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## Nature-Based Solutions for Hydro-Meteorological Hazards: the OPERANDUM Database

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Nature-Based Solutions (NBS) refer to the sustainable management, protection and use of nature to preserve the ecosystem and prevent the loss of biodiversity. Given the multiple environmental, social, and economic benefits they provide to society, NBS have been increasingly promoted and implemented in cities, especially for air pollution mitigation and the improving of human thermal comfort and well-being. Several databases and web platforms already exist, which document these beneficial impacts of NBS in our cities by collecting and exposing existing NBS case studies and projects from around globe. However, the effort of cataloging and storing NBS data according to common and harmonized principles and standards seems yet sporadic and uncoordinated at the global and European level, especially in the context of natural hazard-related disasters. Nature-based solutions have been indeed recently emerged as viable and effective measures to mitigate the impacts of hydro-meteorological phenomena such as floods, landslide, etc. in both urban and rural environments, an aspect not often emphasized in the existing databases.

Driven by the ambition of overcoming these two main gaps, an innovative geo-catalogue of existing NBS has been developed within the framework of GeoIKP, the NBS web-platform newly created by the EU H2020 project OPERANDUM.

The geo-catalogue represents a comprehensive, geo-referenced, database of NBS case studies which are specifically designed to mitigate the risk and impacts of hydro-meteorological hazards, under a variety of environmental setting and hazard categories. It therefore represents a novel and open-access data source to learn about, and explore, the usability of NBS in fulfilling climate mitigation and adaptation objectives over a wide range of hydro-meteorological hazards.

Case studies collected from various resources (NBS platforms, scientific literature, technical

reports, OPERANDUM living labs, etc.) are revised, classified and harmonized according to internationally recognized standard and classification schemes (e.g., INSPIRE legislation, MAES classification, etc.) which allow to characterize each NBS through a comprehensive set of parameters, including the type of hazard and ecosystem, the societal challenges and driving policies linked to it, the type of intervention and its spatial coverage, among many others.

The highly structured and comprehensive data model adopted here enables to query the database and/or filter the results based on a multitude of individual parameters which encompass all different dimensions of NBS (e.g. geophysical, societal, environmental, etc.). This not only allows for a straightforward and automatic association to one or more thematic aspects of NBS, but also enhances standardization, discoverability and interoperability of NBS data.