

D6.4 Potential for adopting insurance value in risk management strategies

EXECUTIVE SUMMARY

"Climate-change-driven disasters accounted for about 91% of the 7,255 major disasters between 1998 and 2017. These disasters not only pose immediate risk to life, but also damage food security, water supply, human security, and economic growth over the longer term across the globe" (Jarzabkowski et al, 2019) "

The aim of the NAIAD approach is analyse and when possible demonstrated the role that ecosystems play in reducing water related risks (e.g. extreme events). In other words, giving specific attention to "the concept and practice of reducing disaster risks through systematic efforts to analyze and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land, water and the environment, and improved preparedness for adverse events" in our case through nature. (UNISDR, 2009)

These are so called "**Natural Assurance Schemes**" (NAS), which build on the potential that ecosystems have in reduce damage costs related to floods and drought. It rests in the assumption that ecosystems can contribute to mitigate extreme water risks & increase resilience of society in a context of climate change. Natural assurance schemes are framed under the ecosystem services concept, i.e. the benefits people obtain from ecosystems in this case for risk reduction and accompanying co-benefits. Ecosystem services include provisioning services such as food, water, timber and fiber; regulating services that affect climate, floods, disease, wastes, and water quality; cultural services that provide recreational, aesthetic, and spiritual benefits; and supporting services such as soil formation, photosynthesis, and nutrient cycling. In 2005, Millennium ecosystem assessment acknowledged the "Natural hazard regulation" as one of these services. (MEA 2005). Another definition by Burkhard et al. (2012), define ecosystem services are the flow of materials, energy, and information from natural capital stocks, which combined with manufactured and human capital services to produce human welfare. This definition therefore gives centrality to the concept of natural capital to human well-being. In the context of NAS, the concept of ecological resilience, also called ecological robustness, as the ability of an ecosystem to maintain its normal patterns of nutrient cycling and biomass production after being subjected to damage caused by an ecological disturbance becomes particularly pertinent.

The aims of this work are fourfold:

- First to develop a better understanding of the role and value of nature-based solutions (NBS) and of nature-based strategies for mitigating the effects of water related natural hazards at the urban, peri-urban and catchment scale;
- Second to present the tools and methods (or “NAS toolbox and Methodological assessment frame”) co-developed to assess the physical impacts of NBS and (ii) the value NBS in monetary and non-monetary terms and how these NBS can be turned into bankable projects or strategies to be fully developed and implemented. Thus, to present the Natural assurance schemes assessment frame, tools and methods developed under different disciplines, by looking in detail at each of its components, as well as the sequence of analysis.
- Third, by looking at concrete examples of how these methodologies, tools and methods have been applied and tested in nine real cases across Europe. In this in depth look at the case studies we show the advantages and limitations of the NAS approach. It will be seen how the NAS assessment frame is a modular and scalable (flexible) approach, where some or all components can be applied.
- Fourth, to make NAIAD results, conclusion and lessons learnt accessible to a range of stakeholders (scientists, decision makers, insurers and interested citizens at large), including potential Policy implications and recommendations.

The report also included the overall framing for NAIAD, mirroring in its structure the flow chart of the work developed in the project, first looking at the main concepts underpinning the natural assurance schemes, second, looking at the main methodological components, to then focus on the integration of these components and their testing in specific real like conditions with our nine Demo Living Labs.

Keywords: natural assurance value, methodological frame, insurance systems, water-related natural hazards.