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A Methodology to Define Flood Resilience

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Abstract

Flood resilience has become an internationally used term with an ever-increasing number of entries on the Internet. The SMARTeST Project is looking at approaches to flood resilience through case studies at cities in various countries, including Washington D.C. in the United States. In light of U.S. experiences a methodology is being proposed by the author that is intended to meet ecologic, spatial, structural, social, disaster relief and flood risk aspects. It concludes that: "Flood resilience combines (1) spatial, (2) structural, (3) social, and (4) risk management levels of flood preparedness."

Flood resilience should incorporate all four levels, but not necessarily with equal emphasis. Stakeholders can assign priorities within different flood resilience levels and the considerations they contain, dividing 100% emphasis into four levels. This evaluation would be applied to planned and completed projects, considering existing conditions, goals and concepts.

We have long known that the "road to market" for the implementation of flood resilience is linked to capacity building of stakeholders. It is a multidisciplinary enterprise, involving the integration of all the above aspects into the decision-making process. Traditional flood management has largely been influenced by what in the UK has been called "Silo Thinking", involving constituent organizations that are responsible for different elements, and are interested only in their defined part of the system. This barrier to innovation also has been called the "entrapment effect".

Flood resilience is being defined as (1) SPATIAL FLOOD RESILIENCE implying the management of land by floodplain zoning, urban greening and management to reduce storm runoff through depression storage and by practicing Sustainable Urban Drainage (SUD's), Best Management Practices (BMP's, or Low Impact Development (LID). Ecologic processes and cultural elements are included. (2) STRUCTURAL FLOOD RESILIENCE referring to permanent flood defense structures such as levies, demountable structures that are partially installed, temporary structures that are removable, as well as dry- and‘ wet floodproofing of structures to meet construction standards to deflect or resist pressure without breaking. (3)SOCIAL FLOOD RESILIENCE referring to the building of robust institutions (including NGO's) and governance systems that underpin our capacity to prepare for and cope with uncertainty, change, and disasters when they occur. (4) FLOOD RISK RESILIENCE implies the ability to withstand and recover from crises through financial insurance assistance and through assistance by governmental institutions, including the communication of information on floodproofing steps that individuals can take on their own.

Within these four levels considerations are outlined to form categories within a matrix as a way to set planning priorities by considering existing conditions, to formulate goals and to develop concepts. The matrix can function as indicators of success for a pre-and post-project assessment. A clear formulation of goals is an essential first step in the planning process, and a pre-requisite for the monitoring of performance. Policy makers would be involved in an active policy process, which has been called „a learning and action alliance to build capacity for flood resilience.