

## Assessing Renewal Needs of Urban Water Infrastructure Systems: Case Study of Linköping in Sweden

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**Abstract :** Urban water infrastructure systems are central to functioning cities. For securing a continuous and efficient supply of the systems services, continuous investment, maintenance, and renewal are needed. Neglecting maintenance and renewal can lead to recurrent breakdown problems as systems age, which makes it more and more difficult to secure efficient long-term supply. Globally, many cities struggle with aging water infrastructure, often due to competing funding priorities. Investment in maintenance and renewal is not prioritized. The problem primarily stems from the challenge of reaping the benefits of investments promptly. The long-term benefits gained from investing in the renewal of water infrastructure may be achievable in the long run, resulting in the oversight of such investments. This leads to a build-up of "renewal debt" for future generations to inherit. Addressing this issue is difficult due to various contributing factors and the complex nature of the systems. The study aims to contribute to an increased understanding of the long-term management challenges of urban water infrastructure, the development of improved maintenance and renewal strategies through the examination of water infrastructure management, and the assessment of the adequacy of the maintenance and renewal in a case study, the city of Linköping, Sweden. Employing a multi-methods approach, this study utilized both qualitative and quantitative methods, including interviews, workshops, and data analysis. The findings of the study provided insights into the current status of the water and sewerage networks in Linköping, highlighting the risks to ensuring reliable and sustainable water supply and discussing strategies for improving maintenance and renewal.

**Keywords :** case study, infrastructure management, renewal needs, Sweden, urban water infrastructure

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