

A Framework for Assessing and Implementing Ecological-Based Adaptation Solutions in Urban Areas of Shanghai

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Abstract : The uncertainty and the complexity of the urban environment combining with the threat of climate change are contributing factors to the vulnerability in multiple-dimensions in Chinese megacities, especially in Shanghai. The urban area occupied high valuable technological infrastructure and density buildings is under the threats of climate change and can provide insufficient ecological service to remain the trade-off on urban sustainable development. Urban ecological-based adaptation (UEbA) combines practices and theoretical work and integrates ecological services into multiple-layers of urban environment planning in order to reduce the impact of the complexity and uncertainty. To understand and to respond to the challenges in the urban level, this paper considers Shanghai as the research objective. It is necessary that its urban adaptation strategies should be reflected and contain the concept and knowledge of EbA. In this paper, we firstly use software to illustrates the visualizing patterns and trends of UEBA research in the current 10 years. Specifically, Citespace software was used for interpreting the significant hubs, landmarks points of peer-reviewed literature on the context of ecological service research in recent 10 years. Secondly, 135 evidence-based EbA literature were reviewed for categorizing the methodologies and framework of evidence-based EbA by the systematic map protocol. Finally, a conceptual framework combined with culture, economic and social components was developed in order to assess the current adaptation strategies in Shanghai. This research finds that the key to reducing urban vulnerability does not only focus on co-benefit arguments but also should pay more attention to the concept of trade-off. This research concludes that the designed framework can provide key knowledge and indicates the essential gap as a valuable tool against climate variability in the process of urban adaptation in Shanghai.

Keywords : urban ecological-based adaptation, climate change, sustainable development, climate variability

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