



As part of a global exercise on Vulnerability Assessment of Freshwater Resources to Environmental Change, initiated by UNEP, the report tracked the changes in freshwater resources over last five decades for five major selected river basins in Northeast Asia: Changjiang (Yangtze) River, Huanghe (Yellow) River, Orkhon River, Songliao Basin and Tuul River. Available freshwater resources continue to decline as a result of excessive withdrawal of surface- and groundwater, as well as decreased water runoff from the land surface attributed to climate change. Use of freshwater for agriculture, industry and energy has increased markedly over the last 50 years. Changes in the hydrosphere can hinder achievements of the clean water, health and food security targets of the MDGs, and damage ecosystem health and services as well as having socio-economic impacts.

FRESHWATER under THREAT NORTHEAST ASIA

FRESHWATER under THREAT NORTHEAST ASIA

Vulnerability Assessment of Freshwater Resources to Environmental Change



Contact

Director, Division of Early Warning and Assessment
P.O. Box 30552, Nairobi 00100, Kenya
Tel: (+254) 20 7623231 • Fax: (+254) 20 7623943
Email: dewa.director@unep.org • Web: www.unep.org

www.unep.org

United Nations Environment Programme
P.O. Box 30552, Nairobi 00100, Kenya
Tel: (+254) 20 7621234
Fax: (+254) 20 7623927
E-mail: unep@unep.org
Web: www.unep.org



978-92-807-2948-1
DEW/1101/BA



United Nations Environment Programme

Peking University

Mongolia Water Authority

Copyright 2008, United Nations Environment Programme

ISBN: 978-92-807-2948-1

JOB No.: DEW/1101/BA

This publication may be reproduced in whole or in part and in any form for educational or non-profit purposes without special permission from the copyright holder, provided acknowledgement of the source is made. UNEP and the authors would appreciate receiving a copy of any publication that uses this report as a source.

No use of this publication may be made for resale or for any other commercial purpose whatsoever without prior permission in writing from the United Nations Environment Programme.

United Nations Environment Programme

P.O. Box 30552, Nairobi, Kenya

Tel: (+254) 20 7621234

Fax: (+254) 20 7623927

<http://www.unep.org>

Cover Photograph Credits

Background: Tom Murphy / WWI / Still Pictures

Left/Middle/Right: Mantang Cai

Disclaimer

The views expressed in this publication are not necessarily those of the agencies cooperating in this project. The designations employed and the presentations do not imply the expression of any opinion whatsoever on the part of UNEP or cooperating agencies concerning the legal status of any country, territory, city, or area of its authorities, or the delimitation of its frontiers and boundaries.

Mention of a commercial company or product in this report does not imply endorsement by the United Nations Environment Programme. The use of information from this publication concerning proprietary products for publicity or advertising is not permitted. Trademark names and symbols are used in an editorial fashion with no intention of infringement on trademark or copyright laws.

We regret any errors or omissions that may have been unwittingly made.



UNEP promotes environmentally sound practices globally and in its own activities. This publication is printed on 100% recycled paper using vegetable based inks and other eco-friendly practices. Our distribution policy aims to reduce UNEP's carbon footprint.

FRESHWATER UNDER HREAT

NORTHEAST ASIA

Vulnerability Assessment of Freshwater Resources to Environmental Change

Changjiang River Basin

Huanghe River Basin

Orkhon River Basin

Songliao River Basin

Tuul River Basin

Yi HUANG

Mantang CAI

Jinhua ZHANG

Dambabazar CHANDMANI

Jialiang CAI



UNEP

UNITED NATIONS ENVIRONMENT PROGRAMME



PEKING UNIVERSITY, CHINA



MONGOLIA WATER AUTHORITY

acknowledgements

This study was supported by United Nations Environment Programme (UNEP), with funding from the Belgian Government through the Belgian Development Cooperation Fund. Special thanks are due Jinhua Zhang, Salif Diop and Patrick M'mayi from UNEP, for their valuable assistance and guidance in the overall formulation of the project.

This project was a joint collaborative effort of Peking University of China (PKU) and the Water Resources Institute of the Mongolia Water Authority (MWA), with the two teams working closely to produce this report. All the efforts of the following individuals from two groups are appreciated, including: Yi Huang, Mantang Cai, Dambabazar Chandmani, Jialiang Cai, Sanduijav Narantuy, Xi Zhao, Yingheng Fei, Yuanqing Chao, Xiaolan Ao, Bo Peng, Yadamtsoo Tsedenbaljir, Qing Yang, Xiao Li, and Weishuang Zheng.

Thanks are also due the following experts that contributed invaluable information and constructive comments and feedback to this sub-regional report: Binghui Zheng, Chazhong Ge, Yuanhang Zhang, Xiaoyan Tang, Huaicheng Guo, Dagva-Ochir Saikhanjargal, Mukand Babel, Donghui Wen, Weizhong Wu, Shuguang Xie, Zhiji Huang, He Yin, and Feng Zhou.

We are also indebted to numerous organizations that assisted us in finding the data required for this report, including the Institute of Environmental Sciences, Chinese Research Academy; Ministry of Water Resources, National Bureau of Statistics, Ministry of Health, and Ministry of Foreign Affairs of the People's Republic of China; National Bureau of Statistics, Mongolia; and other universities, agencies and institutions in the region.

This sub-regional report draws on data published by many other organizations. These sources are specified where appropriate in the text, as well as identified in the Reference List.

oreword

Freshwater resources – essential for life on Earth and the achievement of the Millennium Development Goals (MDGs) – are under growing pressure from social, economic and environmental factors including population expansion, overexploitation of land resources, increasing pollution, climate change and unsustainable management practices. Integrated Water Resources Management (IWRM) has been recognized as one of the top priorities for society to be able to respond to these challenges. This is especially important in Asia where water resources are scarce in many countries. A good understanding of how water resources are vulnerable to environmental change is essential for informed decision making.



Executive Director
United Nations Environment
Programme

This publication – the product of a collaborative effort between the United Nations Environment Programme (UNEP), Peking University of China and the Water Resources Institute of the Mongolia Water Authority – provides an integrated vulnerability assessment of freshwater resources in Northeast Asia. Assessments were carried out for five key river basins in the sub-region: the Changjiang River Basin (China), the Huanghe River Basin (China), the Song-Liao Basin (China), the Orkhon River Basin (Mongolia), and the Tuul River Basin (Mongolia), which together cover a land area of almost 4 million square kilometres, and are home to more than 1 billion people. In Northeast Asia, about 350 million people have benefitted from efforts to achieve the Millennium Development Goal on access to safe drinking water since 1995. However, more than 700 million people in the five basins still have inadequate access to safe drinking water and improved sanitation.

The report also confirms the significant link between climate change and water availability with solid scientific evidence and data in the selected basins. Global warming will further affect the water balance in these basins and exacerbate extreme events of drought and floods.

There are no easy generic solutions. Innovative basin-level policy interventions are urgently needed for each river basin to reduce vulnerability to environmental change, and optimize services for future development. In this context, it is our hope that this report will be a useful resource for decision makers in China and Mongolia to make informed decisions in IWRM, and for other stakeholders to understand the important and urgent need for IWRM in Northeast Asia. This publication will be accompanied by an interactive electronic version allowing users to easily access a greater range of information at basin and sub-basin scales.

A handwritten signature in black ink, which appears to read 'Achim Steiner'.

Achim Steiner
United Nations Under-Secretary General and Executive Director
United Nations Environment Programme
October 2008

Acronyms and Abbreviations

ADB	Asian Development Bank
CRB	Changjiang River Basin
CSY	China Statistics Yearbook
DP	Development pressures
D. P. R. Korea	Democratic Peoples Republic of Korea
EH	Ecological health
FAO	United Nations Food and Agriculture Organization
GDP	Gross Domestic Product
GIS	Geographic Information System
GOVCN	Central People's Government of People's Republic of China
HRB	Huanghe River Basin
IDWS	Improved drinking water supply
IMF	International Monetary Fund
IS	Improved sanitation
LRB	Liaohe River Basin
MC	Management challenges
MDGs	Millennium Development Goals
MFA	Ministry of Foreign Affairs, People's Republic of China
MH	Ministry of Health, People's Republic of China
MSY	Mongolia Statistics Yearbook
ORB	Orkhon River Basin
P. R. China	People's Republic of China
R. Korea	Republic of Korea
R&D	Research and development
RB	River basin
RS	Resource stresses
SHJRB	Songhuajiang River Basin

Symbols

°C	Degrees Centigrade
km	Kilometre
km ²	Square kilometer
km ³	Cubic kilometer

预览已结束，完整报告链接和工

<https://www.yunbaogao.cn/report/index/report?r>