BLUE MISSION BANOS

Supporting the Mission Ocean Lighthouse in the Baltic and North Sea Basins

Monitoring for Transformational Change: Integrating Pathways to Impact and PESTLE in Support of the Sustainable Blue Economy

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A sustainable blue economy must go beyond economic growth; it requires systems that are decarbonised, circular, inclusive, and resilient to both environmental and socio-political change. To track this transformation, a more integrated and forward-looking monitoring framework is urgently needed. Monitoring is crucial within the context of the EU Mission "*Restore our Ocean and Waters*" (Mission Ocean), which aims to protect and restore marine ecosystems while accelerating the transition to a sustainable blue economy. Ensuring that individual actions translate into systemic, long-term change requires tools that can track more than outputs, they must capture external influences and progress along the entire pathway to impact. This policy brief presents the combined use of PESTLE and Pathways to Impact (PtoI) as suitable methods to guide and strengthen such monitoring efforts.

Why a combined approach?

A successful monitoring framework must go beyond compliance-based reporting to provide strategic, system-wide insights. Combining **Pathway to Impact (PtoI)** with **PESTLE analysis** enables this shift.

PtoI provides the conceptual backbone, articulating the causal logic from single small-scale activities and outputs to outcomes and long-term impacts. It maps the intended change over time and identifies the assumptions that underpin each transition step.

PESTLE (Political, Economic, Social, Technological, Environmental, Legal) functions as a structured context lens for identifying external enablers and barriers, ranging from policy shifts and economic trends to social acceptance and technological readiness. With PESTLE, we operationalise a context-aware monitoring system that is both adaptive and anticipatory.

Together, they support the selection of context-relevant Key Performance Indicators (KPIs).
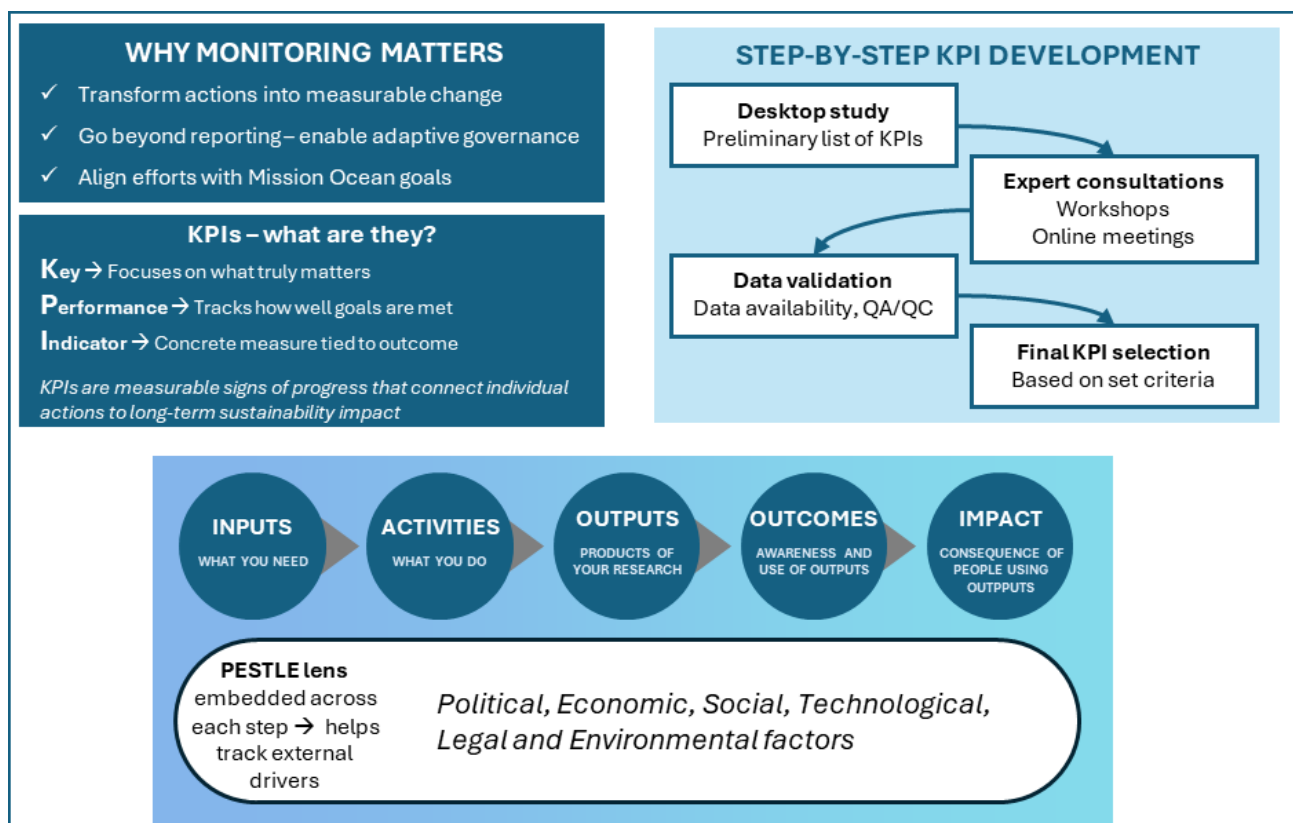
How the integrated monitoring approach works?

To effectively track progress toward Mission Ocean objectives, we propose a structured monitoring framework that combines PtoI with PESTLE analysis.

By combining these two approaches, we can build a monitoring system that is:

- **Structured and scalable**: Applied consistently from individual projects to entire portfolios.
- **Context-aware**: Sensitive to external drivers that influence success or failure.
- **Aligned with Mission objectives**: Tracking both implementation (e.g., number of actions taken) and resulting transformation (e.g., behaviour change, policy adaptation).

Importantly, the application level varies:

- At the **project level**, short- and medium-term KPIs track direct outputs and immediate outcomes (e.g. publications, new data, advances in technology).
- At the **programme level**, shared KPIs monitor cross-project progress (e.g., sector-level change).
- At the **portfolio level**, aggregated KPIs assess broader impact and alignment with Mission Ocean objectives (e.g. decarbonisation trends, ecosystem recovery rates)

Mission implementation context

This approach is encouraged to be tested initially in practice by the Mission funded projects, ensuring its relevance and applicability in real-world settings. Eventually, and if successful, it should be mainstreamed to all Mission relevant projects/initiatives. The policy brief itself was developed through a co-creation process involving the Lighthouse Coordination and Support Actions (CSA) and the Mission Implementation Platform (MIP), reflecting a strong participatory approach.

What is Pathway to Impact?

The Pathway to Impact (PtoI) explains how a project's inputs or individual actions lead to lasting change through a time-based logic model:

Inputs: Resources (e.g. funding, expertise).

Activities: Project actions (e.g. pilots, training).

Outputs: Immediate results (e.g. reports, data).

Outcomes: Medium-term change (e.g. policy uptake).

Impact: Long-term effects (e.g. resilience, reform).

What is PESTLE?

PESTLE is a well-known approach for assessing macro-environmental factors that shape the success of projects, actions and policies across six dimensions:

Political: Governance, policies, and stability (e.g. national strategies, EU regulations).

Economic: Market trends, funding, and incentives (e.g. blue economy growth, green finance).

Social: Public values, knowledge, and inclusion (e.g. community engagement, blue skills).

Technological: Innovation and digital tools (e.g. net-zero shipping, marine monitoring).

Environmental: Natural drivers and constraints (e.g. climate change, pollution).

Legal: Laws and regulations enabling sustainability (e.g. restoration laws, planning and building at sea).

From monitoring to impact: enabling transformational change

A monitoring framework that integrates PESTLE and PtoI:

Provides a structured and adaptive approach to restoration, pollution reduction, and climate-neutral blue growth.

Identifies external drivers (e.g., policy shifts, economic pressures, technological innovations) that influence sustainability outcomes.

Ensures funding and initiatives lead to long-term value by connecting activities to measurable outcomes and impacts.

Equips researchers, funders, and policymakers with a robust, scalable, and mission-aligned framework that links project investments to systemic change.

Facilitates learning loops and feedback mechanisms, allowing adjustments based on real-world monitoring and emerging conditions.

To enable and implement the monitoring EU and national authorities must:

Mandate integrated monitoring frameworks in blue economy funding programmes, including PtoI and PESTLE elements.

Support harmonised KPI development across regional and national scales to ensure consistency in tracking progress.

Ensure that monitoring extends beyond outputs, focusing equally on medium- and long-term impacts.

Promote cross-sector collaboration to ensure data flows across silos (e.g., aquaculture, climate, shipping, conservation).

Invest in capacity building and governance structures to enable uptake of adaptive monitoring practices at local, regional, and EU levels.

Call to action

Pilot the framework

To validate its practical use, test the PESTLE–Pathways to Impact approach in selected Mission Ocean Innovation Actions or national programmes.

Align KPIs across projects

Facilitate co-creation of harmonised KPIs across sea basins, structured by PtoI stages and PESTLE categories, in collaboration with project, programme and portfolio level actors.

Integrate into funding schemes

Encourage EU and national funders to include PtoI/PESTLE-informed monitoring in proposal and reporting guidelines for relevant programmes.

Provide practical guidance

Develop concise templates and toolkits to help implementers apply the framework consistently and effectively.

Enhance data interoperability

Ensure compatibility with existing platforms to enable data sharing, aggregation, and reuse.

Support policy uptake

Use the framework to facilitate science-policy dialogue and translate monitoring insights into effective governance strategies via the Mission specific Lighthouse areas and actions, and advisory systems.

For more information

BlueMissionBANOS deliverables: Sustainable, climate-friendly and circular blue economy in the BANOS area: current status and assessment and monitoring Approaches and KPIs for a carbon-neutral, circular blue economy