



Towards an integrated modelling framework for sustainable urban development

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ABSTRACT

An integrated assessment of utility and industrial sectors contributing to sustainable urban environment development is a complex task. The UK-based 'ReVISIONS' project (Regional Visions of Integrated Sustainable Infrastructure Optimised for Neighbourhoods) utilises an innovative, integrated modelling framework (IMF) to assess urban environment sectors, such as water, energy, waste and transportation. Assessment is undertaken using a range of models, which facilitate projections of employment, population and housing data and technology optioneering, at the regional and neighbourhood scales, culminating in a multi-criteria analysis of all the model outputs to permit scenario assessment. Neighbourhood scales are represented through a 'tile'-based concept. This paper gives an overview of the IMF and then focuses in on the methodology underpinning the water sector assessment, which considers the urban water cycle in an integrated way (i.e. water supply, wastewater and stormwater are considered as one system). Supply-demand parameters are estimated and technologies ranging from water reuse, to sustainable drainage systems, are assessed for their suitability for different scales. Preliminary results indicate that the 'tile'-based approach is an appropriate methodology for undertaking a water supply sector assessment. However, greater accessibility to robust datasets relating to 'alternative' water technologies is required, to facilitate a full, fair comparison of water sector options.

KEYWORDS

Development, framework, integrated, management, modelling, sustainable, water