Roadmap for improving water resource management in the Baltic Sea Region: Enhancing the effectiveness of nutrient management and providing multiple ecosystem service benefits

DELIVERABLE 6.5

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Preamble

Eutrophication remains one of the biggest challenges facing the Baltic Sea, despite the significant progress that has been made in reducing the loads of nutrients through improved wastewater treatment. The main sources of nutrients (nitrogen and phosphorus) released to the sea are waterborne loads from rivers in the Baltic Sea Region (BSR), including diffuse and point sources from mainly the agriculture and urban sectors. High runoff and flooding episodes are considered to be a key driver of nutrient leaching which is predicted to be further exacerbated under climate change.

It is recognized that the Common Agricultural Policy (CAP), dominated by the commodity production objective, is a key driver of nutrient loading from agriculture to the Baltic Sea. The CAP has introduced a multi-layer system of regulations consisting of cross-compliance, greening (possibly substituted by eco-schemes in the next programming period) and agri-environment-climate payments to address negative impacts of agricultural activities on the environment, including on water resource quality, but with limited success. At the same time, numerous BSR and EU environmental policies (e.g. HELCOM Baltic Sea Action Plan, EU Strategy for the Baltic Sea Region, Marine Strategy Framework Directive, Water Framework Directive, Nitrate Directive, Floods Directive) have been enacted to address specifically targeted issues related to nutrient enrichment of freshwater and marine water ecosystems.

Notwithstanding those policy initiatives, it is becoming clear that siloed sectorally based policy approaches are increasingly unable to address eutrophication of the Baltic Sea. This points to a need for greater coordination between agricultural, environmental policies to ensure both sustainable food and biomass production and the provision of clean water and multiple ecosystem services. In this context, the European strategy and action plan towards a sustainable bio-based economy by 2020 recognizes the need for continuous coordination between relevant bio-based economy sectors and policies. This includes addressing bio-based economy needs (increased sustainable biomass production) in updates to major EU and national legislation.

This Roadmap is intended to contribute to the ongoing discourse on the development of coordinated policies and strategies to improve the effectiveness of nutrient management and **provide multiple ecosystem benefits, including private and public goods,** in the agricultural and environmental sectors. It builds upon the results of work undertaken in the BONUS MIRACLE project, including a social learning process with a diverse set of public and private sector stakeholders in case areas across the BSR. In the process, alternative pathways were explored for the provision of multiple ecosystem benefits at the local level and nutrient governance at the BSR level.

The Roadmap is premised on an ecosystem services (ES) approach to facilitate the design of an integrated territorial policy framework with measures targeted at multiple cross-sectoral policy objectives and ES supply (e.g. food, biomass, nutrient management, flood control, climate change). This approach requires that future policies in the BSR be integrated across governance

levels (EU, BSR, national, local) and policy sectors. They also need to be developed and implemented in an inclusive multi-level, multi-sectoral decision-making process and governance system (Figure 1).

To highlight the role of different governance levels in implementing actions towards an integrated territorial policy framework, the Roadmap is structured according to the **three main governance levels** – the **EU-Baltic Sea Region level, national level and local – sub-national level**. Within each governance level, proposed **action points** are organized according to the main stages of the "classic" environmental management policy cycle - planning (agenda setting), policy formulation (development), implementation, evaluation (monitoring and assessment) and policy adaptation. Figure 2 illustrates the structure of the Roadmap and **key messages**. **Action points** of the Roadmap are presented in Table 1.

Figure 1. Conceptual Framework for the Roadmap

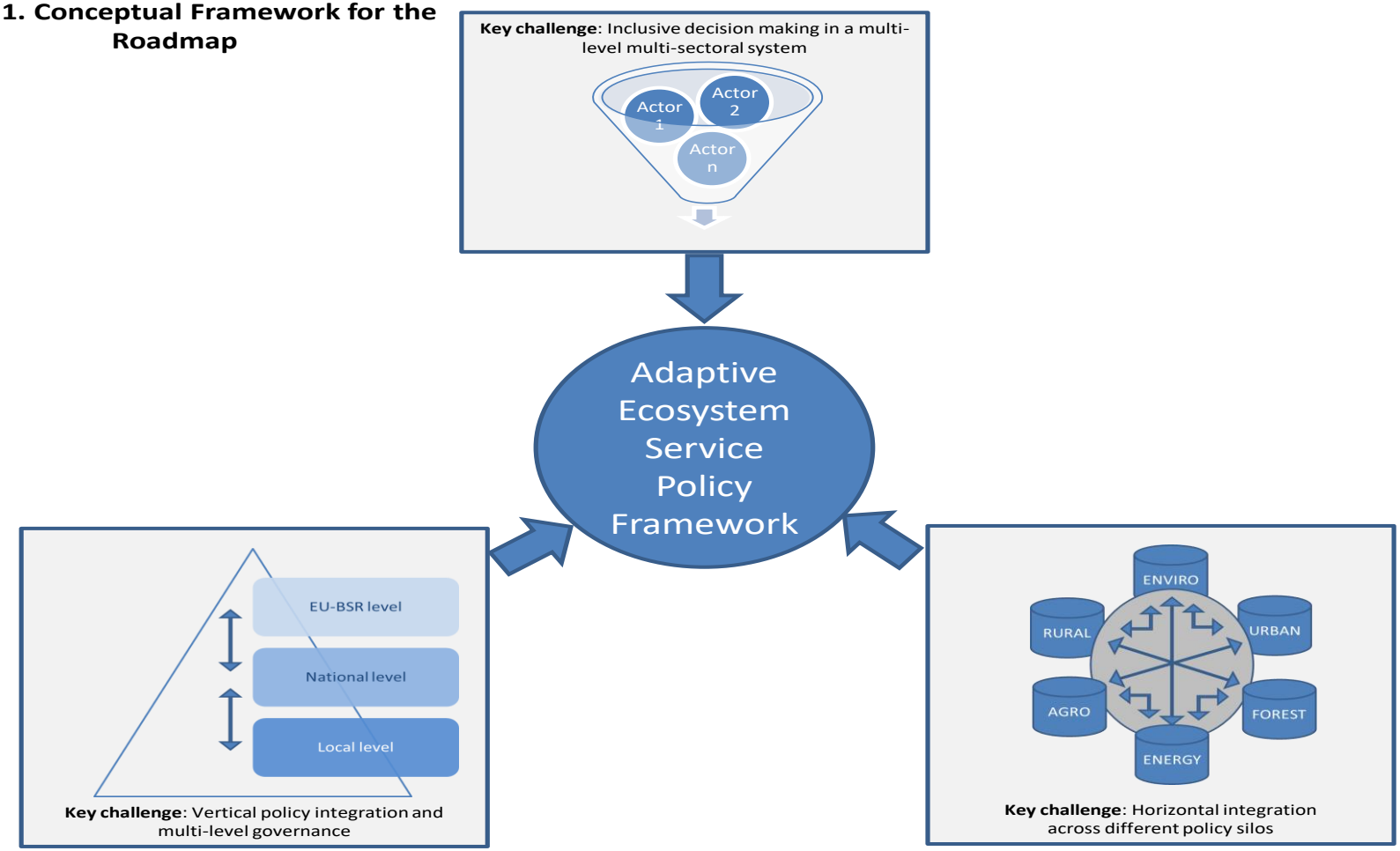

Figure 2. Structure and Key Messages of the Roadmap

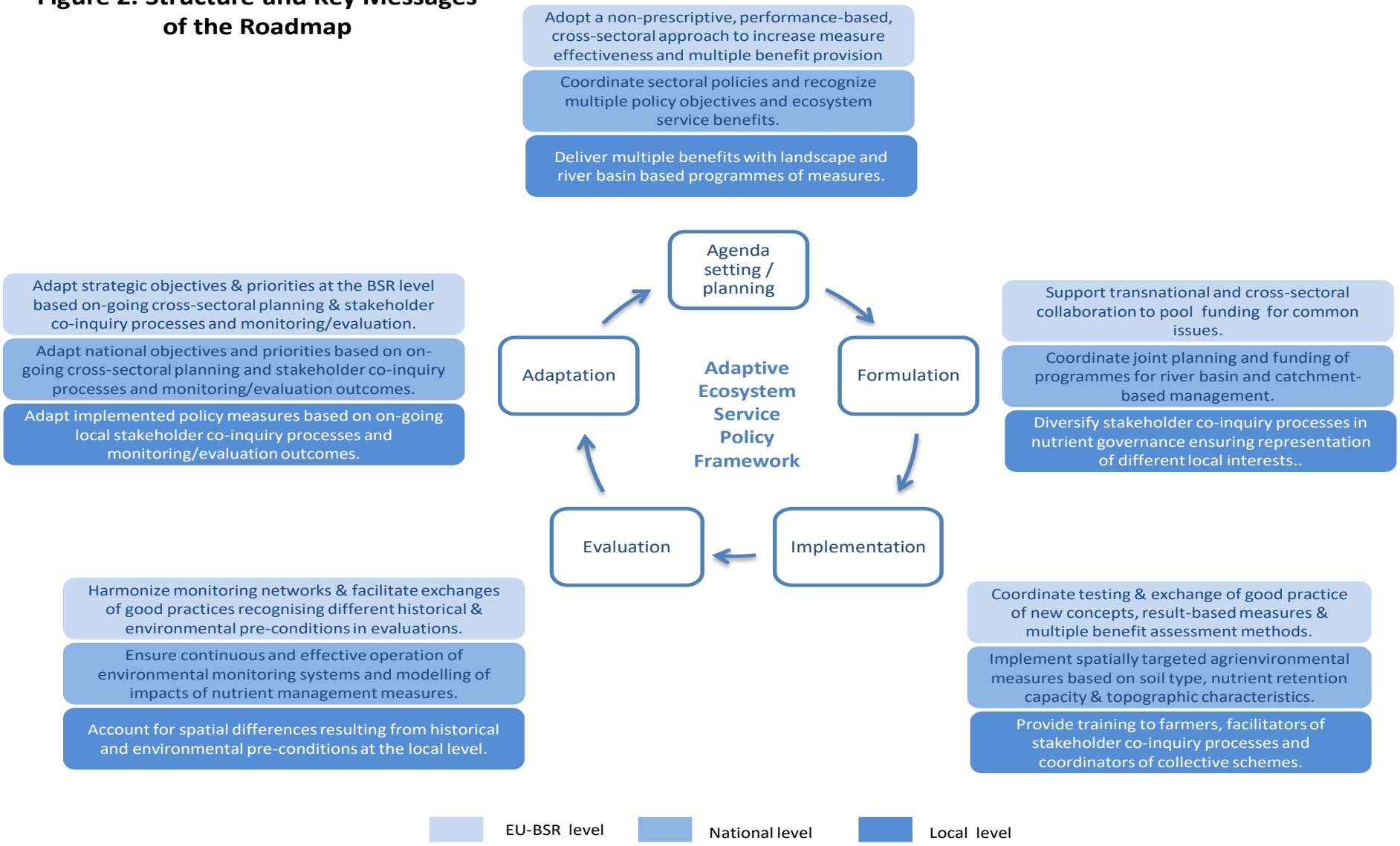

TABLE 1. ROADMAP ACTION POINTS

POLICY CYCLE STAGES	GOVERNANCE LEVELS		
	EU-BALTIC SEA REGION	**NATIONAL**	**LOCAL**
AGENDA SETTING/ PLANNING	• Adopt a non-prescriptive, performance-based, cross-sectoral approach in the HELCOM BSAP and EUSBSR to increase measure effectiveness and multiple benefit provision in national/ sub-national programmes of measures (RDP, RBMP, FRMP). • Identify spatially differentiated water management priorities at the BSR level (NVZ, river basins with high flood risk, river basins not meeting "good water status"). • Consider the effects of climate change when setting nutrient loading, flood reduction and "good water status" targets in the HELCOM BSAP and EUSBSR.	• Define policies and programmes of measures (RBMP, RDP, FRMP) that target multiple policy objectives and ES provision. • Ensure legal equivalence for RBMP, RDP and FRMP in national legislation and equitable access to national funding. • Incorporate a river basin or catchment-based approach to programmes of measures within the RDP based on water management priorities identified in the RBMP and FRMP and at the BSR level (priority landscapes, river basins not meeting "good water status", high flood risk areas, NVZ). • Consider the effects of climate change in the RBMP, RDP and FRMP when defining nutrient loading, flood reduction and "good water status" targets and measures.	• Define programmes of measures (RDP, RBMP, FRMP) targeted at multiple objectives and ES provision. • Define landscape or river basin-based programme of measures within local plans and strategies.
FORMULATION	• Strengthen cross-sector collaboration between state sectors in the HELCOM BSAP and EUSBSR. • Strengthen the inclusiveness of non-governmental stakeholder co-inquiry processes in the HELCOM BSAP and EUSBSR. • Pool investment funds in a BSR development programme to address common cross-sectoral issues. • Support transnational collaboration at the BSR level by pooling investment funds from national and regional ESIF/ EAFRD Operational Programmes to address common water resource management issues identified in the EUSBSR and HELCOM BSAP (priority landscapes, catchments, river basins not meeting "good water status", high flood risk areas, NVZ).	• Strengthen joint planning initiatives between state institutions to coordinate programmes of measures (RBMP, RDP, FRMP). • Diversify stakeholder co-inquiry processes in nutrient governance (RDP, RBMP, FRMP) by including new sectors (food/ biomass production, flood protection, fisheries, recreation, etc.), ensuring adequate administrative support and specifying roles in decision-making. • Develop a coordinated approach to funding national programmes of measures (RDP, RBMP, FRMP). • Earmark a share of the national/ regional RDP agri-environmental budget for RBMP and FRMP river basin and catchment-based management priorities. • Incentivize testing and implementation of cooperative/ collective AEM and water management measures by providing financial support to coordinators and bonus payments to participants. • Incentivize alternative approaches to funding of and other water management schemes and measures (e.g. water utilities, non-state actors).	• Diversify stakeholder co-inquiry processes in nutrient governance (RDP, RBMP, FRMP) by including new sectors representing different local interests (food/ biomass production, flood protection, fisheries, recreation, etc.), ensuring adequate administrative support and specifying roles in decision-making.
IMPLEMENTATION	• Spatially target AEM based on soil type, nutrient retention capacity and topographic characteristics. • Implement a coordinated approach (dedicated platform) to trialling of AEM and other water management concepts and measures (RDP, RBMP, FRMP). • Incentivize testing of result-based measures and payment for ES approaches. • Support cost-benefit assessment of AEM and other water management measures delivering multiple benefits. • Incentivize local cooperative actions to increase spatial targeting, efficiency and effectiveness of AEM and other water management schemes and measures. • Provide guidance and training to farmers and other landowners to improve the effectiveness of AEM and water management measures. • Provide training and support to facilitators of stakeholder co-inquiry processes and coordinators of collective/ cooperative schemes and measures. • Support learning initiatives fostering knowledge and experience exchange between researchers, practitioners and policy-makers.	• Spatially target AEM based on soil type, nutrient retention capacity and topographic characteristics. • Provide guidance and training to farmers and land managers to improve the effectiveness and efficiency of AEM and water management measures. • Provide training and support to facilitators of stakeholder co-inquiry processes and coordinators of collective schemes and measures. • Support learning initiatives fostering knowledge and experience exchange between researchers, practitioners and policy-makers. • Support exchange of EU/ BSR good practice on AEM and water management measures with land managers and other stakeholders in national languages.	• Spatially target AEM based on soil type, nutrient retention capacity and topographic characteristics. • Provide guidance and training to farmers and land managers to improve the effectiveness and efficiency of AEM and water management measures. • Provide training and support to facilitators of stakeholder co-inquiry processes and coordinators of collective schemes and measures. • Support learning initiatives fostering knowledge and experience exchange between researchers, practitioners and policy-makers. • Support exchange of EU/ BSR good practice on AEM and water management measures with land managers and other stakeholders in national languages.
EVALUATION	• Harmonize environmental monitoring networks and facilitate exchange of good practice to improve evaluation of the performance of AEM and water management programmes and measures. • Account for differences between countries, resulting from historical and environmental pre-conditions, when evaluating programme performance.	• Ensure continuous and effective operation of environmental monitoring systems and periodically evaluate target achievements and review targets. • During evaluation of nutrient management programmes account for local spatial differences resulting from historical and environmental pre-conditions. • Improve modelling of the impact of nutrient management measures in relation to meeting "good water status" targets.	• During evaluation of nutrient management programmes account for local spatial differences resulting from historical and environmental pre-conditions.
ADAPTATION	• Adapt strategic objectives and priorities at the BSR level based on on-going cross-sectoral planning and stakeholder co-inquiry processes and monitoring and evaluation outcomes.	• Adapt national objectives and priorities based on on-going cross-sectoral planning and stakeholder co-inquiry processes and monitoring and evaluation outcomes.	• Adapt implemented policy measures based on on-going local stakeholder co-inquiry processes and monitoring and evaluation outcomes.

ABBREVIATIONS

AEM – agri-environmental measures
BSR – Baltic Sea Region
EAFRD - European Agricultural Fund for Rural Development
ES – ecosystem services
ESIF - European Structural and Investment Funds
EUSBSR - EU Strategy for the Baltic Sea Region
FRMP – Flood Risk Management Plan
HELCOM BSAP - HELCOM Baltic Sea Action Plan
NVZ - Nitrate Vulnerable Zones
RBMP – River Basin Management Plan
RDP - Rural Development Programme