

## Participatory Monitoring Strategy to Address Stakeholder Engagement Impact in Co-creation of NBS Related Project: The OPERANDUM Case

**Authors :** Teresa Carlone, Matteo Mannocchi

**Abstract :** In the last decade, a growing number of International Organizations are pushing toward green solutions for adaptation to climate change. This is particularly true in the field of Disaster Risk Reduction (DRR) and land planning, where Nature-Based Solutions (NBS) had been sponsored through funding programs and planning tools. Stakeholder engagement and co-creation of NBS is growing as a practice and research field in environmental projects, fostering the consolidation of a multidisciplinary socio-ecological approach in addressing hydro-meteorological risk. Even though research and financial interests are constantly spread, the NBS mainstreaming process is still at an early stage as innovative concepts and practices make it difficult to be fully accepted and adopted by a multitude of different actors to produce wide scale societal change. The monitoring and impact evaluation of stakeholders' participation in these processes represent a crucial aspect and should be seen as a continuous and integral element of the co-creation approach. However, setting up a fit for purpose-monitoring strategy for different contexts is not an easy task, and multiple challenges emerge. In this scenario, the Horizon 2020 OPERANDUM project, designed to address the major hydro-meteorological risks that negatively affect European rural and natural territories through the co-design, co-deployment, and assessment of Nature-based Solution, represents a valid case study to test a monitoring strategy from which set a broader, general and scalable monitoring framework. Applying a participative monitoring methodology, based on selected indicators list that combines quantitative and qualitative data developed within the activity of the project, the paper proposes an experimental in-depth analysis of the stakeholder engagement impact in the co-creation process of NBS. The main focus will be to spot and analyze which factors increase knowledge, social acceptance, and mainstreaming of NBS, promoting also a base-experience guideline to could be integrated with the stakeholder engagement strategy in current and future similar strongly collaborative approach-based environmental projects, such as OPERANDUM. Measurement will be carried out through survey submitted at a different timescale to the same sample (stakeholder: policy makers, business, researchers, interest groups). Changes will be recorded and analyzed through focus groups in order to highlight causal explanation and to assess the proposed list of indicators to steer the conduction of similar activities in other projects and/or contexts. The idea of the paper is to contribute to the construction of a more structured and shared corpus of indicators that can support the evaluation of the activities of involvement and participation of various levels of stakeholders in the co-production, planning, and implementation of NBS to address climate change challenges.

**Keywords :** co-creation and collaborative planning, monitoring, nature-based solution, participation & inclusion, stakeholder engagement

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