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# An economic reappraisal of the Melamchi water supply project – Kathmandu, Nepal*

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**Abstract.** This paper examines whether the benefits of the Melamchi water supply project in Nepal are likely to exceed its costs, assuming that high-quality municipal water services can be delivered to households and firms in the urbanized part of the Kathmandu Valley. Monte Carlo simulations are used to explore the sensitivity of the net present value and economic internal rate of return calculations to a wide range of assumptions and input parameters. We find that extreme assumptions are not required to generate large differences in economic feasibility; quite plausible differences in the values of some key parameters can lead to large differences in the economic attractiveness of the project. The results reveal that the three most important influences on net present value and economic internal rate of return are: (i) the discount rate and discounting procedure; (ii) the magnitude of monthly benefits for households connected to the new water system; and (iii) the annual growth rate in monthly benefits of connected households after the project comes on line. Our contribution lies in illustrating, with an actual case study in a developing country, the degree to which cost-benefit calculations of large infrastructure projects are influenced by key economic modeling assumptions and input parameters.

**Keywords:** Cost benefit analysis – Municipal water supply – Hyperbolic discounting – Monte Carlo simulations – Melamchi – Kathmandu – Nepal

**JEL Classification Numbers:** H42, H43, H54, Q25, Q56

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