

PREPARED for Climate Change

Adriana Hulsmann

There is no doubt that climate change is one of the most critical and challenging issues we have to face as a global community in the 21st century. Impacts that mankind has to address as a result of climate change are, too much or too little water (flooding, droughts, water scarcity, sea level rise), too high or too low a temperature (extreme heat, extreme cold) and significant changes in the amount of water and in temperature, but also new diseases and loss of biodiversity.

The problem is global and requires global solutions, but it cannot be solved without local and individual commitments and actions. Response to the challenges posed by climate change is needed at both global and local level. Adaptation is a vital part of a response to these challenges to which the world is already committed and additionally offers an opportunity to adjust economic activity in vulnerable sectors and support sustainable development.

The objective of adaptation is to reduce vulnerability to climate change and climate variability, thereby reducing their negative impact. It should also enhance the capability to capture any benefits of climate change. Hence adaptation, together with mitigation, is an important response strategy.

The PREPARED project aims to gather urban utilities in Europe and worldwide that (will) have an advanced strategy in meeting the upcoming challenges for water supply and sanitation brought about by climate change. It provides a framework that links comprehensive research with the development programmes in these utilities.

Our vision is that this connection can provide significant synergistic opportunities that the utilities in turn will utilize to improve their preparedness for the ongoing changes related to the provision of water supply and sanitation.



A welcome note from the EC Project Officer

Panagiotis Balabanis

Promoting water research has been an important element of past and ongoing environmental European Commission's funded research programmes. Within this context particular attention has been given on the development of innovative water technologies and the development of practical solutions for protecting our water resources and reverse the trend of their deterioration in Europe and worldwide. This was felt necessary, in order to strengthen the synergies between the public and the private research sector with a view of providing safe drinking water to the people, sustaining our environment and achieving, also, Europe's sustainable growth and competitiveness.

Nowadays, it becomes evident that within the expected impacts of climate change on water resources, it is important to develop appropriate strategies, technologies and tools to adapt to climate change and to enhance water use and energy efficiency. The latter is very important because linking water and energy present a great opportunity to boost more effective actions in the overall effort to combat climate change.

I firmly believe, that the PREPARED research project, has the potential to address many of the above mentioned water challenges and become a EC flagship project on managing and adapting urban water resources in a changing climate and this for various reasons.

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A welcome note from the EC Project Officer, cont...

The PREPARED project has an integrated approach addressing the whole urban water cycle and dealing with both quantitative and qualitative aspects of the urban water cycle, it works on adaptation strategies while at the same time considering and weighting the mitigation side of solutions and it focuses on risk assessment and risk management issues, addressing also uncertainties and its perception between different groups and cultures.

However, in my view, the major contribution of PREPARED project is the particular focus on the practical demonstration of various results in representative cities within and outside Europe, in close cooperation between, research, water utilities and decision makers. This is facilitated by the creation of a Cities/Utilities Alliances Forum which is based on similar experiences developed in previous EC funded research projects. This knowledge consolidation and transfer provides an opportunity to water and sewerage companies to demonstrate their capacity for incorporating the latest technological solutions and play a key role in stimulating innovation, which has been recently recognised in the Europe 2020 strategy as a key element to create employment and help the European Unions consolidate its economic recovery.

Linking research with reality

The PREPARED Project will work towards a set of solutions for utilities all over the world to put in place mitigating strategies and solutions in the face of the anticipated climate change challenges.

This 4-year project is build around city utilities and the challenges they face as a result of climate change. PREPARED plans to research and exploit opportunities for innovative adaptation technologies and solutions while supporting climate-proof EU policies and Directives.

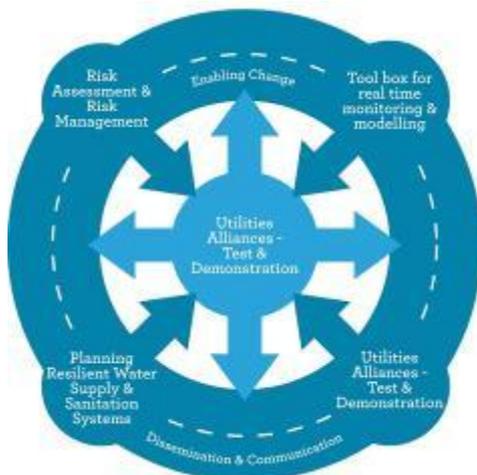
The project will link comprehensive research with development programmes in the participating utilities that are working on an advanced strategy in meeting the upcoming challenges for water supply and sanitation. The partners and technology suppliers will develop new designs, tools and systems to approach adaptation and enable change.

The selection of the cities involved in PREPARED was done on the basis of three criteria: the geographic representativeness, the added value of the cities to the matrix of challenges and the ability of the cities to invest a considerable amount of effort (money and staff) in adaptation measures.

Utilities in the following regions and cities will participate: Barcelona (Spain), Berlin (Germany), Eindhoven (Netherlands), Genoa (Italy), Istanbul (Turkey), Gliwice (Poland), Lisbon (Portugal), Lyon (France), Oslo (Norway), Simferopol (Crimea), Aarhus (Denmark), Wales (England), Seattle (USA) and Melbourne (Australia).

Main PREPARED activities

Activities of the PREPARED project are divided into four research areas responding to the needs of the specific city or utility for adaptation risk assessment and risk management, a tool box for real-time monitoring and modelling, an integrated real-time monitoring and management system and planning for resilient water supply and sanitation systems; an area which demonstrates the outcome of the research: utility alliances-test and demonstration of PREPARED climate proof solutions portfolio; helped by an area which develops methodologies to overcome barriers for adaptation: enabling change and an area disseminating the work done and the experience gained.



What is PREPARED?

The European Commission is funding the Collaborative project 'PREPARED Enabling Change. Within the context of the 7th Framework Programm 'Environment'. The PREPARED project originates from the WSSTP (Water Supply and Sanitation Technology Platform - 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 in these utilities.

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



PREPARED will make a difference

PREPARED will address issues related to the management of water, waste water and storm water that are impacted by climate change both in quantitative and qualitative aspects.

PREPARED will address many of the Pan-European problems and will optimise, test and implement adaptive solutions that will contribute towards an integrated and coordinated approach at EU level.

PREPARED will work on adaptation strategies while at the same time considering and weighting the mitigation side of solutions. What PREPARED delivers should reduce the GHG emissions of the water and waste water sector.

Minimise our carbon- and water footprint.

PREPARED will improve the EU's resilience to deal with the impact of climate change.

PREPARED will contribute to Phase 1 of the EU's framework approach by: contributing to the development of the knowledge base where it concerns the water supply and sanitation sector.

PREPARED will also contribute to the integration of adaptation strategies into EU policies. Priority will be given to adaptation measures that will generate net social and/or economic benefits irrespective of uncertainty in future IPCC forecasts. Priority will be given to measures that are beneficial for both mitigation and adaptation.

Who does what in PREPARED

Prepared has divided the R&D activities in 7 work areas that each have a work area leader that are representatives from various partner organizations in the project.

Work Area 1: Utilities Alliances- test and demonstration of PREPARED climate-proof solutions portfolio is led by Yann Moreau-Le Golvan KWB in Germany.

Work Area 2: Risk Assessment and Risk Management is led by Patrick Smeets of KWR Watercycle Research Institute in the Netherlands.

Work Area 3: Toolbox for real-time monitoring and modelling is led by Jean-Luc Bertrand-Krajewski of INSA in France.

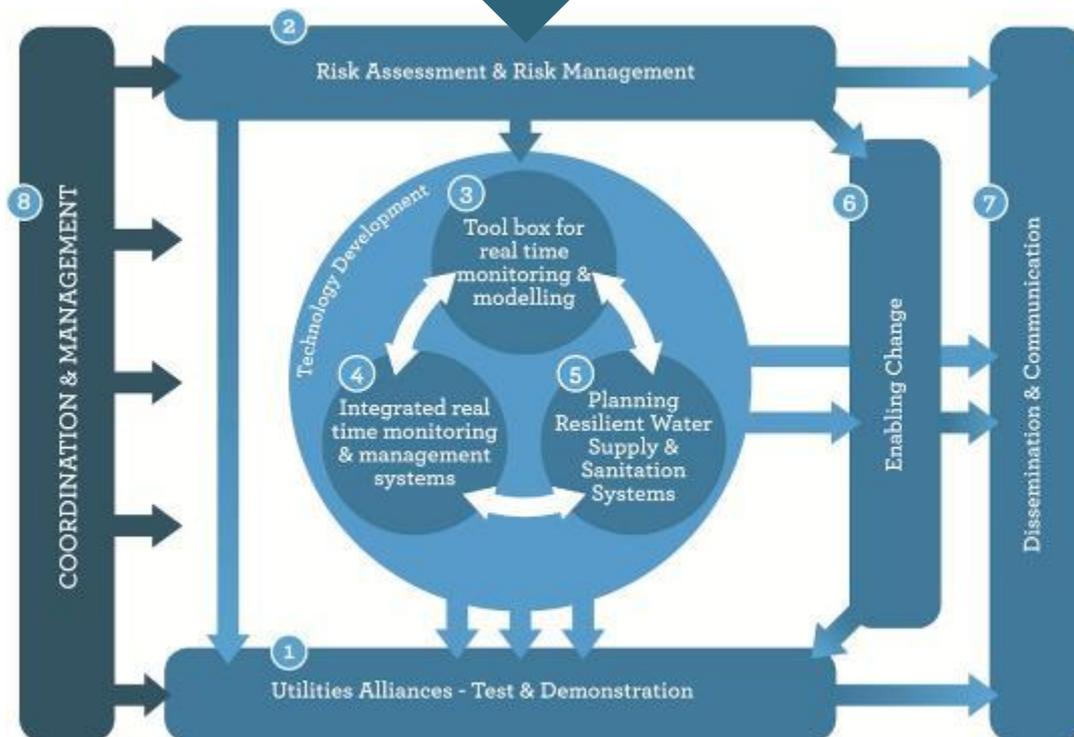
Work Area 4: Integrated real-time monitoring and management system is led by Anders Lynggaard-Jensen of DHI in Denmark.

Work Area 5: Planning for resilient water supply and sanitation systems is led by Lars Hem of SINTEF in Norway.

Work Area 6: Enabling Change is led by Simon Tait of University of Bradford (Pennine Water Group) in the United Kingdom.

Work Area 7: Dissemination and Communication is led by Keith Robertson IWA's Netherlands-based Office.

Work Area 8: Coordination and Management is led by Adriana Hulsmann of KWR Watercycle Research Institute in the Netherlands.



Work Area Leaders



Work Area 1: Utilities Alliances: Test and demonstration : Yann Moreau-Le Golvan



Work Area 2: Risk Assessment and Risk Management : Patrick Smeets



Work Area 3: Toolbox for real-time monitoring and modeling : Jean-Luc Bertrand-Krajewski



Work Area 4: Integrated Real-time Monitoring and Management Systems: Anders Lynggaard-Jensen



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Work Area 7: Dissemination and Communication.: Keith Robertson



Work Area 8: Coordination and Management : Adriana Hulsmann

Kick-off meeting in Eindhoven- March 2010



PREPARED team members and advisors, together with the City of Eindhoven, started the project with a kick-off meeting in Eindhoven during the first week in March 2010. The meeting was kick-started at the Eindhoven city hall by Rob van Gijssel Mayor of Eindhoven.

The aim of the kick-off meeting was for the project partners that will work together for four years to get to know each other and to build the PREPARED team. It was important to align the ideas about the project such as the focus, the activities, the outcome and the planning and the interaction between the work areas and work packages and between the cities.

Rob van Gijssel Mayor Eindhoven

Professor Kundzewicz from Poland, a member of the IPCC and of the PREPARED Project Advisory Committee delivered a well-received keynote on the uncertainties of climate change.

After the introduction of the different Work Areas commenced. Partners were provided with a PREPARED Handbook which will serve as a practical guide throughout the duration of the project.

Partners spent three days building relationships and thrashing out the details of the work.

The field excursions entailed visits to the City of Eindhoven, the Eindhoven water company Brabant Water and Water Board de Dommel.



Partners visited the Eindhoven Water Board

EU Supports Climate Change Adaptation

The PREPARED project originated from the WSSTP (Water Supply and Sanitation Technology Platform) thematic working group Sustainable Water Management in Urban areas.

WSSTP is a platform developed by the European Commission in 2004 and has the objectives to enhance competitiveness of the European water sector, to solve the European water problems and to contribute to achieving the Millennium Development Goals. The stakeholders in WSSTP together developed a common Vision Document for the whole European water in-

dustry and a Strategic Research Agenda.

Based on the work in WSSTP, PREPARED will include the outcomes and recommendations of the Strategic Research Agenda. The PREPARED project is part of the realisation of the SRA and exploitation will be done in line with the Implementation Plan of WSSTP.

The PREPARED project will confirm and demonstrate the technological preparedness of water supply and sanitation systems of ten cities in Europe to adapt to the expected impacts of climate change. PREPARED will show that the water

supply and sanitation systems of cities and their catchments can adapt and be resilient to the challenges of climate change; and that the technological, managerial and policy adaptation of these PREPARED cities can be cost effective, carbon efficient and exportable to other urban areas within Europe and the rest of the world.

The PREPARED project will deal with early warning systems, as well as short- and long-term response strategies for urban areas. The technological and managerial response opportunities in the project are

intended to be developed in the context of environmental, social and economic perspectives.

Due to the regional variability and severity of climate impact most adaptation measures will be taken at national, regional or local level.





Project Advisory Committee

The main task of the Programme Advisory Committee (PAC) is to provide strategic guidance and support to the project coordinator and project team to ensure that the results meet the project's objectives. The responsibilities and duties of the PAC members shall be the following:

- Reviewing the project outcomes and identify the strong/weak points with respect to the objectives of the projects and the applications of the results
- Comment on the teams' skills and the relevance of their proposals and actions
- Link the consortium to other international research efforts;
- Promoting the exposure of PREPARED activities.

To achieve the task, the PAC undertakes the following activities:

- Attending the Project Steering Board meetings to give feedback on the results achieved in the previous year, the plans for the coming 18-months and other issues where feedback is needed;
- Feedback about and linking PREPARED to international research, reports, conferences, etc. on the initiative of the PAC-member;
- Ad-hoc feedback when requested by the Project Coordinator Adriana Hulsmann (KWR Watercycle Research Institute the Netherlands) on various issues.

The project Advisory Committee consists of

- Mike Farrimond WSSTP and UKWIR, United Kingdom
- Birgit Mendel (BMG Germany, regulator drinking water/ENDWARE)
- Jan Cortvriend (EC regulator drinking water)
- Claudia Castell-Exner (DVGW, EUREAU expert drinking water)
- Prof. Riku Vahala Professor water and waste water engineering Helsinki University of Technology, Finland (formerly chair WSSTP)
- Dr. Elena Toth, Assistant Professor, University of Bologna Italy
- Prof. Zbigniew W. Kundzewicz, Head of Laboratory of Climate and Water Resources in the Research Centre of Agricultural and Forest Environment, Polish Academy of Sciences, Pzoznań, Poland.



Mike Farrimond



Birgit Mendel



Jan Cortvriend



Claudia Castell-Exner



Prof. Riku Vahala



Dr. Elena Toth



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6. International Water Association - Netherlands
7. University of Exeter - United Kingdom
8. University of Bradford - United Kingdom
9. Cetaqua Water Technology Center - Spain
10. Iride Acqua Gas SpA - Italy
11. Tubitak Marmara Research Center - Turkey
12. The Institute for Ecology of Industrial Areas - Poland
13. Laboratório Nacional de Engenharia Civil - Portugal
14. University of Innsbruck - Austria
15. Crimean Scientific and Research Centre - Ukraine
16. NIVUS - Germany
18. S::can Messtechnik - Austria
19. Krüger - Denmark
20. Aquateam Norwegian Water Technology Centre - Norway
21. IWW Rheinisch-Westfälisches Institut - Germany
22. Clavequeras de Barcelona - Spain
23. Berliner Wasserbetriebe - Germany
24. Municipality of Eindhoven - The Netherlands
25. Mediterranea delle Acque S.p.a. a Iride ACQUA Gas - Italy
26. Istanbul Water and Sewerage Administration - Turkey
27. Utility of city of Gliwice - Poland
28. Empresa Portuguesa das Aguas Livers, SA - Portugal
29. Water Department of Greater Lyon - France
30. Municipality of Oslo Water and Sewerage works - Norway
31. Simferopol Drinking Water Supply & sewerage Company - Ukraine
32. Aarhus Water and Wastewater - Denmark
33. DWR Cymru Welsh Water - United Kingdom
34. Seattle Public Utilities - United States
35. Melbourne Water Corporation - Australia
36. Monash University - Australia