

Preface

Carl Troll, a German geographer, coined the term “landscape ecology” in 1939. It can be viewed as a complex system, representing areas where conflicts for land exist. The analysis of land use is one of the focus areas in landscape ecology. Anthropogenic use of land in the form of agriculture and urban areas has a vital role in the interaction of landscape and ecosystems. The present land use may affect the movement of certain species as well as determining the availability of land for future use. Different organisms display diverse and individual responses to landscape modification depending on the scale on which they normally operate and how they perceive the environment. The modification of landscapes influences ecosystem processes, species richness, and distribution. It also alters physical attributes of the environment, leading to a degraded environment in which all species, including humans, live. Maintaining the integrity of ecosystems is fundamental in order to adapt to climate change, nurturing biodiversity and providing an uninterrupted supply of ecological goods and services on which humans depend for their existence. Classifying the elements and patterns of landscape ecology and understanding the complex biophysical interactions within the context of landscapes enables scientists and land managers to make informed decisions about effective conservation and land management. Thus, landscape ecology is central to effective conservation of ecology and mitigation of adverse environmental effects arising from the degradation caused by human modification of the landscape.

Water is generally considered to be a “free good” resource that is abundantly available and unlimited in supply, given the fact that three fourths of the Earth is covered with water. However, statistics reveal that the long-held view of water being an unlimited resource no longer holds true and that water is an asset that is vulnerable to an increasing population and changing environment. India is having 4 % of World’s freshwater which is being exploited for an ever-increasing demand for sanitation, drinking, manufacturing, leisure, and agriculture. As water is the principal medium through which climate change expresses itself, adaptation to climate change and the need to build resilience is increasingly being approached through water management initiatives. Successful management of this precious resource requires accurate knowledge of its availability, uses, measures and

processes to evaluate the significance and worth of competing demands, and mechanisms to translate policy decisions into actions on the ground.

This volume incorporates the issues of both landscape ecology and water management. It is divided into two sections, consisting of 24 research papers presented at the IGU Conference, Rohtak, March 14–16, 2013, encompassing the interlinked issues of landscape and water resources in various disciplines such as geoinformatics, geography, hydrology, climatology, forestry, environmental studies, ecology, and biodiversity. The book will be useful for students, researchers, and teachers in these fields as it presents a study of the lithosphere–hydrosphere–atmosphere linked system and its climatic implications, focusing on space and regions, addressing and questioning both short-term and long-term strategies.

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