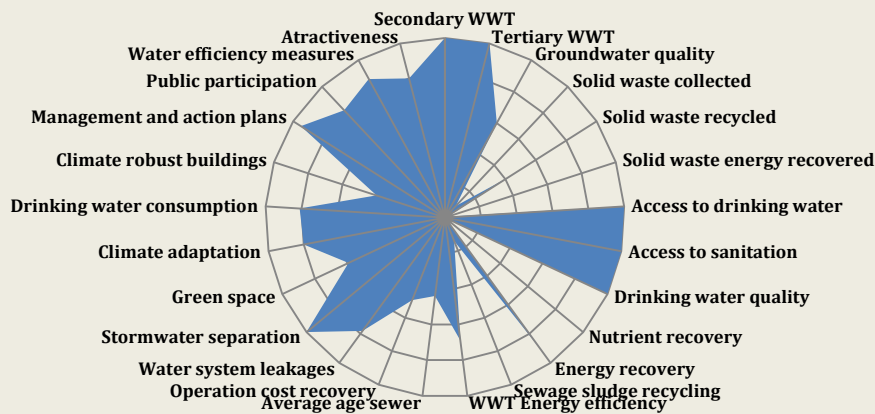


City Blueprints

Improving Implementation Capacities of Cities and Regions by sharing best practices on Urban Water Cycle Services



An EIP Water Action Group of the European Commission



Introduction

Approximately 80% of the world's GDP is produced, and 75% of the global energy and material flows are consumed in cities. Cities are concentrated centres of production, consumption, and waste disposal that drive land change and a host of global health and environmental problems. Cities are highly dependent on other cities and hinterlands to supply materials (including water), energy, and to dispose waste. Urbanization takes place at an unprecedented rate of almost 200,000 people per day and therefore, most of our global challenges, i.e. the [Sustainable Development Goals](#) can best be addressed at the level, where these problems will concentrate, i.e. in cities.

Megatrends in cities

Urbanization

Urban areas of the world are expected to absorb all the population growth expected over the next four decades. By 2050, urban dwellers will likely account for 86 % of the population in the more developed regions and for 64 % of that in the less developed regions.

Water use & water scarcity

Water withdrawals have tripled over the last 50 years. In 2030, there will be a 40% supply shortage of water.

Climate change

Climate change may worsen water services and quality of life in cities.

Sanitation

Currently, 2.5 billion people are without improved sanitation facilities.

Human health

Currently, 3.4 million people - mostly children - die from water-borne diseases every year.

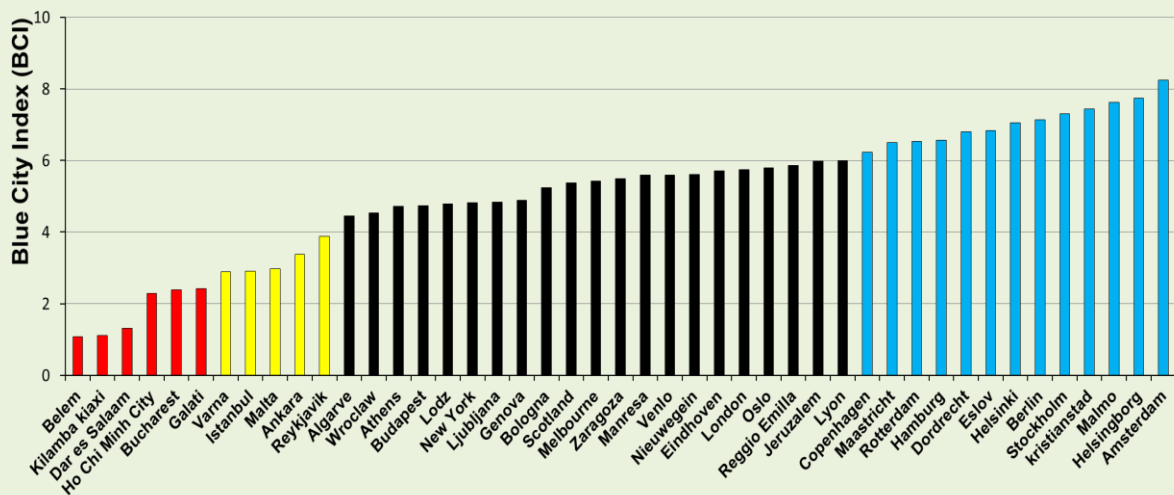
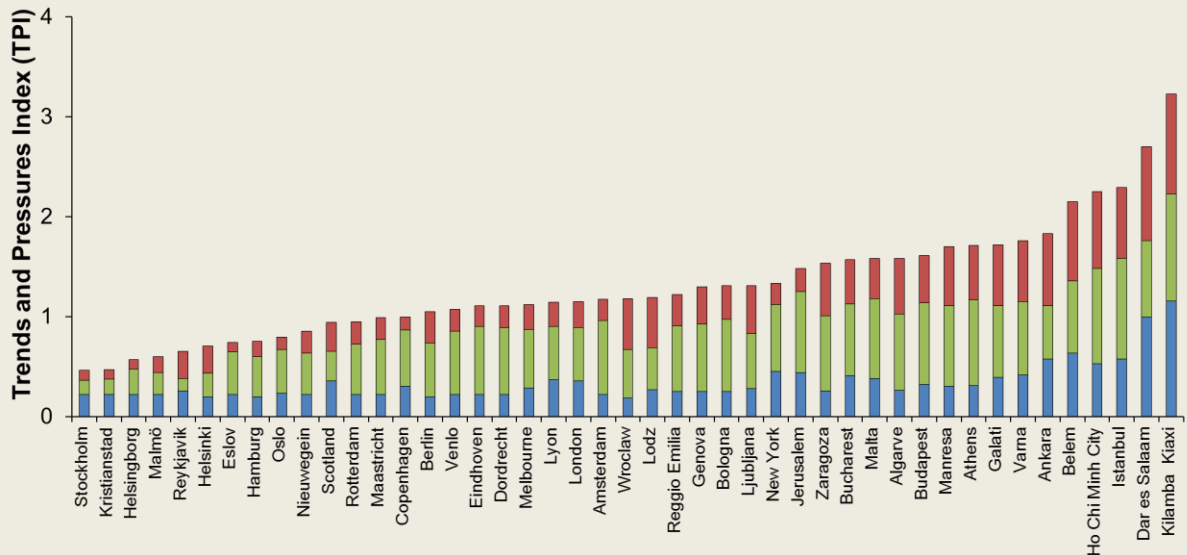
Hazards

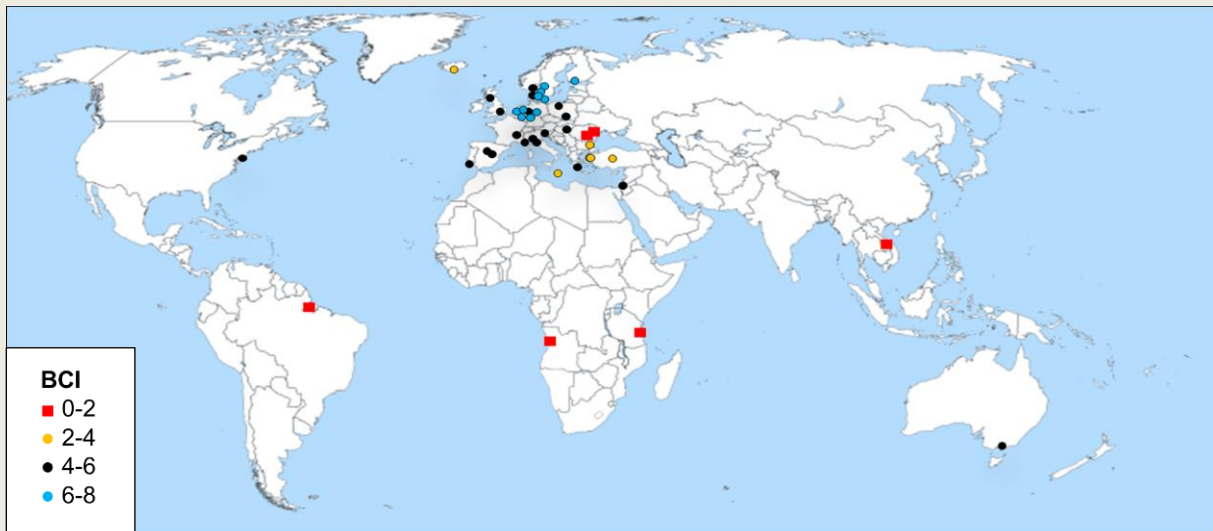
Water-related hazards account for 90% of all natural hazards.

City Blueprint and Blue City Index

These megatrends are the reason why we developed the City Blueprint [methodology](#). We have done this in a learning-by-doing fashion. The first city we assessed, was the City of Rotterdam. [The City Blueprint](#) is a baseline assessment of the sustainability of water management in a municipality (or other dominantly urban region). It allows a city to quickly understand how advanced it is in sustainable water management and to compare its status with other cities. This project is part of the [European Commission Innovation Partnership on Water](#) and is also tightly linked to the European Innovation Partnership on Smart Cities. We have assessed [45 municipalities and regions](#) and detailed reports are available for 7 cities ([Rotterdam](#), [Dar es Salaam](#), [Hamburg](#), [Istanbul](#), [Ho Chi Minh City](#), [Amsterdam](#), and [Melbourne](#)). Climate adaptation options have been reviewed for the City of [Malmö](#).

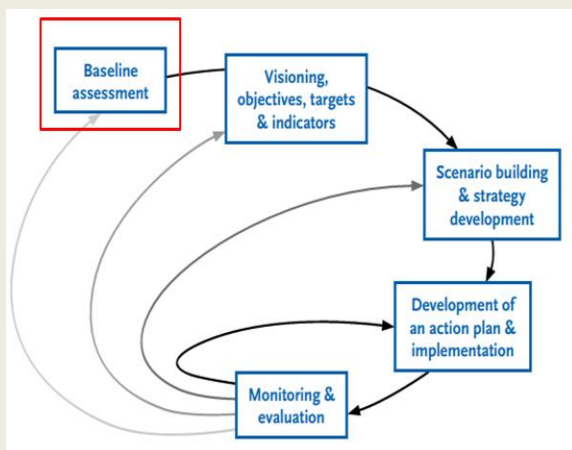
Recently, we published a [critical review](#) of the City Blueprint methodology, to better separate trends and pressures (on which cities have hardly any influence) from their performance on Integrated Water Resources Management (IWRM). We also included solid waste and [applied it](#) again to the 45 municipalities and regions, mainly in Europe. The financial (red), environmental (green) and social (blue) pressures are shown below, together with the BCI, the geometric mean of the 25 indicators of the City Blueprint. The BCI can vary from 0 (concern) to 10 (no concern). The geographical distribution of the BCI is shown as well.



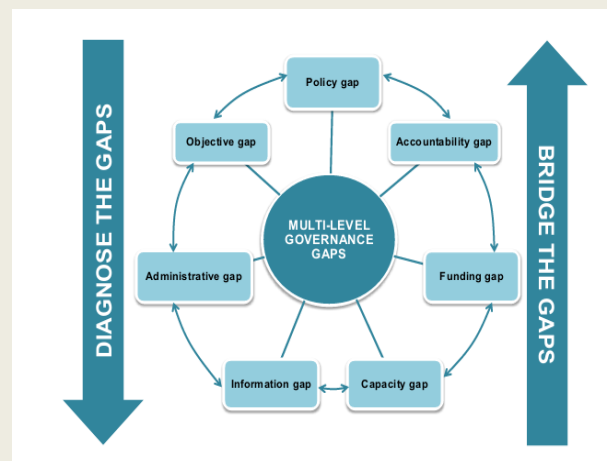


Water governance and the role of the City Blueprint

According to the OECD, *water governance is the set of rules, practices, and processes through which decisions for the management of water resources and services are taken and implemented, and decision-makers are held accountable.* Good water governance is the real challenge. A City Blueprint is just the first step (the baseline assessment) in a long-term journey of communication and co-operation within and between cities.



A City Blueprint is just the first step (the baseline assessment) on a journey of communication and cooperation within and between cities (Source: SWITCH)



The multi-level governance framework of the OECD (Source: OECD)

The prospect of increased urban flooding, heat stress, water scarcity and pollution as reported by the European Environment Agency (EEA) and the Organisation for Economic Co-operation and Development (OECD) emphasizes the need for adaptive and reliable urban water infrastructures. According to OECD, water infrastructures are often old and require refurbishment to meet current standards, whereas standards to withstand future conditions of increased storm events and urbanization are often not accounted for. According to the United Nations Environment Programme (UNEP), an estimated US\$ 41 trillion (41×10^{12}) is needed to refurbish the urban infrastructure in the period 2005-2030. Over 50% will be needed to refurbish the water systems. This is roughly 60% more than is spent on infrastructure in the same period until now. In developed countries water infrastructure investments amount to 1% of the GDP every year. For developing countries this is even more substantial, i.e. about 3.5% with extremes up to 6% or more.

Goal of the City Blueprint

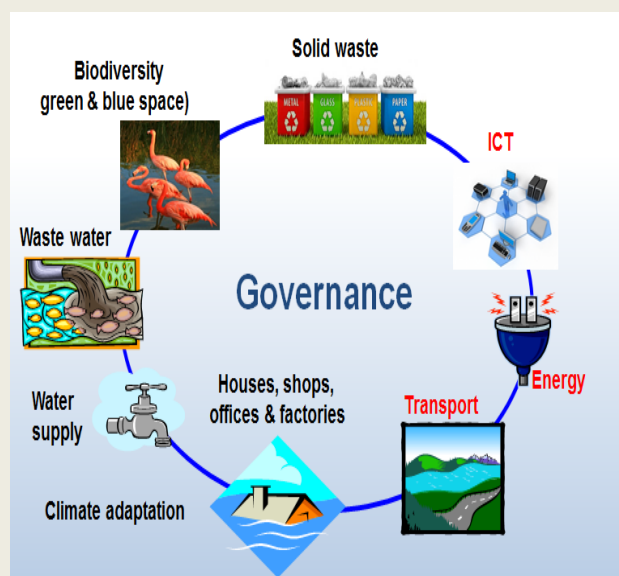
All cities are different. Some are advanced in a few or many subject areas. Our [research](#) demonstrated positive correlations of the Blue City Index with: (a) the ambitions of the local authorities regarding the sustainability of their IWRM, (b) the Gross Domestic Product (GDP) per person, (c) public participation, (d) climate adaptation, and (e) all governance indicators according to the World Bank. This shows that the variability in IWRM of cities offers great opportunities for short-term and long-term improvements, provided that cities share their best practices. Some cities, especially in developing countries, have much work to do. The goal of the City Blueprint process is not to highlight failures, but instead to encourage cities to become smarter by identifying areas for improvement and by sharing their best practices by active participation in learning-alliances, (“winning by twinning”). Recently, we published our [Compendium of Best Practices](#).

Smart cities and Smarter cities

Ideally, cities should develop a clear set of long-term objectives that should be SMART: *Specific* (target a specific area for improvement), *Measurable* (quantify or at least suggest an indicator of progress), *Assignable* (specify who will do it), *Realistic* (state what results can realistically be achieved, given available resources), *Time-related* (specify when the result(s) can be achieved). Very often clear objectives are not set and - as a result - many cities are neither smart nor future-proof. Cities should realize that the [cost of inaction](#) is generally very high. This has been clearly demonstrated by Lykke Leonardsen for the City of [Copenhagen](#).

Smarter cities are:

- Cities with a coherent long-term social, economic and ecological agenda.
- Water-wise cities that implement a circular economy, focus on social innovation and, last but not least, greatly improve on governance.
- Cities that explore co-benefits (win-win’s) by cleverly integrating topics such as water, waste water, energy, solid waste, transport, ICT, climate adaptation, biodiversity (blue-green infrastructure), and housing. This saves time and money and makes cities attractive places to live.



What is the commitment for municipalities?

Agreeing to take part in the City Blueprint survey does not commit a city to any further steps. However, taking the right adaptive and preventive measures is often cheaper than inaction. Therefore we hope that cities will take action to become more resilient and liveable. We would like cities to develop a long-term coherent strategy based on the completion of our [questionnaire](#). You can contact us, without any obligation, at: city.blueprint@kwrwater.nl or +31 306069649.

What is the potential use for consulting and construction companies?

The City Blueprint is the first step in a process to improve the sustainability of cities. It is a tool and process to bring stakeholders together and to develop a long-term strategy on the basis of which cities decide to develop and implement long-term action plans. The focus here is on the integration

of water, waste and climate adaptation with other aspects in a city. The co-benefits or win-win's will make cities a more attractive place to live and save time and money too.

What does the City Blueprint Survey involve?

The survey, based on the [questionnaire](#), is overseen by a group of independent technical experts, who will collate the answers, generate the radar chart and prepare a short accompanying report. There are 25 questions on the subjects shown on the final radar chart or City Blueprint. The city is requested to provide answers for most of these questions, while technical experts answer the remaining questions. Each question requires some element of data collation and/or research. For each, a formula is provided to convert the response to a score between 0 and 10, which can then be plotted on the relevant spoke of the radar chart. For the city, we expect 1 to 2 man-days of time by an appropriate engineer(s)/employee(s) to research and provide the responses. The technical expert may visit the city and work with their team for one to two days. Alternatively, the work can be completed by phone, email, Skype, etc.

The EIP Water – explained

The European Innovation Partnership on Water (EIP Water) is one of the European Innovation Partnerships which aim is to promote innovation that contributes to solve social challenges, enhance Europe's competitiveness and create employment and economic growth. EIPs help to pool expertise and resources by bringing together public and private actors at EU, national and regional levels. The overall objective of the EIP Water is to support and facilitate the development and implementation of innovative solutions to deal with the many water related challenges Europe and the World are facing, as well as to promote economic growth by bringing such solutions to the market in Europe and further afield.

Further information:

The full list of reports and publications is available on the City Blueprint website:

http://www.eip-water.eu/City_Blueprints (click on documents).

Other websites:

<http://www.watershare.eu/>

<http://www.netwerch2o.eu>

<http://ec.europa.eu/eip/smartcities/>

http://ec.europa.eu/environment/water/innovationpartnership/about_en.htm

<http://www.bluescities.eu/>

City Blueprint EIP Water Action Group Partners

NETWERC H2O (EU) – KWR WATER CYCLE RESEARCH INSTITUTE (THE NETHERLANDS) – FUNDACIÓ CTM CENTRE TECNOLÒGIC (SPAIN) - ADVENTECH (PORTUGAL) – COPERNICUS INSTITUTE OF SUSTAINABLE DEVELOPMENT (UNIVERSITY OF UTRECHT) – SIEMENS (THE NETHERLANDS) – ERRIN (EU) – RED ARAGON 7 PM (SPAIN) – ZINNAE (SPAIN) – AMGA (ITALY) – PARAGON EUROPE (MALTA) – USBMA (MOROCCO) – REGIONE PUGLIA (ITALY) – ACQUEDOTTO PUGLIESE (ITALY) – AUTORITA' IDRICA PUGLIESE (ITALY) – DE MONTFORT UNIVERSITY (UNITED KINGDOM) – WITTEVEEN EN BOS (THE NETHERLANDS) – DELTARES (THE NETHERLANDS) – ENEA (ITALY) – REDINN (ITALY) - LEITAT (SPAIN) – DEMOWARE CONSORTIUM (EU) – WORLD BANK (THE USA) – REGIONE TOSCANA (ITALY) – MINISTRY OF ENERGY AND WATER (STATE OF ISRAEL) – EASTON WATER CONSULTING (BELGIUM)

 Pooling resources – Innovating water	
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