A Master Framework for UWCS Sustainability

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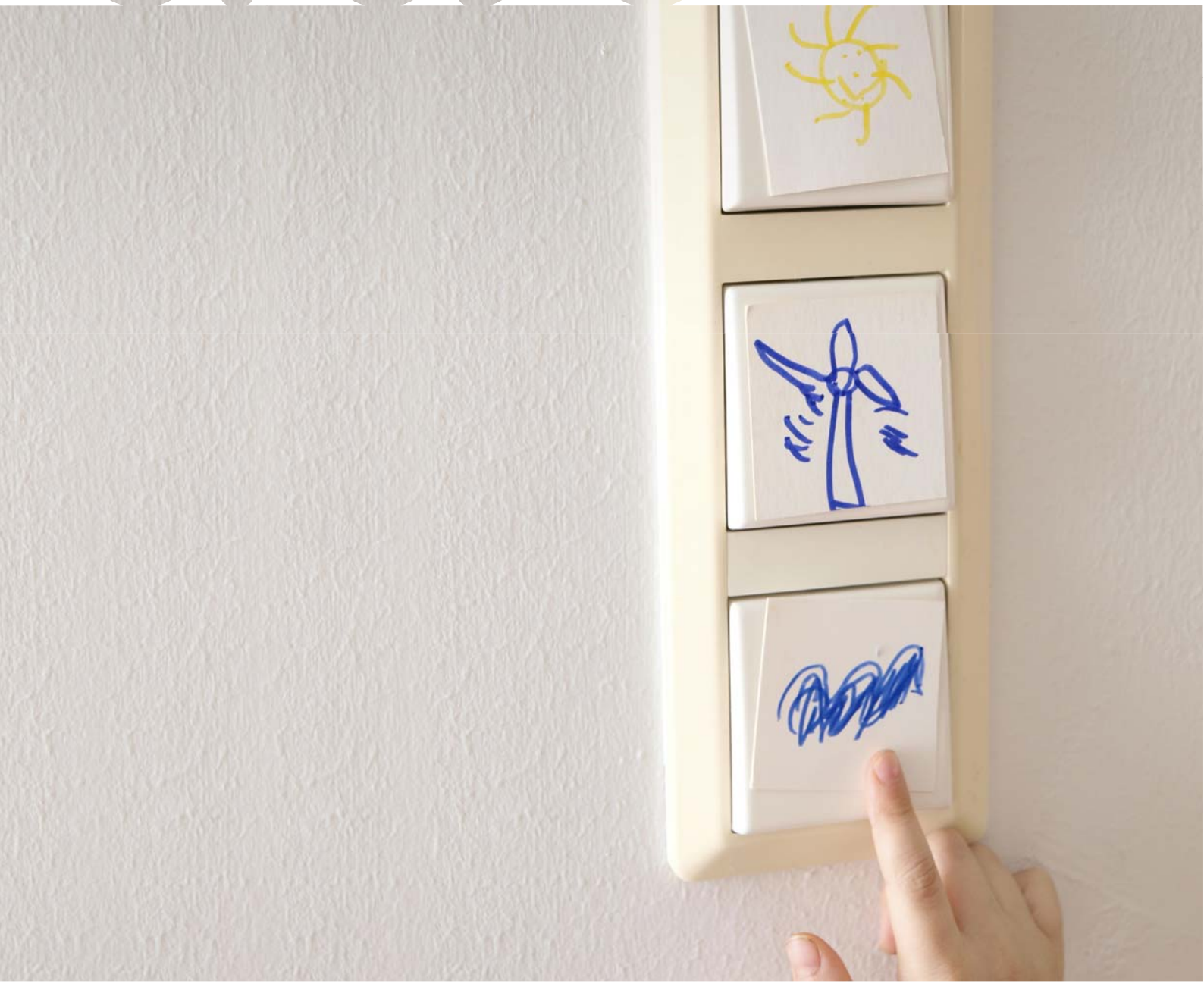

TRANSITIONS TO THE URBAN WATER SERVICES OF TOMORROW

A Master Framework for UWCS Sustainability

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Objective of TRUST

The main objective of the TRUST project (Transitions to the Urban Water Services of Tomorrow) is to support water authorities and utilities in Europe in formulating and implementing appropriate urban water policies in order to enhance urban water cycle services. TRUST's aim is to deliver knowledge to support urban water cycle services (UWCS) towards a sustainable and low-carbon water future without jeopardising service quality. It will achieve this through research-driven innovations in governance, modelling concepts, technologies, decision support tools, and novel approaches to integrated water, energy, and infrastructure asset management. There is no single or clear pathway for the adoption of sustainable practices for water utilities, cities, or any other organization involved in UWCS. Equally, there is currently no consensus on how to assess the sustainability of UWCS.

TRUST proposition on sustainability

Sustainability is commonly perceived as the social, environmental and economic qualities of a given system under study, in a holistic and long-term perspective. This represents the so-called triple bottom line (TBL) dimensions of sustainability (Elkington, 1997)[1].

In order to comply with the general internationally well-recognized TBL definition, we believe that social, environmental and economic sustainability should be the *main dimensions* of a UWCS sustainability definition for TRUST, with a further two dimensions (assets and governance) as required *supporting dimensions*. The sustainability of urban water services is mutually dependent on other urban subsystems such as energy, solid waste management and transportation. A long-term oriented UWCS sustainability definition would benefit from addressing possible contributions to the overall urban sustainability.

This leads to the following proposed UWCS sustainability definition for use within the TRUST project:

Sustainability in urban water cycle services (UWCS) is met when the quality of assets and governance of the services is sufficient to actively secure the water sector's needed contributions to urban social, environmental and economic development in a way that meets the needs of the present without compromising the ability of future generations to meet their own needs.

[1]See more in Elkington, J. (1997) Cannibals with Forks: the Triple Bottom Line of 21st Century Business. Capstone, Oxford.

TRUST proposition on sustainability assessment

On the basis of what is presented above, we propose the following definition of what is expected of a UWCS sustainability assessment in TRUST:

Sustainability assessment of urban water cycle services in TRUST includes the main dimensions of social, environmental, economic and the supporting dimensions of assets and governance sustainability.

The assessment should in particular provide insights in how to improve the management and development of UWCS assets and governance, as part of a strategic transition process towards 2040, in order to positively influence the end dimensions of social, environmental and economic sustainability.

The assessment is made operational by critically and carefully examining a chosen set of performance metrics/indicators and how they comply with a predefined set of sustainability objectives and criteria. The performance metrics/indicators may be quantitative and/or qualitative, and are specifically chosen in order to take account of the particular context and challenges of a given urban water cycle system, in a medium- and long-term transition context.

The UWCS sustainability assessment method must be transparent, valid and holistic, and should make use of a metabolism and life-cycle assessment perspective when this is needed. The assessment method should be inclusive and flexible with respect to stakeholder involvement and decisions regarding target setting and trade-off as part of a multi-criteria decision analysis process.

The rationale for considering the supporting dimensions of assets and governance is to make explicit two important dimensions for complex infrastructure-based systems like UWCS. *Assets* are associated with the system of physical infrastructure, namely their durability, reliability, flexibility and adaptability, but also soft infrastructure, meaning human capital as well as information and knowledge management. *Governance* relates to the political, social, economic and administrative processes which affect the development, delivery or management of water resources and services. Key governance considerations are transparency, broad participation in decision making, the effectiveness and efficiency of measures taken, the quality of the accountability and adjustment mechanisms, and also the existence and alignment of city planning with UWCS.

Figure 1 presents the TRUST approach to sustainability assessment and Table 1 contains the dimension, objectives and criteria of UWCS sustainability.

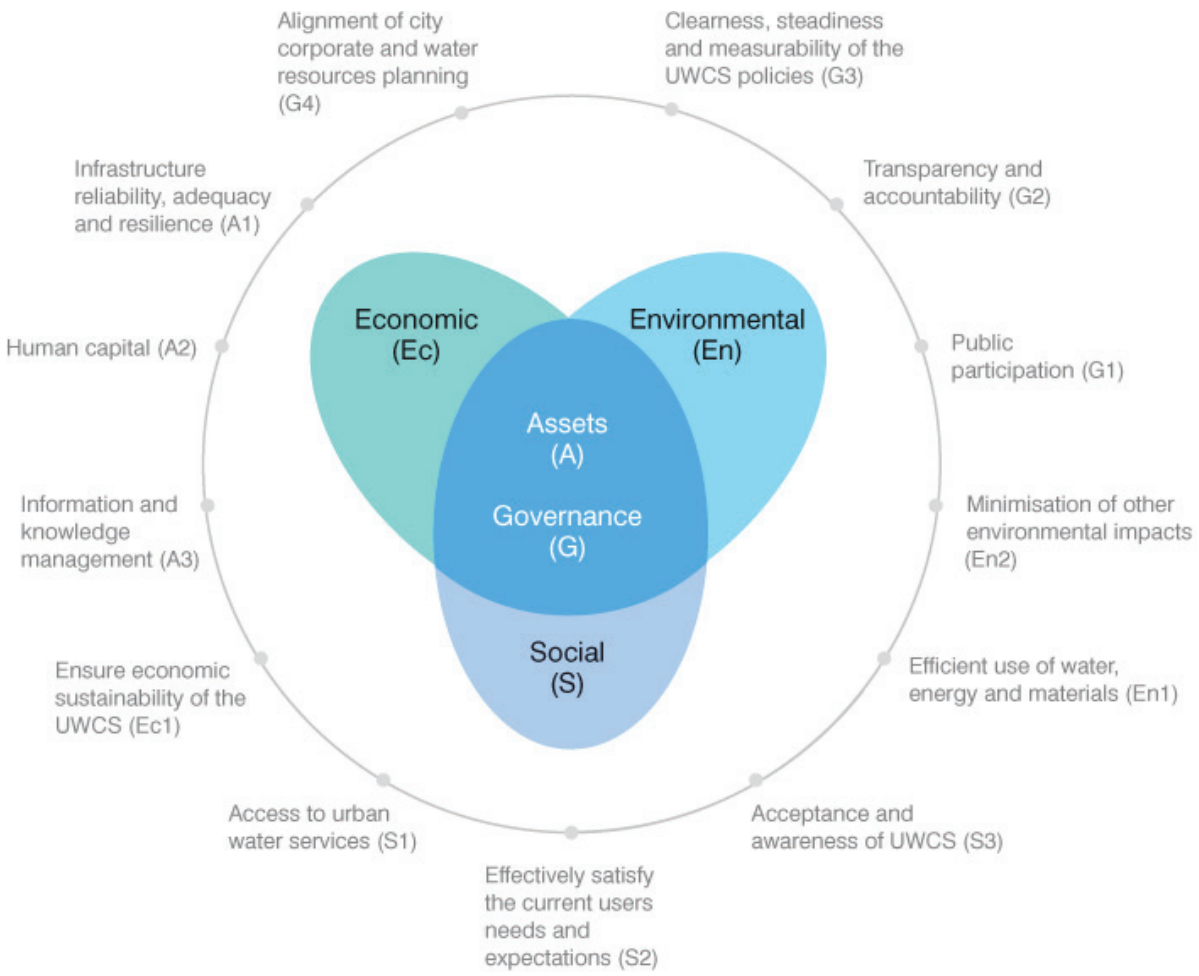
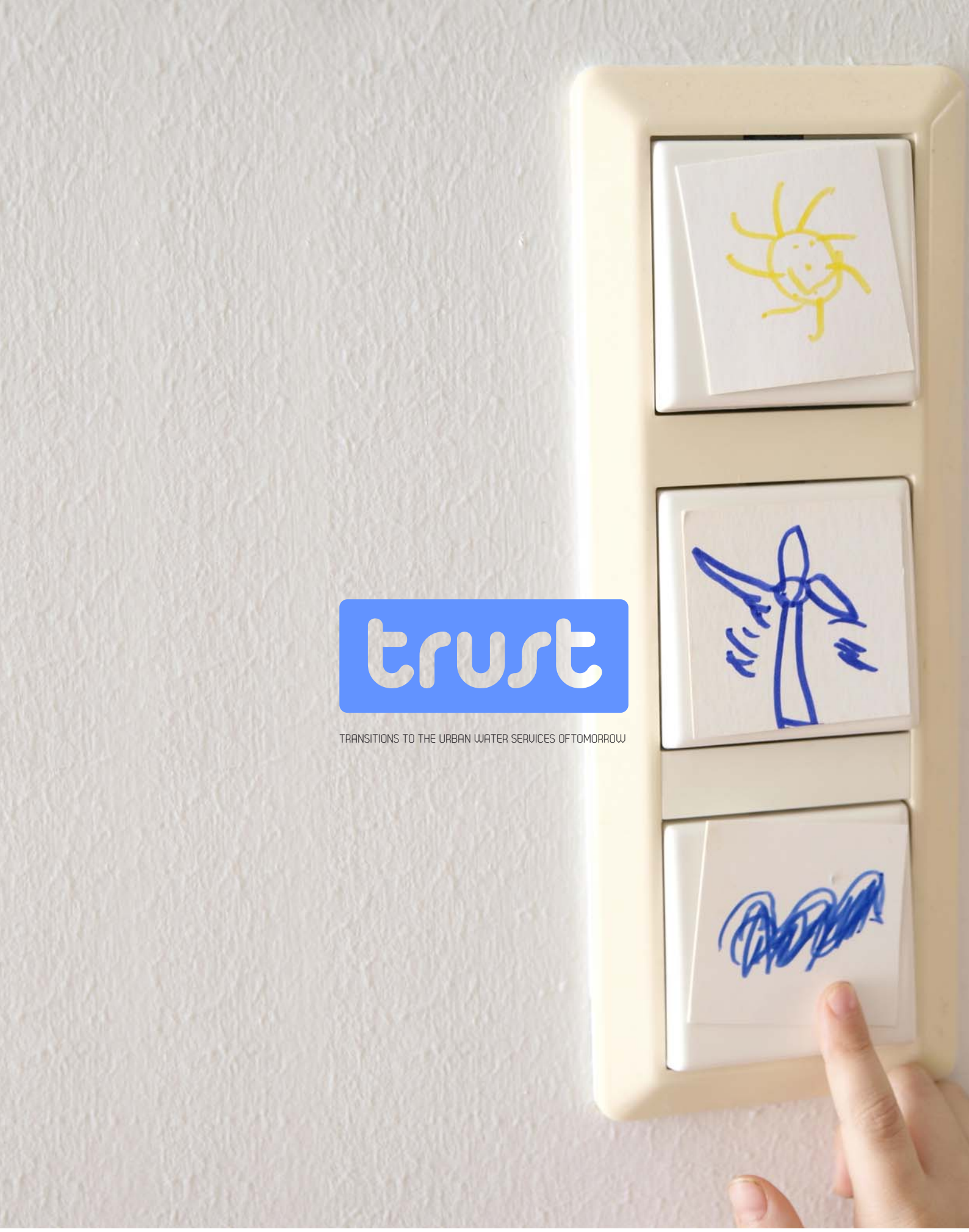


Figure 1 – TRUST approach to sustainability assessment

Table 1 – Objectives and criteria of the UWCS sustainability dimensions

DIMENSION	OBJECTIVES	ASSESSMENT CRITERIA
Social	S1) Access to urban water services S2) Effectively satisfy the current users' needs and expectations S3) Acceptance and awareness of UWCS	S11) Service coverage S21) Quality of service S22) Safety and health S31) Affordability
Environment	En1) Efficient use of water, energy and materials En2) Minimisation of other environmental impacts	En11) Efficiency in the use of water (including final uses) En12) Efficiency in the use of energy En13) Efficiency in the use of materials En21) Environmental efficiency (resource exploitation and life cycle emissions to water, air and soil)
Economic	Ec1) Ensure economic sustainability of the UWCS	Ec11) Cost recovery and reinvestment in UWCS (incl. cost financing) Ec12) Economic efficiency Ec13) Leverage (degree of indebtedness) Ec14) Willingness to pay
Governance	G1) Public participation G2) Transparency and accountability G3) Clearness, steadiness and measurability of the UWCS policies G4) Alignment of city, corporate and water resources planning	G11) Participation initiatives G21) Availability of information and public disclosure G22) Availability of mechanisms of accountability G31) Clearness, steadiness, ambitiousness and measurability of policies G41) Degree of alignment of city, corporate and water resources planning
Assets	A1) Infrastructure reliability, adequacy and resilience A2) Human capital A3) Information and knowledge management	A11) Adequacy of the rehabilitation rate A12) Reliability and failures A13) Adequate infrastructural capacity A14) Adaptability to changes (e.g. climate change Adaptation) A21) Adequacy of training, capacity building and knowledge transfer A31) Quality of the information and of the knowledge management system



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SEVENTH FRAMEWORK PROGRAMME