# Scientometric Review of Sustainable Land Use and Management Research

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**Abstract:** Compared to secondary and tertiary sectors, land has been a more limited resource for agriculture. as a fundamental agricultural ingredient. Of all the resources needed for a modern economy, land holds the top spot. Like any other resource, land has two dimensions: quantity and quality. Because of the broad and intensive use of land for both agricultural and non-agricultural purposes, both of these vital elements are seriously threatened. Due to growing demands on land for housing, industrial growth, the construction of infrastructure, and food production, among other uses, the competition between the agricultural and nonagricultural sectors for land is becoming more intense. In particular, sustainable urban development refers to striking a balance between environmental preservation and urban area growth, with an eye toward social infrastructure, jobs, housing, basic amenities, and transportation justice. As the world's urban population continues to grow, there is a growing awareness of the need to reduce the negative environmental effects of urbanization. Environmental damage, depletion of non-renewable resources, and rising pollution levels in urban areas are major concerns. Cities have increasingly become epicenters of resource waste and environmental degradation, negatively affecting both current and future generations. To address these issues, we must reduce the consumption of non-renewable resources and transition to ecologically sustainable economic development. However, this transition must be achieved in ways that are socially, economically, and politically viable.

**Keywords:** Land; Cultivation; Sustainable Development.

**(Submitted: September 28, 2023; Revised: October 23, 2023; Accepted: November 20, 2023; Published: November 30, 2023)**

## I. Introduction

Land usage and intensity have changed as a result of the extraordinary increase in the number of people and animals. Degraded forest land, grazing land, and other waste lands are actually being brought under cultivation even though they are not specifically designated for crop cultivation (Long & Qu, 2018). Despite all of this, the amount of land available per person is steadily declining. Over time, the monoculture of crops, especially high-value cash crops, combined with widespread, uneven fertilizer usage and excessive doses of plant protection measures, has significantly deteriorated the quality of the land and reduced production per unit of land (Maharjan et al., 2017). The heavy use of pesticides and fertilizers is the primary cause of the reduced productivity of about 10% of the world's irrigated rice fields in South Asia. Another factor contributing to the unprofitable output is the dispersed and awkwardly situated agricultural plots, which force workers to relocate to cities in pursuit of more productive alternatives. Consequently, a sizable amount of agricultural land is left fallow. The absentee owners (nonresidents) are reluctant to give up the land because of land laws (Dale et al., 2000). Under these circumstances, land abandonment occurs together with a continuous decline in the land's capability for production. The cultivated land has grown at a very slight rate during the past three decades, according to research, but throughout the 1990s, the average growth rate of the cultivated area has actually been negative. Even more concerning is the fact that the best agricultural land is being converted to non-agricultural purposes. By cultivating the marginal and bare land, there is a slight chance to increase the land base. Currently, fallow, non-cultivable, and unculturable land makes up 30% of the Indian Himalayas' total stated area. Sustainable Development of Land Use shown in Figure 1 (Fiener et al., 2011).

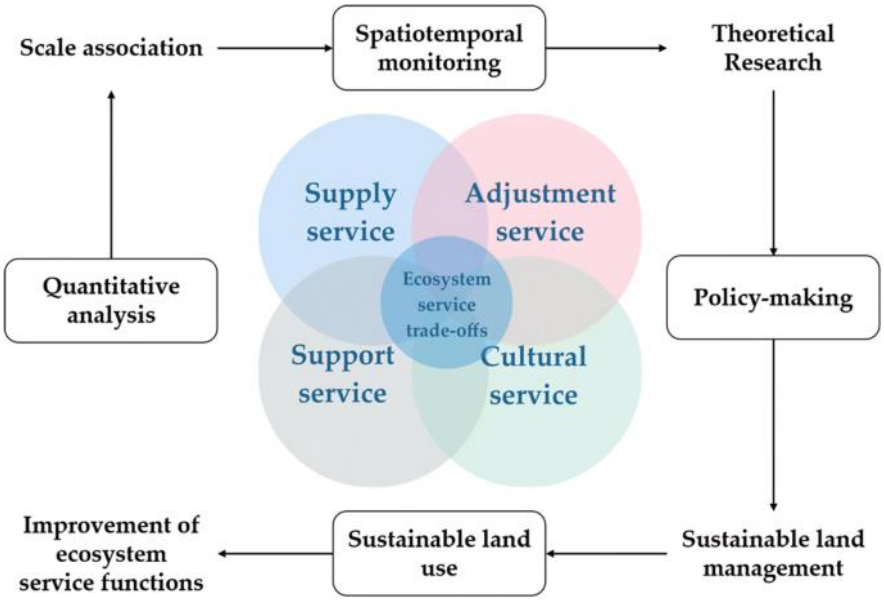


Figure 1: Sustainable Development of Land Use

## II. Sustainable Development

In general, sustainable development seeks to satisfy current needs without endangering the capacity of future generations to satisfy their own. The majority of people on the planet currently reside in cities, and if present trends continue, it is predicted that by 2025, 65% of people will live in cities. The question of whether this level of urban development can be sustained is raised by the extraordinary amount of urbanization and expansion. As a result, governments worldwide now have a significant task in promoting sustainable urban growth. In order to attain the goal of sustainable urban development, cities must essentially work to strike a balance between economic, social, and environmental objectives. In June 1972, the UN General Assembly held a conference in Stockholm on the "Human Environment," which produced guiding principles for the field. It underlined that everyone has a basic right to a healthy environment and that it is his duty to preserve it for both the current and coming generations. About ten years later, it also argued that the earth's natural resources ought to be protected for the benefit of both the current and future generations. It is noteworthy that several of the Millennium Development Goals (MDGs) emphasize reducing extreme poverty and ensuring environmental sustainability. Similarly, the Intergovernmental Panel on Climate Change (IPCC) underscores the importance of social and environmental equity in development when discussing the impacts of climate change on sustainable development. Consequently, major international conferences and initiatives on environment and development have consistently prioritized socially just development, economically viable growth, and environmental protection to achieve sustainable development goals.

## III. Practical Utility

The moment has come to alert all parties involved in the country's growth to the extent of the societal costs associated with land degradation and the pressing need for laws, plans, and initiatives that support the long-term use of natural resources (Wheater & Evans, 2009). Studying natural resources, especially the land, for its best use is crucial for sustainable development. A detailed understanding of the scope and kind of land degradation in the North-Western Himalayas is essential. In order to allocate specific attention appropriately, the study will assist policymakers in learning about crop productivity and soil conservation strategies implemented in various study regions (Xie et al., 2020). In many regions of the state, the existing lands have been "over-utilized" for high-value cash crops, raising severe concerns about their capacity to sustainably supply expanding demands (Liu et al., 2012). Many of today's marginal lands will need to play

a bigger part in supplying the needs of various businesses that are relatively beneficial to the region. At the district and state levels, the current study will offer data on land use patterns, trends in fallow land, uncultivable land, etc. Although there is significant decline at the micro level, the macro (district/state) level does not reflect this. The study will yield valuable data regarding the amount and quantifiable causes of micro-level land degradation in various state regions. This will assist in creating the intended policies to reduce land degradation (Smith et al., 2016).

## IV. Analysis of Factors Determining Land Degradation Methods

The general definition of land degradation is the temporary or permanent reduction in the land's ability to produce. Because degradation necessitates the use of higher input levels to maintain yields, it lowers agricultural yields and may lower total factor productivity. Additionally, it can result in the conversion of land to less valuable uses and the temporary or permanent abandonment of plots. Land Utilization Pattern in 2000-2024 and Land Utilization Pattern in 2020-2024 shown in Figure 2, 3.

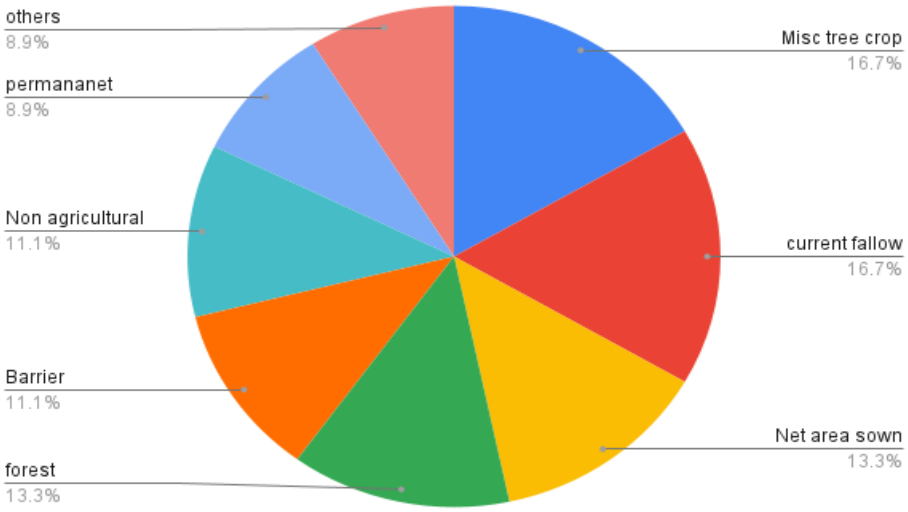


Figure 2: Land Utilization Pattern in 2000-2024

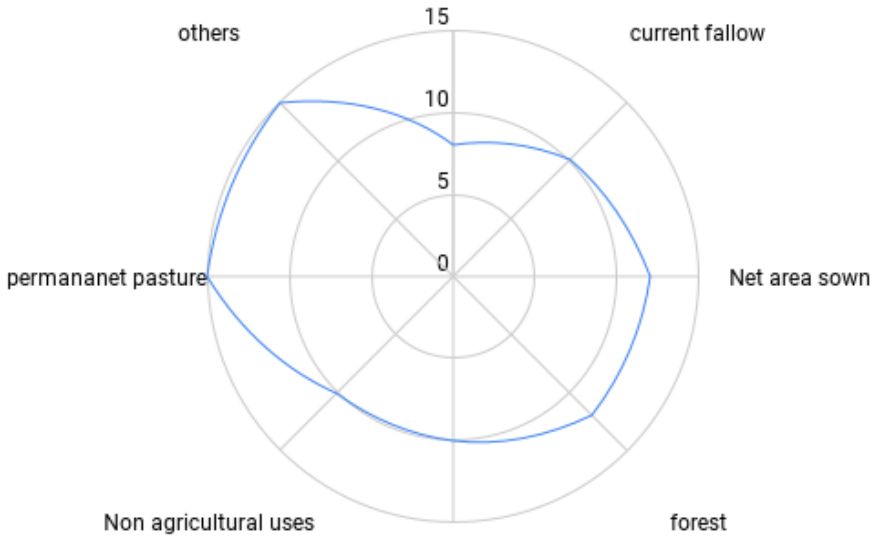


Figure 3: Land Utilization Pattern in 2020-2024

Zone II saw the most rise in waste land, followed by Zone I. Among the primary causes of the rise in waste land were the threat posed by animals, yearly weeds, adjacent fallow land, and a decline in family labor. Along with the previously mentioned causes, migration was promoted as a significant contributing factor to the growth of waste land in Zone II. Due to greater per capita land availability, greater fragmentation, and higher nonfarm income, the growth was greater on large farms. Better irrigation facilities in Zones III and IV resulted in reduced or no waste land.

## V. Conclusion

Compared to secondary and tertiary sectors, land has been a more limited resource for agriculture. Due to growing demands on land for housing, industrial growth, infrastructure development, and food production on the one hand, and other factors on the other, rivalry between the agricultural and non-agricultural sectors for land is becoming more intense. The persistent population growth and the dearth of non-farm work alternatives are the main causes of the steadily declining per capita land availability. This is especially true for Himachal Pradesh and other hill states. Over time, the state's net cultivated area is shrinking. Over time, the irrigated area has mostly stayed the same. Furthermore, the agricultural situation has gotten worse due to the unpredictable weather, and it is becoming increasingly unfeasible. The area remains uncultivated as a result of farmers being compelled to abandon the agricultural industry. Consequently, a sizable amount of agricultural land is left fallow. Land deterioration is the result of this. Due mostly to their profitability, farmers in some of the state's niches have chosen to produce cash crops including fruit and vegetable crops that are grown during the off-season. For a long time, the monoculture of crops, widespread imbalanced fertilizer use, and high dosages of plant protection measures have posed a major threat to the quality of the soil and reduced output per unit of land.

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