



UNITED NATIONS
UNIVERSITY

UNU-IAS

Water Governance for Sustainable Economic Development: A Case Study in Kaski District, Nepal

Saroj Kumar Chapagain^{1*}, Geetha Mohan¹, Giulia Roder¹, Rimba A. Besse¹, Binaya K. Mishra², Kensuke Fukushi^{1,3}

¹Institute for the Advanced Study of Sustainability, United Nations University, 5-53-70 Jingumae, Shibuya-ku, Tokyo, Japan

²Faculty of Science and Technology, Pokhara University, Kaski, Nepal

³Institute for Future Initiatives, University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo, Japan

*Corresponding author: saroj@unu.edu



ABSTRACT

Despite being rich in fresh water resources, water shortage is a major issue in many parts of Nepal. The water use arrangements among various sectors are commonly institutionalized through the agreement between the water use activities, which seems to be more challenging under the changing socio-economic and political situation. The study examined the water shortage and major issues related to the current water supply system (Mardi River) in Pokhara (Kaski district). The research identified the existence of disputes between upstream and downstream communities related to the existing river water supply system. These were particularly related to sharing of services and benefits derived from good water supply, which were often ignored in the management plans. On the other hand, water demand is increasing in Pokhara city due to rapid population growth and tourism activities. To ensure the sustainable development of the region, implementation of water management policies is necessary.

INTRODUCTION

Background

- Pokhara, the headquarters of Gandaki province (4) serves as a major hub for education, health, business, transportation, communication and tourism
- Pokhara-Lekhnath is the second largest metropolitan city and one of the tourist destination city
- Rapid urbanization and population growth has put immense pressure on water environment
- Water shortage (water supply) has become a major concern
- Mardi River serves as a major source of drinking water. It contributes nearly 46,000m³ out of a total 54,120m³ daily water supply (JICA, 2016)
- Headwater (water intake) lies outside of Pokhara- city
- Disputes/opposing interests appear occasionally between upstream and downstream stakeholders related to the current use/practices

Objectives

- Investigate the major issues on the current water use systems (upstream and downstream) in Mardi River
- Identify appropriate options for sustainable water management

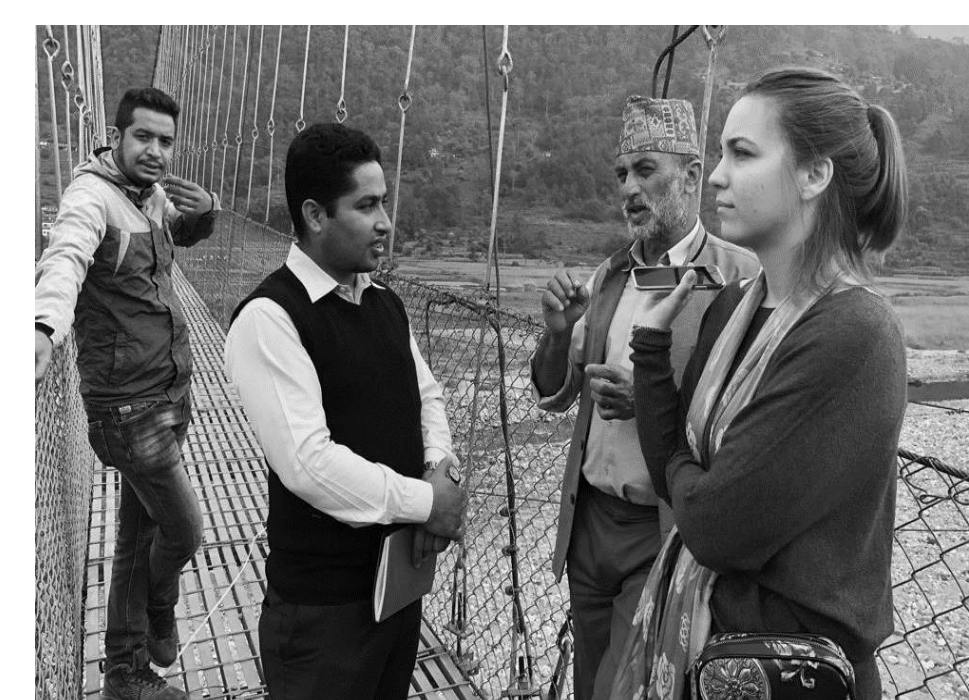
METHODOLOGY

Study area

- Kaski district (1 out of 77 districts of Nepal) covers area of 2017 km² (Fig. 1)
- Total population: 500,000
- Avg. temperature: 20-30°C, Avg. annual precipitation: 2500 mm
- Agriculture is an dominant sector, however, tourism is an emerging sector
- Seti is a major watershed (976 km²) comprising the center part of the district
- Mardi River is the major tributary of Seti watershed. It is a glacier-fed stream, situated at the northern part of Pokhara in the foothills of Annapurna mountain range
- Mardi watershed area: 160 km²
- River water quality: C-Medium category (*NSF-WQI) (Shah, 2014)

Data collection

- Key informants' interview (KII): 12 KIIs
- Area near/above water intake (upstream) (n=7)
- Pokhara-city (downstream, service area) (n=5)
- Interview: 12-18 Nov, 2019



*NSF: National Sanitation Foundation

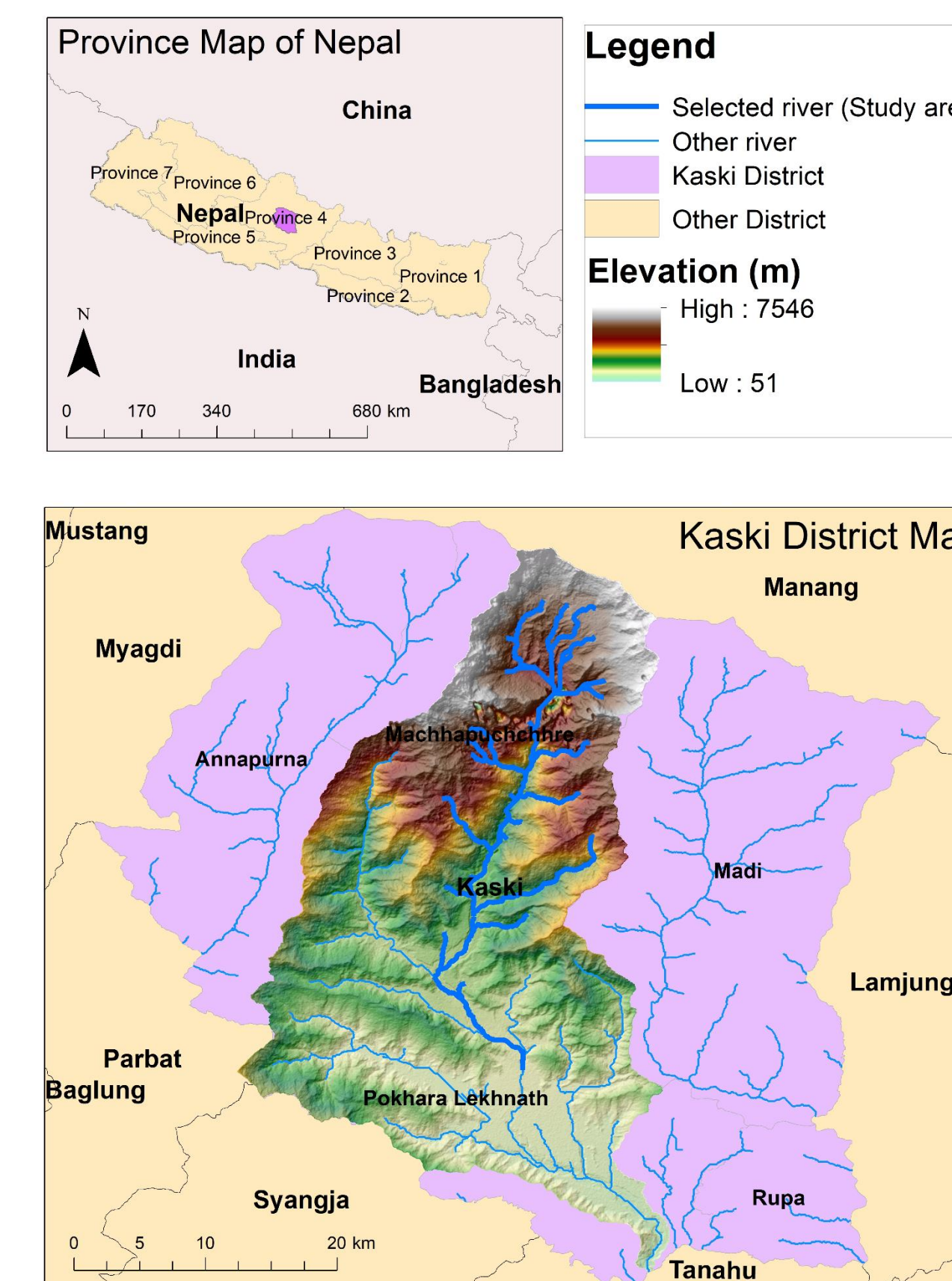


Fig 1: Location map of study area



FINDINGS

Upstream

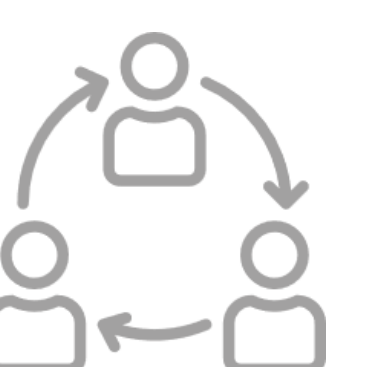
- Decrease flow of Mardi River over the past 10-15 years
- Incidence of floods in adjoining areas of the River
- Increasing levels of river bed due to deposition of sand and gravel caused by dam
- Restriction on dredging of gravel/sand considering its impact on river water quality
- Receive short term benefits/short-lived

Downstream

- A major concern about water quality, which is directly influenced by upstream villages activities
- Realize the role of upstream and agree to have integrated water management systems for sustainable water supply
- Poor coordination exists among relevant agencies (such as: Department of infrastructure/road construction, forestry, irrigation, drinking water supply, soil conservation watershed management, local administrative units)

WAY FORWARD

- Under the changing scenario (population growth, migration, agricultural intensification, governance system), the existing water supply systems need to be reviewed.
- Engineering solutions such as barrage in replace of dam and safe level of river degrading needs to be sought.
- Integrated watershed management involving key stakeholders from upstream-downstream must be undertaken.
- Collaboration/implementation of water management policies is required to achieve sustainable development of the region.



References

JICA (2016). Preparatory survey report on water supply in Pokhara in federal democratic Republic of Nepal
Shah (2014). Water quality assessment of Mardi River by using water quality index. Bibechana 10:100-107

Acknowledgement

MoEJ: Ministry of Environment Japan; PU: Pokhara University, Nepal
WSD: Water for Sustainable Development