

# Making Cologne more resilient against urban flash floods



Image: MUST Städtebau

Marc Daniel Heintz  
Eva Müggenburg  
Cologne, Germany  
16 May 2018

# Municipal Drainage Operations Cologne – tasks and responsibilities

- wastewater disposal
- road drainage
- flood protection / flood risk management
- ecological development and maintenance of river Rhine tributaries and city ponds

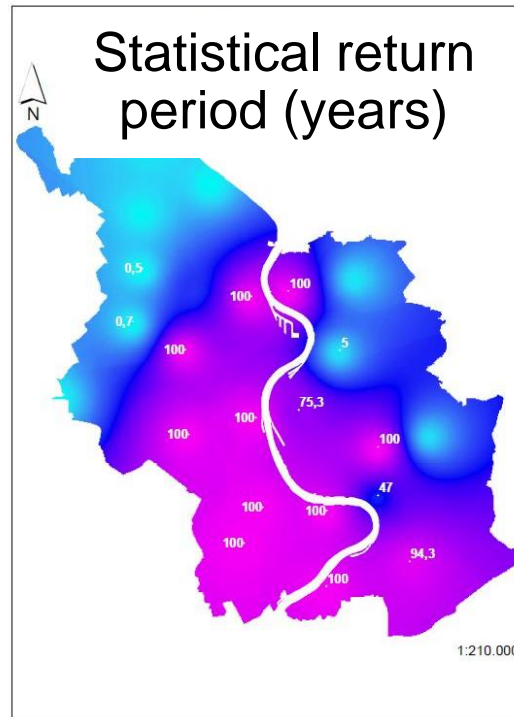
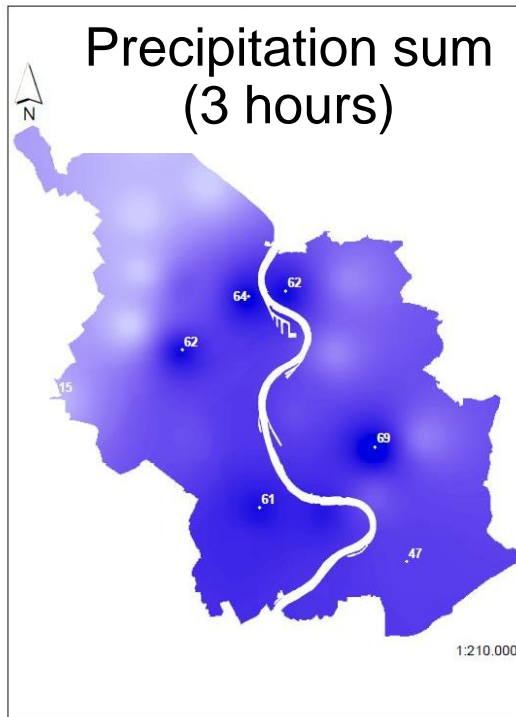


# Urban flash floods – a new challenge

- increasing risk of flash floods due to climate change
  - global / regional scale: IPCC reports
  - local scale: findings from project “Cologne 21”
- flash flood events
  - in other places (Münster 2014, Braunsbach + Simbach 2016)
  - in Cologne (19 July 2017)
- damage potential
  - short warning period
  - whole municipal area at risk
  - densely-populated areas, objects at risk



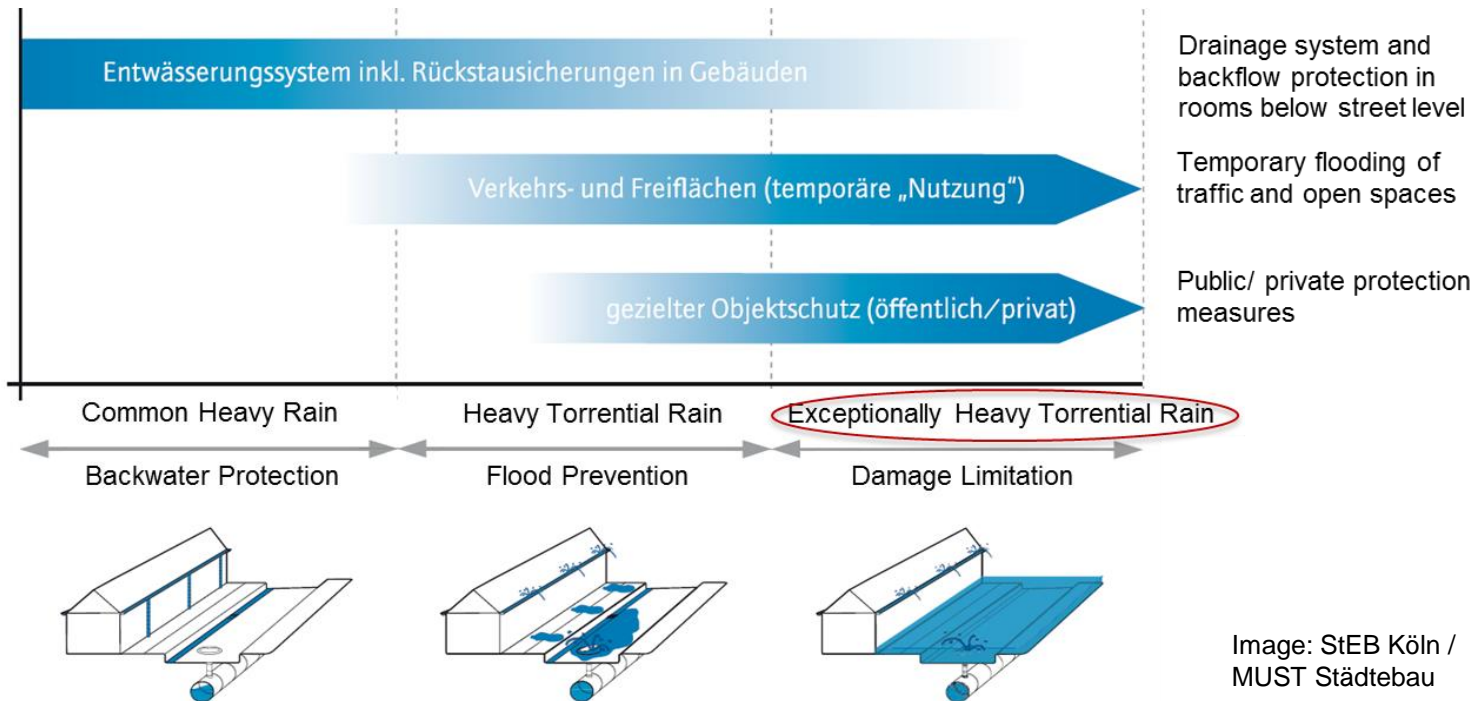
# Rainfall event 19 July 2017



Images: Krasniqi (Kölner Stadt-Anzeiger)

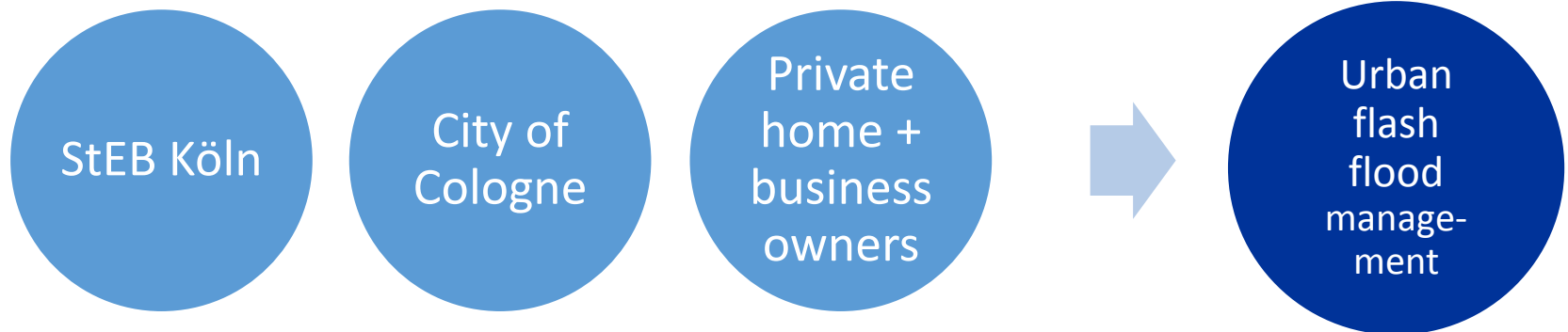


# Dealing with flash floods – a task for the public sector or for privates?







# Flash flood management

- aim: making Cologne and its inhabitants more resilient against urban flash floods
- adapting experience with river Rhine floods to urban flash floods
- involving other disciplines and privates



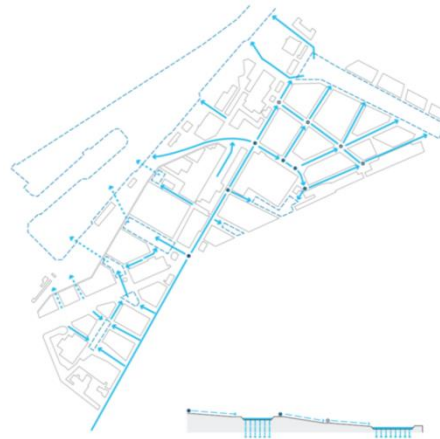
# Flash flood management programme, 2014

- approach inspired by EG Floods Directive
- list of approximately 100 measures
  - description of measure + type of measure
  - competent authorities / additional stakeholders defined
  - implementation status and implementation deadline

Maßnahmengruppen	Beschreibung der Teilmaßnahmen und Aufgaben	Maßnahmentypen (gemäß HWRM-RL)	Stand der Bearbeitung	Status	voraussichtliches Ende	Federführung	Beteiligte
	Überflutungsgefährdung im Rahmen einer Grobanalyse einstufen und priorisieren	Informationsvorsorge	 95%	in Bearbeitung	2016	StEB	37
	Detaillanalysen in Form gekoppelter Simulationen erstellen und bereitstellen	Informationsvorsorge	 10%	in Bearbeitung	2020	StEB	
	Schadensmeldungen (Postprocessing von Überflutungssimulationen) mit Hilfe von geographischer Informationssysteme (GIS) erfassen, verwalten und auswerten	Informationsvorsorge		fortlaufend	-	StEB	
	Schadenspotentiale ermitteln und Risikopotentiale ableiten	Informationsvorsorge	 100%	abgeschlossen	2015	StEB	15, 37,
	Flächen, die zukünftig multifunktional genutzt werden können (Grünflächen, s.u.) mit Hilfe			in Bearbeitung	2017	StEB	15, 67

# Measures from the public sector

- guideline with standards for urban planning
- identify sensitive objects / critical infrastructure
- integrate water routes in new urban developments
- identify potential retention areas for multi-functional use



Images: MUST Städtebau





# Flash flood hazard map

- published in march 2017, 2<sup>nd</sup> city in Germany
- all hazards in one map (river/ groundwater/ flash flood)
- 3 probability scenarios: 1 in 30 / 50 / 100 years

Hochwasser Grundhochwasser Starkregen

Starkregengefahrenkarte



**Legende**  
Starkregengefährdung

- gering
- mäßig
- hoch
- sehr hoch

**Suche**  
Adresse:  
Straßenname... Nr   
Stadtteil:  
Stadtteil wählen...

**Karteneinstellungen**  
Ereignis  
mittel selten extrem

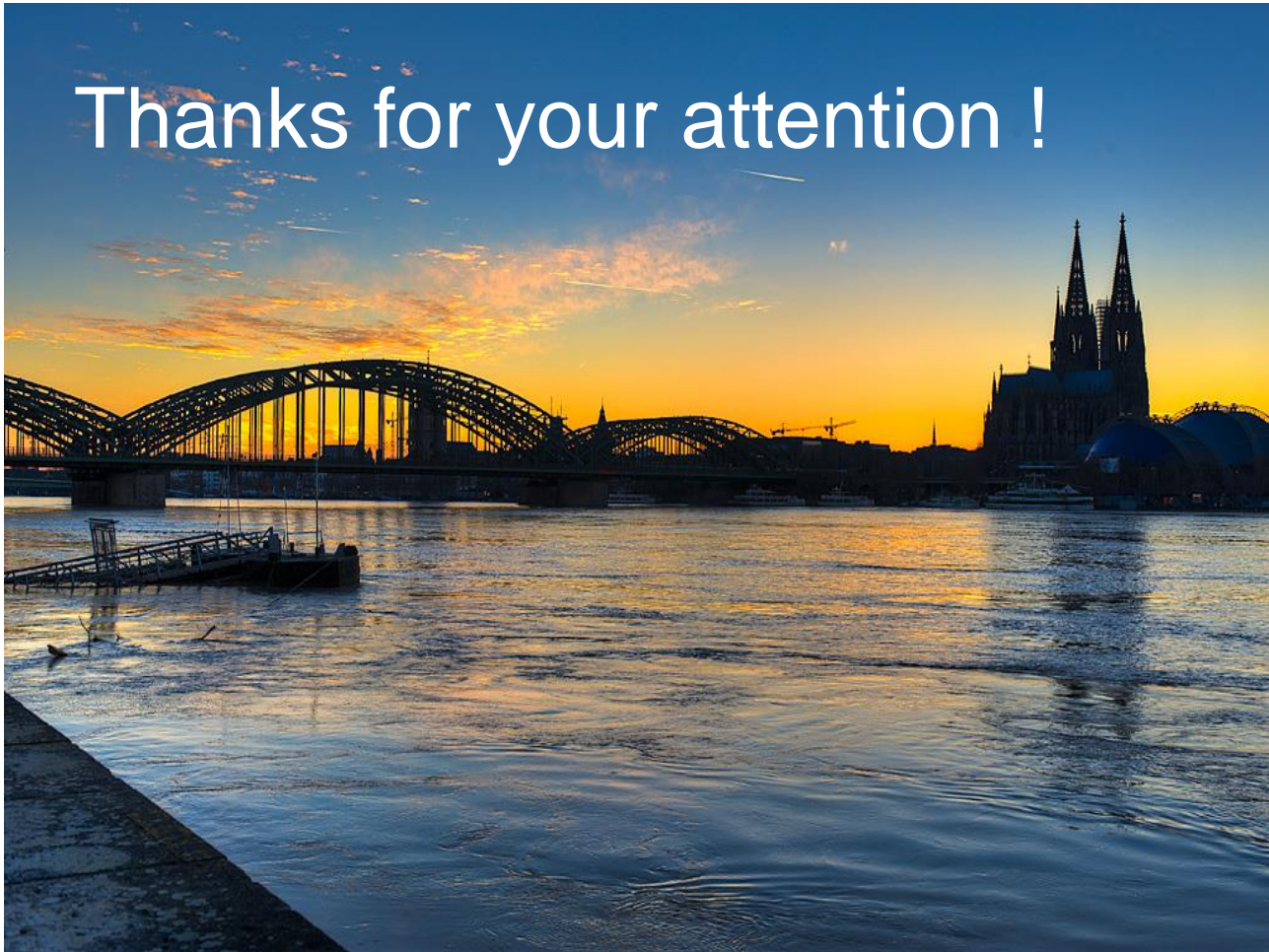
Kartenhintergrund  
 Stadtplan  
 Luftbilder

# Information material and campaign

- guideline for home owners
- participation at festivals and events
- lecture series in cooperation with citizens' initiatives
- exposition touring through district town halls



6th EWA / JSWA / WEF Joint Conference  
„The Resilience of the Water Sector“  
15-18 May 2018, Munich, Germany



Thanks for your attention !

