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Three Points Approach for urban flood risk management: adapting to climate change through transdisciplinarity and multi-functionality

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Abstract

Urban flood risk is increasing as a consequence of climate change and growing impervious surfaces. Increasing complexity of the urban context, gradual loss of tacit knowledge and decreasing social awareness are leading to inadequate maintenance of urban infrastructures. The European Flood Directive sets clear requirements and emphasises the need for a paradigm change in favour of non-structural measures aimed at urban resilience and social preparedness. The Three Points Approach (3PA) provides a structure that facilitates the organization of the decision making process dealing with urban flood risk management (UFRM) by enhancing the use of transdisciplinarity and accepting the complexity of the urban context. The 3PA introduces three domains where the decision makers may act (1) *technical optimization*, dealing with standards and guidelines; (2) *spatial planning*, to make the urban area more resilient to future changing conditions; (3) *day to day values*, to enhance support and awareness among the stakeholders. This study demonstrates the validity of the 3PA and describes how it can be used in practical UFRM. A multilevel approach to knowledge was employed to understand the mechanisms driving complex adaptive systems, like nature and society, characterizing the urban area and thus apply the 3PA in practice. Two case studies were analysed in the Netherlands and in Denmark with the 3PA. This analysis demonstrates the validity of the 3PA for UFRM and highlights the differences between the two countries in approaching the decision making process, drawing attention to the importance of culture in projects. We conclude that the 3PA offers decision makers an innovative perspective on UFRM and is ready to be used to organize strategy plans for urban adaptation to climate change.

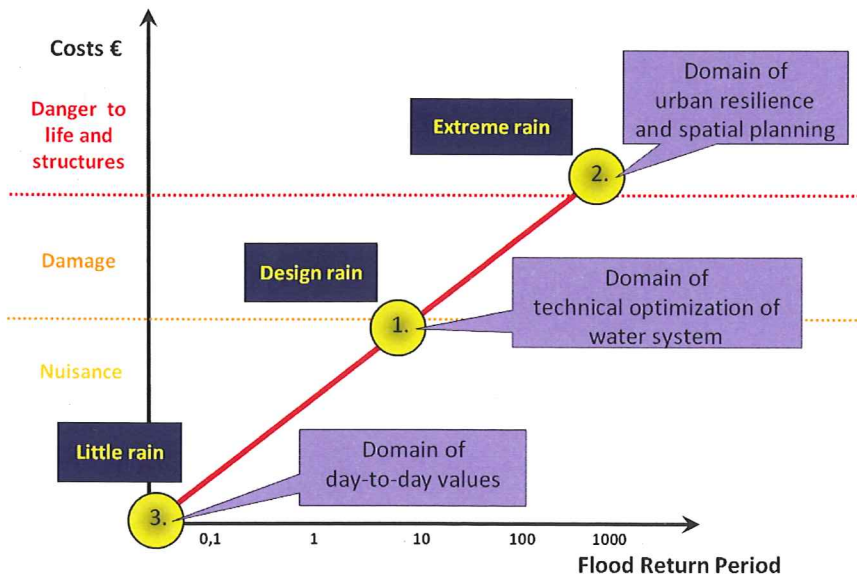


Figure 1. The Three Points Approach scheme. Both the axes are on a logarithmic scale. The horizontal axis represents the return period and the vertical axis represents the size of the flooding in terms of the cost of the nuisance/damage/-danger caused to the urban area and its inhabitants.

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