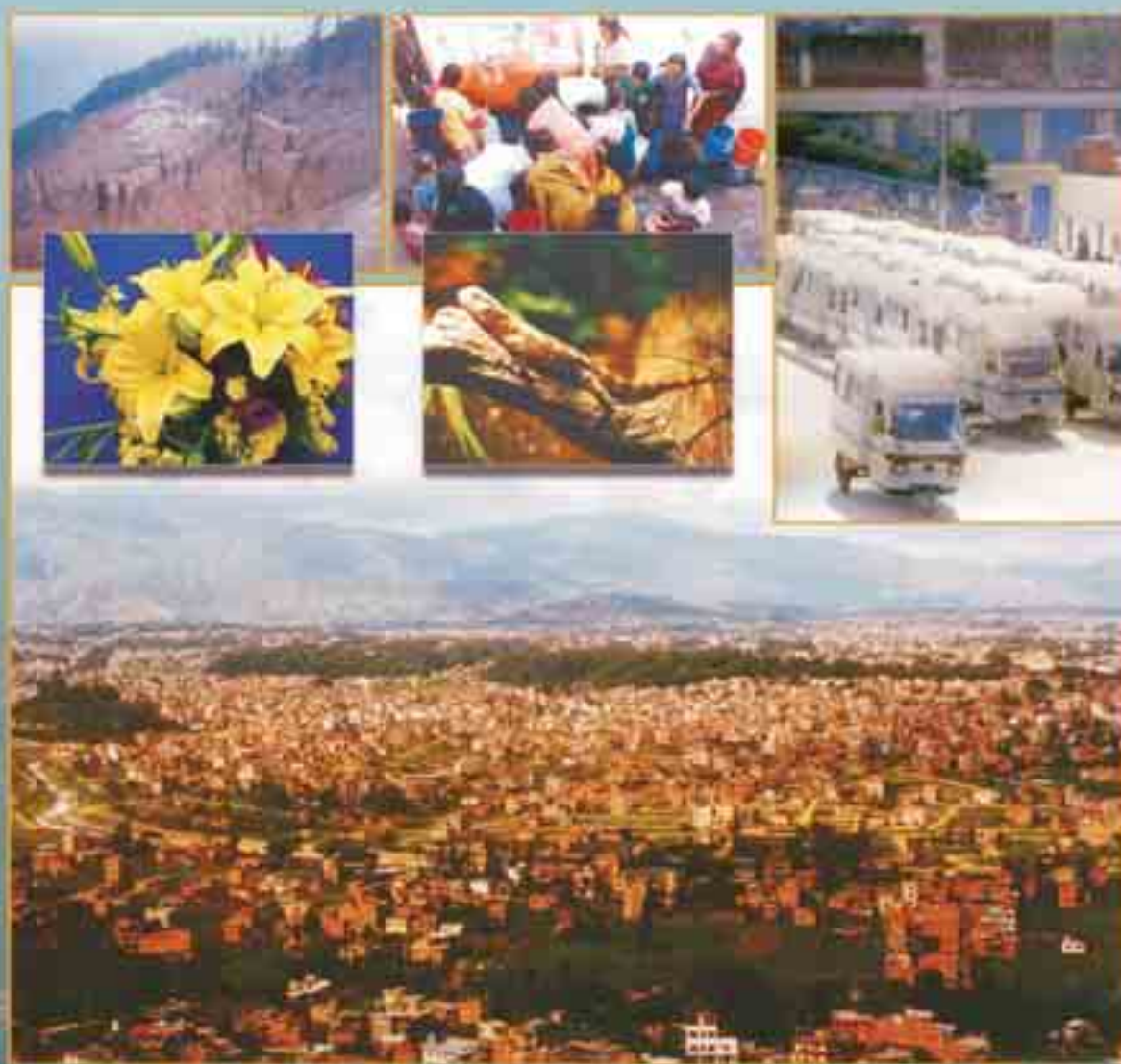


# Environment Assessment of Nepal

## Emerging Issues and Challenges



ADB



# About the Organisations

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The **Asian Development Bank** (ADB)'s work is aimed at improving the welfare of the people of the Asia and Pacific region, particularly for the 1.9 billion who live on less than \$2 a day. Despite the success stories, Asia and Pacific remains home to two thirds of the world's poor.

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The **International Centre for Integrated Mountain Development** (ICIMOD) is an independent 'Mountain Learning and Knowledge Centre' serving the eight countries of the Hindu Kush-Himalayas – Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan – and the global mountain community. Founded in 1983, ICIMOD is based in Kathmandu, Nepal, and brings together a partnership of regional member countries, partner institutions, and donors with a commitment for development action to secure a better future for the people and environment of the Hindu Kush-Himalayas. ICIMOD's activities are supported by its core programme donors: the Governments of Austria, Denmark, Germany, Netherlands, Norway, Switzerland, and its regional member countries, along with over thirty project co-financing donors. The primary objective of the Centre is to promote the development of an economically and environmentally sound mountain ecosystem and to improve the living standards of mountain populations.

ADB



# Environment Assessment of Nepal

Emerging Issues and Challenges

Asian Development Bank

International Centre for Integrated Mountain Development

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Background - View of the Kathmandu Valley (*M. Bajracharya*)  
Inset - Clockwise from top left - Deforestation (*NEFEJ*);  
Water Scarcity (*M. Bajracharya*); SAFA Tempos (*B. Pradhan*);  
Biodiversity (*ICIMOD file photo*)

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# Foreword

The critical role of the environment in enabling and sustaining poverty reduction is magnified within mountainous ecosystems such as those found in Nepal. For this reason, the International Centre for Integrated Mountain Development (ICIMOD) was engaged to work with the Asian Development Bank (ADB) and the Government of Nepal to develop this publication.

The ADB's environment policy requires environmental considerations to be mainstreamed not only into investment projects but also into ADB's country and sector strategies. This important thematic work—the country environmental analysis (CEA)—informed ADB's current country strategy and program for Nepal, and provided the basis for the present publication.

The CEA provides an analysis of environmental status and trends in the country; the policy, legal and institutional framework for environmental management; and major environmental issues and opportunities. Review of available documents, update of the relevant information, and consultations with relevant stakeholders were conducted while undertaking the CEA and preparing this publication.

This publication also serves to demonstrate ADB's and ICIMOD's strong commitment to developing south Asia's environment knowledge base further, to disseminating the information widely, and to providing critically needed environment assessment information to policy makers, researchers and development practitioners for the development of economically and environmentally sound ecosystems while improving the living standards of mountain populations.

The report contains a wealth of data and information and highlights key environmental issues, emerging problems, and strategic priority areas. It seeks to provide a critical analysis of the impacts of policy, the status of environmental governance, and financing mechanisms.

This publication is the result of close collaboration between ADB and ICIMOD. Sungsup Ra, the Senior Program Specialist, and Nogendra Sapkota, Social and Environment Officer, Nepal Resident Mission (NRM), supervised the study on behalf of ADB. Basanta Shrestha and Bidya Banmali Pradhan provided overall guidance to the ICIMOD team of consultants comprising Mahesh Banskota, Govinda Raj Bhatta, Bandana Pradhan, and Drona Ghimire. We believe that this publication will be used widely within and beyond Nepal.



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We thank Batu Upreti and Sher Jung Shah, previously at the Ministry of Population and Environment, for the valuable suggestions they provided during the preparation of the report.

Several organizations and individuals provided photographs for use in this report and we thank them all, with special thanks to Rakesh Y. Shrestha of Practical Action and Deependra Joshi of the World Conservation Union (IUCN). As far as possible all sources have been credited, we apologize if any were overlooked.

This publication is an outcome of the country environmental analysis (CEA) undertaken by ICIMOD for ADB, and we wish to acknowledge the contribution of all those who contributed to the preparation of the CEA report.

This report could not have been prepared without the support of the staff of ICIMOD's Mountain Environment Natural Resources Information Systems (MENRIS) Division, in particular Gauri Dangol who prepared many maps and figures.

The extensive input of the Publications Unit in ICIMOD's Information Management, Communications and Outreach Section is gratefully acknowledged, in particular A. Beatrice Murray, the Senior Editor, Dharma R. Maharjan, who did the layout and design, and Asha Kaji Thaku, Cartographer/Artist. Matthew Zalichin, the consultant editor, made many valuable suggestions.

Finally the support of the ADB Publications Unit led by Kavita Sherchan was much appreciated. The assistance provided by Arun Rana, ADB, editorial consultant, was crucial for preparing the publication in its final form.



# Acronyms and Abbreviations

ACAP	Annapurna Conservation Area Project
ADB	Asian Development Bank
ARI	acute respiratory infection
BOD	biological oxygen demand
BOD5	biological oxygen demand (over 5 days)
CBS	Central Bureau of Statistics
CCCM	Canadian Climate Change Model
CEA	country environmental analysis
CFUG	community forest user group
CHP	Chilime Hydroelectric Project
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CO	carbon monoxide
COD	chemical oxygen demand
COPD	chronic obstructive pulmonary disease
DANIDA	Danish International Development Agency
DDC	district development committee
DFID	UK Department for International Development
DO	dissolved oxygen
EIA	environmental impact assessment
ESPS	Environment Sector Programme Support
EU	European Union
FY	fiscal year
GATT	General Agreement on Tariffs and Trade
GDP	gross domestic product
GEF	Global Environment Facility
GFD3	geophysical fluid dynamics model
GIS	geographic information system
GLOF	glacial lake outburst flood
GTZ	German Technical Cooperation
HDI	human development index
HEI	human empowerment index
ICIMOD	International Centre for Integrated Mountain Development
IEE	initial environmental examination
INGO	international nongovernment organization
IUCN	World Conservation Union
LDF	local development fee
LPG	liquefied petroleum gas
MDG	Millennium Development Goals
MOEST	Ministry of Environment, Science and Technology
MOFSC	Ministry of Forest and Soil Conservation
MOPE	Ministry of Population and Environment
masl	meters above sea level
NEA	Nepal Electricity Authority
NGO	nongovernment organization
NLSS	Nepal Living Standards Survey
NO <sub>2</sub>	nitrogen dioxide
NO <sub>x</sub>	nitrogen oxides
NORAD	Norwegian Agency for Cooperation and Development
NPC	National Planning Commission
NTFP	non-timber forest product
ODS	ozone depleting substance
OPD	outpatient department
PM10	particulate matter of diameter 10 microns or less

PM2.5	particulate matter of diameter 2.5 microns or less
PAH	polyaromatic hydrocarbon
RS	remote sensing
SAARC	South Asian Association for Regional Cooperation
SACEP	South Asia Cooperation for Environment Programme
SEA	strategic environmental assessment
SO <sub>2</sub>	sulfur dioxide
TSP	total suspended particles
UK	United Kingdom
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
US	United States (of America)
VDC	village development committee
WEPCO	Women Environment Preservation Committee
WHO	World Health Organization
WTO	World Trade Organization

## Weights and Measures

dBa	decibels A
GJ	Gigajoules
GW	Gigawatt
GWh	gigawatt-hour
GWh/y	Gigawatt hour per year
kWh	kilowatt-hour
mld	million liters per day
ppb	parts per billion
pph	persons per hectare
ppm	parts per million

## Currency Equivalent

(As of 28 February 2006)

Currency Unit—Nepalese rupees (NRs)

\$1 = NRs 70.75

## Notes

- (i) The Nepalese calendar year (B.S.) runs from mid April to mid April. Unless otherwise stated, year ranges written in the form 2005/06 denote a single calendar year.
- (ii) The fiscal year (FY) of the Government ends on 15 July. FY before a calendar year denotes the year in which the fiscal year ends. (For example, FY2000 begins on 16 July 1999 and ends on 15 July 2000.)
- (iii) In this report, \$ refers to US dollars.
- (iv) In this report, tons (t) refer to metric tons or tonnes (1,000kg).
- (v) Acts and Regulations are cited under the name of the ministry from which they originate. The official version of Acts and Regulations is published in the Nepal Gazette (in Nepali). Some Acts and Regulations are published by other Government agencies in English (unofficial translations).



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