

NATIONAL REPORT ON IHP RELATED ACTIVITIES
IN
REPUBLIC OF KOREA

May, 2008

Korean National Committee
for
The International Hydrological Programme
Republic of Korea

1. ACTIVITIES UNDERTAKEN IN THE PERIOD JULY 2006-MAY 2008

1.1 Meetings of the IHP National Committee

1.1.1 Decisions regarding the composition of the IHP National Committee

For the solution of water problems and the protection of mans welfare and the quality of human life, a UNESCO Resolution in 1964 created the International Hydrological Decade(IHD). Korea as a participant in the program, then appointed within its Ministry of Construction a IHD National Committee(later, IHP National committee), which undertook pioneer hydrologic surveys of selected representative basins in three major river systems during the program period, and embarked in 1975 on a 6-year International Hydrological Programme (IHP) project as the first step toward an extension of surveys of domestic river basins in order to fulfill its responsibilities in the world's consolidated efforts to cope with the water problem. After the completion of the first phase of IHP in 1980, the second phase of IHP project(1981~1983), the third phase of IHP project(1984~1989), the fourth phase of IHP project(1990~1995), the fifth phase of IHP project(1996~2001), the sixth phase of IHP project(2002~2007) and the seventh phase of IHP project(2008-2013) followed for the continuation of representative basin studies, the adoption of new techniques of water resources development and water quality control, the hydrological evaluation of urbanization and variations of watershed including sustainable development in a changing environment, hydrology and water resources development in a vulnerable environment, water interactions of systems at risk and social challenges and water dependencies of systems under stress and societal responses, and education and training in hydrology and water resources.

From the beginning of the New Millennium through this year(2008), Korean National Committee for the IHP was reorganized and strengthened to fulfill the IHP activities more effectively and actively. All members of the Committee were from every part of water related organizations in the country and executive functions are carried out within the Water Resources Bureau, Ministry of Land, Transport and Maritime Affairs.

Decisions regarding most of IHP related activities are made by this committee which is held regularly and on request in special occasion.

1.1.2 Status of IHP- activities

During the sixth phase(2002~2007) of IHP, the Korean National Committee for the IHP paid its efforts to achieve the objectives set by UNESCO for this phase of IHP and the following projects have been executed in Korean river basins and in the field of hydrology and water resources in Korea.

- (1) Global changes and water resources
- (2) Integrated watershed and aquifer dynamics
- (3) Land habitat hydrology
- (4) Water and society
- (5) Water education and training

Based on these projects(themes), more practically-oriented-projects for Korean hydrologic and water resources conditions have been executed and their detailed information are listed in Table-1.

Table-1 IHP National Events in IHP-

Projects/Activities	Brief Description	IHP-Subprogram	Location and Duration	Supporting Body	Gov. Input	Output
1. 2006 IHP Representative Basin Studies	<ul style="list-style-type: none"> ·Water demand management planning and its studies ·Runoff characteristics change and runoff reduction studies according to large-scale housing area development ·Runoff analyses by future landuse and climate change ·Int'l river management examples investigation and development of management strategy of South-North Korean co-boundary river basins ·River basin management manual for Integrated River Basin management(IRBM) ·Optimal water resources use and its management technique development in island and coastal region ·Groundwater variation characteristics in urban areas ·River and culture/civilization studies in river basin ·Selection and design of new Representative basins for hydrological data collection ·Review of study results and future direction of present Representative basins 	Theme 1, 2, 4 and 5	Korean rivers	MOCT	Major Gov. input	Report and Papers
2. 2007 IHP Representative Basin Studies	<ul style="list-style-type: none"> ·Water demand management planning and its studies(cont'd) ·Runoff characteristics change and runoff reduction studies according to large-scale housing area development(cont'd) ·Runoff analyses by future landuse and climate Change(cont'd) ·River basin management manual for Integrated river Basin management(IRBM)(cont'd) ·Optimal water resources use and its management technique development in island and coastal region(cont'd) ·Groundwater variation characteristics in urban areas(cont'd) ·River and culture/civilization studies in river basin(cont'd) ·Electronic publication and distribution of hydrologic and water quality data ·New representative basin operation and studies 	Theme 1, 2, 4 and 5	Korean rivers	MOCT/MLTM	Major Gov. input	Report and Papers
3. Asian/Pacific FRIEND & HELP Studies(2006-2007)	<ul style="list-style-type: none"> ·Basic hydrologic analyses in AP FRIEND river basins ·Comparative regional analyses of hydrology and water resources in AP FRIEND regions 	Theme 1 Area 1.1	Korean rivers	MOCT/MLTM		Report and Papers
4. Water resources management during extreme flood and drought	<ul style="list-style-type: none"> ·Extreme flood and drought modeling ·Water resources management techniques during extreme hydrologic periods 	Theme 1, 2 and 3	Korean rivers	MOCT/MLTM		Report and Papers
5. Special program of regional hydrology	<ul style="list-style-type: none"> ·FRIEND & HELP basin studies ·PUB studies 			MOCT/MLTM MOE		

MOCT : Ministry of Construction and Transportation (from 2008, MOCT was reorganized as MLTM)

MLTM : Ministry of Land, Transport and Maritime Affairs

MOE : Ministry of Environment

1.1.3 Decisions regarding contribution to / participation in IHP-

In the beginning of the seventh phase of IHP(2008-2013) the Korean National Committee for the IHP has prepared the implementation plan of IHP- during the period(2008-2013) as listed in Table-2 and the potential activities to be undertaken by the Korean National Committee for the IHP as listed in Table-3 both according to the core programme Themes and Focal Areas, overviews of which are shown as follows;

WATER DEPENDENCIES: SYSTEMS UNDER STRESS AND SOCIETAL RESPONSES

Theme 1: ADAPTING TO THE IMPACTS OF GLOBAL CHANGES ON RIVER BASINS AND AQUIFER SYSTEMS

- Focal area 1.1 - Global changes and feedback mechanisms of hydrological processes in stressed systems
- Focal area 1.2 - Climate change impacts on the hydrological cycle and consequent impact on water resources
- Focal area 1.3 - Hydro-hazards, hydrological extremes and water-related disasters
- Focal area 1.4 - Managing groundwater systems' response to global changes
- Focal area 1.5 - Global change and climate variability in arid and semi-arid regions

Theme 2: STRENGTHENING WATER GOVERNANCE FOR SUSTAINABILITY

- Focal area 2.1 - Cultural, societal and scientific responses to the crises in water governance
- Focal area 2.2 - Capacity development for improved governance; enhanced legislation for wise stewardship of water resources
- Focal area 2.3 - Governance strategies that enhance affordability and assure financing
- Focal area 2.4 - Managing water as a shared responsibility across geographical & social boundaries
- Focal area 2.5 - Addressing the water-energy nexus in basin-wide water resources

Theme 3: ECOHYDROLOGY FOR SUSTAINABILITY

- Focal area 3.1 - Ecological measures to protect and remediate catchments process
- Focal area 3.2 - Improving ecosystem quality and services by combining structural solutions with ecological biotechnologies
- Focal area 3.3 - Risk-based environmental management and accounting
- Focal area 3.4 - Groundwater-dependent ecosystems identification, inventory and assessment

Theme 4: WATER AND LIFE SUPPORT SYSTEMS

- Focal area 4.1 - Protecting water quality for sustainable livelihoods and poverty alleviation
- Focal area 4.2 - Augmenting scarce water resources especially in SIDS
- Focal area 4.3 - Achieving sustainable urban water management
- Focal area 4.4 - Achieving sustainable rural water management

Theme 5: WATER EDUCATION FOR SUSTAINABLE DEVELOPMENT

- Focal area 5.1: Tertiary water education and professional development
- Focal area 5.2: Vocational education and training of water technicians
- Focal area 5.3: Water education in schools
- Focal area 5.4: Water education for communities, stakeholders and mass-media professionals

Cross-cutting programmes: HELP, FRIEND

Associated programmes: International Flood Initiative (IFI)

International Sediment Initiative (ISI)

Water for Peace: From Potential Conflicts to Cooperation Potential (PCCP)

Joint International Isotope Hydrology Programme (JIHP)

Internationally Shared Aquifer Resources Management (ISARM)

Global Network on Water and Development Information in Arid Lands (G-WADI)

Urban Water Management Programme (UWMP)

World Hydrogeological Map (WHYMAP)

Education, Training and Capacity Building across all the themes

Table-2 Implementation Plan of IHP-VII Phase

Name of the IHP National Committee	Country Priorities 2008-2009	Country Participation in Theme and Focal area 2008-2013	Events organized in the Country	Activity lead/Coordinated by the Country
<u>REPUBLIC OF KOREA IHP-NC</u>				
IHP VII Themes and Focal areas				
Theme 1:				MLTM/KWRA*
Focal area 1.1	•	2008-2009		MLTM/KWRA
Focal area 1.2	•	2009-2010		MLTM/KWRA
Focal area 1.3		•2011-2013		MLTM/KWRA
Focal area 1.4	•	2008-2009		MLTM/KWRA
Focal area 1.5				
Theme 2:				MLTM/KWRA
Focal area 2.1		•2010		MLTM/KWRA
Focal area 2.2	•	2008-2009		MLTM/KWRA
Focal area 2.3		•2010-2011		MLTM/KWRA
Focal area 2.4		•2011-2013		MLTM/KWRA
Focal area 2.5				
Theme 3:				
Focal area 3.1	•	2008-2009		MLTM/KWRA/IHES*
Focal area 3.2	•	2008-2009		MLTM/KWRA/IHES
Focal area 3.3		•2010-2011		MLTM/KWRA/IHES
Focal area 3.4		•2011-2012		MLTM/KWRA/IHES
Theme 4:				
Focal area 4.1	•	2008-2009		MLTM/KWRA
Focal area 4.2				MLTM/KWRA
Focal area 4.3		•2010-2011		MLTM/KWRA
Focal area 4.4		•2011-2013		MLTM/KWRA
Theme 5:				
Cross-cutting programmes				
HELP	•	2008-2013		MLTM/IHES
FRIEND	•	2008-2013		MLTM/IHES
Associated programmes :				
International Flood Initiative(IFI)	•	2008-2013		MLTM/IHES
International Sediment Initiative(ISI)				
Water for Peace(PCCP)				
UNESCO-IAEA Isotope(JIIHP)				
Shared Aquifer(ISARM)				
Global Network Arid Lands(G-WADI)				
Unban Water Management(UWMP)	•	2008-2013		MLTM/KWRA
World Hydrogeological Map(WHYMAP)				

* MLTM : Ministry of Land, Transport and Maritime Affairs

KWRA : Korea Water Resources Association

IHES : International Hydrologic Environmental Society

* NOTE : Education, Training and Capacity Building activities are to be undertaken across all the themes

Table-3 Activities to be undertaken by the Korean National Committee

Name of the IHP National Committee <u>REPUBLIC OF KOREA IHP-NC</u>	Activities suggested by the IHP National Committee and their method of implementation
IHP VII Themes and Focal areas	
Theme 1:	
Focal area 1.1	Case studies on facility management techniques for abnormal climate
Focal area 1.2	Case studies of climate change impact on hydrological cycle Case studies of effect on water resources by climate change and development of evaluation system
Focal area 1.3	Case studies on regional hydrological extremes and water-related disasters
Focal area 1.4	Case studies of large scale groundwater dependencies related global change
Focal area 1.5	
Theme 2:	
Focal area 2.1	
Focal area 2.2	Best practices of good governance, capacity development and stakeholder participation at regional level
Focal area 2.3	
Focal area 2.4	
Focal area 2.5	
Theme 3:	
Focal area 3.1	Case studies of ecohydrological measures to protect and remediate catchment process
Focal area 3.2	Case studies on complementing engineering solutions with ecological measures resulting in sustainable carrying capacity of ecosystems Case studies on gravel contact oxidation process technology applied to improvement of stream quality
Focal area 3.3	
Focal area 3.4	
Theme 4:	
Focal area 4.1	Methodologies for safeguards against water borne biotic and abiotic pollutants
Focal area 4.2	
Focal area 4.3	
Focal area 4.4	
Theme 5:	
Cross-cutting programmes	
HELP	Regional case studies in HELP experimental river basins
FRIEND	Regional comparative case studies in Asia-Pacific river basins
Associated programmes :	
International Flood Initiative(IFI)	Regional case studies on flood and water-related disasters
International Sediment Initiative(ISI)	
Water for Peace(PCCP)	
UNESCO-IAEA Isotope(JIIHP)	
Shared Aquifer(ISARM)	
Global Network Arid Lands(G-WADI)	
Urban Water Management(UWMP)	Development of urban water management strategies and technologies
World Hydrogeological Map(WHYMAP)	

* NOTE : Education, Training and Capacity Building activities are to be undertaken across all the themes

1.2 Activities at a national level in the framework of the IHP

1.2.1 National / local scientific and technical meetings

Annual regular or many special scientific and technical meetings in the framework of the IHP were held in collaboration with International Hydrologic Environmental Society(IHES), Korea Water Resources Association(KWRA), Korean Society of Civil Engineers(KSCE), ICOLD Korean National Committee (KNCOLD), IWRA Korea Geographic Committee(IWRA-KGC), Korea Federation of Water Science and Engineering Societies(KFWSES), Korea Water Resources Corporation, and other water-related organizations in Korea. In those meetings, national/local hydrologic issues and water resources problems were dealt with special solution measures and their results were published in the form of scientific or technical reports and papers.

1.2.2 Participation in IHP Steering Committees / Working Groups

Republic of Korea was one of most active member countries in IHP Regional Steering Committee's activities for Southeast Asia and the Pacific. Republic of Korean delegates actively participated in the IHP Regional Steering Committee and Working Group meetings held in the period of 2006~2008.

1.2.3 Research / applied projects supported or sponsored

Research projects supported by the Government in the framework of the IHP in the period of 2006~2008 are listed in Table-1. Some other research or applied projects were also supported or sponsored by the Government and other water-related organizations such as Korea Water Resources Corporation during this period.

The following projects have been and are being implemented for the Asian Pacific FRIEND in the three representative river basins chosen as the Korean Asian Pacific FRIEND and HELP basins(Wichun, Kumho and Hwang river basins).

- Basic hydrologic analyses and data collection
- Comparative regional flow regimes analyses
 - Rainfall models and design storm
 - Flood models and design flood
- FRIEND river basins studies
- HELP river basins studies

1.2.4 Collaboration with other national and international organizations / or programmes

The Korean National Committee for the IHP is functioning in the execution of IHP activities in collaboration with the following national and international organizations/or programmes; Korea Water Resources Corporation(The K-Water); Korea Water Resources Association(KWRA); Korean Society of Civil Engineers(KSCE); Korean Society of Agricultural Engineers(KSAE); Korean Meteorological Society(KMS); ICOLD Korean National Committee(KNCOLD); IWRA Korea Geographic Committee; International Hydrologic Environmental Society(IHES); Korea Federation of Water Science and Engineering

Societies(KFWSES); Korea Institute of Construction Technology(KICT); Korean Universities Hydrology and Water Resources Programmes.

1.3 Educational and training courses

1.3.1 Contribution to IHP courses

The Korean National Committee for the IHP is contributing to the Korean Universities hydrology and water resources courses in the framework of the IHP in which graduate students and engineers are mostly involved with IHP projects and also educated or trained through the formal courses.

1.3.2 Organization of specific courses

Special workshops and seminars in the field of hydrology and water resources are annually organized by the Korean National Committee for the IHP in collaboration with above mentioned organizations in 1.2.4. In these specific courses, special topics are dealt with practical application in river basins.

1.3.3 Participation in IHP courses

The Korean National Committee for the IHP has actively been participating in IHP courses which were held in Asia-Pacific regions such as Japan, China and Malaysia by sending highly qualified hydrologists or proper candidates.

1.4 Cooperation with the UNESCO-IHE Institute for Water Education and/or international /regional water centres under the auspices of UNESCO

The Korean National Committee for the IHP had particularly close cooperation with International Center for Water Hazard and Risk Management(ICHARM) under the auspices of UNESCO in its preparatory activities for the establishment during last two years through the participation in workshops and strong support at the UNESCO Council and regional meetings. Furthermore, Korea Water Resources Corporation(The K-Water) which is a member of the Korean National Committee for the IHP established a special cooperation program with the UNESCO-IHE since 2007.

1.5 Publications

The Korean National Committee for the IHP is publishing IHP Annual Research Report and the Catalogue of Rivers in Korea every year in the form of Government Publication since 1975. These reports are distributed to all water-related organizations and IHP-KNC members and research results are published on the journals of academic societies or organizations.

Some other technical reports, proceedings of scientific meetings and specific course's materials are also published by the IHP-KNC.

1.6 Participation in international scientific meetings

1.6.1 Meetings hosted by the country

The following IHP meetings were hosted and organized by the IHP-KNC, IHES and KFWSES.

- 2006 International Symposium on Hydrological Environment(in Sri Lanka)
- 2007 International Symposium on Climate Change and Flood

1.6.2 Participation in meetings abroad

The Korean National Committee for the IHP actively participated in the IHP Inter-Governmental Council meeting as well as the regional IHP meetings such as Meetings of IHP Regional Steering Committee for Southeast Asia and the Pacific, Asian Pacific FRIEND Project and its workshops, working Group meetings and etc.

2. FUTURE ACTIVITIES

2.1 Activities planned until December 2009, foreseen for 2010-2011 and envisaged in the long term

From the beginning of 2008, IHP-KNC prepared concrete national plan for the seventh phase of IHP and began to implement this plan in Korean river basins. IHP-KNC will also actively continue and participate in the Asian Pacific FRIEND project to complete with successful results for the Southeast Asia and the Pacific.

The following international symposiums and workshops will be organized until December 2009 and during 2010-2011 as the IHP-VII activities of IHP-KNC.

- 2008 International Symposium on Hydrological Environment
- 2009 International Symposium of Hydrologic Environment
- Korean Workshops of FRIEND, HELP and PUB during 2010-2011