

## **“Implementing a Greener Drainage System in a Highly Urbanized Environment”**

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A conventional stormwater drainage system primarily focuses on flood control in urban regions and does not address the need of water quality management and ecosystem service design. Since the last decade, there have been rising interests worldwide in implementing component-based Best Management Practices throughout urban areas to promote sustainable stormwater management and to reduce environmental impact on the receiving water body. This new approach in stormwater management, referred to as low impact development (LID) or sustainable drainage systems (SuDS), also provides many other benefits such as increasing freshwater supply and the mitigating heat island effect in urban areas. Though gaining popularity worldwide, relatively less LID is found in megacities such as New York City and Hong Kong. The objective of my recent research is to evaluate the feasibility and also facilitate LID implementation in megacities. It first applies numerical models and optimization tools to evaluate the effectiveness and also optimize the design of large-scale LID implementation. It further proposes specific techniques in greening existing drainage systems with LID practices given the unique conditions of megacities. LID implementation in a highly urbanized environment is technically challenging, but also socially and politically complex. My technical research is therefore supplemented with social-economic analysis to justify and strategize such LID implementation.