

Preface

Rivers have been the prime sources of sustenance for mankind. Man has continued to reap the benefits provided by the rivers for centuries, largely without understanding much of how the river ecosystem functions and maintains its vitality. Rivers play a significant role in the biogeochemical cycle and in the provision of water for domestic, agricultural, recreational, navigational, and industrial purposes and sediment and nutrients for the sustenance of natural ecosystems. A river basin is a basic geographic and climatological unit within which the vagaries of natural processes act and manifest at different spatiotemporal scales. The channels, the water, and the sediment transported and distributed within the river basin act as a unified system connected to each other through a delicate environmental equilibrium. This equilibrium is influenced by the vagaries of nature including climate, lithology, slope, etc. Left undisturbed, the river system has its own dynamism of maintaining its natural health and equilibrium. Any change in the factors that affect the equilibrium would result in recognizable changes in the system, often to the detriment of the natural dynamism of the rivers and thus the sustenance of mankind.

Given cognizance to the importance of holistic study, integrated management practices, and sustenance of environmental flow of river systems for nourishment of river basin ecosystems, there are a number of international efforts in terms of the Stockholm conference on the Human Environment (1972), United Nations conference on Environment and Development (1992), International Geosphere-Biosphere Program, International Human Dimension Program, and more recently, the EU water framework directive, and flood directive. There are many other programs that provide a comprehensive guideline for environmental management of river basins. As a corollary to these efforts, this volume presents specific thematic papers covering the various facets of river basin ecosystems, methods of study, myriad varieties of influences on natural environmental processes, anthropogenic interventions and resultant impacts, methods of reclamation, remediation, management, and nourishment. Though the interconnectedness of river basins as a unified system and its delicate balance between litho-bio-hydro-atmospheric processes are known to the scientific community, the importance of sustenance of this delicate equilibrium is exemplified through various case studies and methodology papers in this volume.

The publication of this volume is intended to enlighten academicians, researchers, administrators, and planners. This intention would be served if the readers spread awareness among the common people and those concerned for the wellness of the Earth and sustainability of its resources.

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