

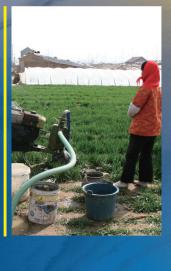
As part of a global exercise on Vulnerability Assessment of Freshwater Resources to Environmental Change, initiated by UNEP, the report tracked the changes in freshwater resources over last five decades for five major selected river basins in Northeast Asia: Changjiang (Yangtze) River, Huanghe (Yellow) 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.

FRESHVATER UNGER THREAT ASIA

Vulnerability Assessment of Freshwater Resources to Environmental Change







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FRESHWATER under THREAT

NORTHEAST



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FRESHWATER UNDER



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



UNITED NATIONS ENVIRONMENT PROGRAMME



PEKING UNIVERSITY, CHINA



MONGOLIA WATER AUTHORITY



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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.



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
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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.

Achim Steiner

Admi Jemes

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

km² Square kilometer

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