

Development and application of Smart Water Cities global standards and certification schemes based on Key Performance Indicators

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Abstract

Smart water cities (SWC) are urban municipalities that utilizes modern innovations in managing and preserving the urban water cycle in the city; with the purpose of securing sustainability and improving the quality of life of the urban population. Understanding the different urban water characteristics and management strategies of cities situate a baseline in the development of evaluation scheme in determining whether the city is smart and sustainable. This research herein aims to develop measurements and evaluation for SWC Key Performance Indicators (KPIs), and set up a unified global standard and certification scheme.

The assessment for SWC is performed in technical, as well as governance and prospective aspects. KPI measurements under Technical Pillar assess the cities' use of technologies in providing sufficient water supply, monitoring water quality, strengthening disaster resilience, minimizing hazard vulnerability, and maintaining and protecting the urban water ecosystem. Governance and Prospective Pillar on the other hand, evaluates the social, economic and administrative systems set in place to manage the water resources, delivering water services to different levels of society. The performance assessment is composed of a variety of procedures performed in a quantitative and qualitative manner, such as computations through established equations, interviews with authorities in charge, field survey inspections, etc.

The developed SWC KPI measurements are used to evaluate the urban water management practices for Busan Eco Delta city, a Semulmeori waterfront area in Gangseo district, Busan. The evaluation and scoring process was presented and established, serving as the basis for the application of the smart water city certification all over the world. The established guideline will be used to analyze future cities, providing integrated and comprehensive information on the status of their urban water cycle, gathering new techniques and proposing solutions for smarter measures.

Keywords : Smart water cities, KPIs, Urban water cycle, Water policy

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