

## Accepted Manuscript

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Sangam Shrestha, Ajay Ratna Bajracharya, Mukand S. Babel

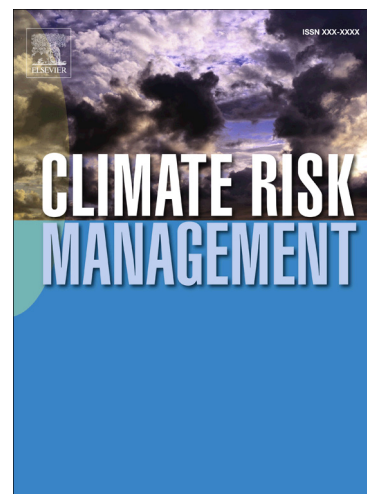
PII: S2212-0963(16)30027-4  
DOI: <http://dx.doi.org/10.1016/j.crm.2016.08.002>  
Reference: CRM 80

To appear in: *Climate Risk Management*

Received Date: 12 July 2015  
Revised Date: 23 June 2016  
Accepted Date: 4 August 2016

Please cite this article as: S. Shrestha, A.R. Bajracharya, M.S. Babel, Assessment of risks due to climate change for the Upper Tamakoshi Hydropower Project in Nepal, *Climate Risk Management* (2016), doi: <http://dx.doi.org/10.1016/j.crm.2016.08.002>

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**Assessment of risks due to climate change for the Upper Tamakoshi  
Hydropower Project in Nepal**

Sangam Shrestha\*, Ajay Ratna Bajracharya, Mukand S. Babel

Water Engineering and Management, School of Engineering and Technology,  
Asian Institute of Technology, P.O. Box 4, Klong Luang, Pathum Thani 12120,  
Thailand

\*Corresponding Author: Dr. Sangam Shrestha

Tel: +66-847284535, e-mail: [sangam@ait.asia](mailto:sangam@ait.asia) and [sangamshrestha@gmail.com](mailto:sangamshrestha@gmail.com)

**Abstract**

Climate change poses significant challenges to hydropower development and management in mountainous basins. This study examined the impact of climate change, and the associated risks, on the energy production of the Upper Tamakoshi Hydropower Project, which is located in the Tamakoshi basin of Nepal. The outputs of three GCMs—namely MIROC-ESM, MRI-CGCM3, and MPI-ESM-M—under the Representative Concentration Pathways (RCP) scenarios were used for the projection of precipitation and temperature in the future. The minimum and maximum temperatures of the basin are projected to increase by 6.33 °C and 3.82 °C, respectively, by 2100. The projected precipitation varies from -8% to +24.8%, which is expected to alter the streamflow by -37.83% to +47% in the future. Based on the streamflow output, the risk for energy production was calculated with respect to the baseline energy production of 1963 GWh and 2281 GWh. Using the three GCMs, the risk associated with annual hydropower production under altered runoff was analyzed. The risk percentage in the future periods shows a mild risk varying from 0.69 % to 6.63%. MPI-ESM-M GCM

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