



Final plan for the use and dissemination of foreground





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COLOPHON

Title

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Report number

PREPARED 2014.058

Deliverable number

D 8.8

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Quality Assurance

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Document history

Version	Team member	Status	Date update	Comments
1	G. Grützmaker	Draft	04.03.2014	
2	R. Glotzbach	Draft	06.03.2014	
3	G. Grützmaker	2nd Draft	07.03.2014	for input by AH
4	A. Hulsmann	2nd Draft	10.03.2014	
5	G. Grützmaker	Final draft	07.04.2014	For QA by KC
6	G. Grützmaker	Final	10.04.2014	comments by reviewer included

This report is:

PP = Restricted to other programme participants (including the Commission Services).

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1 Dissemination of the project results during the project

The members of the PREPARED consortium are recognized major players at the European and international level, and have undertaken successful dissemination including:

- The operators participating in the project were major utilities, among them two European capital cities (Berlin, Lisbon), who made the project visible to other EU utilities.
- The PREPARED utilities were asked to provide input to the EURO-CITIES conference in Stockholm in 2013.
- The participation of the International Water Association (IWA) gave access to 10.000 members in over 110 countries. This provided an exceptionally large target group for our conference announcements and newsletters.
- The involvement of two major European-based industrial partners Veolia Environment and Suez Environnement (though BWB, KWB, Krüger, CLABSA, CETaqua) increased the dissemination/implementation pathway at the European and international level. For example, A workshop organized by KWB at the IWA International Water Week in Amsterdam was supported by representatives from Veolia and EUREAU.
- Technology providers like DHI, Aquateam or SCAN were able to rapidly transfer the know-how generated in the project to tailor-made solutions for the utilities. For example, this was seen, in Aarhus and Oslo, where the implementation of the solutions for real-time-control of urban drainage systems for enhancement of urban water quality is already now seen as successful climate change adaptation.
- The involvement of applied water research partners like KWR, IWW, LNEC and KWB, gave direct access to the Water sector of the Netherlands, Germany and Portugal.

The dissemination and exploitation of project results and PREPARED knowledge exchange during the project was organised through all project partners at a number of levels:

- o The project was presented to a meeting with managing directors of all Dutch water supply companies
- o The project was introduced to the Dutch water sector through the H2O professional magazine in the Netherlands
- o The project was mentioned in a special edition of the professional magazine of the Dutch Water Boards Theme International.

1.1 The PREPARED Alliance Forum

The PREPARED Alliance Forum is the network of water utilities participating in PREPARED. The Forum Meeting brings utilities together with researchers and experts from different sectors to share experiences and lessons learned with the goal of further developing innovative concepts for climate adapted urban development. The Forum is a key opportunity to discuss experiences with the experts from the PREPARED utilities, identify innovations that might also be transferable to other systems and strengthen the utilities' network to improve resilience to the impacts of climate change.

The PREPARED Alliance Forum met three times, first at the project steering board (PSB) meeting in Berlin 2011 followed by the IWA Water, Climate and Energy Congress in Dublin, Ireland in month 24 (in Dublin 2012) and again in month 48 (in Aarhus 2014) of the project. The first meeting in Berlin focused on learning about the water system and the climate-related challenges of the different project partners through group work (13 participants) and the second meeting in Dublin aimed at presenting the individual cases to a broader audience (about 40 participants and an additional 50 viewers via webinar). The final Alliance forum meeting in Aarhus in January 2014 included not only presentations and knowledge-exchange by the PREPARED utility partners on their demonstrations, but gave also some visionary input to the discussions by complementing the sessions with presentations from cities like Copenhagen (DK) and Wageningen (NL) on alternative approaches.

A summary of the events as well as presentations are available on the PREPARED web-site (<http://www.prepared-fp7.eu/viewer/file.aspx?FileInfoID=567> or <http://www.prepared-fp7.eu/prepared-news-detail/prepared-conference-adaptive-solutions-for-water-utilities>).

1.2 National / regional platforms and organizations

All 12 European utilities that are involved in PREPARED represent examples of the possible impacts of climate change. However, these are examples of only one city/utility in a country or region. Other utilities/cities might face

(slightly) different problems but more importantly might want to benefit from the lessons learned during the demonstration. To enhance the impact of PREPARED, we encouraged the participating utilities and their nominated research partners to set up national/regional platforms within their area. Local networks and local knowledge sharing may give long-lasting impacts for the society addressed, since international knowledge from the project will be communicated in the national language.

For example, during the [2013 IWA Cities of the Future Conference](#) “Innovation to practice” a session dedicated to the Black Sea countries was organized. Black Sea partners in the PREPARED team, from Turkey and Ukraine, presented the results of their work within the PREPARED project, demonstrating the impact of climate change to the Black Sea countries and also how the research into adaptation would help the countries involved better cope with the challenges posed by climate change. The objective behind the inclusion of a Black Sea event within PREPARED was to involve more Black Sea countries in the work done by the project and ultimately to help and create a co-operation platform for that region.

A collaboration link was forged with Eurocities to incorporate PREPARED discussions during their Environment Forums and Working Group meetings. Representatives from Genoa attended the Eurocities Environment Forum (EEF) in the city of Stockholm from June 12-14th, 2013. <http://www.prepared-fp7.eu/prepared-news-detail/http-www-eurocities-eu>.

Another good example of a platform is the co-operation between the Water Board, the Water Supply Company and the Municipality of Eindhoven. The co-operation between water agencies helps better address and manage the (urban) water cycle in the region and it is seen as a way for the Water Framework Directive to be implemented successfully.

In addition, the PREPARED research partners are members of national technical organizations and were able to present their work at national meetings and contribute to the exploitation of the results (e.g. meetings of the German Water and Waste-water association DWA or of the Encontro Nacional de Saneamento Básico ENaSB in Portugal).

1.3 PREPARED branding

1.3.1 *Rapid Assessment Method to Develop PREPARED Marquel/Brand Tool*

The IWA, together with KWR has developed a rapid assessment tool to determine the level of preparedness of European cities in coping with climate change related challenges. Results of the assessment will be used to develop a ‘PREPARED’ approach to be applied to cities, to showcase successful examples.

The methodology covers the whole urban water cycle and helps local decision makers achieve a number of goals:

1. Determine what challenges there are to climate change and its related risks in the short and long term.
2. Assess the adaptation strategies that a city already has in place, and what may need to be developed.
3. Assess the implementation, viability and effectiveness of measures developed within the PREPARED project.

This methodology represents a baseline assessment of the preparedness of urban water utilities to climate change and does not include future projections.

The assessment consists of questions where respondents score their answers on a scale. For Example. *what is the projected change in extreme precipitation? or have measures been taken to prevent and handle water scarcity?* Responses are transformed using a 0 (poor performance) to 10 (excellent performance) scale and plotted on a spider diagram.

There are also open questions to gather details on the measures and infrastructure that will impact the adaptive capacity of a city. E.g. *what types of flood risk management measures are available to prevent/mitigate floods?*

1.3.2 Application of PREPARED Brand Tool

Results are being used to develop a 'PREPARED' brand for cities which will be used to:

- Set priorities for climate change response interventions and investment strategies
- Map climate change induced challenges and potential adaptation measures
- Contribute to policy development and decision making processes

The rapid assessment tool is providing the basis for a strategic and efficient planning framework for adaptation measures. The assessment tool will be further developed and tested, for fine tuning, through further collaboration between the IWA and KWR, and communicated to increase interest among cities to see their own level of preparedness and identify where improvements are needed. An example of the application of the tool is shown below.

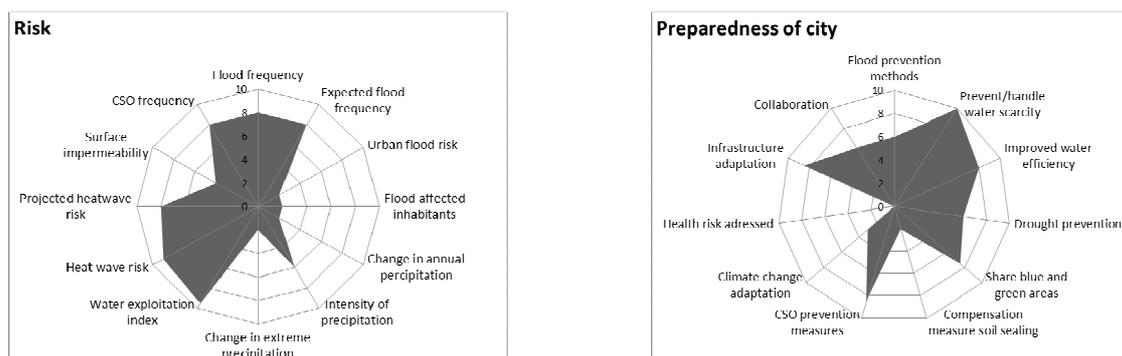


Figure 1: An example of the application of the PREPARED Brand Tool.

1.4 Policy support

PREPARED aimed to contribute to policy support at national and EU Community level. Close links were established with the relevant policy making units at DG Environment to provide scientific support such as the revision process of the Water Framework Directive (WFD), as well as other pieces of community legislation as the Drinking Water Directive, Bathing Water Directive and Urban Waste Water Treatment Directive.

Links to the Water Framework directive

PREPARED focuses on the urban water cycle, the WFD on wider river basin management, the difference being mainly the scale. PREPARED did not directly working on the policy aspects or implementation of the WFD, but the project produced tools that support the reduction of the contaminant load to water systems and river basins (including CSO), and as such help to achieve the goals of the WFD.

In addition, PRPEARED stimulated the co-operation between cities by setting up platforms. A good example is the co-operation between the Water Board, the Water Supply Company and the Municipality of Eindhoven. A second example is the close collaboration between the Berlin water utility (BWB) and the Berlin water authority (Senatsverwaltung für Stadtentwicklung und Umweltschutz) for defining scenarios to be investigated in the frame of PREPARED. The co-operation between water agencies to better address and manage the (urban) water cycle demonstrates how the WFD can be implemented successfully. PREPARED strongly focused and advocated the interaction between problem owners and technology developers.

Links to other water-related legislation

PREPARED further contributed to EU water policy development and implementation. A direct link to the EU water policy was ensured by inviting DGENV Marine unit to sit in the Project Advisor Committee (which was accepted by Jan Cortvriend, desk officer responsible for the Drinking Water Directive and Bathing Water Directive).

PREPARED also worked with a risk assessment and risk management approach to the whole urban water cycle. The currently ongoing revision of the Drinking Water Directive 98/83/EC aims at including risk based approaches as well. This is done in the water safety plan approach. With the Water Cycle Safety Plans that were developed in

PREPARED, we paved the way for a step in the direction of a water cycle base policy development within the EU. The team was invited to contribute to a European WSP Workshop in Berlin (in March 2014) organized by IWA and WHO, which aims at sharing and evaluating the current status of WSP implementation across Europe and bringing together a wide audience of high level stakeholders from regulation, water supply utilities and research.

The PREPARED project took part in Science and Policy Interface (SPI) meetings organized by DGENV/DGCLIMA in Brussels, ‘Adapting to Climate Change: A dialogue between Research and Policy’. A meeting in the European Parliament was organized where various project coordinators exchanged information on how research can be used in policy development. The tool developed within PREPARED on risk based approaches Water Cycle Safety Planning will be presented in a green paper as policy support document. The green paper will be put out for consultation and then be used as basis for a white paper. As more and more legislation on water is based on risk management approaches we will submit this practical paper to DGENV and DGCLIMA.

In November 2011 PREPARED took part in the national workshop on the Development of a National Strategy for Adaptation to Climate Change adverse effects in Nicosia, Cyprus.

1.5 Production of guidance documents, technical guidelines, demonstration reports and books

PREPARED and its Work Areas produced more than 70 technical documents such as guidance documents and technical guidelines, as well as reports on real life demonstration activities. All these deliverables were posted on the PREPARED website (<http://www.prepared-fp7.eu/prepared-publications>) but in addition we have the advantage of being able to use the IWA marketing machine, with thousands of relevant contacts, for the world-wide dissemination of PREPARED deliverables.

Major results will also be summarized in a book published by IWA on “Climate Change, Water Supply and Sanitation” towards the end of 2014.

1.6 Other dissemination activities

More traditional dissemination methods that were used were:

- Presentations at national and international conferences and workshops (utility, policy- and science-oriented),
- Currently 55 publications in peer-reviewed journals and conference proceedings,
- Set-up and constant update of the PREPARED Website (<http://www.prepared-fp7.eu/>). Owners and web-masters of related websites such as TECHNEAU, WSSTP were asked to make a click-through link on their sites to the PREPARED web-site. All project partners established links to the PREPARED web-site on their homepages.
- The adaptation initiatives matrix was converted into a web-based tool, which can be accessed through the PREPARED web-site (<http://aim.prepared-fp7.eu/>), see Figure 2.
- Six monthly bulletins (PREPARED newsletter),
- Organization of two international conferences in M24 (back-to-back with the Dublin conference on Climate Change and Energy) and M48 (Final PREPARED conference: Adaptive Solutions for Water Utilities in Aarhus), conference proceedings (abstracts and presentations published on the web).
- IWA News bulletins/updates on upcoming events, etc.
- Twitter (@PREPAREDFP7; <https://twitter.com/PREPAREDFP7>),
- LinkedIn group ([Adaptive Solutions for Water Utilities](#)) and its subgroups ([WA1](#), [WA2](#), [WA3-4-5](#) and [WA6](#)).

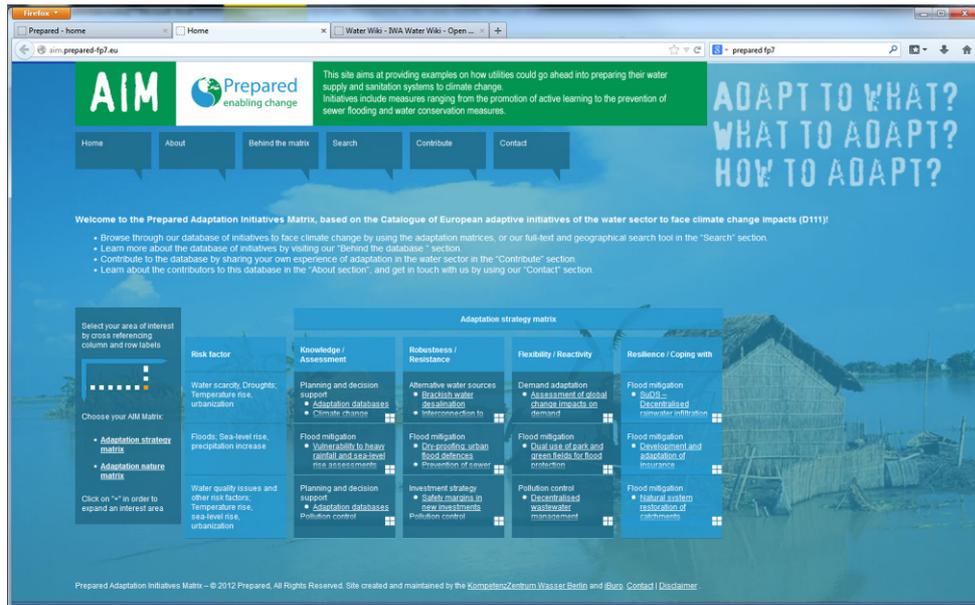


Figure 2: Screen-shot of the AIM web-site.

1.7 Exploitation of the results by involved SMEs and companies

In PREPARED we had a number of SMEs/technology suppliers such as Aquateam, NIVUS, S::CAN and Krüger that are able to further commercially exploit the results of the project. This in general holds for the industrial sector involved in PREPARED that not only includes four technology suppliers but also 12 utilities that can exploit the resulting knowledge and expertise elsewhere in Europe and world-wide.

Examples for the further exploitation of the knowledge generated by PREPARED through the technology suppliers and utilities during the project are:

- utilization of a DSS developed in PREPARED for optimizing energy efficiency and supply security of water supply from different sources for planning by IREN Aqua Gas in Genoa,
- application of a methodology developed in PREPARED to quantify the effect of different treatment options for reducing bio-film formation by the Oslo water utility.
- application of a tool for urban run-off risk assessment developed in PREPARED in Barcelona by the drainage networks' operator in order to prioritize actions for flood-control,
- implementation of real-time-control systems developed in PREPARED for managing urban drainage networks and avoiding flooding and / or CSOs in Aarhus and Oslo
- utilization of a planning instrument developed in PREPARED to quantify the effect of different CSO reduction measures onto receiving waters by the water utility and environmental authority in Berlin,
- application of an early warning system for receiving waters developed in PREPARED by the drainage system operator in Lisbon.
- development of a water cycle safety plan in close collaboration between the water / waste-water utility, the water authorities, the water board and other stakeholders according to the procedure developed in PREPARED in Eindhoven and Lisbon (Figure 3),
- implementation of an adaptation planning process developed within PREPARED by the Welsh water utility.



Figure 3: Participants of a WCSP workshop in Eindhoven

1.8 Interacting with EUREAU and WssTP

PREPARED partners participated in WssTP working groups and task forces (e.g. the urban water workshop in Amsterdam in 2010 or the workshop on “urban pollution control” in Genoa in 2012) thus disseminating the knowledge gained within PREPARED to a larger group of utilities, technology providers and researchers. On the web-site, a direct link was made between the web-sites of WssTP and PREPARED.

EUREAU as the European umbrella organization for water and waste-water utilities was closely involved throughout the project: Representatives were members of the project advisory committee (C. Castel-Exner, DVGW) or gave their input as EUREAU representatives to workshops organized by PREPARED (e.g. P. M. Bregolat, CLABSA, for the PREPARED workshop “impacts of combined sewer overflows on urban waters: challenges and solutions for European cities” during the International Water Week in Amsterdam 2013).

2 Plan for the use and dissemination of the project results after the project

2.1 Dissemination of the project results

The PREPARED website with all public deliverables will be hosted for another five years after the end date of the PREPARED project. This gives the project partners the opportunity to refer to the web-site as focal point of information on climate change adaptation for the next few years.

In addition, some scientific papers have been submitted but not yet published. We expect at least 10 additional publications within the next few months.

2.2 Networking activities of utilities and research partners

The utility contacts will be offered to be included as part of the IWA Water, Climate and Energy Steering Committee and to incorporate them into various task forces, specialist groups, etc. with the aim to thus offer a platform for climate change adaptation similar to the Alliance Forum. In addition, many utilities have taken up bilateral contacts (e.g. Aarhus – Berlin) on a technical level for further knowledge exchange. As a third measure for future contact IWA will continue to accompany the LinkedIn group and subgroups initiated during the project.

The IWA has suggested hosting future Alliance Forum meetings at future IWA events (e.g. [IWA Water, Energy and Climate Conference](#), [IWA European Utility Conference](#), [IWA World Water Congress & Exhibition](#), etc.) as a good way to continue sharing experiences and best practices and encourage past promises to be met in future. It is the intention of PREPARED industrial collaborators to use the knowledge they gain from PREPARED to change their long term investment plans, and then to inform other utilities with their country to encourage uptake of best practice from PREPARED.

IWA has set up a LinkedIn group (and sub groups: “Adaptive Solutions for Water Utilities” (<http://www.linkedin.com/groups/Adaptive-Solutions-Water-Utilities-7457822?trk=anet Ug Parent&gid=7457822>) and will work with consortium partners to enable regular updates and discussions on deliverables (during) and post PREPARED. The aim is for the tailor-made portfolio to be used by interested utilities/cities/municipalities both from (required) and outside PREPARED (see deliverable: <http://www.prepared-fp7.eu/viewer/file.aspx?FileInfoID=429>) . This supports the dissemination and exploitation of the project to a wider network beyond PREPARED. This area of work targets the influencers and the decision-makers – whether they are in a political role or in another leadership or managerial role – with adaptation solutions or measures that can be implemented to better prepare their city for future challenges in water supply and sanitation resulting from climate change. Using PREPARED outputs, the platform provided represents vehicles for advocacy and will be encouraging behaviour change for the benefit of sustainable futures. Key people will be engaged to buy into and own the knowledge that has been generated, and be part of moving the agenda forward, and leading change and advocating this in their constituencies.

2.3 Application of project results in the PREPARED cities

The demonstrations carried out within PREPARED aimed at showing that the research results are ready to be implemented in practice and demonstrating the benefits to the involved utilities. Many of the deliverables demonstrated will continue to be applied or further developed by the utilities or cities, demonstrating the success of the project (Table 1).

Table 1: Examples for further use of the PREPARED results by the involved utilities / cities:

City	Demonstrated deliverable	Further use
Aarhus	Integrated real time control of sanitation systems incl. early warning for Water quality in receiving waters	The RTC and early warning system have been installed by the municipality, the water utility and DHI and will be used in the future to achieve the goals of the WFD and bathing water directive
Aarhus	Real time integrated monitoring system	Has been applied test-wise and will be further

City	Demonstrated deliverable	Further use
	supporting improved rainfall monitoring	developed by DHI
Barcelona	Decision support system for planning complex urban water systems for regions under water stress	Will be used for planning purposes
Barcelona	Conceptual scheme of catchment and conservation of water from high flow events	Recommendations for maintenance and operation will be taken up by the local managers: Aigües de Barcelona, CUADLL (Association of water users in the Llobregat Area) and ACA (Catalan Water Agency)
Barcelona	Methodologies for urban runoff risk assessment	Methodology will be applied by Barcelona utility
Barcelona	New methodologies for sediments monitoring in sewer networks	Recommendations for sediment monitoring ready to be applied by Barcelona utility
Berlin	Substance flow model and decision support tool for managing drinking water supply from varying sources under climate change conditions in partially closed water cycles	Results has been used by utility to identify further R&D needs
Berlin	Planning instrument for an integrated and recipient/impact based CSO control under conditions of climate change	Planning tool has been transferred to utility and authority for further use
Eindhoven	System for early warning of deteriorating water quality in distribution networks	Recommendations ready to be applied by Eindhoven municipality
Eindhoven	Water Cycle Safety Plan protocol	Actions identified by WCSP approach will be taken up for climate change adaptation by Eindhoven municipality
Genoa	Models simulating the effect of alternative price systems and regulation schemes on the demand of water in urban areas to support water resource planning	Results communicated to decision makers at the utility as basis for further developments
Genoa	Decision support system for the competing uses of source water incl. protection of water intakes	Has been applied as planning tool and to be further developed for daily operation by utility
Gliwice	Enhanced real-time measuring and forecasting technologies for combined sewer system	Further development for as planning instrument by utility
Istanbul	Conceptual scheme for rainwater harvesting and grey water management as alternative resource for regions under water stress	Results communicated to decision makers at the utility as basis for further developments
Lisbon	System for distributed real time disinfection control	Recommendations for implementing real-time disinfection control ready to be applied by utility
Lisbon	Demonstration system for early warning of health risks from faecal contamination in recreational waters	System will continue to be operated by the utility and the R&D partner
Lisbon	Water Cycle Safety Plan protocol	Actions identified by WCSP approach will be taken up for climate change adaptation by Lisbon municipality
Lyon	Real time integrated monitoring system supporting improved rainfall monitoring	Has been applied test-wise and will be further developed by DHI
Lyon	Prototype software tool on the sensors calibration and verification and the evaluation of uncertainties	Will be further used by the utility for automated data validation
Oslo	Remedial actions to prevent adverse	Methodology will be continued to be applied to

City	Demonstrated deliverable	Further use
	effects of regrowth in networks at higher temperatures	monitor regrowth potential
Oslo	Integrated real time control of sanitation systems incl. early warning for Water quality in receiving waters	Model developed by the utility in PREPARED will be further developed and extended (included in new master plan for Oslo's waste-water system)
Oslo	Models and knowledge for operation and maintenance of wastewater networks exposed to rapid changes in flow	Recommendations ready to be implemented by Oslo's utility
Wales	Draft materials to support all partner cities' in building their adaptive capacity including building engagement & knowledge of adaption by all stakeholder groups	Actions identified by adaptive capacity planning will be taken up for climate change adaptation by Welsh Water