SWITCH Integrated Urban Water Management (IUWM) covers:

- all aspects of the water cycle – water, wastewater, stormwater and natural systems
- household to city scales
- water as part of urban planning and built environment
- countries in the North and the South
- social, economic and environmental aspects
- the present time to the 'City of the Future'
- a wide range of climatic, socio-economic and institutional situations.

SWITCH uses an action 'learning alliance' approach involving:

Research across six themes:

- Paradigm shift to sustainable and integrated urban water management
- Stormwater management
- Efficient water supply and use for all
- Innovations in sanitation and waste management
- Urban water environments and planning
- Governance and institutional change

Demonstration cities showing practical examples of technologies at work

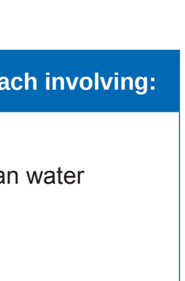
Learning Alliances (LAs) of stakeholders and researchers at city and global levels to ensure that research is demand-driven and implemented

Training events and toolkits to develop effective city LAs and a global LA

Dissemination of SWITCH research outputs and lessons learned

A Global Learning Alliance

Australia has been in long-term severe drought, in part due to climate change. At the 1st SWITCH Annual Scientific Meeting held in Birmingham in January 07, Alan Gregory from the Australia's Commonweatlh Scientific and Industrial Research Organisation (CSIRO) "Water for a Healthy Country" programme shared Australia's experiences in urban water research with SWITCH partners from Asia, Africa, Europe and South America.



Sustainable Water Management Improves Tomorrow's Cities' Health

The SWITCH project aims to achieve more sustainable urban water management in the "City of the Future". A consortium of 33 partner organizations from 15 countries are working together on innovative scientific, technological and socio-economic solutions, which can then be more speedily replicated around the world.

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Integrated and Sustainable Urban Water Management in the 'City of the Future'

SWITCH

SIXTH FRAMEWORK PROGRAMME

Re-roofing

Extensive green roofs, used as part of the architectural contribution to redevelopment, may halt the decline in flora and bird habitats in the city and could contribute to the expansion of the threatened black redstart population in Birmingham. SWITCH is evaluating not only the biodiversity benefits of these new roof forms but also their added value for thermal cooling, water supply and flood control.

Birmingham, UK

Capturing the rain

Ways to slow down and capture rainwater are being tested:

- Retention of roof runoff locally
- Disconnecting runoff from roads to reduce stormwater system overloads
- Best Management Practice for managing interaction of storm water drainage and high groundwater levels
- Restoring connectivity in a river catchment as part of the rehabilitation of a former steelworks area

Emscher Region, Germany

Leap across the Elbe

Water sustainability isn't just about water supply and control, but embraces ecological, social and cultural considerations essential to the health and wellbeing of any modern city. Water sensitive urban design reflects this holistic view and the developing plans for regeneration of Willhelmsburg Island provide a powerful demonstration of its application.

Hamburg, Germany

Restoring urban rivers

Two rivers have been selected to trial alternative river restoration methods using eco-hydrological solutions that improve socio-economic and environmental amenity:

- Sokolwka River - addressing the restoration of a municipal river for stormwater management
- Ner River - addressing the opportunity for novel sewage effluent treatment.

Lodz, Poland

Water for peri-urban farmers

Beijing is challenging the limits of rainwater collection and use for urban agriculture. Emphasis is on effective use of water through appropriate technologies for capturing and applying water to urban fields. The goal is to demonstrate the efficiency, economy and replicability of the methods as well as the opportunities for market led peri-urban production of produce.

Beijing, China

Increased urbanization

An important factor affecting the management of urban water globally is urban population which is currently growing by 1 million per week. This means that by 2011 there will be 7 billion people in the world. The overwhelming majority of this increase will be in the urban areas of Southern countries (mainly in low-income settlements) where growth is five times as fast as in the North. These cities are already facing enormous backlogs in shelter and services, insufficient water supply, deteriorating or non-existent sanitation and environmental pollution. In all cities there is increased density resulting in more impervious surfaces and increased runoff.

Greywater improving city liveability

An integrated scheme of grey water reuse and landscape irrigation is proposed for the Huxi Campus of Chongqing University. Greywater from 21 high rise developments will be treated onsite in constructed wetlands with rainwater treated in shallow grass trenches. This will reduce potable water demand and ensure consistent water supply to campus lakes that provide a visual amenity for the local community.

Chongqing, China

Climate change

Although estimates of the level, cause and speed of climate change vary, there is compelling evidence that we can all expect higher maximum temperatures and more hot days, less frost, and in the mid to high latitudes, more intensive rain. In dry areas this means increased pipe breakage, reduced water supplies, and problems with drinking water quality. In wet areas and those subject to more intense rain, this means flooding, sewer overflows and disruption to services such as electricity, which affects the ability to pump water and treat wastewater. Higher peak flows and storm surges can also affect levees, pump stations and other infrastructure. It is vital for water demand management to assess these risks now in order to prevent serious crises in the future.

Aging infrastructure

Poorly maintained infrastructure for water supply has serious impacts on the safety of drinking water and is usually the result of insufficient funding, poor management or inappropriate technologies. In developed countries, there is a legacy of inadequate maintenance and systems renewal, many of which are now reaching the end of their life. In the US alone these costs are an estimated 500 to 1200 billion dollars. In many low income countries the necessary infrastructure does not exist, with less than 50% of the population having access to piped water supplies in-house and less than 25% having adequate sanitation. In both Northern and Southern countries, the situation impacts on state and local economies and increases the risks to public health and the environment.

Innovation in storm water management

Four demonstrations projects are underway to:

- Monitor functionality and efficiency of infiltration trench and detention systems
- Study infiltration trenches that better manage runoff water quality and quantity
- Assess retrofitted wetland and detention basins
- Assess combined detention basin and creek restoration

Belo Horizonte, Brazil

Accra faces the challenge

Accra is adopting a whole city approach to solving its water problems through actions spanning:

- Safe water reuse
- Eco-sanitation and decentralised waste water management
- Use of urban water for urban agriculture and other livelihood opportunities
- Use of natural systems in the municipal water cycle
- Optimising social inclusion

Accra, Ghana

Doing more with less

Zaragoza is committed to reducing daily consumption of water to 90 litres per person by 2010. This is being achieved through two recognized approaches: water loss management, and reducing water consumption. SWITCH demonstrations are aimed at reducing water use and losses from the distribution network as well as showing the potential of an integrated resource planning approach.

Zaragoza, Spain

Water sustainability at neighbourhood scale

The demonstration city project aims to create IUWM with improved water supply and sanitation services to sensitive environments. Special emphasis will be placed on implementing IUWM in a Fishing Village with impoverished conditions. The use and reuse of potential water resources will be employed for the development of more sustainable water management schemes.

Alexandria, Egypt

Improved systems

Increasing water scarcity requires exploration of new water sources. SWITCH is testing water treatment and storage technologies for indirect potable reuse. Soil aquifer treatment (SAT) is used as a natural prefilter for nanofiltration (NF) of microbial and chemical pollutants in wastewater effluent. Due to growing demand for housing and energy, an improved short SAT-NF system is being developed, as an alternative to large infiltration fields.

Tel Aviv, Israel