Advances in Asian Human-Environmental Research

Marcus Nüsser *Editor*

Large Dams in Asia

Contested Environments between Technological Hydroscapes and Social Resistance

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Aims and Scope

The series aims at fostering the discussion on the complex relationships between physical landscapes, natural resources, and their modification by human land use in various environments of Asia. It is widely acknowledged that human-environment-interactions become increasingly important in area studies and development research, taking into account regional differences as well as bio-physical, socio-economic and cultural particularities.

The book series seeks to explore theoretic and conceptual reflection on dynamic human-environment systems applying advanced methodology and innovative research perspectives. The main themes of the series cover urban and rural landscapes in Asia. Examples include topics such as land and forest degradation, glaciers in Asia, mountain environments, dams in Asia, medical geography, vulnerability and mitigation strategies, natural hazards and risk management concepts, environmental change, impacts studies and consequences for local communities. The relevant themes of the series are mainly focused on geographical research perspectives of area studies, however there is scope for interdisciplinary contributions.

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Preface

Based on the underlying paradigms of modernisation and the concrete idea of implementation of large infrastructure projects, the quest for national development and improvement of local livelihoods has generated a strong boost for the demand of large dams in the Global South, especially in Asia. The belief in the panacea that gargantuan hydro-projects offer for the betterment of nations and peoples has run roughshod over other environmental and social concerns. Whereas these large-scale transformations of fluvial environments into technological hydroscapes serve to provide hydropower, flood control, and water supply for irrigation and industrial and urban uses, their massive adverse effects have evoked controversies of developmental and environmental impacts.

The contributions in this edited volume explore the various dimensions of the large dams controversy in Asia from a critical perspective. Most of these contributions originate from the research project 'Large dams: Contested environments between hydro-power and resistance', which ran from 2008 to 2011 as part of the Cluster of Excellence 'Asia and Europe in a Global Context: Shifting Asymmetries in Cultural Flows', Heidelberg University. I am grateful to the German Research Council (DFG) and the German Council of Science and Humanities (Wissenschaftsrat) for funding. The continuous support of the directorate and administrative staff of the cluster is gratefully acknowledged. I am indebted to Thomas Lennartz (Heidelberg), who worked hard to standardize formats of all individual contributions. It is hoped that this volume will be beneficial to those looking to gain an overview of the large dams debate. At the same time, the individual chapters may offer insights from case studies that should be useful to a specialist audience.

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Abbreviations

ADHPL	Allain Duhangan Hydro Power Limited
BCE	before the Common Era
BNP	Bhakra Nangal Project
CAS	Chinese Academy of Sciences
CASS	Chinese Academy of Social Sciences
CB ratio	cost-benefit ratio
CCP CC	Chinese Communist Party Central Committee
CDM	Clean Development Mechanism
CE	Common Era
CER	Certified Emission Reduction
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CS	Cadastral Survey
CV	coefficient of variation
DNA	Designated National Authority
DOE	Designated Operational Entities
DVC	Damodar Valley Corporation
EAC	Expert Appraisal Committee
EF	exceedance frequency
EFR	environmental flow requirement
EIA	environmental impact assessment
ENSO	El Niño/La Niña-Southern Oscillation
ET	emission trading
GIS	geographic information systems
GHG	greenhouse gas
GoS	Geography of Science
GUP	Government of Uttar Pradesh
GWIL	Gujarat Water Infrastructure Limited
HEC	Hydrologic Engineering Center
HFC	hydrofluorocarbon
IRS	Indian Remote Sensing

ICOLD	International Commission on Large Dams
IFC	International Finance Corporation
JI	joint implementation
KWDT	Krishna Water Disputes Tribunal
LISS	Linear Imaging Self-Scanning
MoEF	Ministry of Environment and Forest, Government of India
MPRVD	Multi-purpose River Valley Development
MRO	manager reservoir operation
MW	megawatt
N_2O	nitrous oxide
NIR	near infrared
NGO	non-governmental organisation
NRSA	National Remote Sensing Agency
P	precipitation
PAP	Project Affected Person
PDD	Project Design Document
PFC	perfluorocarbon
Q	hydrologic discharge
R&R	resettlement and rehabilitation
RBO	River Basin Organisation
RS	Revision Survey
SANDRP	South Asian Network on Dams, Rivers and People
SD	standard deviation
SoI	Survey of India
SSP	Sardar Sarovar Project
SSK	Sociology of Scientific Knowledge
STS	Science and Technology Studies
SWIR	short-wave infrared
TBVSS	Tehri Bandh Virodhi Sangharsh Samiti (Committee to Oppose the Tehri Dam)
THDC	Tehri Hydro Development Corporation
TINA	There Is No Alternative
TVA	Tennessee Valley Authority
UNFCCC	United Nations Framework Convention on Climate Change
WAPDA	Water and Power Development Authority (Pakistan)
WCD	World Commission on Dams
WFD	Water Framework Directive
WWF	World Wildlife Fund

Units of Measure

ft^3/s	cubic feet per second (cusec)	1 $ft^3/s \approx 0.028\ m^3/s$
GW	gigawatt	1 GW = 1,000,000,000 W
ha	hectares	1 ha = 10,000 m^2
kV	kilovolt	1 kV = 1,000 V
maf	million acre feet	1 acre foot $\approx 1233.5\ m^3$
mha	million hectares	
MW	megawatt	1 MW = 1,000,000 W