

### **381. Smart City Flood Index: identifying urbanised delta regions most vulnerable for flooding and improving their smartness against flooding**

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#### **ABSTRACT**

##### **Objectives**

Flooding is an ever increasing problem in cities everywhere around the world. Over the last 50 years global economic losses due to flooding have significantly increased. According to projections of the World Bank in 2050 two-third of the world's population will live in urbanized deltas, which are vulnerable to flood disasters. In the context of the underlying demographic, urbanization and climactic trends, city-managers, national and provincial policy-makers in urbanized deltas have to make difficult decisions over medium and long-term investments in order to make their cities and communities more resilient to the existing and future flood risks.

Facing these challenges, there is a need for a more comprehensive view on flood management issues worldwide. Since cities and deltas are constantly changing, flood management turns out to be a dynamic process. The ability to change the flood vulnerability of a city depends on various aspects. Also the attitude regarding the way authorities face flood issues differ. Some countries (viz. the Netherlands) have traditionally a strong focus on flood protection as a means to improve the flood protection level and reduce the flood risks involved. Whereas in other countries (viz. America or United Kingdom) focus is more flood preparedness and responds/recovery.

##### **Method**

In this research, a framework is proposed to get a quick overview of the flood management indicators of cities worldwide incorporating indicators such as flood risk level, flood protection standard, landuse management & flood damage mitigation, public preparedness, flood responds/ recovery & emergency and disaster plans.

Application of the framework provides a Smart City Flood Index enabling us to identify urbanized delta regions that are most vulnerable for flooding and/or most flood resilient from a comprehensive point of view. Each city will get a score for each indicator, yielding in an overall score on the Smart City Flood Index. To assess cities, we make use of public data (open streetmaps, Remote Sense data, mobile data collection, etc.) that is freely online available.

##### **Results**

In this way, a global ranking list of cities and urbanized delta regions can be produced based on their existing and future flood risks, accounting for climate change and socio-economic development, and their scores on the multiple flood management indicators. The list will be published on yearly basis including updates in order to get up with recent changes.

##### **Conclusions**

The outcomes per city and the global ranking list provide a basis for further action. For instance, based on this, an evaluation of the flood management status of a city can be done, resulting in a preliminary advice for the appropriate measures or management actions. Moreover, the global ranking list provides a way to communicate about flood management issues between the cities, and creates an atmosphere where cities can

learn from each other, or induces some sort of competition between cities to come up with sustainable solution to better deal with flood issues. Ultimate aim of the Smart City Flood Index is to make urbanized delta around the world more resilient to the physical, social and economic challenges that are a growing part of the 21st century.