



Flood Retention on Private Land in Iceland

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Increasing urbanization, climate change, and degradation of natural capital are main causes for an increased risk of natural disasters. In particular flood risk continues to increase. Civil engineering flood defense methods can only protect to some extent, and they can even have undesirable effects (i.e. dike dilemma). Natural water retention measures (NWRM) such as wetlands, forests, and floodplains, promise to be sustainable, cost-efficient and flexible alternatives to flood defense infrastructure. To reduce flood risks effectively, NWRM need to be adopted on a large scale with multi-functional uses located throughout the river catchments. Also large scale flood retention measures can be NWRM. They can not only provide temporary water storage, but also restoration of natural ecosystems, additional benefits for flora and fauna, and recreational functions for local residents. However, NWRM in general also demand much more land than civil engineering flood defense methods. Making this – often privately owned – land available is a crucial task of future flood risk management. In this contribution we explore flood protection measures on private lands in four typical Icelandic watersheds: i) Ölfusá (a river with various dams on private lands), Ytri Rangá (a river in a forestation area), Skaftá (a glacier river with glacial flood outbursts), Elliðaár (an urban river with large water retention areas). A stakeholder analysis reveals different perceptions of flood protection measures. Based on the stakeholder analysis, the acceptance of the following flood protection measures were assessed: first, providing land to construct civil engineering flood defense measures, second, implementation of flood retention measures by the landowners themselves, and third the acceptance of NWRM for floor risk management, e.g. wetland restoration and reforestation. We will conclude by summarizing the constraints and possibilities to realize flood retention on private land.