Utility Responses to Climate Change the PREPARED Project

IWA Cities of the Future Program

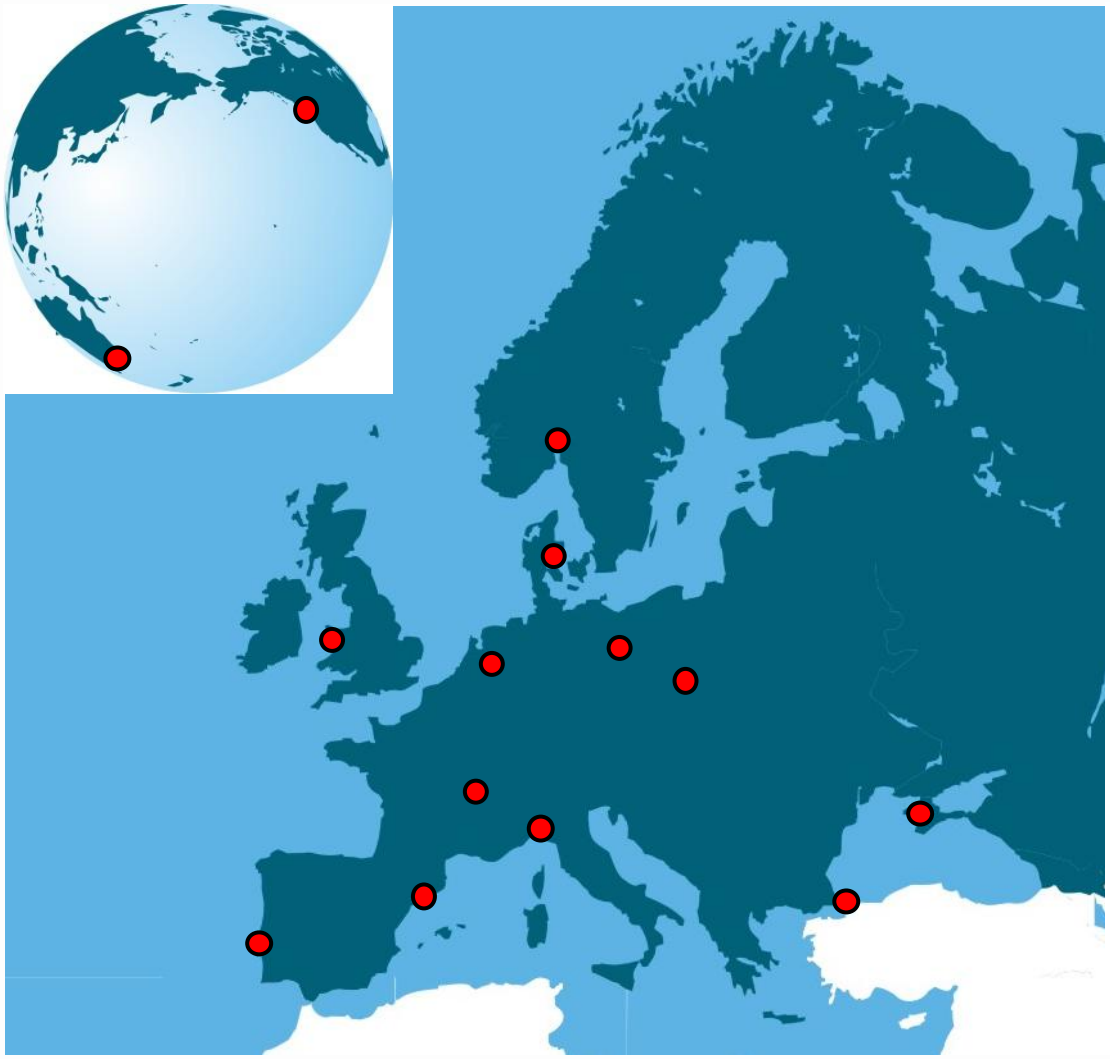
Istanbul Special Topic Workshop #1: Climate Change Adaptation in Turkey – February 7-8, 2011

Anders Lynggaard-Jensen, DHI, Denmark

Project Information

- **Project Title: PREPARED - Enabling Change**
  - **Adaptation of water supply and sanitation systems to cope with climate change**
- **Budget: 10.7 mill EUR;**
- **EU Support: 7 mill EUR (FP7)**
- **Project duration: 4 years**
- **Project start: 1. February 2010**
- **Project Management Team:**
  - **Project coordination: KWR (NL)**
  - **Technology Management: DHI (DK)**
  - **Demonstration Management: KWB (D)**
- **Participants: 36**

City/Utility partners



Aarhus	Denmark
Barcelona	Spain
Berlin	Germany
Eindhoven	The Netherlands
Genoa	Italy
Gliwice	Poland
Istanbul	Turkey
Lisbon	Portugal
Lyon	France
Melbourne	Australia
Oslo	Norway
Seattle	US
Simferopol	Crimea
Wales	United Kingdom

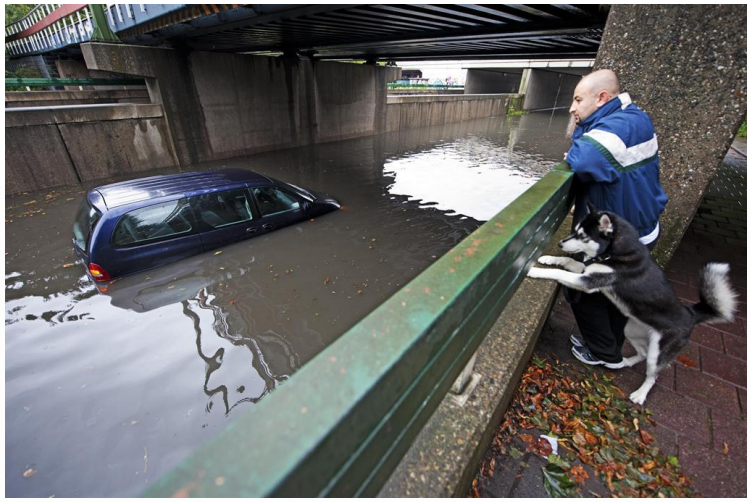
Research/Technology Partners

Research Partners

CETAQUA	Spain
CSRC	Ukraine
DHI	Denmark
IETU	Poland
INSA	France
IRIDE	Italy
KWR	Netherlands
KWB	Germany
LNEC	Portugal
SINTEF	Norway
TUBITAK	Turkey
UNBRAD	UK
UNINNS	Austria (Melbourne)

Technology Partners

Aquateam	Norway
IWA	The Netherlands
IWW	Germany
Krüger	Denmark
Monash	Australia
NIVUS	Germany
S::can	Austria
Exeter	UK



City/Utility Challenges

- Surface water availability
- Groundwater availability
- Surface water quality impact
- Impacts on drinking water systems
- Impacts on sanitation systems
- Flooding
- Vulnerability and risks

City/Utility Priorities

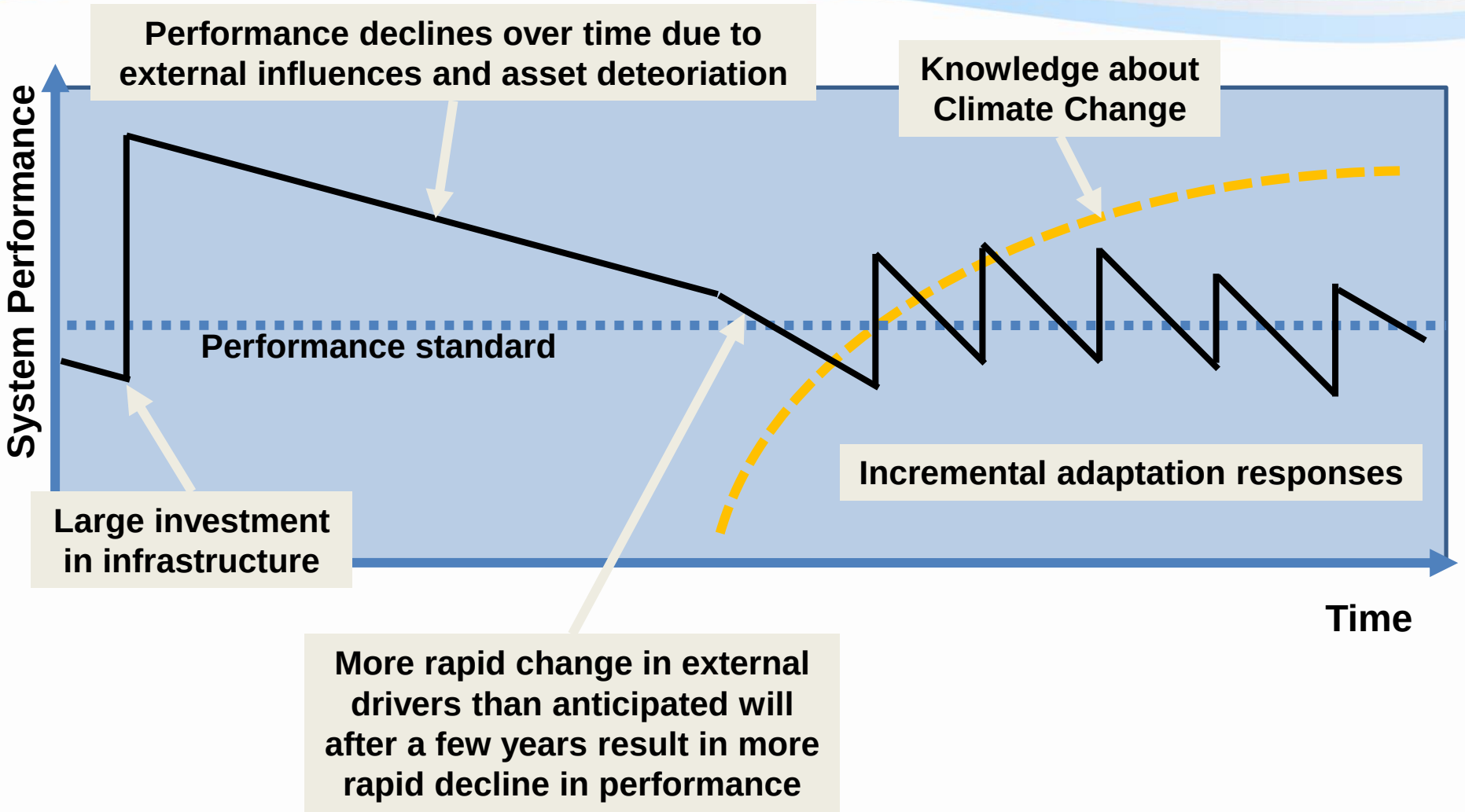
Survey of identified Climate Change related issues to address by the Cities/utilities

Alliances formed among the cities/utilities :

1. **Adaptation to Water resource scarcity/ quality changes**
2. **Adaptation to extreme rainfall events**
3. **Integrated approaches to adaptation – Enabling change**

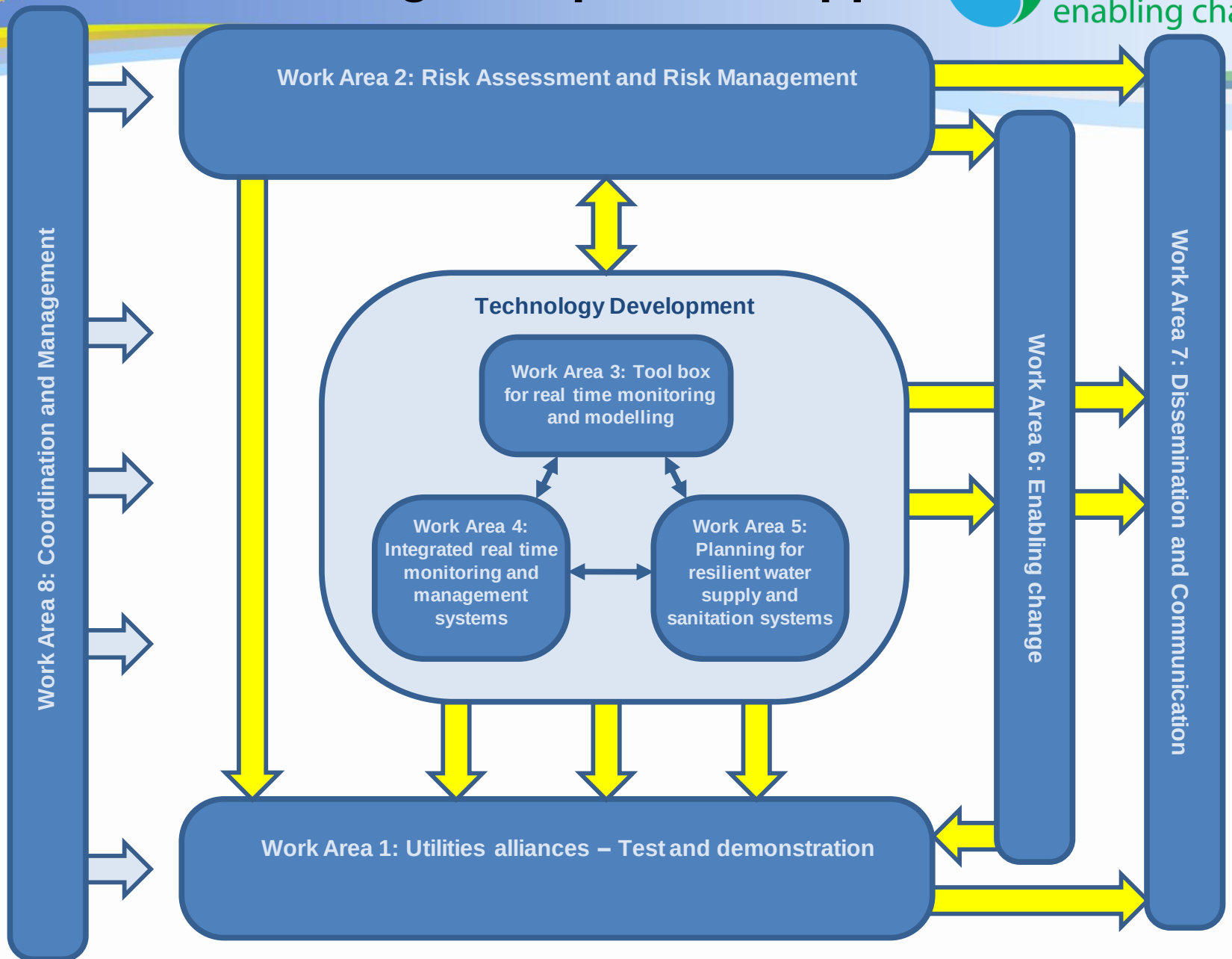
Adaptive solutions to address		Aarhus	Barcelona	Berlin	Eindhoven	Genoa	Istanbul	Gliwice	Lisbon	Lyon	Melbourne	Oslo	Simferopol	Seattle	Wales
Surface water availability	Integrated water resource management plan		x	x	x	x	x		x	x	x				x
	Alternative water resources						x		x		x		x		
	Demand management						x				x				
	Water conservation		x			x	x						x		
Groundwater availability	Groundwater recharge / high flow catchment and underground storage	x	x	x						x					
Surface water quality impact	Integrated control / operation and design of sewer systems and wastewater treatment plants	x	x	x				x		x		x		x	
	Stormwater treatment (technology or filtration/infiltration)	x								x				x	
	Real time control of combined sewer overflow during rain	x	x		x	x			x	x					
	Surface water routing			x							x				x
Impacts on sanitation systems	Increased hydraulic loads on wastewater treatment plants	x										x			
	Salt water intrusion in sewers and wastewater treatment plants	x							x			x			
	Increase storage capacity							x		x		x			
	Separation storm and sewage systems									x		x		x	
	Frost/low temperature related problems for sewer and wastewater treatment plant operation											x			
	Sustainable urban drainage to reduce the volume of surface water entering the network			x						x					x
Impacts on drinking water systems	Flooding of well fields	x			x					x					
	Adaptation of MAR to changing surface water quality and temperature			x						x					
	Monitoring water quality		x		x	x	x		x				x	x	
	Adapting treatment to "new" surface water quality			x						x	x	x			
	Biogrowth in distribution network								x	x		x	x	x	
Flooding	Flooding prevention and management model					x	x	x	x	x					x
Vulnerability and risks	Vulnerability and risk to infrastructure									x		x			

Climate Change Adaptation - strategy



Climate Change Adaptation - approach

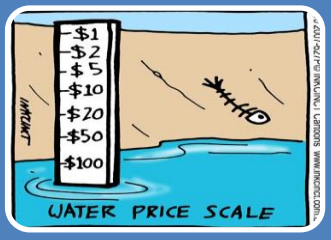
Prepared
enabling change



Adaptation to Water resource scarcity/quality changes

Decision support system for planning complex urban water systems for regions under water stress (Barcelona)

Substance flow model and decision support tool for managing drinking water supply from varying sources under climate change conditions in partially closed water cycles (Berlin)



Model simulating the effect of alternative price systems and regulation schemes on the demand of water in urban areas to support water resource planning (Genoa)

Adaptation to Water resource scarcity/quality changes

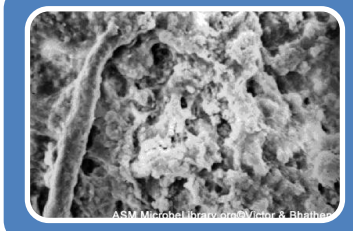
Conceptual scheme of catchment and conservation of water from high flow events (Barcelona)

Conceptual scheme for rainwater harvesting and grey water management as alternative resource for regions under water stress (Istanbul)

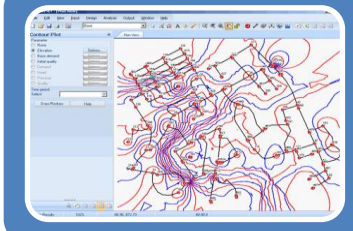
Decision support system for the competing uses of source water incl. protection of water intakes (Genoa, Simferopol)

Adaptation to Water resource scarcity/quality changes

System for distributed real time disinfection control (Lisbon)

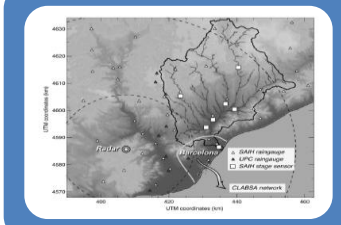


Remedial actions to prevent adverse effects of regrowth in networks at higher temperatures (Oslo)



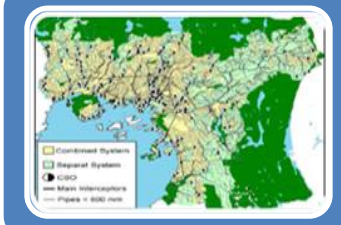
System for early warning of deteriorating water quality in distribution networks (Eindhoven)

Adaptation to extreme rainfall events



Methodologies for urban runoff risk assessment (Barcelona)

Planning instrument for an integrated and recipient/impact based CSO control under conditions of climate change (Berlin)

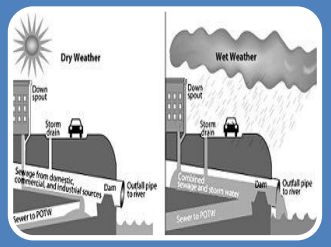


Models and knowledge for maintenance of wastewater networks exposed to rapid changes in flow (Oslo)

Adaptation to extreme rainfall events

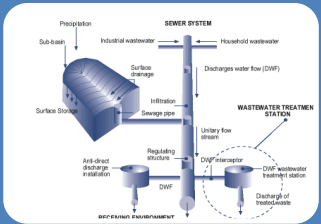
Prototype software tool for sensor calibration and verification and to evaluate uncertainties in measurements (Lyon)

Real time integrated monitoring system supporting improved rainfall monitoring (Lyon, Aarhus, Seattle)

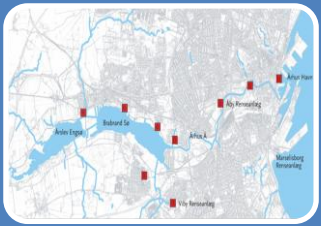


Enhanced real-time measuring and forecasting technologies for combined sewer system (Gliwice)

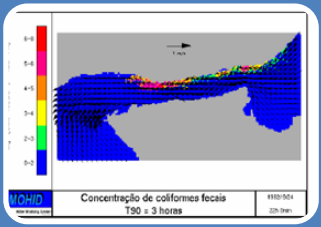
Adaptation to extreme rainfall events



New methodologies for sediments monitoring in sewer networks (Barcelona)

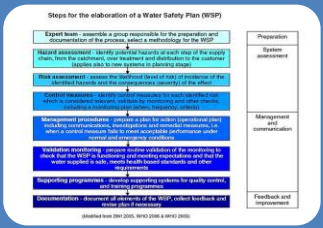


Integrated real time control of sanitation systems incl. early warning for WQ in receiving waters (Oslo, Aarhus)

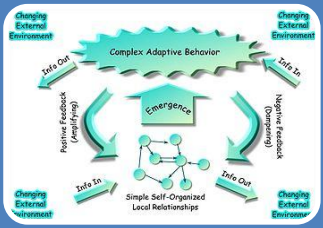


Demonstration system for early warning of health risks from faecal contamination in recreational waters (Lisbon)

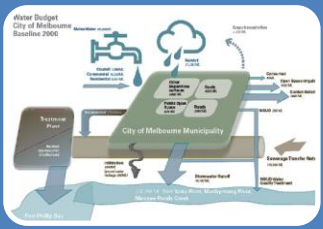
Integrated approaches to adaptation – Enabling change



Water Cycle Safety Plan protocol, Water Cycle Hazard Database, Database of risk reduction options (Eindhoven, Lisbon, Simferopol and Oslo)



Audit tool to estimate the adaptive capacity of current assets and asset plans (Wales)



Calibrated Virtual Urban Water Systems software tool (Melbourne)

More information on city/utility demonstrations…..

Prepared
enabling change

Poster booklet
PREPARED 2010

Prepared
enabling change

Extranet SHARE

Vælg sprog

Leveret af Google™ Oversæt

Home | Prepared | News | Contact Us

Receive the Prepared Newsletter? your email address subscribe

Home

The European Commission is funding the Collaborative Project 'PREPARED Enabling Change' (PREPARED) within the context of the Seventh Framework Programme 'Environment'. The PREPARED project originates from the WSSTP (Water Supply and Sanitation Technology Platform - www.WssTP.eu) thematic working group Sustainable Water Management in Urban areas.

Over a period of five years, PREPARED will work with a number of urban utilities in Europe and worldwide to develop advanced strategies to meet anticipated challenges in the water supply and sanitation sectors brought about by climate change. The project will provide a framework that links comprehensive research with development programmes for cities and utilities. The PREPARED vision will provide significant synergistic opportunities that the utilities can realise to improve their preparedness for the ongoing changes related to the provision of water supply and sanitation.

The outcomes of the project will be used as input for the planning and rehabilitation programmes of the participating cities. Following on from that, the experience gained by the utilities, will be shared with other actors in the water sector in Europe.

The ultimate objective is environmental-concern based rehabilitation and investment programmes for water supply and sanitation systems (including storm water). The cities and utilities involved will be prepared and resilient to the impacts of climate change in the short and in the long-term.

The project implementation started in February 2010 and it is expected to end in January 2014, under E.U. contract number 244232.