Targeted journal(s)	Status	Expected submission date
1	Aligning Local Perceptions of Ecosystem Services with Global Frameworks: A Participatory Approach for Science-Policy Integration	IST-ID	Full article	Socio-Ecological Practice Research	Submitted, under review	NA

2	Mapping Cultural Ecosystem Services in Mafra: A comparative study for identifying complementarities between participatory mapping and InVEST model	IST-ID	Full article	Landscape and Urban Planning	Submitted, under review	NA
3	Transition in-the-making in Mafra, Portugal: valuing biodiversity and natural assets in spatial planning processes	IST-ID, CMM	Full article	European Urban & Regional Studies	In progress	November 2025
4	BioValue - Enhancing biodiversity value in spatial planning through policy mixes in multi-level governance transformation / Enhancing biodiversity value in multi-level governance transformation, promoting policy mixes through the transformative change potential of 5instrumental constellations	IST-ID, AAU, UFZ, UniTrento, CMM, CTN, CoKnow	Full article	Land Use Policy / Ecology and Society / Environmental Science and Policy	In progress	Mid-2026
5	Advancing Responsible Research and Innovation through Transformative Collaboration: Lessons from the BioValue Project	IST-ID, AAU, UFZ, UniTrento	Full article	TBD	In progress	December 2025
6	Agency Activation Towards Biodiversity: Insights From The Planning Context	IST-ID	Full article	Environmental Science and Policy	In progress	December 2025

Please note: all information on scientific publications in the above tables has been updated as of September 30th, 2025.

6. Policy advocacy and knowledge transfer

6.1. Policy advocacy at multiple governance levels

Policy advocacy involves influencing policymaking, supporting evidence-informed decisions, and shaping regulatory or governance frameworks. It aims to convert research outputs into policy-relevant messages, recommendations, and actions that can drive institutional change.

6.1.1. BioValue enabling tools for policy advocacy

Two policy briefs have been produced during the project:

- **White paper on transformative change for biodiversity** - Representing the culmination of a collaborative journey carried out by BioValue throughout the project, under the impetus of the Research Executive Agency (REA). It was co-developed with fellow Horizon Europe projects of the Cluster on Transformative Change for Biodiversity, namely CLEVER, RAINFOREST, BAMBOO, BEDROCK, BioAgora, BIONEXT, BIOTraCes, TRANSPATH, PLANET4B, and DAISY. It was discussed at the joint final event in Brussels (4–5 June 2025), where BioValue and its cluster partners convened policymakers, researchers, and practitioners. The two-day gathering marked a significant step toward building a shared understanding of what transformative change for biodiversity entails. The White Paper consolidates the key insights, discussions, and outcomes of the event, providing a joint call for mainstreaming biodiversity in EU governance and policy frameworks. Its main target audiences are policymakers at the European level, as well as other Horizon Europe projects – both ongoing and future – funded by REA under biodiversity-related calls, thereby ensuring continuity and cross-fertilisation across programmes.
- **Policy brief for the Mecklenburg-Vorpommern Arena** (see Chapter 4.4.3) - Developed by CoKnow Consulting with the support of BioValue research partners, it is addressed to regional and federal stakeholders engaged in climate and biodiversity policy. It focuses on the forthcoming Mecklenburg-Vorpommern Climate Protection Law (KSG), showing how legislation primarily designed to achieve climate neutrality can also serve as a lever for advancing biodiversity protection.
  Central to the brief is the role of SEA in aligning climate and biodiversity goals. SEA can help embed the mitigation hierarchy (avoidance, minimisation, restoration, compensation) into planning and decision-making, while also considering habitat size, quality, and connectivity to achieve stronger ecological outcomes. The brief also puts forward practical recommendations, including strengthening baseline biodiversity assessments, integrating systemic thinking and scenario-building, applying cumulative impact analysis, and ensuring robust monitoring frameworks. By linking biodiversity safeguards directly to climate legislation, it demonstrates how BioValue outputs can inform governance processes and exemplifies the added value of arena-specific knowledge translation in regional contexts.

6.1.2. Partners' intentions for policy advocacy

In terms of policy advocacy, BioValue's research partners intend to pursue individual pathways to exploit project KERs for policy advocacy.

Table 18: Partners' policy advocacy intentions

IST-ID	BioValue's results are expected to inform and influence spatial planning policies and practices at local, national, and European levels, including through clustering activities. Achieving effective policy impact will require strengthening the currently weak or absent connections between nature conservation, urban development, and spatial planning sectors, as these represent significant obstacles to the uptake of BioValue's outcomes. KER2's set of tools could inform and contribute to spatial planning policies and processes, from the local to the national level.
	KER3's recommendations can extend their influence from the local to the international scale. In Portugal, KER3 could also contribute to the transposition of the EU Nature Restoration Law into the national regulatory context.
AAU	Authorities in charge of EAIs at the national level represent a key stakeholder group to be engaged. They will be directly involved in discussions with both researchers and practitioners, including municipal public servants, proponents, and consultants. In this context, AAU's DCEA is currently in dialogue with the responsible Danish state agency on the development of new guidance for Environmental Assessment. BioValue's results – particularly KER2 and KER3 – will play a central role in informing this process.
UFZ	The recommendations developed within KER3 will be used in other national policy advocacy initiatives in Germany, as already demonstrated during the workshops with journalists and policymakers on peatland rewetting narratives held during the project development (11-12 June 2025).
	The UFZ team will also consider employing KERs 1 and 2 to further stimulate dialogue and guide policy actions.
UniTrento	KER1's framework can support Member States and local planning authorities in assessing the transformative potential of spatial plans and programs. It holds strong potential to influence decision-making, provided it is adapted to the specific needs of different target audiences at local, regional, and national levels. The main barrier to policy impact lies precisely in this adaptation effort: tailoring the framework to varied user types requires significant restructuring. To address this, UniTrento will seek partnerships with relevant actors and apply to suitable funding schemes in the future.
	KER2's catalogue and KER3's recommendations can be mainstreamed into local and municipal planning policy frameworks. Municipalities may use these outputs to revise regulatory frameworks, requirements, and criteria for spatial interventions. The capacity gaps identified in D1.4 can serve as entry points to strengthen implementation in different contexts. For policymakers and planning authorities, the recommendations specifically address improvements in funding schemes for local authorities and the creation of incentives for private actors to adopt biodiversity-

enhancing measures. Some of these tools and recommendations will also be presented at local events to inform the development of Trento's future municipal urban plan and its regulatory framework.

6.1.3. Interaction with IPBES

As an independent intergovernmental body, IPBES [17] aims to strengthen the **science-policy interface** for the conservation and sustainable use of biodiversity. While BioValue has not established a formal collaboration with IPBES, research partners (UniTrento, AAU, UFZ, IST-ID) have previous experience contributing expertise and feedback to the platform. This creates a strong basis for alignment, as BioValue's methodology and objectives resonate closely with IPBES's focus on transformative change. From the outset, IPBES was identified as a critical stakeholder and potential user of BioValue outputs, given its influential role in shaping global biodiversity policy.

Engagement with IPBES can significantly enhance the sustainability and impact of BioValue's results by:

- Creating opportunities to inform EU and global policy frameworks and recommendations;
- Broadening dissemination and visibility of BioValue findings, frameworks, and research;
- Supporting uptake of BioValue outputs in biodiversity and spatial planning processes at national and international levels.

In the post-project phase, BioValue research partners may pursue targeted knowledge transfer with IPBES, for instance by submitting outputs for consideration in upcoming assessments, presenting results to national focal points (e.g. Portugal, Italy, Germany), and co-organising events or webinars. Such initiatives represent strategic networking opportunities and open pathways for active participation in IPBES consultations and review processes, ultimately strengthening BioValue's contribution to global biodiversity governance.

Concrete avenues for engagement are already available: multiple BioValue partners are involved in the ongoing IPBES "methodological assessment of integrated biodiversity-inclusive spatial planning and ecological connectivity[18]", which has begun in 2024 – after plenary approval at IPBES 10, in 2023 – and will terminate in 2027. Knowledge generated through BioValue will thus be leveraged to guide and support the assessment, helping provide "options for avoiding land and sea use change that negatively affects biodiversity and for improving planning for effective conservation, restoration and sustainable use of nature".

Moreover, partners may register as IPBES Stakeholders, a process open year-round that ensures continued access to updates, calls, and networking opportunities. The ongoing nomination process for the Multidisciplinary Expert Panel (MEP) (deadline: 30 September 2025) also provides a direct channel to contribute expertise in biodiversity and spatial planning at the global level. Beyond formal calls, partners can engage through events, webinars, and dialogue with national focal points, further embedding BioValue's insights in international biodiversity policy discussions. Partners may also take part in the review phases of the Second Global Assessment once draft

[17] https://www.ipbes.net/
[18] https://www.ipbes.net/spatial-planning-assessment

chapters are released, ensuring that BioValue outputs and evidence feed directly into global biodiversity decision-making.

6.2. Knowledge transfer and capacity building towards professionals

Knowledge transfer entails targeted dissemination and adaptation of outputs to benefit spatial planning professionals and practitioners, translating knowledge into tools, skills, and actionable insights.

6.2.1. BioValue enabling tools for knowledge transfer

Knowledge transfer maximises opportunities for sharing project-generated know-how, methods, and innovations with relevant stakeholders, including practitioners, policymakers, and the wider research community. Efforts are aimed at ensuring that research-generated recommendations and instruments are adapted, adopted, and scaled in real-world planning processes.

6.2.1.1. BioValue recommendations for enhancing biodiversity through spatial planning and catalogue of instruments

As part of BioValue's ambition to mainstream biodiversity into spatial planning, partners have produced a comprehensive "toolbox" that brings together two complementary outputs:

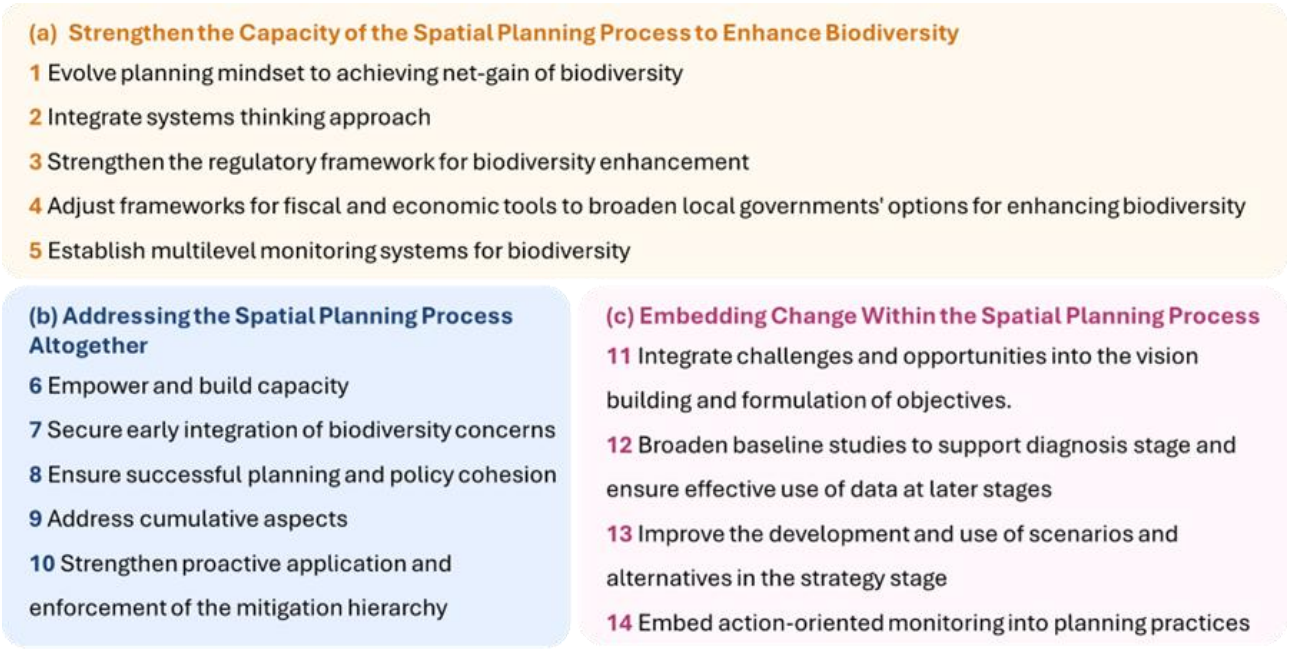
1. **14 strategic recommendations** for enhancing and protecting biodiversity through spatial planning;
2. A **catalogue of instruments** including SP&MIs, EAIs, and E&FIs, classified by their functions, objectives, and needs.

The **recommendations** are aimed at planners, policymakers, and practitioners. They are structured across three levels:

- Actions outside the planning process, to strengthen its transformative capacity;
- Recommendations for the planning process as a whole;
- Targeted suggestions for specific stages of the planning process.

Together, these recommendations aim to reshape planning dynamics and foster systemic change in governance frameworks and societal norms, promoting a holistic, biodiversity-positive approach to spatial planning.

Figure 12: BioValue's recommendations along the spatial planning process (source: D4.4 Recommendations for policy mixes combining instruments from SP&MI, EAI and E&FI across governance levels drawing on the respective transformative potential)



The **catalogue of instruments** operationalises these recommendations. Beyond classifying instruments by function (information, planning/project design, incentive, agreement, regulation, enforcement) and objectives (information, planning/project design, incentive, agreement, regulation, enforcement), it assesses their political acceptability and implementation feasibility, drawing on testing in the three Arenas for Transformation. This provides users with context-sensitive guidance on how tools can be applied in real planning settings. A distinctive feature is the emphasis on the combined use of instruments. BioValue demonstrates that aligning regulatory measures ("sticks"), economic incentives ("carrots"), and informational or capacity-building tools ("sermons") can create effective, biodiversity-positive planning outcomes that are both ambitious and feasible.

Figure 13: Excerpt from BioValue's catalogue of instruments

Type	Instrument	OBJECTIVE / NEED / FUNCTION	Acceptability & Feasibility	
1 01	**Guidelines for Public Space Design and Management** Frameworks for integrating biodiversity into planning and upkeep of public spaces. This can support biodiversity by guiding ecological design in public spaces and favoring integration with green networks.	PUBLIC SERVICES AND ADMINISTRATION INFORMATION	T P M	1 1
1 02	**Best Practice Guidelines for Private Landowners** Recommendations for biodiversity-friendly land management on private properties. This can enhance biodiversity by encouraging more sustainable land management and ecologically friendly practices.	PRACTICES INFORMATION	T P M	1 2
1 03	**Protected and Conservation Areas** Legally designated sites where ecological preservation is prioritized through restrictions on land use and activities. These areas preserve biodiversity by safeguarding habitats, halting land-use change and connecting green spaces.	PRACTICES PLANNING & PROJECT DESIGN	T P M	2 2
1 04	**Land Use Zoning** A tool that allocates land (at different scales) for specific uses, balancing development and conservation goals. It supports biodiversity by organizing land use to protect habitats and potentially linking natural habitats to increase connectivity.	PRACTICES PLANNING & PROJECT DESIGN REGULATION	T P M	2 2

Taken together, the recommendations and the catalogue form an adaptable, ready-to-use package for four key agents of change in spatial planning:

1. **Planning authorities** – can integrate the recommendations into regular activities (e.g., revising local/regional spatial plans and zoning regulations). The catalogue provides practical guidance for selecting and implementing biodiversity-friendly mechanisms.
2. **Spatial planning and environmental practitioners** – may operationalise recommendations in day-to-day planning, using the catalogue as a decision-making toolkit to evaluate and apply context-specific instruments aligned with planning objectives.
3. **Policymakers at EU, national, and local levels** – gain evidence-based guidance for updating biodiversity and planning policies. The catalogue, with its feasibility and acceptability assessments, supports the integration of instruments into legislative proposals, policy reforms, or funding programmes.
4. **Other authorities** (regional bodies, sectoral agencies, etc.) – can incorporate recommendations into development plans and sectoral strategies, while using the catalogue to align biodiversity instruments across different sectors and to support local authorities in adopting appropriate tools.

The toolkit enhances the operational readiness of planning authorities and decision-makers, laying the foundation for a broader uptake and replication of biodiversity-inclusive spatial planning across Europe and serving as knowledge transfer assets for further research, education, and innovation.

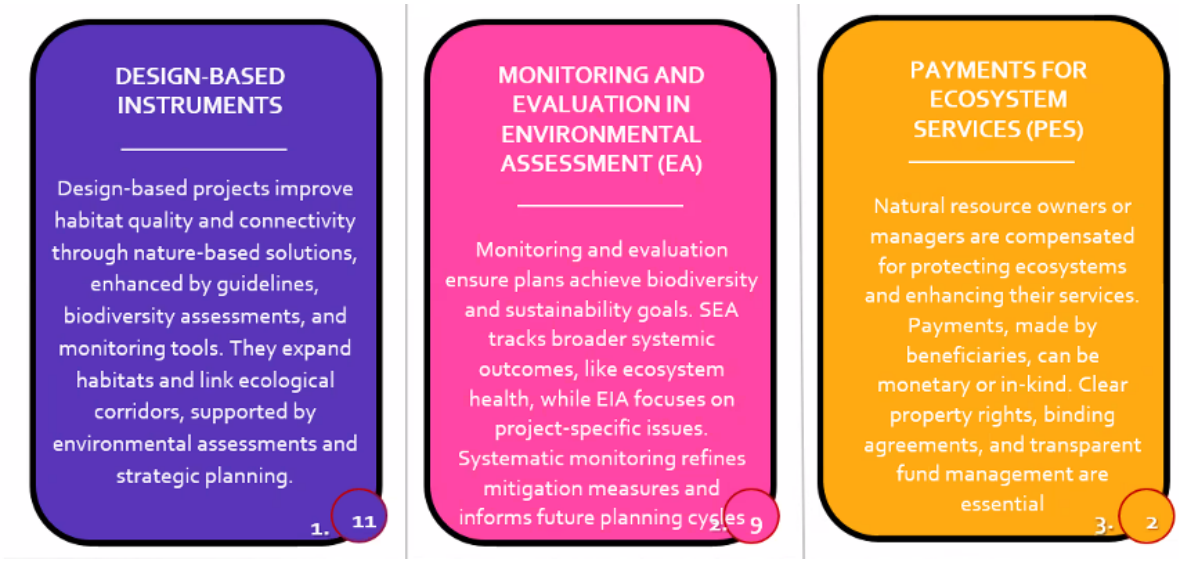
6.2.1.2. BioValue Planning Game

The BioValue Planning Game is a serious game developed to foster participatory discussion and collaborative learning around how spatial planning can be leveraged to enhance biodiversity. It operates as a dynamic and engaging tool designed for use and capacity building in real-world contexts, where a diverse group of stakeholders are invited to work together to build synergies

between policy instruments and actions, considering the specificities of the local context and the related trade-offs.

Participants collaborate, negotiate, and align actions to support biodiversity goals within a realistic territorial planning scenario. Central to the game design are hexagonal pieces representing policy instruments and stakeholder-led actions that promote commitment to biodiversity. Instruments are selected from the BioValue catalogue (with the option to introduce new ones), while actions are generated by the players based on their stakeholder roles. The game is facilitated by a Game Master, who introduces the territory, context, challenges, and rules, and guides the group through rounds of play by prompting critical reflection and moderating interactions.

Figure 14: Instrument cards examples



The outcome is a collaboratively constructed mental map highlighting relationships between instruments and actions. This artefact captures technical planning logic, stakeholder motivations, and potential real-world conflicts, supporting systems thinking, reflection on behavioural change, conflict resolution, and reflection on policy coherence and unintended consequences.

Figure 15: Game set-up example

Key target users include policymakers, urban planners, environmental professionals, researchers, and civil society groups. Policymakers and administrators can benefit from visualising policy scenarios and testing planning strategies, while practitioners and technical experts may develop practical skills in biodiversity-inclusive planning. Researchers and academics could use the game in educational settings to teach systems thinking and participatory governance. Finally, local communities might gain a voice in shaping land use decisions, contributing to more democratic and resilient spatial plans.

In the post-project phase, the game will act as a living dissemination tool – available on the Oppla Platform, in both a printable and a digital format. By fostering stakeholder dialogue, learning, and agency, it will support strategic spatial planning for biodiversity, help uncover potential alliances, and nurture willingness to take action. Its use in workshops and conferences will offer opportunities for dissemination and uptake across stakeholder groups.

6.2.1.3. BioValue Group on the Oppla Platform

BioValue's main outputs have been integrated into the Oppla open platform - the EU Repository of Nature-Based Solutions[19]. Oppla provides a knowledge marketplace, where the latest thinking on natural capital, ecosystem services and nature-based solutions is brought together[20] and embodies BioValue's commitment to open science, stakeholder engagement, and lasting impact. By design, Oppla supports collaboration and knowledge exchange among researchers, practitioners,

[19] https://oppla.eu/
[20] https://oppla.eu/about

policymakers, and businesses, making it an ideal space to extend BioValue's visibility and reach beyond the project's lifetime.

The BioValue repository[21] has been created within *Oppla Groups* and will be hosted in perpetuity at no ongoing cost beyond the initial setup fee: all materials are openly accessible and free of charge for all users, including for potential future updates. This link has also been shared on the BioValue website[22], which will remain accessible for 4 years after the end of the project. Should updates be required – for example, due to policy changes or user feedback – the BioValue Coordinator will assess the opportunity to provide them. Each resource is tagged with keywords that allow Oppla to categorise and cross-link BioValue's outputs with other projects, amplifying their visibility and impact.

The main stakeholders expected to engage with the BioValue Oppla Group include policymakers, researchers, and NGOs, who will benefit from straightforward access to curated guidance and scientific evidence on biodiversity, environmental assessment, and spatial planning. Through this platform, BioValue's outputs can inform policymaking, project design, capacity building, and advocacy efforts, ensuring that results remain both usable and influential.
By showcasing BioValue's KERs and methodological approach on Oppla, the project strengthens its contribution to upscaling and replication across Europe. This integration secures the long-term sustainability and open-access availability of results, while ensuring that BioValue's knowledge, tools, and methods continue to inform policy, support practitioners, and inspire future research well beyond the project's end.

6.2.2. Partners' intentions for knowledge transfer

BioValue's research partners have foreseen individual efforts to ensure the transfer of project KERs.

Table 19: Partners' knowledge transfer intentions

IST-ID	The main stakeholders expected to engage with BioValue's results include urban and regional planners, government agencies, and environmental organisations. Through the integration of outputs into the Oppla platform, these actors will have direct access to project outcomes and will be able to apply them across regions and municipalities that recognise the transformative potential of spatial planning for biodiversity.
AAU	EA professionals, consultants, authorities, and proponents at both national and local levels are the primary stakeholders targeted by knowledge transfer activities related to EAI. These efforts, which also include educational initiatives, aim to strengthen their capacity to develop EAI practice and to integrate the knowledge generated within BioValue.
UFZ	Potential collaboration with the Horizon Europe project MarginUp! is currently under discussion. In this context, events could be organised – together with the Leibniz Institute of Agricultural Engineering and Bio-economy – focusing on the integration

[21] https://cloud.oppla.eu/s/QNdtfJc95eY6dyP
[22] https://biovalue-horizon.eu/

	of instrumental perspectives with particular attention to E&FIs and targeting farmers. In addition, further knowledge transfer inputs are expected to be provided through the Eklipse process.
UniTrento	KER1's framework can be applied by professionals and planning officers at all government levels to assess the transformative potential of spatial plans during their design, implementation, or monitoring. It helps distinguish when plans are simply maintaining the status quo versus enabling restructuring or path-shifting change. The framework's four characteristics – restructuring, path-shifting, innovation, and multiscale – can also serve as design principles to guide the revision of visions, strategies, and regulatory instruments toward more transformative planning practices. In addition, by focusing on "spatial planning provisions for different sectors", practitioners can identify leverage points for cross-sectoral collaboration and track how well sectoral policies align with biodiversity mainstreaming objectives.
	KER2's catalogue of instruments can be integrated into professional training courses developed in collaboration with associations of engineers, architects, and planners, as well as local planning offices. These courses – often part of continuing education programmes that provide credits required for professional registration – offer a concrete opportunity to adapt and transfer BioValue outputs to practice. Building on its regular invitations to design and deliver such training, the UniTrento team plans to incorporate BioValue materials into future sessions, ensuring their uptake by professional audiences.
	KER3's recommendations can support planners and practitioners in embedding biodiversity considerations throughout the planning cycle. They promote: (i) early and systematic integration of biodiversity in planning tools (e.g., embedding ecosystem services and condition assessments); (ii) alignment of instruments with strategic ecological and spatial objectives (e.g., coordinating tools to foster habitat connectivity); (iii) effective implementation through monitoring and adaptation, including compliance tracking; (iv) tailoring of tools to local ecological conditions and planning contexts; (v) participatory approaches, such as citizen science and collaborative monitoring; and (vi) equity and long-term sustainability, by prioritising compensation and incentive schemes that generate net ecological and social benefits.

6.3. Synergies and relevance for other Horizon Europe projects

As detailed in the next paragraphs, collaborative efforts with other EU-funded projects have played a significant role towards policy advocacy and knowledge transfer, and can continue acting as a vehicle to:

- maximise policy impact by providing evidence-based insights and recommendations to EU and international decision-makers;
- support transformative change by aligning project results with overarching EU biodiversity strategies and frameworks like IPBES;

- coordinate joint actions, such as workshops, policy briefs, scientific publications, and participation in common events, ensuring a unified voice on biodiversity issues;
- promote sustainability and replication of tools, methods, and findings across sectors and geographical contexts, including beyond BioValue's – and other projects' – individual lifespan.

6.3.1. BioValue enabling tools for targeted dissemination towards other EU projects

To maximise the visibility and uptake of its findings, BioValue has undertaken **targeted dissemination efforts** towards other EU-funded projects, both within and beyond the *Transformative Change for Biodiversity Cluster*.
These efforts included:

- **Direct outreach activities**, with dedicated mailings sent to identified projects to provide a concise summary of BioValue's results and share relevant resources.
- **Clustering activities** within the *Transformative Change for Biodiversity Cluster*, where BioValue collaborated with other projects to co-create materials, participate in joint events, and exchange knowledge aimed at enhancing the collective impact of EU-funded biodiversity research.

To support these efforts and ensure long-term accessibility of its outputs, BioValue developed a set of enabling tools designed to facilitate targeted dissemination:

- **BioValue Technical Brochure** – A collection of concise infopacks summarising the project's main results, mapping them to specific target audiences, and providing direct references to the relevant deliverables and supporting resources. This brochure serves as a practical entry point for projects and stakeholders interested in leveraging BioValue's findings.
- **Final Video** – A video-documentary presenting an overview of BioValue's journey through the voices of project partners: from its objectives and approach, to its impacts on the Arenas for Transformation, and concluding with the project's main results and legacy. Designed for both policy and technical audiences, it serves as a versatile communication asset for wider dissemination.
- **Project Resources Section** – The BioValue website hosts a dedicated resources page that consolidates all relevant deliverables, policy briefs, infopacks, and supporting documents. This section will remain publicly accessible for at least 4 years after the project's conclusion, ensuring continuous availability of BioValue's outputs for other EU-funded projects, researchers, and practitioners.

By combining targeted outreach with purpose-built enabling tools, BioValue ensures that its results remain visible, accessible, and usable beyond the project's lifetime, supporting ongoing knowledge transfer, replication, and synergies with related initiatives across Horizon Europe.

6.3.2. Synergies put in place during the project and within the Transformative Change for Biodiversity Cluster

The **Transformative Change for Biodiversity Cluster**[23] unites Horizon Europe projects funded under biodiversity-oriented calls, aiming to catalyse systemic societal change. By fostering collaboration, knowledge-sharing, and joint outputs, the Cluster helps shape strategic pathways

[23] Cluster 6: Food, Bioeconomy, Natural Resources, Agriculture and Environment.

toward implementing the EU Biodiversity Strategy for 2030 and aligning with global biodiversity priorities. Initially composed of 11 pioneering projects – including BioValue, BAMBOO, BIONEXT, BIOTraCes, BIOTRAILS, CLEVER, PLANET4B, RAINFOREST, SUSTAIN, TC4BE, and TRANSPATH – the Cluster continues to expand with new initiatives under REA's continued funding. BioValue, as one of the first participants, played an instrumental role in establishing the Cluster's direction and leaving a transferable legacy of tools, analytical frameworks, and participatory methods, as outlined within D5.3 Action Plan of Transformative Change Clustering [24] which also mapped synergies among projects. The Cluster also benefits from knowledge sharing with other EU-funded projects advancing transformative change for biodiversity: an EC publication[25] identifies 27 such ongoing projects.

Among the many joint activities carried out during the project development, BioValue final event co-organized with other Cluster projects (CLEVER, RAINFOREST, TRANSPATH, BAMBOO, BEDROCK, BIOAGORA, BIONEXT, DAISY and BIOTraCes) and held in June 2025 in Brussels, represented a key achievement. The gathering brought together over 150 participants – decision-makers, researchers, practitioners, and civil society – to advance the discourse on embedding biodiversity into policy, business, and planning frameworks. It laid the groundwork for continuing collaboration and concluded with the launch of the Joint White Paper on Transformative Change for Biodiversity (see Chapter 6.1.1), intended as a legacy document for policymakers and future Horizon Europe projects.

Looking to the future, synergies remain rich and actionable:

- **Governance, policy integration, and transformative change** – Opportunities to apply BioValue's analytical framework and its "Arenas for Transformation" model in projects like BIONEXT, PLANET4B, BIOTraCes, TRANSPATH, and TC4BE.
- **Spatial planning and system integration** – RAINFOREST, BAMBOO, CLEVER, and SUSTAIN may leverage BioValue's spatial planning tools to assess biodiversity trade-offs and embed biodiversity in land-use policy.
- **Stakeholder engagement and knowledge co-production** – BIOTRAILS and BioAgora could use BioValue's participatory approach developed and applied within BioValue Arenas to strengthen inclusive governance; notably, BioAgora's demonstration case aligns closely with BioValue's approach.
- **Monitoring, indicators, and data infrastructure** – SELINA and NetworkNature may benefit from BioValue's integration of socio-economic and ecological assessments into natural capital mapping and data-driven decision-making.

6.3.3. Relevance for other Horizon Europe Cluster 6 projects

BioValue's research, tools, frameworks, and findings can support and enrich projects funded under other related Horizon Europe calls within Cluster 6 that are currently active.

[24] https://biovalue-horizon.eu/wp-content/uploads/2023/09/BioValue_Action-Plan_WP5_D5.3.pdf

[25] European Commission: Directorate-General for Research and Innovation, Jennewein, H., Warin, C., Ooststroom-Brummel, F. v., Auvergne, N. et al., EU-funded research projects – Towards transformative change for biodiversity, Jennewein, H.(editor), Ooststroom-Brummel, F. v.(editor), Auvergne, N.(editor) and Menna, E. d.(editor), Publications Office of the European Union, 2025, https://data.europa.eu/doi/10.2777/1772923

Table 20: Past HE calls proposals to which BioValue's research may be particularly relevant

	Topic code	Topic title
1	HORIZON-CL6-2021-BIODIV-01-03	Understanding and valuing coastal and marine biodiversity and ecosystems services
2	HORIZON-CL6-2021-BIODIV-01-07	Ecosystems and their services for an evidence-based policy and decision-making
3	HORIZON-CL6-2021-BIODIV-01-16	Biodiversity, water, food, energy, transport, climate and health nexus in the context of transformative change
4	HORIZON-CL6-2021-BIODIV-01-19	A mechanism for science to inform implementation, monitoring, review and ratcheting up of the new EU biodiversity strategy for 2030 ('Science Service')
5	HORIZON-CL6-2022-BIODIV-01-01	Observing and mapping biodiversity and ecosystems, with particular focus on coastal and marine ecosystems
6	HORIZON-CL6-2022-BIODIV-01-02	Building taxonomic research capacity near biodiversity hotspots and for protected areas by networking natural history museums and other taxonomic facilities
7	HORIZON-CL6-2022-BIODIV-01-03	Network for nature: multi-stakeholder dialogue platform to promote nature-based solutions
8	HORIZON-CL6-2023-BIODIV-01-9	Biodiversity, economics and finance: unlocking financial flows towards reversing of biodiversity loss
9	HORIZON-CL6-2023-BIODIV-01-11	Biodiversity loss and enhancing ecosystem services in urban and peri-urban areas
10	HORIZON-CL6-2023-BIODIV-01-12	Reinforcing science policy support with IPBES and IPCC for better interconnected biodiversity and climate policies
11	HORIZON-CL6-2023-BIODIV-01-18	Additional activities for the European Biodiversity Partnership: Biodiversa+
12	HORIZON-CL6-2024-BIODIV-01-5	Transformative action of policy mixes, governance and digitalisation addressing biodiversity loss

With regards to projects funded under these calls, some examples of potential synergies with the work conducted by BioValue partners can be preliminarily identified:

- **Spatial and coastal governance**: *MARBEFES* could integrate BioValue's spatial planning and valuation methodologies to enhance governance and planning of marine ecosystems.

- **Policy and institutional innovation**: Ongoing Cluster 6 projects like DAISY, REINFORCE, NetworkNaturePLUS, and UNPplus could adapt BioValue's multi-level governance and transformative change toolkit to deepen policy integration and stakeholder co-creation.
- **Marine observation and planning**: Projects such as MARCO-BOLO, OBAMA-NEXT, and DiverSea (focused on marine observation and ecosystems) would gain from BioValue's integration tools for ecosystem data and spatial planning.
- **Natural capital and biodiversity finance**: Initiatives like BIOFIN, BioMonitor4CAP, BIO-CAPITAL, and Biodiversa+ may leverage BioValue's insights on E&FIs.
- **Taxonomy and digital monitoring**: Projects such as TETTRIs and GoDigiBios could benefit from BioValue's co-design strategies to bridge expert knowledge with spatial governance networks.

6.3.4. Relevance for open Horizon Europe calls

Current Horizon Europe open calls for proposals have also been analysed: the ones included in the following table are worth mentioning, as projects funded under them are likely to develop strong synergies with the work carried out by BioValue partners.

Table 21: Current HE calls proposals to which BioValue's research may be particularly relevant

	Topic code	Topic title
1	HORIZON-CL6-2025-01-BIODIV-01	Additional activities for the European Biodiversity Partnership: Biodiversa+
2	HORIZON-CL6-2025-01-BIODIV-02	Strengthening the capacity of citizen science in biodiversity observation
3	HORIZON-CL6-2025-01-BIODIV-04	Large-scale in situ biodiversity observations for better understanding of biodiversity state, drivers of its decline and impacts of policies
4	HORIZON-CL6-2025-01-BIODIV-06	Assessing and modelling socio-economic impacts of nature restoration
5	HORIZON-CL6-2025-01-BIODIV-09	Understanding the perceptions of and improving communication on the biodiversity crisis and nature restoration benefits
6	HORIZON-CL6-2025-01-BIODIV-10	Supporting the implementation of nature restoration measures for the social, economic and environmental sustainability of farming systems

Projects that will receive funding under these calls may hold strong potential to make use of BioValue's science and findings within the following synergies, including references to specific topics:

1. **Policy integration and strategic governance**: projects under topics 1, 5, and 6 could build on BioValue's work on multi-level governance, spatial planning integration, and policy advocacy towards science-policy translation;

2. **Participatory monitoring and citizen engagement:** projects under topic 2 might benefit from BioValue's participatory approaches and local stakeholder engagement strategies, drawing from the Arenas for Transformation to integrate citizen input into structured observation and policy feedback loops;
3. **Behavioural drivers and transformative change:** projects under topic 3 may employ BioValue's system mapping, value framing, and narrative-based tools to investigate the human and institutional factors behind biodiversity pressures, possibly replicating engagement mechanisms for integrating behavioural insights into real-world policy design and land-use decisions;
4. **Nature restoration and socio-economic impact assessment**: under topic 4, projects could build upon BioValue's tools to develop methodologies for quantifying the distributional impacts of restoration initiatives and to identify enabling governance conditions that support biodiversity restoration.

Looking forward, BioValue partners are also considering applications to upcoming Horizon Europe calls, either as follow-up projects or as part of new consortia. These efforts would allow them to leverage the expertise, methodologies, and networks developed throughout the project, ensuring continuity of knowledge and scaling up of results. In particular, BioValue partners see opportunities to:

- Adapt BioValue's frameworks to new territorial contexts (urban, coastal, rural);
- Expand the use of the Arenas as living laboratories within future project designs;
- Integrate BioValue's tools (e.g., recommendations, catalogue, serious game) into EU-level initiatives on biodiversity monitoring, nature restoration, and citizen engagement.

Through this forward-looking approach, BioValue does not only provide immediate results but also lays the groundwork for a new generation of projects that can build upon and expand its legacy.

7. Conclusions

This Final Exploitation Plan (D5.5) has outlined how BioValue's results can be sustained, replicated, and scaled to embed biodiversity as a core principle of spatial policy and planning. Through three years of research and co-creation in the Arenas for Transformation, the project has consolidated three Key Exploitable Results:

- **KER1**: an analytical framework for assessing the transformative potential of planning instruments;
- **KER2**: a practical toolbox of measures and instruments for biodiversity-sensitive planning;
- **KER3**: guidelines and pathways to integrate these tools into real-world planning contexts.

Together, these results show that biodiversity can shift from being seen as a regulatory constraint to becoming a driver of resilience, well-being, and sustainable territorial development. They also demonstrate that practical tools and participatory processes can foster institutional innovation and support **transformative change**.

The significance of BioValue's outputs lies in their adaptability and transferability: opportunities and recommendations for both long-term **sustainability** within Arenas and wider **replication** across Europe have been outlined, while exploitation strategies have also been defined for **academia**, **professional practice**, and **policy advocacy**. In this way, the project contributes to the objectives of EU and global frameworks and initiatives, including the Global Biodiversity Strategy, the EU Biodiversity Strategy 2030, the EU Territorial Agenda 2030, and the Nature Restoration Law.

Looking ahead, several **next steps** are key to consolidate BioValue's legacy:

- integrate frameworks and tools into municipal, regional, and national planning reforms;
- replicate Arenas' methodologies in neighbouring municipalities and across Europe;
- strengthen links with science-policy platforms, including IPBES, to enhance policy impact;
- embed outputs in academic curricula and professional training to educate the next generation of planners and decision-makers;
- use enabling tools – catalogue of instruments, recommendations, Planning Game, Oppla repository – as vehicles for knowledge transfer and capacity-building.

This Final Exploitation Plan provides a strategic roadmap for ensuring that BioValue's results will continue to **generate impact** beyond the project's duration. By combining robust science, actionable tools, and participatory approaches, the project will contribute to transformative change for biodiversity across Europe, positioning biodiversity as a structural principle of spatial planning and as a cornerstone of sustainable territorial development.