MENRIS CASE STUDY SERIES

No. 4

Lamjung District Information System for Local Planning and Assessment of Natural Resources Using GIS and RS Technology

Mountain Environment and Natural Resources' Information Service (MENRIS)
International Centre for Integrated Mountain Development (ICIMOD)

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Inset: *Sloping agricultural land (H. Trapp)*

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MENRIS Case Study Series No. 4

Lamjung District Information System for Local Planning and Assessment of Natural Resources Using GIS and Remote Sensing Technology

Prepared by

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Pradeep Mool**

in cooperation with

**Rural Development Through Self-Help Promotion (RDSP) Lamjung
(HMG/GTZ)**

District Development Committee Lamjung

**Mountain Environment and Natural Resources' Information Service (MENRIS)
International Centre for Integrated Mountain Development (ICIMOD)**

Foreword

One of the main reasons why mountain areas have been left behind in the development process is the lack of adequate information about their limitations to and potential for development. Geographic Information Systems (GIS) and Remote Sensing (RS) Technology are powerful tools that can increase the information base essential for sustainable mountain development. The strength of GIS lies in its ability to integrate data and information on different subjects and from different sources using a common geographic reference.

Through Remote Sensing, new mechanisms for obtaining information on remote and inaccessible areas have become available. Since 1989, ICIMOD has developed a strong capability in the fields of GIS and RS through its Mountain Environment and Natural Resources' Information Service (MENRIS). The present study provides a good example of the applications of GIS and RS technologies for regional development planning.

The study is the result of a joint effort of the Rural Development through Self-Help Promotion-Lamjung (RDSP-Lamjung) Project implemented by His Majesty's Government of Nepal and German Technical Assistance (GTZ) and ICIMOD. It is primarily intended to assist with the building up of a district information system that will enable decision-makers, development planners and extension agencies in Lamjung District, NGOs, donor agencies, and private organisations, to better visualise existing natural and infrastructural situations; integrate natural science and socioeconomic data, and use the information thus gained for improved area-specific planning and programme monitoring in Lamjung District. One of the great advantages of GIS is that it is a dynamic planning tool that can incorporate new information when it becomes available. The present document is meant to stimulate the readers' interest in GIS/RS applications and also to help them to reorient development planning at district level so as to contribute to sustainable management of mountain natural resources.

Prior to this case study, ICIMOD published 'Applications of GIS for Natural Resources' Management in Dhading District, Nepal' in 1995. This illustrated basic concepts and the use of GIS to demonstrate how data integration enables decision-makers and development planners to improve the management of natural resources.

The studies have been undertaken by Mr. Hubert Trapp, GIS Specialist, and Mr. Pradeep K. Mool, Remote Sensing Analyst, in collaboration with professionals from the Rural Development through Self-Help Promotion Lamjung Project. Other MENRIS staff members in the team who have assisted in the case study include Mr. Basanta Shrestha, Mr. Birendra Bajracharya, Mr. Sushil Pradhan, Mr. Sushil Pandey, Mr. Anirudra M. Shrestha, Mr. Govinda Joshi, Ms. Mona Thapa, Ms. Mona Lacol, Mr. Udaya Tegi, and Ms. Sabina Pradhan. On behalf of ICIMOD we would like to thank them all for their contributions and, through GTZ, the Government of Germany for the financial support it provided to undertake this study.

P. Pradhan
Head, MENRIS

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Director General

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ACRONYMS

AAT	Arc Attribute Table
ACAP	Annapurna Conservation Area Project
ADB/N	Agricultural Development Bank of Nepal
AIC	Agricultural Inputs' Corporation
AIX™	Advanced Interactive Executive
APP	Agricultural Perspective Plan
APROSC	Agricultural Project Services' Centre
B.S.	Bikram Sambat
BYVY	Build Your Village Yourself
C	Agricultural land on sloping terraces
CBS	Central Bureau of Statistics
CCT	Computer Compatible Tape
CNRS	Centre National de la Recherche Scientifique
CPI	Character per inch
CTP	Control Tie Point
DADO	District Agricultural Development Office
DDC	District Development Committee
DEM	Digital Elevation Model
DM	Dry Matter
F	Agricultural land at the foot of a slope/tar
FAO	Food and Agriculture Organisation of the United Nations
GDP	Gorkha Development Project
GIS	Geographic Information System
GPS	Global Positioning System
GTZ	<i>Deutsche Gesellschaft für Technische Zusammenarbeit</i> (German Agency for Technical Cooperation)
ha	hectare
Helvetas	Swiss Association for International Cooperation
HKH	Hindu Kush-Himalayas
HMG/N	His Majesty's Government of Nepal
HMR	High Mountain Region
IBM™	International Business Machines' Corporation
ICIMOD	International Centre for Integrated Mountain Development
IIDS	Institute for Integrated Development Systems
ILO	United Nations International Labour Organisation
ILWIS	Integrated Land and Water Information System
ITC	International Institute for Aerospace Survey and Earth Sciences
IUCN	The World Conservation Union
Kadoorie	Agricultural Aid Association - British Gurkhas Nepal
KMTNC	King Mahendra Trust for Nature Conservation
LRMP	Land Resource Mapping Project
LU	Livestock Unit
masl	metres above sea level
MENRIS	Mountain Environment and Natural Resources' Information Service
MLD	Ministry of Local Development
MMR	Middle Mountain Region
MoU	Memorandum of Understanding
MPSSC	Wooli Devi - Multipurpose Social Service Centre

MS Nepal	Danish Association for International Cooperation in Nepal
MSS	Multi Spectral Scanner
mt	metric ton
NGO	Non-Government Organisation
NPC	National Planning Commission
NPDP	National Potato Development Programme
NRSA	National Remote Sensing Agency
PAT	Polygon/Point Attribute Table
PC	Personal Computer
PET	Potential Evapotranspiration
RDSP-Lamjung	Rural Development through Self-Help Promotion Lamjung Project
RISC™	Reduced Instruction Set Computer
RMS	Root Mean Square
RS	Remote Sensing
RSDC	Rural Self-Reliance Development Centre
SBD	Suspension Bridge Division
SERSOC	Self-Reliant Society Service Centre
SFDP	Small Farmers' Development Programme
SLC	School Leaving Certificate
T	Agricultural land on level terraces
TDN	Total Digestible Nutrients
TM	Thematic Mapper
Uli Devi	Cooperative Society Tarkughat
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
UTM	Universal Transverse Mercator
V	Agricultural land on valley floors
VDC	Village Development Committee
VTCD	Vocational Training and Community Development