Submitted Abstract

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Title	Investigating The Role Of Forest-Fed Rivers Within Inhabited Mountains, Their Transformation And Role Towards Climate Adaptation Within The Indian Himalayas.
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Abstract

The paper critically examines 'forest-fed' rivers, smaller rivers that support human habitation within the Himalayas. Forest and water resources are critical landscape elements for carbon-water sequestration and climate impact reduction through nature-based adaptation strategies. Enhancing and conserving these key landscape features can leverage ecological and economic opportunities for settling in the mountains. The Garhwal region in the Himalayan region is renowned for its key rivers, such as the Bhagirathi, Alaknanda, Yamuna and the Ganga, that flow within deep gorges and do not support settlements. The paper emphasizes the role of 'forest-fed' rivers, which do not have a glacial source of origin. The spread of settlements are found along the smaller, more accessible river streams which emerge from forests and underground springs can be termed as 'Inhabited ecologies'. The paper explores the role of 'forest-fed' rivers in sustaining traditional (aquifers, springs, traditional irrigation canals) and modern water resources supporting settlement and agriculture within the mountains. The quality and quantity of water resources within these 'Inhabited ecologies' have an inseparable relationship to its landscape, which have been compromised due to loss of native forests, increasing anthropogenic activities, increasing global temperature and irregular precipitation. The paper explores research by design methodology utilizing cartography and interpretative mapping in investigating the Barkot watershed within the Garhwal region of the Himalayas (250 km north of Delhi).

The paper compares the transformation of the Barkot watershed, spread across a diverse topography (spread across 1100msl to 2200 msl) that represents dynamic human occupations linking land use, water, typography and settlements. The paper will examine the transformation within the separate watersheds by overlapping historical and present occupations, exposing landscape structure, urbanization, and infrastructure positions. It intertwines the issues of representing marginal demographics of the Himalayas through people-centric and community-driven projects. Finally, the paper argues for the importance of forest-fed river systems as critical elements of natural infrastructure, which leverage ecological, economic and settlements opportunities for the urbanizing mountains and are essential in planning for climate adaptation for mountainous communities. Traditionally, mountain communities are custodians of the region's ecological diversity. The article strongly argues for landscape rejuvenation using nature-based solutions, which embedded soil and water conservation, livelihood opportunities for local communities. The paper interprets the water-settlements nexus in enhancing ecosystem services to respond to the immediate needs of climate change, support capacity building, and enable Himalayan communities to transition towards sustainable development.