



TRIBHUVAN UNIVERSITY INSTITUTE OF FORESTRY POKHARA CAMPUS POKHARA, NEPAL



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Call for MSc Student Research Grant on Ground Water Issues

The Tribhuvan University Institute of Forestry, together with our international collaborators, is pleased to present the opportunity for a Master's thesis grant in watershed management. The research project will focus on Pokhara groundwater resources, including both quality and consumption aspects, with a particular focus on springs. The background concept of the research proposal has been provided along with this announcement.

The successful applicant will work under the supervision of the research team: Prof. Binod Heyojoo, Dr. Bishnu Devkota and Tim Muller (with input available from colleagues based outside Pokhara as required). The research project will begin in December 2025 and continue for approximately six months, with possibility of extension for another six months only.

Research proposal is invited from MSc fourth ^{sem} ~~year~~ students at the Institute of Forestry, Pokhara Campus. The proposal should be submitted in the standard format provided by the campus.

The research amount will be **Nrs. 100,000** (one lakh rupees only) which includes **campus overhead (10%)** and other **applicable taxes**.

Applications should include a brief (1-2 page) CV, approval of proposed supervisor/s, a covering letter and must be submitted to research committee (rc@iofpc.edu.np) by **2025/12/12** (26 Mangsir, 2082 BS).

Background concept of the research project

This Master's project is part of a wider investigation of groundwater issues in South Asia, using Pokhara as a case study site. Specifically, the main project is focused on the impacts of monsoon rainfall on groundwater quality. Groundwater contaminant concentrations and transport processes have been well-studied, but mostly in developed countries and in temperate climates (for example: Blaschke et al., 2016; Kalhor et al., 2019; Pang, 2009).

The monsoon climate system, which predominates in South-and South-East Asia, causes fundamental changes to the water cycle, affecting the availability and quality of water supply for billions of people in that region. Most notably, monsoonal regions also tend to have pronounced dry seasons, during which they are heavily reliant on natural water storage systems, typically either in the ground or in up-gradient snow/ice packs (Bhatta et al., 2020; Suhardiman et al., 2015; WCRP, n.d.; World Bank, 2010; Yao et al., 2012). Consequently, these regions are also among the greatest groundwater users in the world (Shah, 2007; World Bank, 2010), but the impact of monsoon rainfall on the severity and temporal variation of groundwater contamination has not been thoroughly investigated - which the main project aims to address.

The specific areas of focus for the Master's project are:

- Developing an estimated range of reasonable values for the total annual consumption of groundwater in Pokhara, based on both interviews with owners of wells (both 'inar' and 'borings', in Nepali terminology) and direct flow measurements from springs and wellheads where possible.



- Collecting samples of water from selected springs and analyzing these for water quality parameters (including at least physico-chemical variables, nutrients and bacteria). It is expected that most of the chemical/microbiological analysis will be done at a commercial laboratory.

The proposed research budget is available for laboratory charges, fieldwork costs, and other relevant expenses. The successful applicant is expected to produce an itemized budget in consultation with the project team. Additionally, equipment in use for the main project, including a multiparameter water quality meter (for pH, conductivity, ORP and temperature), turbidimeter and groundwater level meter, will be available for use (training will be required).

The successful applicant will also be expected to write:

1. a detailed research proposal at the start of the project, including a literature review and an explanation of methodology for the Master's research project, and taking account of what is achievable within the budget and research period.
2. A thesis report at the end detailing and interpreting their findings. (It is also expected, though not certain, that the applicant will have the opportunity to publish the thesis results in a scientific journal article, with assistance from the wider project team).

The successful applicant will ideally:

- Have a specific interest in groundwater quality or related fields (e.g. geology, hydrology, environmental chemistry).
- Demonstrate integrity, self-motivation, reliability and meticulousness.
- Be a clear communicator with strong technical writing skills.
- Be confident with statistics and/or modelling/data science techniques.
- Have some experience collecting water samples, including some familiarity with cleaning and quality assurance protocols for environmental chemistry/microbiology.
- Be confident communicating with strangers in both English and Nepali, whether in person, on the phone or in written form.

Enquiries about the project can be discussed with Dr Bishnu Devkota (Bishnu.devkota@pc.tu.edu.np) or Mr. Tim Muller (tim.muller@postgrad.otago.ac.nz) while enquiries about the application process itself can be addressed to Dr. Lila Puri (Research Committee) via email lila.puri@pc.tu.edu.np or rc@iofpc.edu.np

The following non-publicly available documents can be made available to prospective applicants on request:

- 'Reviving Spring Sources in the Watershed of Lake Cluster of Pokhara Valley with Institute of Forestry, Pokhara' a 2020 report on a related topic.
- Research proposal for the full project.
- Field record sheets, questionnaire forms and other miscellaneous documents for the main project that are similar to what will be required for this Master's.
- As-yet unpublished data from A Sharma on water quality of samples collected in 2023-4 from Pokhara wells, springs and surface water bodies.

Lila Puri, PhD

Member Secretary, Research Committee