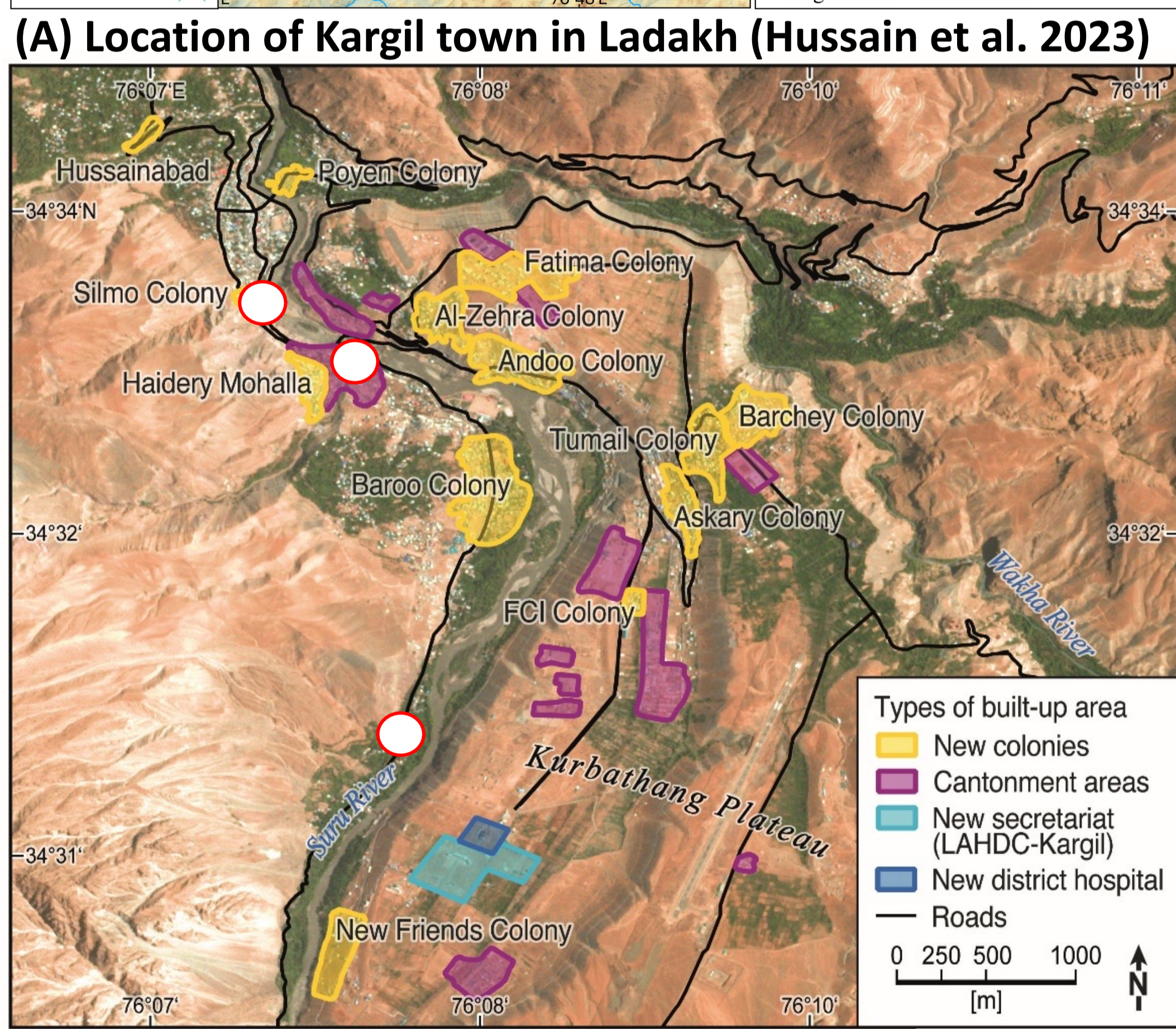
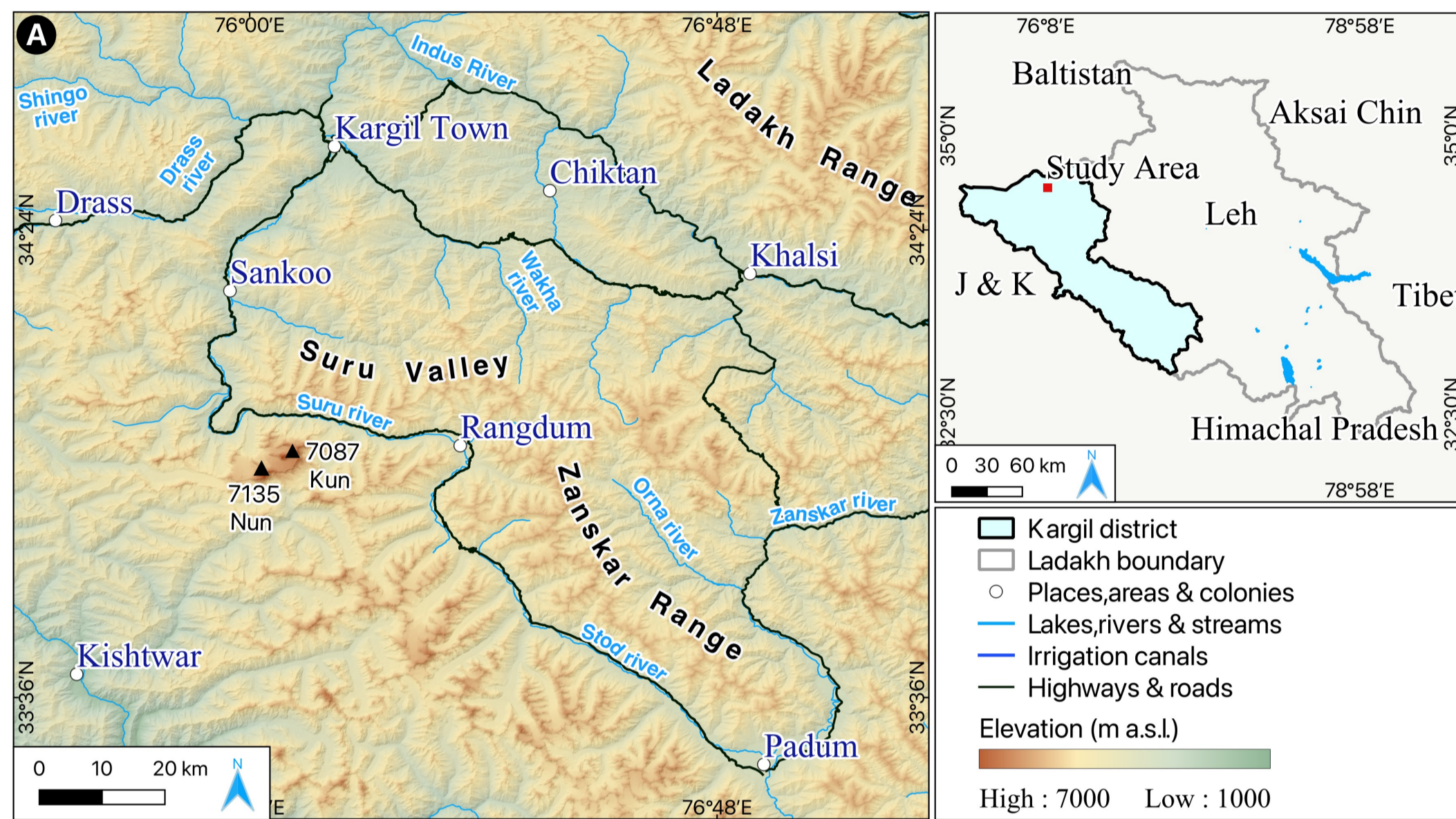


## 1. Introduction

Small and medium-sized towns in the high mountain regions of South Asia are characterized by rapid and mostly unplanned urbanisation processes resulting in increased risk to natural hazards, such as flash floods, landslides and earthquakes. Due to rapid urban expansion, the second largest town of the Union Territory of Ladakh is chosen to investigate the determining factors of urban landscape change and disaster risk-prone areas in Kargil town since the 1960s.

## 2. Study Area

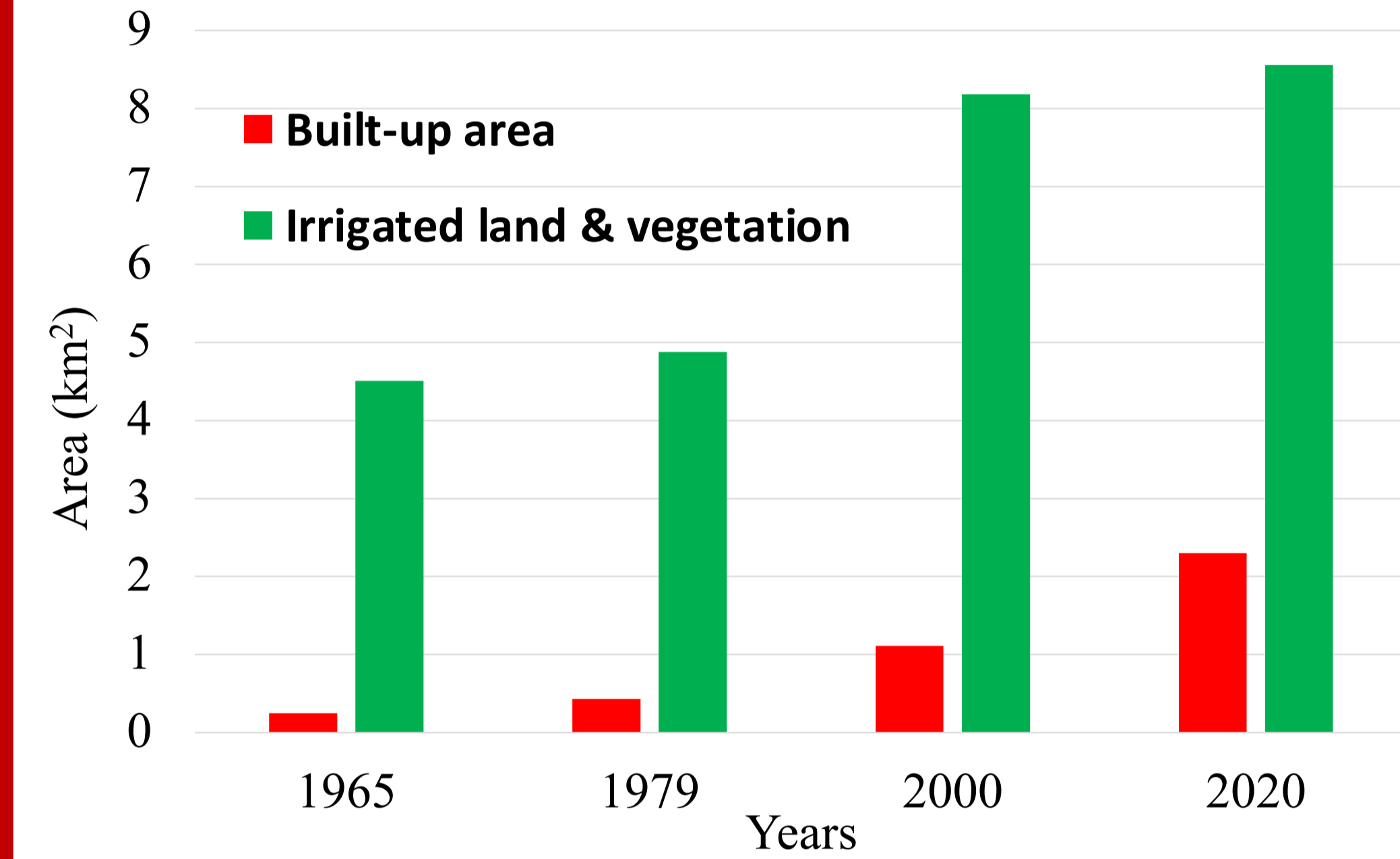
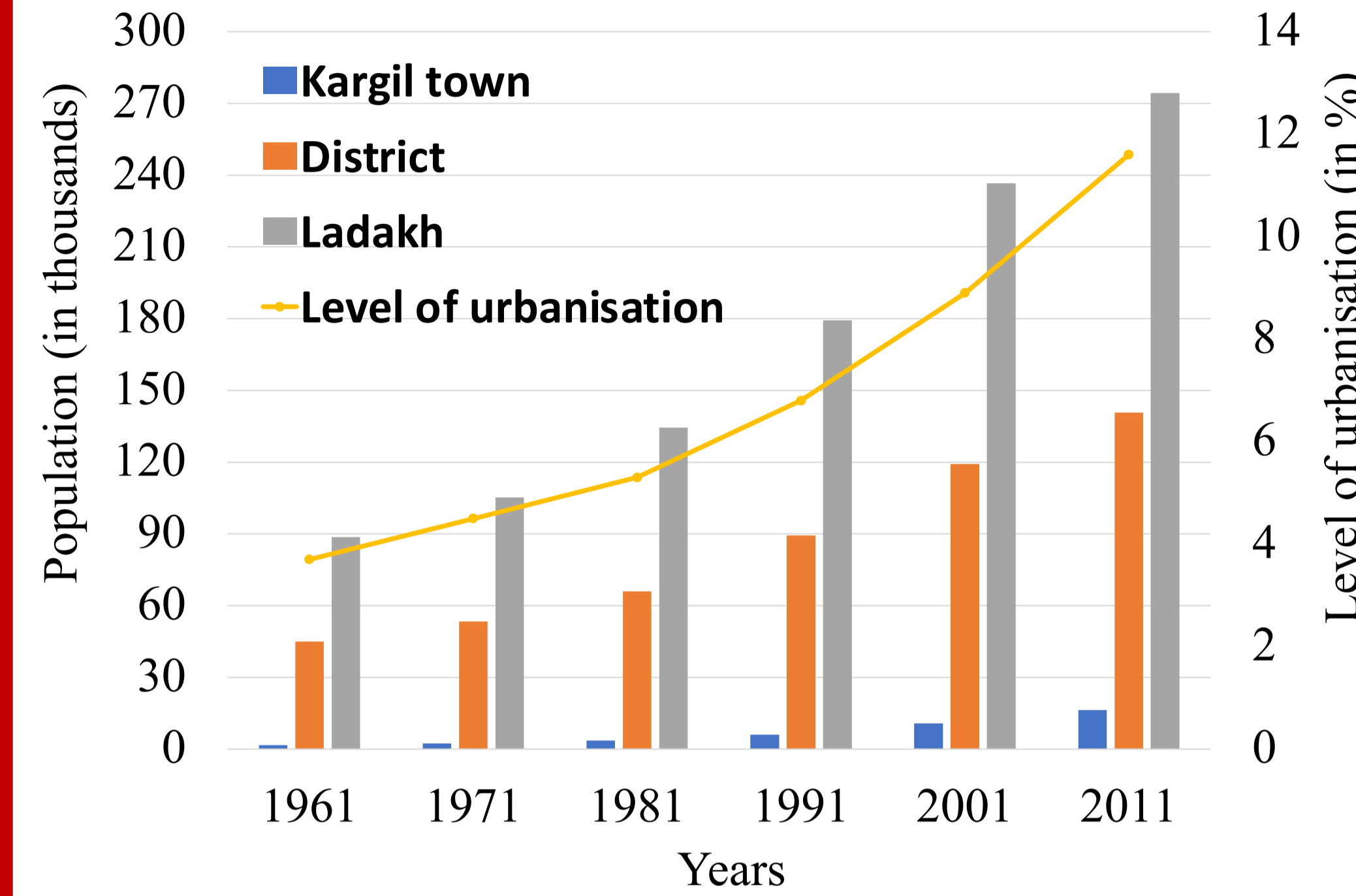


## 3. Data and Methods

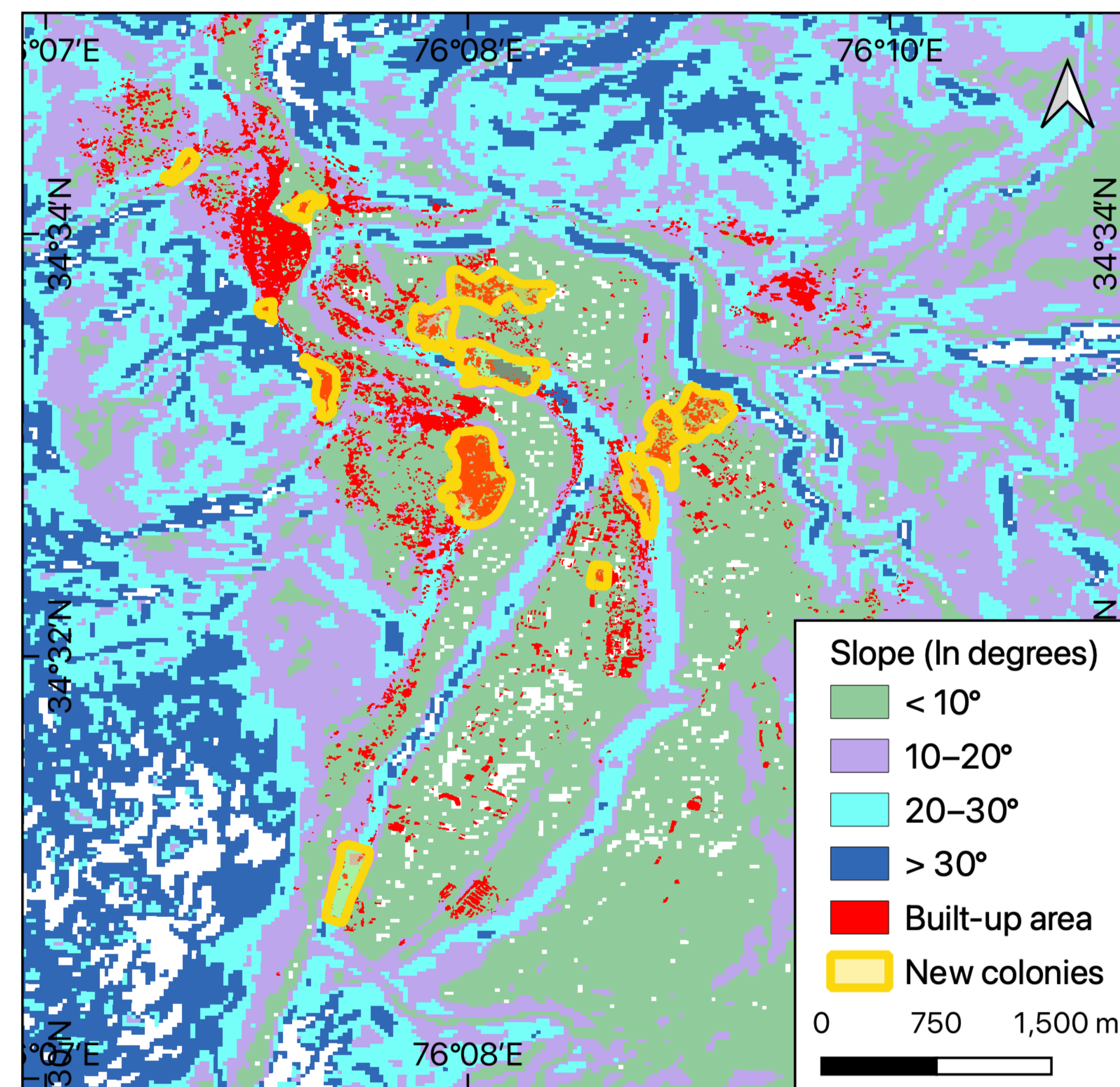
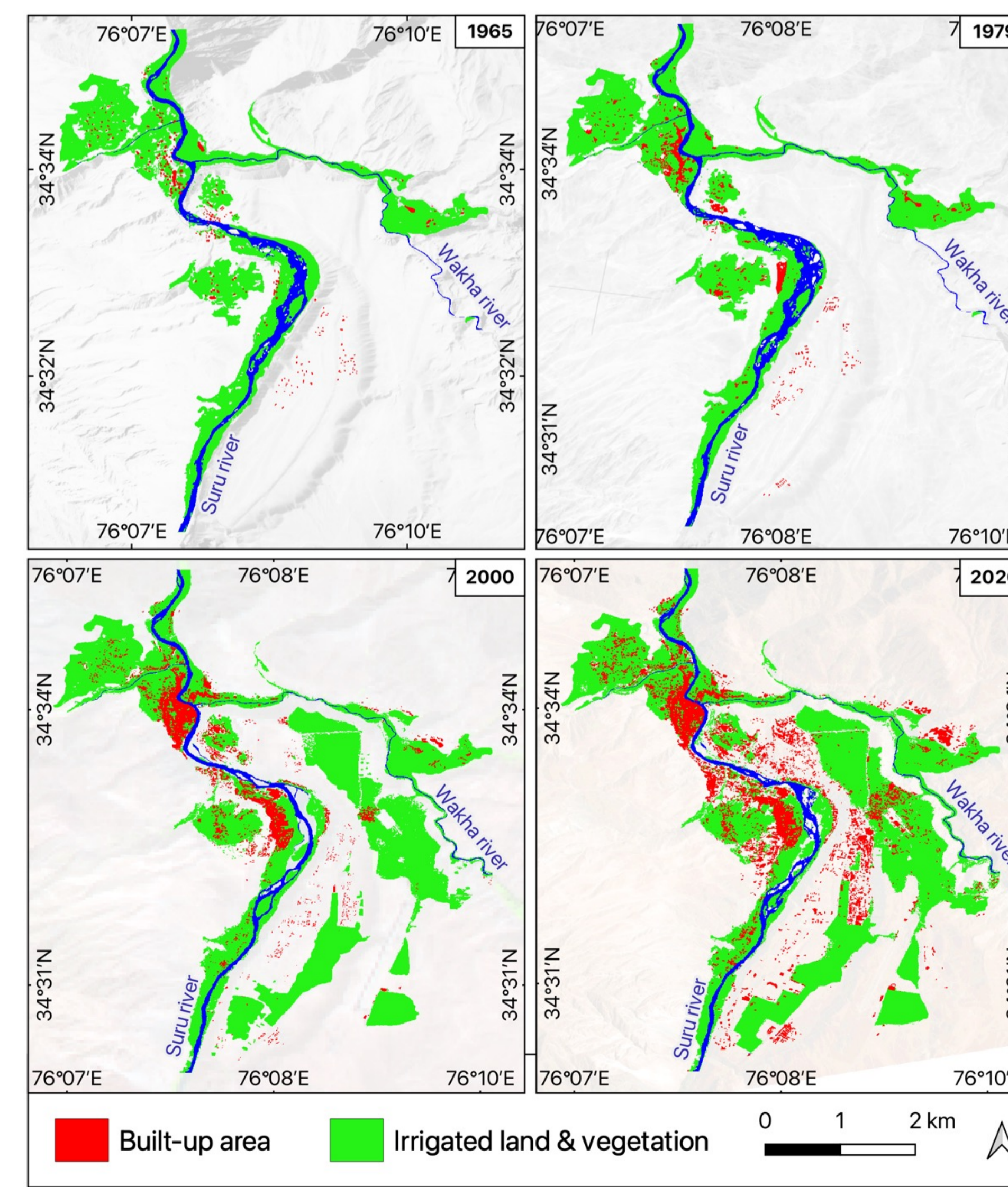
Based on multi-temporal approach using high resolution satellite imagery (Corona, ASTER and PlanetScope), statistical data and field surveys, urban landscape changes of Kargil town as well as the impact of former natural hazards are analysed:

- Satellite Images such as Corona (1965,1979), ASTER (2000) and PlanetScope (2020) were used to map and quantify changes of built-up area, irrigated land and vegetation.
- Statistical data: Census of India (1961–2011), District Statistical and Evaluation Office Kargil (2011–2012, 2018–19, 2019–20), and District Tourism Department of Kargil, Ladakh.
- Field and photographic surveys.

## 4. Results



Land cover changes from 1965 to 2020 in km²



The built-up area has been more than ninefold from 0.25 km<sup>2</sup> (1.3%) to 2.30 km<sup>2</sup> (11.7%) between 1965 and 2020.

Many settlements were developed on steep slopes and flood-prone areas along the Suru river particularly in two decades.

## 5. Conclusion

Systematic approach is needed to deal with the unplanned and haphazard urban development of the Kargil town. The LAHDC-Kargil and Union Territory of Ladakh administration need to take drastic decision with respect to disaster management, urban planning and governance mechanism.



## Reference

Hussain, A.; Schmidt, S.; Nüsser, M. Dynamics of Mountain Urbanisation: Evidence from the Trans-Himalayan Town of Kargil, Ladakh, India. *Land* 2023, 12, 920. <https://doi.org/10.3390/land12040920>

Photo: Fayaz Ali, Altat Hussain, and Feroz Hussain (2021, 2022)