

Summary

Obstacles and leverages for the implementation of Nature based Solutions for climate change Adaptation (NbSA)

Summary for policymakers and practitioners implementing Nature based Solutions for Adaptation

This study aims at accelerating and facilitating the development of Nature-based solutions by capitalizing lessons learnt from their implementation. It has been completed under four stages: (1) a literature review, which led to the creation of a database of about 100 implemented actions; (2) an online survey filled by 303 French citizens and 170 operators; (3) 30 in-depth qualitative interviews; (4) and finally, the formulation of recommendations based on the results from the previous stages.

I. Obstacles to the implementation of NbSA

This analysis allowed the creation of a typology of obstacles to the implementation of NbSA, hereafter introduced chronologically according to the four main steps of NbSA projects.

At the beginning of the project, common misconceptions on NbSA (expected drawbacks or lack of efficiency attributed to these solutions...), as well as institutional or structural issues (segmented approaches, late planning), can curb the **choice of the NbSA** amongst several solutions.

When it comes to **designing the chosen NbSA**, supporting structures often face internal limits such as a lack of support capacity, or difficulty in producing reliable budgets. Yet there are also more structural obstacles: lack of reference systems, regulatory complexity, and incompatibility with external technical standards (architecture, urban planning...).

Land access is a major hurdle to **NbSA implementation**, as a result of other prior obstacles (lack of shared vision, lack of anticipation,...) or a local issue (land pressure). Then comes the lack of clearly identified operators to conduct relevant studies and construction work. Finally, existing mismatches between NbSA and public contracts complexify the process for project owners.

Eventually, **NbSA long-term management** often faces a lack of multidisciplinary and technical abilities and may imply extra costs in terms of labor force. The scarcity of feedbacks on NbSA management slows progression on this step.

II. Leverages to facilitate NbSA implementation

Define operationally and share the NbSA concept: the concept must be specified, especially its articulation with other solutions, and with other stakeholders' skills, towards a demonstration of NbSA benefits.

Communicate; demonstrate the benefits and the sustainability of NbSA: highlight their main performances, adaptive capabilities and contribution to territorial resilience.

Share a toolbox with practitioners: for those who rely on an internal environmental engineering unit, tools such as specific and local technical references are expected; for the others, it seems essential to offer technical and administrative support.

Develop and deploy financial reporting frameworks on NbSA to start an upgrading process based on financial reviews of implemented NbSA, financial evaluation models adapted to public accountability and a systematic financial audit.

Limit the global cost of NbSA through innovative economic models (global cost, life cycle, ecosystem services...), a better management (anticipation, planning...), land access strategies and organizational adaptations (pooling, training...).

Encourage regulatory changes to facilitate NbSA: for example by making environmental or sectorial policies compatible on a regulatory level, adding clauses in public contracts, adapting local planning documents, etc...

Facilitate social acceptability using participatory methods and co-designing projects to challenge myths associated to NbSA and involve the stakeholders as early as possible.