Subject Group:
Water Sensitive Urban Design

WP 5.1: Water Sensitive Urban Design
WP 2.2: Decision Making Process for effective Urban SWM

Iwona Wagner

Modern cities, with patches of ecosystems in the landscape and technical infrastructure, create a complex of interactions consisting of multidirectional flow of water, matter, pollutants and energy.

It is necessary to understand the combined (technological and ecological) flow paths of all these components, in order to control them and achieve a high quality of life in the city.

They should be organized based on the rules governing natural ecosystems.

(Zalewski & Wagner, 2006)

Urbanisation and the water cycle…

- disintegration of the water cycle within the landscape;
- increased runoff (flooding, hydraulic stress to rivers, water quality);
- reduced infiltration (groundwater level and recharge, base flow);
- reduced evaporation (higher temperatures, lower humidity) ;

… and environmental security

- lower quality of water;
- degraded habitats structure;
- water resources availability;
- health risk;
- reduction of the aesthetic, cultural & recreational quality of landscape;

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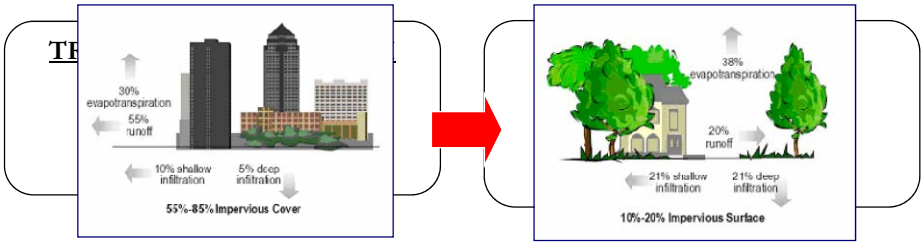
(Sieker & Zweynert, 2008, Zalewski & Wagner, 2006)

Cities….

• Provide an opportunity for personal development, equity, improvement of the material status, access to culture, scientific and social life and organisations, information;

• May create unhealthy and unfriendly environment…

… if managed based on the old paradigm



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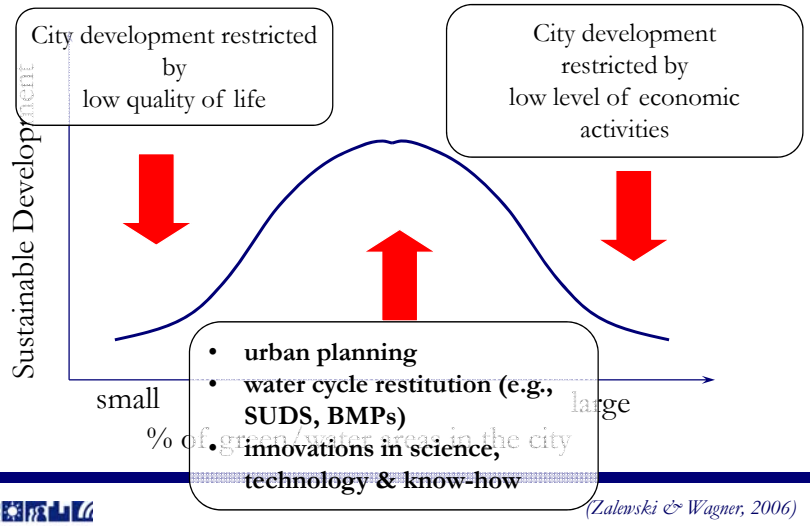
(US-EPA, 2005)

Balanced landscape and city development



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(Zalewski & Wagner, 2006)

Water Sensitive Urban Design

Interdisciplinary cooperation of water management, urban design and landscape architecture which considers all parts of the urban water cycle, combines water management function and urban design approaches and facilitates synergies for the ecological, economical, social and cultural sustainability.

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(Langenbach et al., 2006)

Subject Group:
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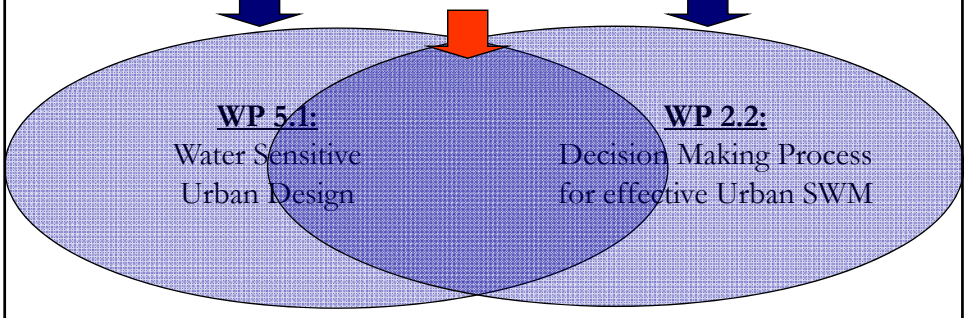

TUHH: Technical University of Hamburg, Germany
Prof. Heike Langenbach

MU: Middlesex University, UK
Prof. Mike Revitt

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WPs in the WSUG SG

- *Objectives*
- *Completed research*
- *Complementarities*

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WP 5.1: Water Sensitive Urban Design

- Review of the strategies and solutions of WSUD;
- Evaluation of components in urban small-scale planning systems;
- Integration in urban systems and spatial contexts of town districts, housing areas and urban landscapes (large-scale planning systems);
- Implementation of WSUD-solutions in urban transformation processes;
- Elaboration of planning principles and developing a framework, which completes conventional strategies of urban planning und leads to new opportunities of WSUD;

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(SWITCH DoW)

WP 5.1: Research up-to-date

- Review of small-scale planning strategies and solutions of WSUD in Hamburg
- revising the state of art in WSUD
- documenting five case studies on best practice solutions (Report: Review of planning strategies of 'Water Sensitive Urban Design').

- Evaluation of the sustainable components of 'Water Sensitive Urban Design' for each of the small scale case studies which developed indicators of WSUD, defined WSUD method and described WSUD planning principles.
- 1st draft of the design manual on WSUD.

Demonstration Cities: Hamburg, Zaragoza; Emsherregion

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(Langenbach et al, reports: 2006, 2008)

WP 2.2: Decision-making processes for effective urban stormwater management

- Development of robust concepts of sustainable stormwater resource use which cities on a global scale can utilise to inform and develop/review their own stormwater management strategies.
- Development of approaches which will enhance stakeholder perception of and participation in the use of stormwater as a valuable urban resource.
- Identification of multi-benefit catchment-scale stormwater management strategies and mechanisms for integration into urban land management planning processes and procedures.
- Integration of the above objectives with specific regard to the development of generic model approaches to contribute to the delivery of the requirements of the EU WFD.

SWITCH

(SWITCH DoW)

WP 2.2: Research up-to-date

- Report on possible secondary uses of stormwater around the world (Deliverable 2.2.1b) and current stormwater management strategies in selected demonstration cities.
- A framework of principles for sustainable stormwater management in 3 demonstration cities (Deliverable 2.2.1a).
- Eco.RWB software tool, to facilitate the calculation of life-cycle costs for different stormwater BMPs (D2.2.2a).

Demonstration Cities: Hamburg, Belo Horizonte, Birmingham

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(Revitt et al,, reports: 2006, 2008)

Why to integrate?

- Ensure, as far as possible, integration of the work on the individual research areas within the WP 5.1 and 2.2;
- minimise overlap of efforts;
- maximize knowledge development, know-how and principles for their use in cities;

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Why to integrate?

- Complementing issues / activities in the same cities;
- Possible use of software (WP2.2) in WSUD (WP5.1) and WSUD principles in stormwater decision making process.
- Joint decision making tolls can support decision making processes elsewhere e.g., in urban water supply and eco-sanitation (SGs: „Natural System for Treatment" and „Decentralized WW Mgt").
- Joint contribution to WP 1.1 (Sustainability concepts and indicators) and WPs related to „Governance and institutional change" (SG: „Institutions & Finance").
- Essen in the Emscher (July 2008) - important step forward towards focusing the joint activities of the WPs and demonstration cities (Hamburg, Belo Horizonte, Lodz - Link to WP 5.3 and ecohydrological innovation;

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WSUG SG

- Objectives

- Contribution to the SWITCH approach

- Outputs

SWITCH

Objectives of the Subject Group

- Science & Innovation
- Planning & Decision Making
- Demonstration & LA
- Training

SWITCH

Objectives of the Subject Group

- Link with other SGs for bringing innovations in science and technologies developed within SWITCH, to enhance the efficiency of the stormwater management and WSUD measures;
- Develop joint tools for efficient incorporation of stormwater management into the decision making in IUWM and urban planning;
- Implement and validate the joint planning and DS tools in demonstration cities together with the LAs.
- Contribute to the SWITCH training package (WSUD, stormwater management, decision making, Strategic planning);

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Deliverables of the Subject Group

- Science & Innovation ⇨ other SGs
  - Joint SCI papers (+ SGs);
- Planning & Decision Making ⇨ LAs, CW, SP
  - Joint guidelines integrating BMPs & WSUD principles
  - Involving the Eco.RWB tool into the urban planning process (development of a joint WSUD/BMP tool);
  - Elaboration of decision-making procedures in WSUD and BMPs including communication strategies

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Deliverables of the Subject Group

Demonstration & LAs

•Documented cases of WSUD/SUDS, BMPs in cities

⇨ Demonstration Cities, LAs

Training

•Preparation of training material
• Cities / LAs trained

⇨ Training package Global LA

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Long-term Goals

- Change stakeholders perception of a stormwater as a „constraint" into stormwater as „valuable resource", indispensable in sustainable urban planning, design and decision making;
- Improve urban water systems and quality of life, assuring economics of the management and sustainable solutions under conditions of progressive urbanization and growing cities.

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Subject Group Session:
Water Sensitive Urban Design

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Overall objective

To develop a strategy on how the science within the subject group will evolve in the next 2 years;

a) What will be the most significant science developed and how it will embed into the IUWM planning and LA process?
b) What will be key deliverables and how they will integrate with the SWITCH approach;
c) How can we involved the demonstration Cities fn the SWITCH LAs;

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Subject Group Session:
Water Sensitive Urban Design

Monday 1st December 2008, 16.00 – 18.30		
TIME	**TITLE**	**AUTHORS**
16.00-1620	Integration Of Activities Within The 'Water Sensitive Urban Design' Task Group	Iwona Wagner
16.20-16.40	Water Sensitive Urban Design	Heike Langenbach
16.40-17.00	**Questions and discussion on presentation**	
17.00-17.20	Developing A Framework For Sustainable Stormwater Management	Mike Revitt
17.20 - 17.40	Water Balance Approach To Urban Planning	Heiko Sieker
17.40 - 18.00	**Questions and discussion on presentation**	
18.00-18.30	**General discussion and formulation of recommendations**	

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