Paving the way for a sustainable asset management of urban water infrastructures: research challenges and opportunities or SAM at the Portuguese pavilion of the 5th WWF or SAM R&D priorities: outcomes of the 5th WWF

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The Portuguese Pavilion at the World Water Forum dedicated the 17th March to water science and research. Because asset management of urban water infrastructures is a key research and development topic worldwide, and Portugal is not an exception, LNEC, the Portuguese national laboratory of civil engineering, and the Strategic Asset Management (SAM) Specialist Group of IWA jointly organised a panel discussion aiming at identifying research challenges and opportunities for a sustainable asset management of urban water infrastructures. The objective was to get a multi-stakeholder perspective. Contributors included the IWA President, the IWA SAM SG Chair, a senior officer of the European Investment Bank, utilities CEOs, consultants, academics, researchers, and representatives of national professional associations, in order to try and identify the best paths to move forward.

Portugal has a word to say in terms of asset management because the water sector has had a remarkable evolution in the past 15 years in terms of quality of the services provided, institutional and organisational framework, investments made in new infrastructures, regulatory environment, management skills and scientific developments. The organisation in Lisbon of LESAM 2007, the IWA leading-edge SAM Conference, and the on-going national project AWARE-P (advanced water asset rehabilitation in Portugal, www.aware-p.org) are two examples of remarkable initiatives for paving the way for a sustainable management of urban water infrastructures. There is a need for joint initiatives, particularly in Europe, that create synergies, and allow for sharing and complementing competences and experiences. R&D has to be based on the joint work and cooperation between the key types of stakeholders, such as utilities, regulators, researchers, users, authorities and financial agencies. This is fundamental to create stakeholder awareness, change the existing culture of taking the water services for granted, implement adequate financial mechanisms, create know-how and develop effective decision support tools.

Speakers were encouraged to identify the main SAM drivers, R&D gaps and priorities, and products needed. Discussion was rich and the contributions complemented each other, whilst demonstrating common views on the key aspects. Outcomes of the meeting are summarised in the table.

SAM drivers:
• Promote adequate levels of service and strengthen services reliability • Improve the sustainable use of water and energy while minimizing the carbon foot print • Plan and promote climate change adaptations in a phased way • Manage risk of service failure, taking into account users' needs and risk acceptability • Give preference to rehabilitation of existing assets instead of building new, when feasible • Promote investment and operational efficiency gains of water utilities • Make a clear and straight forward justification of investment priorities
R&D gaps
• Innovative technologies for asset condition assessment (e.g., on-line monitoring) and better understanding of the relationship between asset condition and level of service • Information management improvements and understanding organizational constraints • Better understanding and incorporation in the SAM process of the stakeholders' needs and expectations • Managing interactions between urban infrastructures (drinking water & wastewater; urban water and other) • Better understanding and improved control of asset deterioration processes • Economic assessment of indirect and external costs and benefits • Reliable, long lasting and low cost rehabilitation materials • Quantifying uncertainty in the different models • Water security innovation
R&D priorities and products needed
• AM regional directives, international standards and guidelines (e.g. AM policy, AM methodologies and procedures, protocols for data collection and information management) • Guidelines and communication materials to promote the change of culture of the organizations with a continuing effort to implement SAM • Comprehensive, user-friendly and flexible SAM computer-based systems that promote a step by step SAM implementation • Common framework and plug & play software systems and models for SAM of small and medium size utilities and systems • Communication, training materials and guidelines expressly directed to the operational / field staff. • Finance models for single utilities, and at multi-utilities or regional levels • Reference methods for economic assessment • Enhanced construction and renewal materials and performance assessment of new materials • Standard risk management guidelines for urban water systems, including how to deal with risks associated to low probability hazards and catastrophic consequences • Effective international networks of SAM stakeholders, including service users • Processes for assessment of asset condition • New generation of information management systems for SAM that allow for integrating and incorporating different existing information systems • Best practice manuals and training materials (including for e-learning) addressed to the policy-makers, technical staff and operational staff and to utilities with different levels of complexity and development • Decision support tools to support water systems adaptation to climate change and efficient use of water and energy, assuring added flexibility and resilience.