

Nature-based Solutions to Reduce Flood Risk: Perspectives from France and the United States

Solutions fondées sur la nature pour réduire le risque
d'inondation : perspectives de la France et des États-
Unis

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RÉSUMÉ

Dans le contexte de la gestion des risques d'inondation, les Solutions fondées sur la nature (SfN) peuvent être considérées comme un moyen innovant de surmonter l'opposition classique entre les projets de protection contre les inondations et de restauration des rivières. Cependant, jusqu'à présent, on sait peu de choses sur la façon dont ce concept défini à l'échelle mondiale se déploie à l'échelle nationale et locale. À travers des entretiens avec des parties prenantes, des enquêtes et l'analyse d'études de cas spécifiques, le projet « Solutions fondées sur la nature, de la théorie à la pratique » analyse la façon dont ce concept est institutionnalisé aux États-Unis et en France et dont les projets SfN sont mis en œuvre et évalués dans les deux pays. Les résultats préliminaires montrent que si en France ce nouveau concept semble mettre l'accent sur la préservation de la biodiversité, aux États-Unis, il se développe surtout autour des stratégies d'atténuation, notamment en ce qui concerne la réduction des risques d'inondation face au changement climatique, et comme solution alternative à des infrastructures grises vieillissantes.

ABSTRACT

In the context of flood risk management, Nature-based Solutions (NbS) can be seen as an innovative way to overcome the classical opposition between flood protection and river restoration projects. However, so far little is known about how this globally defined concept unfolds at national and sub-national scales. Through interviews with stakeholders, surveys and the analysis of specific case studies, the project “Nature-Based Solutions from Theory to Practice” analyzes how this concept is being institutionalized in the USA and in France and how NbS projects are implemented and evaluated in both countries. Preliminary results show that while in France this new concept makes a clear emphasis on biodiversity issues, in the USA it seems to have a strong focus on mitigation strategies, especially regarding to flood risk reduction in the face of climate change, and as an alternative solution to aging gray infrastructure.

KEYWORDS

Nature-based Solutions, flood risk management, USA, France

1 INTRODUCTION

Nature based Solutions (NbS) is an increasing popular concept that is now being used internationally to “reframe policy debates on biodiversity conservation, climate change adaptation and mitigation strategies, and the sustainable use of natural resources, among other issues” (Potschin et al. 2016). The International Union for Conservation of Nature (IUCN) defined NbS during its 2016 World Conservation Congress in Hawai’i (Resolution 6.069 Defining Nature-based Solutions) as ‘actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits’. In the available literature, the main ‘societal challenges’ addressed by NbS are climate change mitigation and adaptation, disaster risk reduction, economic and social development, human health, food security, water security, or environmental degradation and biodiversity loss (IUCN, 2020).

In the context of flood risk management, NbS is seen as an opportunity to encourage more environmentally friendly practices that can help to reduce flood risk. However, in flood risk management this concept means different things to different people. For example, in the USA some agencies use this new concept interchangeably with existing concepts such as green infrastructure. In fact, NbS builds on and supports other closely related concepts, such as the ecosystem approach, ecosystem services, or green infrastructure (DG Research and Innovation 2020). Well implemented NbS could potentially prompt positive changes integrating social and environmental goals under the same framework. However, some clarity and consistent language in statute and policy is urgently needed if this concept really has to bring new insights on how we should reframe the current approach to manage natural resources and mitigate risk at the same time. In short, NbS may help to bring out synergies among measures with diverse goals, or it may simply add to the confusion already generated by the proliferation of terms. How are different countries adopting this concept? In this paper we analyze how different agencies/institutions in USA and France define NbS in the context of flood risk management to identify similarities and differences in relation to the definition promoted by the IUCN.

1.1 Methods

The preliminary results presented in this paper are part of an ongoing collaboration between INRAE Strasbourg and University of California at Berkeley. In the first phase of our project, we focus on the following research questions: How is this term being appraised in relation to other existing terms? How is the concept integrated into sectorial policies and institution strategies? How do the approaches between France and the USA differ? To answer these questions and taking as a reference the IUCN definition of NbS, we analyze how NbS are defined by different actors and policies in the USA and in France through the analysis of scientific and policy literature, reports from different flood-related agencies and semi-structured interviews with relevant stakeholders.

2 PRELIMINARY RESULTS

2.1 Institutionalizing NbS in the USA

In the USA the concept of NbS has been actively promoted by the Nature Conservancy, the largest environmental nonprofit (by assets and revenue) in the Americas, and is now being adopted by many different federal agencies related to the environment and risk management sectors: the National Oceanic and Atmospheric Administration (NOAA) Office for Coastal Management, the US Army Corps of Engineers (USACE), the US Environmental Protection Agency (EPA) and the Federal Emergency Management Agency (FEMA). At a federal level, although the USA government acknowledges other co-benefits of NbS such as improving water quality, reducing heat, improving health, sustaining biodiversity, this new concept seems to have a strong focus on mitigation strategies, especially regarding to flood risk, in the face of climate change, and as an alternative solution to aging gray infrastructure. However, there is no common definition accepted at a federal level guiding the USA efforts on NbS (Lipiec 2020) and some agencies use this new concept interchangeably with other existing concepts such as green infrastructure, Nature-based Infrastructure or Nature-based Features. State and local governments can have their own strategies related to biodiversity conservation or green infrastructure but the concept of NbS is not totally integrated yet at these levels.

2.2 Institutionalizing NbS in France

In France, the development and institutionalization of NbS has followed several paths. The IUCN French Committee¹ promoted the concept in France through the creation of a dedicated working group gathering several NGOs, local and central administrative representatives aimed at discussing and operationalizing the concept nationally. The French Development Agency² financially supported the definition of IUCN Global Standards for Nature based Solutions. Since 2020, a EU funded project through LIFE program called ARTISAN (Achieving Resiliency by Triggering Implementation of nature-based Solutions for climate Adaptation at a National scale) aims at developing and operationalizing NbS for climate change adaptation in France. This new dynamic seems to have an impact in the institutionalization of the concept since it is coordinated by the French Office for Biodiversity (OFB) and associates other administrative sectors such as the energy (through the participation of the French Agency for ecological transition ADEME, formerly called Agency for the Environment and Energy Control) and urbanism (through Cerema, French public agency for developing public expertise in the fields of urban planning, regional cohesion and ecological and energy transition). Moreover, this ARTISAN project aims at operationalizing the national strategy for climate adaptation and the national strategy for biodiversity. The institutionalization of the concept in France seems therefore to focus more on biodiversity conservation and on climate change adaptation sectors. However, the institutionalization of the concept is still an ongoing process, and the concept is not yet disseminated in many policy sectors.

3 CONCLUSIONS

Nature-based Solutions (NbS), an increasing popular concept, is now being adopted in many countries. However, it might mean different things to different people. Preliminary results of the analysis of the institutionalization of this concept in France and in the USA show that while in France NbS seems to make a clear emphasis on biodiversity issues, in the USA it seems to have a strong focus on mitigation strategies, especially regarding to flood risk reduction in the face of climate change, and as an alternative solution to aging gray infrastructure.

LIST OF REFERENCES

DG Research and Innovation (European Commission's Directorate-General Research and Innovation) (2020). Nature-Based Solutions (NBS): State of the Art in EU-funded Projects. Research and Innovation. Brussels, Belgium. ISBN 978-92-76-18204-7doi:10.2777/183298

IUCN (International Union for Conservation of Nature) (2020). Global Standard for Nature-based Solutions. A user-friendly framework for the verification, design and scaling up of NbS. First edition. Gland, Switzerland: IUCN.

Lipiec, E. 2020. Nature-Based Infrastructure: NOAA's Role. Congressional Research Service Reports R46145

Potschin, M.; Kretsch, C.; Haines-Young, R., E. Furman, Berry, P., Baró, F. (2016): Nature-based solutions. In: Potschin, M. and K. Jax (eds): OpenNESS Ecosystem Services Reference Book. EC FP7 Grant Agreement no. 308428. Available via: www.openness-project.eu/library/reference-book

¹ Created in 1992, the IUCN French Committee is the Members' network of the International Union for Conservation of Nature organizations and experts in France.

² The French Development Agency is a public financial institution that implements the policy defined by the French Government regarding poverty alleviation in developing countries.