Remote Sensing and GIS GPS Based Resouce Management

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PREFACE

India as a developing country, largely depend on the utilisation of natural resources for their immediate advancement. Advancement involves a change in the existing use of resources to a higher level or more economical methods of production or the more complete use of resources that are at present partially or completely neglected. Every region within our country has its own array of natural resources, suited to different forms of use and offering different opportunities of production. These resources set the pattern for primary production and to a degree, secondary production. We need to make decisions which natural resources can be easily and effectively developed, which are most likely to contribute our needs in both short and long term on a sustained basis and where and when other resources can be most gainfully employed. Efforts have been made in this book to prepare a GIS and GPS based database of resources of Rajasthan, being a prerequisite for sustainable developmental planning. Important among these resources are soil, surface and ground water, vegetation, minerals, climatic conditions, land-use and human resources. In addition to these resources a few other physical parameters are landforms, slope and physical infrastructures. The integration of resource data in the area of geology, geomorphology, soil, agriculture, forestry, hydro-geology, land-use, land-cover, environment, ecology, etc. can assist in identification of homogeneous land units having unique combination of characteristics and evaluated for site specific and suitable land-use practices in respect of scientific land utilization. Geographic Information System (GIS) today is an indispensable tool in the planning for tomorrow's requirements. Basic fundamentals and advance analysis in Geographical Information system have been discussed in length in this present book.The Global Positioning System is a burgeoning technology, which provides unequalled accuracy and flexibility of positioning having tremendous amount of applications in GIS data collection, surveying, and mapping. Basic fundamentals, components and operational methodology of the GPS system have been discussed in this volume. Application of GPS and its future in developing regions have also been covered inside the book.

The Research book addresses one fundamental developmental problem of Rajasthan i.e., the problem of easy access to a wide variety of data relating to natural resources, socio-economic factors and physical infrastructure in the state. These data are necessary to understand the extent of development in different parts of the state so that improvements can be planned on a priority basis. Developmental strategies can then be outlined and programmes implemented in specific regions. Process adopted for building the Rajasthan Resources Assessment Database has been

discussed in book. An attempt has also been made towards generation of a 3D Digital Terrain Model using GIS software for the state of Rajasthan in the research book. Geological features, climatological characteristics, forest and flora and fauna of the Rajasthan have also been discussed in detail in this book.

Mineral resources are the backbone for the industrial and socio-economic development of Rajasthan state as it ranks seconds after Jharkhand in mineral deposits in India. The research book detailed information about the mineral resources were collected, analysed and then represented and also briefs about the non-conventional sources of energy in the book. The importance of livestock in agriculture is of great significance in state. The entire field operation from ploughing to the harvesting of crops is carried out by the animals mainly bullock and camel. Animal husbandry occupies an important role in the state economy. Since more than half of the area is arid or semi-arid and is not suitable for traditional crop farming.

A number of Remote Sensing and GIS, GPS based rural and urban case studies have been successfully accomplished. These studies have been focused on the burning issues in the context of Rajasthan. This book will be very useful for anyone, researchers, teachers, inventor, administrators, social workers or politicians with having interest in the state's resources. Remote Sensing and GIS, GPS data user community could also get the benefit from the Rajasthan state resource database.

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