



Japan
Funds-in-Trust



INTERNATIONAL HYDROLOGICAL PROGRAMME

18th IHP Regional Steering Committee meeting for Southeast Asia and Pacific

Hanoi, Vietnam, 11-12 November, 2010

FINAL REPORT

IHP-VII Regional Steering Committee meeting | No. 18
Regional Steering Committee for Southeast Asia and the Pacific
UNESCO Jakarta Office, 2010

CONTENTS

1	OPENING.....	1
2	ADOPTION OF AGENDA	1
3	ELECTION OF RAPPORTEUR	1
4	ADDRESS FROM MEXT	1
5	SECRETARIAT REPORTS.....	2
5.1	UNESCO JAKARTA OFFICE REPORT	2
5.2	UNESCO BEIJING OFFICE REPORT	2
6.	REPORT ON THE IHP 19 TH INTERGOVERNMENTAL COUNCIL	2
7	COUNTRY REPORTS	3
7.1	AUSTRALIA	3
7.2	PR CHINA	4
7.3	INDONESIA	4
7.4	JAPAN	4
7.5	LAO PDR	4
7.6	MALAYSIA	5
7.7	MONGOLIA.....	5
7.8	MYANMAR.....	5
7.9	NEW ZEALAND	5
7.10	PAPUA NEW GUINEA	6
7.11	PHILIPPINES	6
7.12	KOREA (REPUBLIC OF).....	6
7.13	THAILAND.....	6
7.14	VIETNAM	6
8.	DEVELOPMENT OF CENTRES UNDER THE AUSPICES OF UNESCO (INDONESIA, THAILAND AND CHINA).....	7
9.	REPORT FROM THE ASIA-PACIFIC FRIEND	7
10	REPORT FROM THE GLOBAL FRIEND CONFERENCE (25-29 OCTOBER)	8
11	FLOOD FORECASTING AND WARNING SYSTEM ASSESSMENT (SEAP)	8
12	PROGRESS OF THE CATALOGUE OF RIVERS, VOLUME VI.....	9
13	IHP TRAINING COURSES IN THE REGION (20 TH IHP NAGOYA TRAINING COURSE, JAPAN 2010).....	9
14	REPORT FROM UNESCO ISI (INTERNATIONAL SEDIMENT INITIATIVE)- PROF M SPREAFICO	10
15	REPORT OF THE IHP-DRH WORKSHOP (MR TAKARA)	10
16	ORGANIZATION OF THE 19 TH RSC MEETING IN JAPAN IN 2011	11
17	REPORTS FROM UNESCO CATEGORY II CENTRES (HTC, ICHARM AND APCE)	11
18	ORGANIZATION OF THE 20 TH RSC MEETING IN 2012.....	12
19	ELECTION OF THE RSC SECRETARY (2011-2012)	12
20	OTHER ISSUES	12
21	ADOPTION OF RESOLUTIONS.....	13
22	CLOSING OF THE MEETING.....	13

ANNEXES

- ANNEX 1 PARTICIPANTS, 18TH MEETING OF THE IHP REGIONAL STEERING COMMITTEE FOR SOUTHEAST ASIA AND THE PACIFIC**
- ANNEX 2 AGENDA, 18TH MEETING OF THE IHP REGIONAL STEERING COMMITTEE FOR SOUTHEAST ASIA AND THE PACIFIC**
- ANNEX 3 SECRETARIAT REPORT BY UNESCO JAKARTA OFFICE**
- ANNEX 4 SECRETARIAT REPORT BY UNESCO BEIJING OFFICE**
- ANNEX 5 COUNTRY REPORTS**
- ANNEX 6 INTERNATIONAL SEDIMENT INITIATIVE - ISI**
- ANNEX 7 AGENDA OF THE IHP-DRH WORKSHOP**
- ANNEX 8 RESOLUTIONS**

**The 18th IHP
Regional Steering Committee Meeting for
Southeast Asia and the Pacific**

**Hanoi, Vietnam,
11-12 November 2010**

Chairman: Mr Liu Heng (China)
Secretary: Mr Kaoru Takara (Japan)

UNESCO Representatives: Mr. Giuseppe Arduino (Jakarta Office)
Ms. Eva Mia Siska (Jakarta Office)
Mr. Takeshi Mori (Jakarta Office)

Countries Represented: Australia, China, Indonesia, Japan, Korea (Republic of), Lao PDR,
Malaysia, Myanmar, Mongolia, New Zealand, Papua New Guinea,
Philippines, Thailand, Vietnam.
(See Annex 1 for the list of participants)

Observing Countries and Organizations: MEXT, Canada

1 OPENING

The RSC Chair Mr Liu Heng (China) opened the meeting at 08:55 am on 11 November 2010 and welcomed the participants. The Vietnamese IHP National Committee was thanked for organizing the conference and meeting. He announced that Mr Soontak Lee was elected as Chairperson of the Intergovernmental Council in July 2010. Mr Soontak Lee was given the opportunity to make some opening remarks. He thanked all members for the support received from the regional representatives in his election and he was unanimously elected and will do his best for the region's hydrological affairs.

2 ADOPTION OF AGENDA

The draft agenda was presented by the Chairman. Agenda Items 8 and 17 were clarified and the agenda in Annex 2 was adopted.

3 ELECTION OF RAPPORTEUR

It was agreed that the task of Rapporteur would be carried out by Mr. Richard Ibbitt (New Zealand) with support from Mr. Trevor Daniell (Australia).

4 ADDRESS FROM MEXT

Mr Higashi thanked the meeting for the opportunity to address the meeting. He spoke of the Pakistan Floods as an example of the need of Disaster Prevention. There is an attention to water related disaster reduction through courses such as the IHP Nagoya training course which is in its 20th year. The Japanese National Commission is focusing on Water. Through MEXT there has been the opportunity to train many people in the skills required to alleviate stress of disasters.

Mr Heng thanked MEXT for their support over the years and how it has brought the region together.

5 SECRETARIAT REPORTS

5.1 UNESCO JAKARTA OFFICE REPORT

Mr Arduino introduced his colleagues Mrs. Eva Mia Siska and Mr. Takeshi Mori (Jakarta). He then presented the secretariat report. Some key points follow, with details of other topics being noted elsewhere in these minutes and the complete report as Annex 3. The Beijing Office report is also included (Annex 4).

The status of 12 action items from the 17th RSC meeting in Wuhan were outlined. Specific requests were made as follows:

- Countries were to be contacted such as Singapore, Brunei, Timor Leste to establish links for the RSC without any success. Singapore did not respond whereas Brunei has had communications and Timor Leste has responded but as yet has no IHP committee.
- He reported on training and workshops which were considered important. The number of participants (156) at workshops and different training courses showed the health of the capacity building undertaken in the region. This included the workshops on flood warning systems in Kuala Lumpur, and the IHP Nagoya training course.

The complete report, including status of action items from the 17th RSC meeting, is included as Annex 3.

Mr Mori of Jakarta Office gave a presentation of the Japanese Funds in Trust (JFIT) He outlined the funds that Japan had contributed to UNESCO. He outlined the geographical focus of Japan both being in Asia and in Africa. He is the contact point for Japanese funds in Trust in Jakarta (email: t.mori@unesco.org). His presentation is included as Annex 3. Mr Mori mentioned the interaction between WINGA (Water Interoperability Networks for Global Change Adaption) IHP, DRH, Nagoya courses and APFRIEND. The year 2009 represented the 40th year of Japanese support.

5.2 UNESCO BEIJING OFFICE REPORT

This report is attached as Annex 4.

6. REPORT ON THE IHP 19TH INTERGOVERNMENTAL COUNCIL

An outline of important points from the Intergovernmental Council meeting held in Paris 5-9 July 2010, was given by Mr Soontak Lee. The full proceedings of this meeting have been published by UNESCO on their website as the Final Report of the 19th Session of the Intergovernmental Council.

A number of issues were covered at the Intergovernmental Council Bureau Meeting as on the web site:

- Mr Soontak Lee was elected as the Chairperson of the Council
- The region was well represented by 7 countries
- The Council endorsed the summary concept paper as a basis for discussion with the Member States during the detailed consultation that will ensue as part of the process for formulating the Eighth Phase of IHP

Mr Arduino made the plea to the member countries to consider the fact that FRIEND and HELP were not included as cross cutting Programs within the IHP VIII draft concept paper. He was concerned that unless a concerted effort was made by countries of the region then the crosscutting programmes of HELP and FRIEND would cease to be supported by the IHP.

Mr Mohd Nor put forward the idea that it was very expensive to send students to IHE and it would be better to have their programs taught in the region.

Mr Jayawardena responded to this by saying that ICHARM could satisfy the training in this region.

Mr Daniell raised the question that Australia made a point about SIDS at the IGC meeting. Mr Virobo made a call for the fact that small islands were not singled out in the IHP VIII program and at the IGC.

It was raised a number of times about the omissions from IHP VIII Task Force.

Mr Lee made the point that submissions need to be made before the IGC 20 in 2012 and he will raised at the next bureau meeting the matters discussed at this meeting.

Mr Jayawardena outlined that one of the main problems in the region was that of water supply and sanitation. Whether this fits into the role of IHP is not understood. It certainly is a major issue covering the developing areas of the globe and is omitted from IHPVIII.

Mr Arduino responded in saying that many of the issues raised by Mr Jayawardena are covered by other UN agencies.

Mr Jayawardena replied that since these issues are part of water science then they should be included.

Mr Lee indicated that the draft Concept paper did include the areas of sanitation and water supply. Discussion revolved around the fact that the UN already has a decade of Water Supply and sanitation running from 2005 to 2015.

Mr Hehanussa also suggested that a resolution should be forwarded on including vulnerable coastal areas within the small islands resolution.

7 COUNTRY REPORTS

All country reports are included as Annex 5, with the exception of Cambodia.

7.1 AUSTRALIA

Mr Daniell noted that Australia has had rainfall over a large part of the country but some regions were still in drought as in the South West of Western Australia. Mr Daniell noted that IHP activities continued to receive the interest and support within Australia with Bruce Stewart (Bureau of Meteorology (BoM)/WMO), Prof. Ian White, Tony Falkland, Peter Dillon and other members of the Committee being actively involved.

Many water activities are being carried out in Australia at all levels of government and research institutions due to the prolonged drought being broken by floods in many regions. The drought still persists in some regions. Considerable funding is being input into research through an agreement between the BoM and CSIRO (Commonwealth Scientific and Industrial Research Organisation) called WIRADA. Other activities include the upgrade of Australian Rainfall and Runoff (ARR) flood analysis project where a large number of researchers are working in the areas of flood estimation and the uncertainties associated with those estimations.

The eWater Cooperative Research Centre (CRC) has the Water toolkit which is a web based resource (<http://www.toolkit.net.au/>) for hydrological analyses.

A high priority has been the work on the assistance given to Pacific Islands on the adaption policies, and science, for climate change on water resources.

7.2 PR CHINA

Ms Huang Yan presented the report for the China IHP National Committee. The full report contains details of many activities, both carried out and planned, across all IHP areas. Some selected highlights follow.

The Ministry of Water Resources has approved new members for the China IHP National Committee. There is a program of activities to educate the non specialist government people in water related issues.

They are active internationally on IHP activities with Ms Huang being chair of the HKK FRIEND group and Mr Heng chair of the RSC. China IHP is also working with the DPR of Korea.

7.3 INDONESIA

Ms. Gadis Sri Haryani presented the report of the Indonesian IHP National Committee. The report contains descriptions of a wide range of activities and meetings aligned to the activities to Phase VII.

The Indonesian National Committee for IHP has a total of 18 members.

A number of studies and courses have occurred on the impact of drought and climate change, and also on aquifer storage and recovery.

7.4 JAPAN

Mr Kaoru Takara, Chairperson of Japan IHP, presented the Japan IHP National Committee report. There is new membership of the national committee. The report covered progress on the Catalogue of Rivers, the Asia-Pacific FRIEND project, DRH project, IHP training courses from Kyoto and Nagoya.

He outlined how the lecture notes were available through the Jakarta Office and through global casting. Japan are now considering how they will contribute to the IHP VIII.

The review and evaluation meeting on IHP activities supported by the Japanese Fund In Trust (JFIT) was presented. This is covered in more detail in the UNESCO Jakarta report (Annex 3).

7.5 LAO PDR

Mr Vithaya of the Dept of Meteorology and Hydrology outlined the activities at the national level in the framework of IHP VII. As yet the IHP committee for Lao has not yet been formalized.

A number of workshops have been attended with support from ICHARM and UNESCO.

A number of National training courses on Modelling, Gauging and Data collection have been organized in June, July and September 2010. There is strong cooperation with the Mekong Commission and the Typhoon Committee.

7.6 MALAYSIA

Mr. Hanapi, Secretary of the National IHP committee noted there was a new chairman of the Malaysian IHP (MIHP) National Committee.

MIHP plans its activities through its Executive Committee and implements work through three standing committees and associated working groups on Research, Education Training and Public Information, and on Standardization of Hydrological Practices. The standing committee on research coordinates and formulates proposals for research projects. An overview of the activities and courses undertaken were given.

The MIHP committee makes awards for hydrological practice to increase the standards in education. The Deputy Prime Minister opened World Water Day.

7.7 MONGOLIA

Mr Basandorj presented an overview of national activities.

These included training and workshops for a variety of activities in water resources, water supply, sanitation, water policy household water treatment with many contacts with UN agencies over topics such as water supply.

Sustainability is a topic which is being brought to decision makers' attention.

Regional and International Activities included participation in Central Asian semi arid regions, ecowater efficient water infrastructure and water related disasters.

5 participants attended an International workshop on Land Surface observation and Modeling in Beijing. Other participants attended various workshops within the region.

Mr Bassandorj concluded by stressing the need for further programs of water education in both urban and rural areas.

7.8 MYANMAR

Ms Htay Than reported on the activities in Myanmar which are now aligned to the IHP VII activities. The IHP committee has been formed with 17 members. The current objectives of the committee are in water quality and have made recommendations on climate change to the government as well as participating in international scientific meetings

7.9 NEW ZEALAND

Mr. Dennis Jamieson briefly described IHP related activities in New Zealand, highlighting freshwater resources data collection, effects of land use intensification on water quality and quantity, reducing the effects of weather related hazards and the FRIEND Motueka Basin project. The importance of collaboration was emphasized with examples given of the New Zealand work with the WMO and the South Pacific Applied Geosciences Commission (SOPAC), and important ongoing and active linkages between the New Zealand Hydrological Society and the Korean Water Resources Association (KWRA).

Additional information was presented on initiatives to work in a collegial manner with Pacific Island based water specialists, introduce new technology via education and training, and to ensure international linkages were maintained and expanded. The emphasis was stressed on how to support colleagues in the Pacific Island countries as much as possible. There is an expansion of the dairy industry which requires a greater use of water for irrigation of growing grass.

Reducing impact of weather related hazards and urban Impacts of Climate Change Toolkit are two programs that are being progressed. Much more information is now being published on line through NIWA and through the EDENZ and WRENZ systems which are web based.

He finished his presentation with the fact that NZ have appointed a Chief Scientist who is advocating that research is an investment and not a cost.

7.10 PAPUA NEW GUINEA

Mr. Virobo presented the PNG report which noted the challenges facing the water resource work given a switch in emphasis and resources from protection and conservation of the environment to policy development. There are 8 members of the IHP committee (unchanged).

There are a number of changes to government which could allow better funding of water resources. A number of water resource assessments have been carried out. A number of projects in water resources are funded by SOPAC with EU funding support.

Significant developments were reported including examining climate change adaption.

7.11 PHILIPPINES

Mr. Lionsan described the operation of the National Committee over the previous year, highlighting a whole range of activities.

He outlined the IHP VII activities undertaken in the Philippines. Many meetings have been undertaken because of the floods that have inundated the country. These included meetings and training associated with increasing the capacity building within the country.

7.12 KOREA (REPUBLIC OF)

Mr. Hongkee Jee presented information on the wide range of activities related to the IHP undertaken in the Republic of Korea. The work described, included a comprehensive range of projects associated with the implementation of IHP-VII.

The linkages with many different agencies in Korea were explained. He described the HELP basin activities. He stated that they had contributed a river to the 6th Catalogue of Rivers.

7.13 THAILAND

Ms. Adirektrakan noted that the Thai National Committee (TNC-IHP) has had a new chairman. The Secretary has changed twice. The IHP committee is in a stage of transition. Information was given on capacity building within the country.

There was a need for examining droughts and floods which were of crucial importance in the region and it has become a high priority in Thailand with a number of projects being developed to alleviate the stree of lossed farm production

Ms. Adirektrakan described collaboration with a wide range of national and international organizations. The presentation concluded with an overview of expected future activities.

7.14 VIETNAM

Mr. Hoang presented the Vietnam report of the IHP.

The focus of IHP activities in Vietnam was at the national level. A number of meetings were held in Vietnam including the APFriend meeting on Floods and IDFs as well as the Flood Forecasting project. A number of major publications have been submitted to parliament on Climate change.

Of particular concern to Vietnam are the effects of climate change and sea level rise due to climate change. A priority has been the development of dry season reservoir rules for Central Vietnam. A high priority for early warning of flood levels in some regions. There has been strong cooperation between WMO and IHP activities in Vietnam.

The VNNC IHP has a yearly meeting with the Vietnam National UNESCO Commission

8. DEVELOPMENT OF CENTRES UNDER THE AUSPICES OF UNESCO (INDONESIA, THAILAND AND CHINA)

The following reports were given

- Indonesia. Mr. Hehanussa gave a report on the Ecohydrology Centre based in Indonesia (Asia Pacific Centre for Ecohydrology – APCE). This Centre will actively participate in projects related to reservoir eutrophication and to possible water scarcity issues affecting major cities. In March 2011 the signing of agreement will be undertaken.
- Proposed Thailand Centre: no further information supplied
- China: no further information supplied on that which RSC 17 had

9. REPORT FROM THE ASIA-PACIFIC FRIEND

Mr. Jamieson updated the Committee on the state of APFRIEND. He talked to his report and will go for the Depth Area Duration methods.

Mr. Jamieson updated the Committee on the state of APFRIEND. He talked to his report and confirmed that Stage 1 has been completed.

The three discussion points in the report resulted in the following outcomes:

- Stage 2 will proceed with the Depth Area Duration methods.
- Additional work, particularly around land use changes and climate change was discussed. How this work could be undertaken, whether as "volunteer" or funded project was not resolved. Any additional work and any funding requirements are topics for a further APFRIEND workshop.
- The opportunity for additional countries to those who participated in stage 1 was discussed,. It was concluded that additional countries could participate if they could forward stage 1 information, but it was also recognized that some countries may not have this information.
- Depth Area Duration curves (DAD curves) are of interest to a number of countries.

Comments

Mr van Nguyen commented that in Canada there was an attempt to incorporate Climate change effects in Depth Area Duration analysis.

Mr Jamieson responded that there is a lot uncertainty in DADA analysis in the region. In the 2nd year there is the opportunity to consider climate change effects on the analysis.

Ms Yan said that there should be a workshop sooner rather than late and wished that the project reflected changes into National Development.

Mr van Nguyen raised the issues of land use changes including the urban environment to be include in the study. Mr Takara commented that Japanese had experience in DAD development.

The Philippines supported the idea of DAD especially with respect to typhoon rainfalls.

Mr Arduino suggested that countries who had not contributed to stage 1 could participate in Stage 2. Mr Virobo was concerned that some countries would find it difficult to make useful contributions. Mr Mohd Nor supports the extension of the project into DAD curves. The item of when the workshop was to be held raised by Mr Arduino is addressed later in this report.

10 REPORT FROM THE GLOBAL FRIEND CONFERENCE (25-29 OCTOBER)

Mr Daniell reported that the Global FRIEND conference in Fes, Morocco was quite successful with over 150 participants. There were 86 papers published in the IAHS red book No.340 as well as another 80 poster papers presented at the conference. It was enlightening that there was a significant blending of young researchers at this meeting. This was not the case for the APFRIEND participants. A special thanks needs to be made to Ms Yan Huang for her efforts as an editor of the Global FRIEND report 2006-2010.

A number of significant meetings were held during the conference including the 8th Meeting of the FRIEND Intergroup Coordination Committee on the 27th October. A number of important outcomes resulted from this meeting:

There is an opportunity for this region to host the 2014 FRIEND Group meeting.

Siegfried Demuth talked about the task force that designed the IHP VIII and FRIEND is not included. It is important that all National IHP groups and regional FRIEND groups are contacted and ask them to write a letter to chairman of the task force and to the Chairman of the Intergovernmental Council. This has been addressed in a resolution.

The harmonization of the FRIEND Data bases was a separate topic discussed at the FRIEND meeting and Mr Chikamori gave a presentation on the process that has been so far undertaken by a committee setup for the harmonization of data bases. This resulted from a meeting in Koblenz earlier in 2010. The first step in the harmonization is to use the same architecture. According to the report it has common meta-data which meets a certain minimum standard. Discussion revolved around the issue that data which was only available to the region would now be available to other FRIEND researchers world wide. Mr Ibbitt raised the view that this work would be done with inadequate data as all data would not accessible through this data base. Mr Daniell supported the fact that there is much more data available that should be used for hydrological investigations.

Mongolia wished to know about HELP and FRIEND programs and the response from Mr Arduino was that these are supported from the Jakarta Office.

Mr Lee suggested a working group be formed to discuss the harmonization within the global context to report back in one year. Mr Daniell commented that the harmonization of the data base will proceed irrespective of the views of APFRIEND.

Ms Huang supported the idea to proceed carefully.

Mr Heng then forwarded that the composition of this committee should be made up of Mr Chikamori, a representative from Malaysia and Australia.

11 FLOOD FORECASTING AND WARNING SYSTEM ASSESSMENT (SEAP)

Mr. Mohd Nor gave the report that had been distributed earlier in the day. He presented the results of Stage 1 of this project. Four catchments for the river basins were examined in Malaysia, Indonesia, Vietnam and the Philippines.

Mr. Mohd Nor stated that this study 2nd phase has progressed and could include four further catchments for this study in four more countries. Two countries have been visited: The Republic of

Korea and China. Cambodia and Thailand are yet to respond. A brief discourse of the basins being reviewed was given.

Mr Daniell asked whether the Action Item from the 17th RSC of “It is recommended that the document and study address the social consequences of the flood forecasting systems that are in place on the people downstream and the damages and people at risk downstream.”

The response was that this was not done due to lack of resources and did not occur.

Mr Jayawardena requested that Mr Mohd Nor highlight the technical processes and details of the systems used for flood forecasting. Have you tested the flood forecasting for accuracy and robustness. Mr Jayawardena asked whether anyone in the region can support the conclusions reached in the report. Mr Nor implied that the answer was yes.

Peter Heahanusa reported that the data in the report was incorrect in that the floods had been generated from downstream catchments.

Mr Arduino asked why Thailand and Cambodia had not responded. Mr Mohd Nor replied there was more potential in the Thailand case than that of Cambodia.

12 PROGRESS OF THE CATALOGUE OF RIVERS, VOLUME VI

Mr. Chikamori gave a presentation that gave details of the 3 rivers that have been submitted for the Volume 6 of the Catalogue of Rivers and the 10 rivers for the Supplement No 1 volume. Publication is behind schedule and there are not enough basins and the data has not been updated.

The Action Item of the previous RSC was undertaken only by a handful of countries with 3 countries submitting new rivers.

There was considerable discussion as to the appropriateness and effectiveness of the Catalogue of Rivers from a number of countries. Mr Ibbitt said that a new phase of data information cataloguing through linking to on-line data is progressing internationally. This provides a vehicle for revitalizing the “catalogue of rivers” concept by overcoming the need for specific data supply to the catalogue. Mr Daniell and Mr Jayawardena agreed with Mr Ibbitt.

Mr Virobo stated that there is a problem for updating of river information and there was a need for extra resources.

Mr Heng stated that there needed to be action : All countries were to propose rivers for inclusion in Vol. VI and Supplement No 1 by the end of the meeting.

Vietnam to contribute 1 river named River Ca, Thailand not yet and will advise, Republic of Korea possibly 1 or 2 additional to their present 1, Philippines to update existing record for Passac, PNG possibly 1, New Zealand to supply linkages to websites, Myanmar to reply by email, Mongolia 1 river Tuun, Malaysia 1 Muda, Indonesia 2 rivers, Lao not to contribute, Japan additional 2 to their present 1, China 1, Cambodia unknown, Australia website references to data.

13 IHP TRAINING COURSES IN THE REGION (20TH IHP NAGOYA TRAINING COURSE, JAPAN 2010)

Mr. Arduino gave a presentation on the 20th IHP Nagoya Training Course “Groundwater as a key for adaption to changing climate and society”.

The key point of the presentation was to draw attention to changes in the method of delivery for this course and future courses. This course was described as an e-learning training course. Electronic textbooks were uploaded to the site before courses and lecture presentations were done

by direct webcasting and these were uploaded immediately after the lecture. Non-participants in the training course who have an interest in the topic were able to participate in an interactive forum for a certain period following the course. This increased the availability of course content to a wider audience.

Mr Takara stated that to overcome the differences in time the uploading of video presentations were made available.

There was considerable discussion on aspects of the presentations and interactions between the participants and lecturers. It was announced that in last year course there were 50 extra participants using links to universities.

Mr Virobo stated that people in remote locations such as islands do not have broadband features to participate. Mr Arduino said that slow connections will work but with some limitations. Mr Liongson stated that other disciplines have similar systems and that whether the training course has been recorded it could be downloaded in different occasions.

14 REPORT FROM UNESCO ISI (INTERNATIONAL SEDIMENT INITIATIVE) - PROF M SPREAFICO

Professor Spreafico presented what this initiative involved which was developed to be considered in any integrated water resources management system which is included as Annex 6 The 3 main objectives of the ISI were outlined and various topics of ISI which included sediment monitoring, floods and sediments, measures for the reduction of erosion, sedimentation in natural and artificial lakes, sediment in lowland rivers and delta areas.

There is a website through the IRTCES (<http://www.irtces.org/isi>) explaining the initiatives of the ISI as well as newsletters that can be sent to interested parties.

A number of world case studies were listed and there has been a major initiative for capacity building through workshops and training. A number of countries in the region are assisting the ISI with China hosting and funding the Secretariat, Switzerland funding ISI and Australia funding a researcher based in Beijing to carry out the case studies.

Mr Ibbitt expressed his gratitude for a comprehensive presentation. There was a significant amount of discussion on the problems of sedimentation in the region with Malaysia, Indonesia and Papua and New Guinea expressing their concerns on specific problems of sedimentation including forestry operations and mine waste tailings. Mr Spreafico in commenting on the discussion said that the problems should be looked at in context. The West Papua situation was raised where thousands of tons of sediment are transported to the ocean per day.

It was proposed by Mr Takara to include ISI issues in a session in the next conference.

Action: Mr Arduino to send information on ISI to the National Committees

15 REPORT OF THE IHP-DRH WORKSHOP (MR TAKARA)

Mr. Takara introduced the IHP-DRH workshop that had been undertaken on Tuesday 9th November. The agenda for this meeting is attached as Annex 7. Mr. Takara outlined the activities that were undertaken in the previous year. The current state of the “Disaster Reduction Hyperbase (DRH)” was outlined which uses a wide range of web based technology to share information amongst collaborators.

An action Plan was outlined which resulted from the workshop

- to finish DRH contents before January 2011;

- to develop a phase III proposal by Kyoto University with consultation with IHP Member countries; and
- as a result of the workshop to encourage member countries to contribute and select focal points in individual countries

Considerable discussion was undertaken. Mr Arduino said that there had been much work to make the DRH visible. Mr Liongsan questioned the timetable of the activities but more importantly what was the role of the focal points and but these focal needed the approval of the various National IHP committees. and Mr Takara explained that these were required by March 2011. Mr Mohd Nor stated that the Malaysian contribution was already in template form and Mr Hanapi suggested post event technologies. The minutes of this workshop will be available from Mr Takara. Mr Takara explained that the template should be used for uploading information and that this should be in simple language.

16 ORGANIZATION OF THE 19TH RSC MEETING IN JAPAN IN 2011

Mr Takara gave a short presentation on the 19th RSC Meeting Programme with some possible dates 24-28 Oct or 21 to 25 th of November 2011.

The possible conference theme: Extreme weather and river conditions

A number of theme descriptions for the conference were presented

“Extreme events – meteorological and hydrological aspects that affect communities”

Mr Takara wanted to be inclusive of the meteorologists as there were a number of researchers at Kyoto.

After discussion it was concluded that the preferred meeting arrangement would be October 24-28th October and the title of the Conference would be decided by the organizing committee.

The location of Kyoto with perhaps a field trip to various facilities within the region. The hosts indicated that the schedule would allow time for the field trip on the Wednesday.

17 REPORTS FROM UNESCO CATEGORY II CENTRES (HTC, ICHARM AND APCE)

The Humid Tropics Centre (HTC) report presented by Mr. Mohd Zainal Abidin who described a range of activities to date. He discussed the report which was issued during the meeting. A key activity for the HTC was a R&D of a WSUD project which involved rainwater collection, grey water recycling, storm water collection with grassed swales and turf pavements.

Activities involved the UNESCO HELP Langat River Basin IWRM project and the application of MSMA storm water Management Eco-hydrology at a local scale. A number of seminars and workshops training were carried out.

Mr Heng thanked the Malaysian delegate and the Malaysian government for their support.

Mr. Jayawardena (The research and training advisor ICHARM) gave a comprehensive presentation on the International Center for Water Hazard and Risk Management (ICHARM) which was originally established in March 2006. Information presented showed the relationship of the 3 major activities including Capacity Building, research output and networking with other institutions.

An outline of the programs of post graduate activities that are carried out was delivered. A large number of training courses have been held, including ones on the Flood Hazard Mapping Course and Dam and River Engineering as well as Early Warning Systems for Flood Forecasting.

A request was made to the representative countries to nominate potential students to attend post graduate courses at ICHARM. It was expressed that they were after quality of students rather than quantity.

It appears that flood related disasters research remained the first priority of the Centre. The research output was outlined with 38 peer reviewed papers and 4 Book Chapters as well as other publications.

The Networking activity was carried out through out the world with both MOUs and participating in numerous Conferences and existing UNESCO Water Centres.

Mr Heng thanked Mr Jayawadena for his presentation noting that ICHARM is becoming one of the more active centres.

Mr Hehanussa reported on the APCE. He reported on a study of one volcanic lake system which a water balance was carried out. Sedimentation issues were looked at in 3 river systems. The problems of the upstream catchment development producing sediment and poor quality water were of paramount importance in these systems. These are highlighted in the report to be sent to Mr Arduino.

18 ORGANIZATION OF THE 20TH RSC MEETING IN 2012

Nominations were called for the RSC for 2012. Malaysia indicated an intention to host the RSC in 2012 in Langkawi Island. In response to a question on access to Langkawi Island, Mr Mohd Nor said there were no problems as there are frequent air services to the island. As there were no other proposals for this meeting the Malaysian offer was accepted. The timing and detailed information will be presented at the next RSC meeting in Kyoto.

19 ELECTION OF THE RSC SECRETARY (2011-2012)

There were calls for Nomination of the next RSC Secretary. Mr. Takara was nominated from Korea and Malaysia. Mr Takara was appointed with acclamation. Mr Takara said that he had been in this position since 1999 and accepted the nomination and asked the committee that there be a succession plan.

20 OTHER ISSUES

The award system previously outlined in a resolution from a previous meeting to thank long year contributors for their remarkable services to the region was discussed. The award system was to be implemented previously but the 20th RSC meeting is an appropriate time to initiate the award system.

The 19th RSC Symposium would arrange a paper competition for young researchers with awards for excellent papers.

A Working Group is to be formed consisting of several senior representatives from member countries for considering the mechanism for awards.

Action: It is proposed that Mr Lee, Mr Takara, Mr Mohd Nor, Mr Heng and Mr vanThanh van Nguyen (Canada) become members of the group to implement the resolution of RSC17.

Mr Chiakamori responded to the request that he should have a small working group for harmonization. Mr Daniell and Mr Mohd Nor with Mr Chikamori would be this committee.

Dennis Jamieson outlined the proposal for an APFRIEND Flood Design Workshop to be held in Hanoi City in Feb 28th and March 1st, 2011.

Mr Jamieson will circulate what is required with regards to information to members of the RSC committee early December 2010. Participants are required to respond before the workshop as a condition of funding to the workshop. The workshop will also review previous work and complete any missing items.

Mr Arduino would invite the countries that are appropriate to the fulfillment of activities. A plan of the activities to finish the work for this project later in the year will be produced.

21 ADOPTION OF RESOLUTIONS

RESOLUTION RSC XVIII-I

Sustainable Water Supply in Small Islands to cope with climate variability

Indonesia suggested that the resolution include the coastal zones of larger islands as well but this was not accepted.

The final wording of the Resolution is included in Annex 8. After a few minor amendments this resolution was adopted

RESOLUTION RSC XVIII-II

Continuation of FRIEND and HELP as Cross Cutting Programs for the IHP

The final wording of the Resolution is included in Annex 8.

After a few minor amendments this resolution was adopted

RESOLUTION RSC XVIII-III

Continuing Education and Capacity Building

This resolution **was not adopted** due to lack of information supporting it.

22 CLOSING OF THE MEETING

The Chairman thanked all the delegates for participating in the meeting, UNESCO and MEXT for their support and the Vietnam National Committee for hosting the meeting and the excellent organization and assistance throughout the meeting.

The meeting was closed at 12:45 on 12 November 2010.

ACTION ITEMS	BY WHOM	DATE
1. UNESCO Jakarta to approach the relevant government agencies in Singapore, Brunei Darussalam and Timor Leste to enable participation in the RSC activities.	UNESCO Jakarta	By next 19 th RSC Meeting, 2011
2. Send information on ISI to the National Committees	UNESCO Jakarta	As soon as possible
3. Award system: It is proposed that Mr Lee, Mr Takara, Mr Mohd Nor, Mr Heng and Mr vanThanh van Nguyen (Canada) become members of the group to implement the resolution of RSC17	Working group	By next 19 th RSC meeting
4. APFRIEND workshop to be organized in Ha Noi in February 2011	Mr Arduino & Mr Jamieson	Before February 2011
5. Resolution RSC XVIII-2, Continuation of FRIEND and HELP as Cross Cutting Programs for the IHP	the Secretary and Chairman of the RSC IHP to raise this urgent matter directly and personally with the Chairman of the Intergovernmental Council and the Chairman of the Task Force for IHPVIII	As soon as possible

ANNEX 1

**PARTICIPANTS, 18TH MEETING OF THE IHP
REGIONAL STEERING COMMITTEE FOR
SOUTHEAST ASIA AND THE PACIFIC**

List of Participants
 18th RSC Meeting
 11-12 November 2010 in Hanoi, Vietnam

No	Name	Country	e-mail
1	Trevor Daniell	Australia	trevord@civeng.adelaide.edu.au
2	Van Thanh Van Nguyen	Canada	van.tv.nguyen@mcgill.ca
3	Yan Huang	China	y.huang.ctw@gmail.com
4	Liu Heng	China	hliu@china.com
5	Wang Zhiyi	China	zywang@mwr.gov.cn
6	Gadis Sri Haryani	Indonesia	gadis@limnologi.lipi.go.id
7	Peter Hehanussa	Indonesia	phnussa@yahoo.com
8	Yudha Mediawan	Indonesia	wibiindadea@yahoo.com
9	Hidetaka Chikamori	Japan	tikamori@cc.okayama-u.ac.jp
10	Hideaki Higashi	Japan/MEXT	hhigashi@mext.go.jp
11	Akira Kawamura	Japan	kawamura@tmu.ac.jp
12	Naoko Nakagawa	Japan	nakanaok@tmu.ac.jp
13	Hideo Amaguchi	Japan	amaguchi@tmu.ac.jp
14	Mitsukuni Tsuchiya	Japan	tsuchiya@mebashi-it.ac.jp
15	Yasuto Tachikawa	Japan	tachikawa@hywr.kuciv.kyoto-u.ac.jp
16	Bin He	Japan	hebin@flood.dpri.kyoto-u.ac.jp
17	Kaoru Takara	Japan	takara.kaoru.7v@kyoto-u.ac.jp
18	A.W Jayawardena	Japan	hrecjaw@hkucc.hku.hk
19	Soontak Lee	Korea (Rep. Of)	leest@yu.ac.kr soontaklee@hanafos.com
20	Hongkee Jee	Korea (Rep. Of)	hkjee@yu.ac.kr
21	Somphanh Vithaya	Lao P.D.R	somphanh_dmh@etllao.com
22	Mohammad Zahit Ali	Malaysia	zahit@mosti.gov.my
23	Mohamed Roseli	Malaysia	drroseli@water.gov.my
24	Mohammad Noor Hanapi	Malaysia	hanapi@water.gov.my
25	Mohd. Nor Mohd. Desa	Malaysia	mohammednor@uniten.edu.my
26	Rohayu Che Omar	Malaysia	rohayu@uniten.edu.my
27	Nor Hazwani Nor Khalid	Malaysia	hazwani@uniten.edu.my
28	Basandorj Davaa	Mongolia	basangreen@yahoo.com
29	Gombo Davaa	Mongolia	watersect@yahoo.com
30	Htay Htay Than	Myanmar	HHThan.DMH@gmail.com

31	Dennis Jamieson	New Zealand	d.jamieson@niwa.co.nz
32	Richard Ibbitt	New Zealand	richard.ibbitt@gmail.com
33	Maino Virobo	Papua New Guinea	mvirobo@dec.gov.pg
34	Leonardo Liongson	Philippines	leony1948@yahoo.com
35	Manfred Spreafico	Switzerland	manfred.spreafico@googlemail.com
36	Wannarattana Adirektrakarn	Thailand	wannarattana@hotmail.com
37	Wandee Pattansatianpong	Thailand	wandee_pat@yahoo.com
38	Tran Thuc	Vietnam	thuc@netnam.vn
39	Hoang Mih Tuyen	Vietnam	hmtuyen@vkttv.edu.vn
40	Huynh Lan Huong	Vietnam	hhuongtv@vkttv.edu.vn
41	Eva Mia Siska	UNESCO Jakarta	em.siska@unesco.org
42	Giuseppe Arduino	UNESCO Jakarta	g.arduino@unesco.org
43	Takeshi Mori	UNESCO Jakarta	t.mori@unesco.org

ANNEX 2

**AGENDA, 18TH MEETING OF THE IHP
REGIONAL STEERING COMMITTEE FOR
SOUTHEAST ASIA AND THE PACIFIC**

AGENDA

18TH MEETING OF THE IHP REGIONAL STEERING COMMITTEE FOR SOUTHEAST ASIA AND THE PACIFIC

Army Hotel, Ha Noi, Viet Nam

Thursday 11 and Friday 12 November 2010

- 1) Opening (9.00 am) (L. Heng, S. Lee)
- 2) Adoption of the Agenda
- 3) Election of Rapporteur
- 4) Address from MEXT (H. Higashi)
- 5) Secretariat reports (Jakarta - Beijing)
- 6) Report from the IHP Intergovernmental Council (S. Lee)
- 7) Country Reports (5-10 minutes each), discussion
- 8) Development of Centres under the auspices of UNESCO (Indonesia, Thailand, China)
- 9) Report from the Asia-Pacific FRIEND (Dennis Jamieson)
- 10) Report from the Global FRIEND Conference (25-29 October 2010) (T. Daniell)
- 11) Flood Forecasting and Warning System assessment (SEAP) (Mohd Nor)
- 12) Progress of the Catalogue of Rivers, Volume VI (Chikamori)
- 13) IHP Training Courses in the Region (20th IHP-Nagoya Training Course, Japan 2010)

Possible draft resolutions should be submitted to the RSC Secretariat early afternoon 11 November 2010

- 14) Report from UNESCO-ISI (M. Spreafico)
- 15) Report on IHP-DRH Workshop (K. Takara/G. Arduino)
- 16) Organization of the 19th RSC Meeting in Japan in 2011 (K. Takara)
- 17) Reports from UNESCO Category II Centres (HTC, ICHARM, IRTCES, APCE)
- 18) Organization of the 20th RSC Meeting in 2012
- 19) Election of the RSC Secretary (2011-2012)
- 20) Other issues
- 21) Adoption of Resolutions
- 22) Closing of the Meeting

ANNEX 3

**SECRETARIAT REPORT
BY
UNESCO JAKARTA OFFICE**

**18TH IHP REGIONAL STEERING COMMITTEE MEETING
FOR SOUTHEAST ASIA AND THE PACIFIC**

Hanoi, Vietnam, 11-12 November 2010

UNESCO OFFICE, JAKARTA

Secretariat Report

TABLE OF CONTENTS

1. ACTIVITIES CARRIED OUT SINCE THE LAST REGIONAL STEERING COMMITTEE MEETING.....	3
1.1 Follow-up to the 17th IHP-RSC meeting	3
1.2 Workshops, training courses, symposia.....	4
1.2.1 19 th IHP Nagoya Training Course “Water Resources and Water-Related Disasters under Climate Change - Prediction, Impact Assessment and Adaptation –“from 29 November to 12 December 2009 in Kyoto, Japan	4
1.2.2 Short Training Course on Methodologies applied to hydrological and hydrogeological field investigations in the context of climate change, from 9 to 11 June 2010 in Hanoi and from 12 to 15 June 2010 in Ninh Thuan , Viet Nam.....	5
1.2.3 International seminar “Flood Forecasting and Warning System for tropical regions” from 24 to 25 May 2010 in Kuala Lumpur, Malaysia.	6
1.3 Travel grants	8
1.4 Asian Pacific Flow Regimes from International and Experimental Network Data (AP FRIEND)	9
1.5 Flood Disaster Prevention and Mitigation Measures in the Asia and the Pacific Region Project	9
1.5.1 Flood Disaster Prevention and Mitigation Measures in the Asia and the Pacific Region	9
1.6 Activities within UNESCO Jakarta.....	10
1.6.1 Hydrogeological project for artificial aquifer recharge in Hong Phong District, Binh Thuan Province, Viet Nam.....	10
1.6.2 Hydrogeological investigation and drilling campaign in the coastal area of Ninh Thuan Province, Viet Nam, June 2010	11
1.6.3 Rainfall station in UNESCO Jakarta Office	13
1.7 Review and Evaluation Meeting on IHP Activities supported by the Japanese Fund in Trust (FIT)	13
1.8 IHP Nagoya Training Courses Databases	14

2. PUBLICATIONS SINCE OCTOBER 2009	16
3. CONTACT REFERENCES.....	17

1. ACTIVITIES CARRIED OUT SINCE THE LAST REGIONAL STEERING COMMITTEE MEETING

1.1 Follow-up to the 17th IHP-RSC meeting

A number of actions to be followed-up were identified during the 17th RSC meeting (UNESCO Office, Jakarta, 2009). Here below is a brief report on the current status:

1. *UNESCO field offices in the region to approach the relevant government agencies in Singapore, Brunei Darussalam and Timor Leste to enable participation in the RSC activities.*
Announcement of the 18th RSC meeting was forwarded in June to Brunei, Singapore and Timor Leste. Intense communications followed with both Timor and Brunei but unfortunately no delegates will attend the 18th RSC meeting. Singapore never replied to our several reminders
2. *Countries will be informed of the links and sites to visit for the December 3rd and 10th presentation material on this initiative..*
This was done
3. *Nomination of a focal person to assist the Coordinator (Mr. Jamieson) with individual country aspects of the Flood estimation project. The default nomination is the Secretary of each national committee*
From Coordinator.
4. *Coordinator to circulate report outline for “Catalogue of Methods” by 31 December 2009. This will include a description of information required from each country which will be brief and descriptive rather than technically detailed. The report will include a listing of key contacts in each APFRIEND country who participates.*
 - *Country representatives to assemble and submit information required by 31 March 2010*
 - *Coordinator to circulate draft report by 30 September 2010*
 - *Finalisation at RSC/APFRIEND meeting November 2010*
 - *Final Report Printed*From Coordinator.
5. *Data for Catalogue of Rivers Volume 6 and supplement Number 1 to be assembled in Kyoto with links to open data access sites where these are made available by the country providing the data*
Mr Hidekata Chikamori to report
6. *All countries to progress with rivers for inclusion in Vol VI and Supplement No 1*
Mr Hidekata Chikamori to report
7. *Flood forecasting and Warning system Assessment-- It is recommended that the document and study address the social consequences of the flood forecasting systems that are in place on the people downstream and the damages and people at risk downstream.*
Committee to report.

8. *First Announcement for 18th RSC Meeting and associated conference*

This was done.

9. *Evaluation of the HTC is required consisting of an external review prior to consideration of a new Memorandum of Understanding (MoU) between UNESCO and the Government of Malaysia to replace the current MoU which expires in 2009*

ToRs were prepared by UNESCO HQs and submitted to both UNESCO IOS and HTC for revision.

10. *The Secretariat to draw out the discussion items on IHP VII items from the country reports*

The report is ready to be shared.

11. *The IHP National Committees and UNESCO field offices in the region to nominate relevant candidates for the newly established awards.*

IHP National Committees to report

1.2 Workshops, training courses, symposia

1.2.1 19th IHP Nagoya Training Course “Water Resources and Water-Related Disasters under Climate Change - Prediction, Impact Assessment and Adaptation –“from 29 November to 12 December 2009 in Kyoto, Japan

The 19th IHP Nagoya Training Course “Water Resources and Water-Related Disasters under Climate Change - Prediction, Impact Assessment and Adaptation –“ was organized by the Water Resources Research Center, DPRI, Kyoto University in collaboration with the Institute of Hydrospheric-Atmospheric Sciences of Nagoya University. The training course was held in Kyoto, Japan, from 29 November to 12 December 2009 and attended by 20 participants (8 of which supported by UNESCO Office, Jakarta, through the Japanese FIT). The course comprised a series of lectures in English, practice sessions at Uji Campus, Kyoto University and technical tours to Ujigawa Open Laboratory.

The 19th IHP training course focused on three major objectives: (1) to learn recent knowledge on water resources and water related disasters under climate change in Asia-Pacific regions, (2) to practice selected techniques on prediction and assessment of global, regional and/or local changes in hydrological systems, and (3) to discuss strategies of adaptation to resultant hydrological systems under the climate change including efforts for problem prevention and mitigation with respect to irreplaceable water resources.

Twenty participants (8 ladies and 12 gentlemen) from 13 countries have attended the Training Course, namely from Brazil (1), China (1), Egypt (2), India (1), Indonesia (2), Iran (2), Malaysia (2), Mongolia (1), Myanmar (1), Nepal (3), Philippines (1), Thailand (1), and Vietnam (1). Eight participants were supported by UNESCO Jakarta through Japanese FIT, while 12 participants were

students from the Kyoto University. Participants supported are researchers (3), scientist (2), lecturer/university professor (2) and engineer (1). Regarding their affiliation, most of the participants are working at governmental institution (6) while the rest at university (2).

A special remark from the 19th IHP Training course is the launching of two e-learning courses that were broadcasted in collaboration with the Engineering Sciences and Technology (EST) Unit through its e-learning network, i.e. SOI-Asia, NREN's and INHERENT. The e-learning were conducted on the 3 and 10 December by Prof. Kaoru Takara and Prof. Toshiharu Kojiri. 17 Universities from 5 countries were connected through the SOI Asia, NRENs and INHERENT and 2 government offices i.e. PUB, Singapore and Jakarta Drainage and Flood control and conservation, Indonesia. The e-lectures provide opportunities to 50 additional participants from the region.

1.2.2 Short Training Course on Methodologies applied to hydrological and hydrogeological field investigations in the context of climate change, from 9 to 11 June 2010 in Hanoi and from 12 to 15 June 2010 in Ninh Thuan , Viet Nam.

The training course, organised by UNESCO Jakarta and the Institute of Geological Sciences (VAST), was held by Prof. Paolo Bono, from the Department of Earth Sciences, Università La Sapienza, Roma, Dr Fabrizio Gherardi from the National Research Council of Italy (CNR), Istituto di Geoscienze e Georisorse (IGG), Pisa and by Dr Luigi Siciliani, Director of the Seismic Observatory, Perugia, Italy.

The theoretical session of the short training course was held in Ha Noi in the Institute of Geological Sciences of the Vietnamese Academy of Science from 9 to 11 June. The session was attended by 18 postgraduate participants from different University and Institutions.

The training course was divided in basic modules, such as a) references and basic theoretical concepts in Hydrology and Hydrogeology, b) application on hydrological and hydrogeological issues: case studies of karst aquifer in central Italy, Ninh Binh and Ha Giang karsts aquifers in Viet Nam, porous aquifer in both Viet Nam (Binh Thuan and Ninh Thuan) and Italy; c) hydrogeochemical methods in hydrology; d) methods in isotopic hydrology; e) cases studies on hydrological methods applied to earthquake events; f) field instrumentation for basic parameters acquisition in the field (current meters, pH meters, conductivimeters, groundwater sampling devices, etc.)

The practical session of the short training course was held in Ninh Thuan Province (Phan Rang) from 12 to 14 June where the MAR project “Adapting to climate change: Solutions for monitoring saltwater intrusion and managed aquifer recharge in areas affected by sea level rise in Ninh Thuan province” is located. The Training Course was attended by 5 participants.

Different areas of the project were visited and water samples were collected for both chemical and isotopic analyses. The participants were trained to the use of different instrumentation in order to acquire data on physio-chemical parameters (EC, pH, T, salinity

and TDS), measure well and surface water discharge (current meter) and collect groundwater from wells with means of different devices (including EC, T and salinity logs in wells). The practical session also aimed at the reconnaissance of the distribution of different aquifers, through springs, seepage and water wells and also to the characterization of the salt water/fresh water interaction at different locations along the coastal areas. A methodology on data acquisition was also largely introduced, without which a consolidation and comparison of results is a quite difficult task.

1.2.3 International seminar “Flood Forecasting and Warning System for tropical regions” from 24 to 25 May 2010 in Kuala Lumpur, Malaysia.

The international seminar “Flood Forecasting and Warning System for tropical regions” was planned to present findings of the study conducted during the project period (2009-2010) in Indonesia, Malaysia, Philippines and Viet Nam, as well as to address different stakeholders (Government Agencies, Private Sectors, Local Government Stakeholders, Water Managers, Practitioners, Academicians, Researchers and Students), with flooding issues in a comprehensive way and also in the attempt to engage integrated management within river basin approach.

More specifically the objectives of the seminar were:

1. To expose the participant the awareness and importance of the Flood Forecasting and Warning System (FFWS)
2. To apply scientific findings for society adaptable towards extreme weather to become flood disaster resilient society.
3. To address holistically and comprehensively the various concerns and gaps in the different phases of the flood disaster management cycle by considering the underlying causes of floods (e.g. the conditions of flood risks) and the broader set of issues and contexts associated with flood risk and its management.
4. To prevent, mitigate, prepare for, and respond effectively to the occurrence of floods through the enhancement of local capacity and capability, especially in flood risk management (e.g. recognizing, managing and reducing flood risks, and ensuring good decision-making in flood reduction and response based on reliable flood risk information);
5. To promote multilevel, multidimensional and multidisciplinary coordination and collaboration among stakeholders in flood reduction and response as they ensure the participation of the community, the integration of stakeholders’ action, and the best use of limited resources.

The seminar was attended by approximately 80 participants from 8 different countries and included 1,5 days of presentation and discussions and half day visit to the Department of Irrigation and Drainage in Kuala Lumpur.

The seminar included:

- Opening remarks from Mohamed Nor and Dato Mashkuri Yaacob
- Official signing of the MoU between UNITEN and DID
- Key note address by Ahmad Husaini bin Sulaiman (DG DID)
- Presentation of the study outcomes, Mohamed Nor
- reports from the 4 examined basins Ciliwung (Indonesia), Klang (Malaysia), Marikina (Philippines) and Thu Bon (Viet Nam)

- DRH Disaster Reduction Hyperbase, Hiroyuki Kameda
- Japanese experiences in FFWS, Kazuhiro Fukami (ICHARM)
- Integrated Flood Forecasting River Management, the new comprehensive tool of DID, Hanapi bin Mat Nor
- APFRIEND Project, Giuseppe Arduino and Agung Bagiawan
- FFWS in the Rep of Korea, Hongkee Jee

1.3 Travel grants

UNESCO Office, Jakarta, provided several travel grants to regional scientists in the framework of the IHP Programme, to attend international events. In particular:

- 15 participants from 12 countries were supported by UNESCO Office to attend the International Conference on “Hydrology and Disaster Management” (H&DM 2009) which was held from 2 to 3 November 2009, Wuhan, Cina. Eleven of them were supported through Japanese FIT;
- 8 participants from 6 countries were supported by UNESCO Jakarta through Japanese FIT to attend the 19th IHP Nagoya Training Course on “Water Resources and Water-Related Disasters under Climate Change - Prediction, Impact Assessment and Adaptation –“ was organized by the Water Resources Research Center, DPRI, Kyoto University in collaboration with the Institute of Hydrospheric-Atmospheric Sciences of Nagoya University, was held in Kyoto, Japan from 29 November to 12 December 2009;
- 2 groundwater experts were supported as resource persons at the short training course on “Methodologies applied to hydrological and hydrogeological field investigations in the context of climate change”, from 9 to 11 June 2010 in Hanoi and from 12 to 15 June 2010 in Ninh Thuan , Viet Nam;
- The chairman of the Japanese IHP National Committee was invited to participate at the International seminar “Flood Forecasting and Warning System for tropical regions” from 24 to 25 May 2010 in Kuala Lumpur, Malaysia;
- 2 scientists from Vietnam were supported for the 2nd Summer School on Land Surface Observing, Modeling and Data Assimilation which was held from 13 to 16 July 2010 in Beijing, China;
- 1 scientist from Indonesia was supported to participate at the International Advance Study Course: "Ecohydrology & Biotechnology for Sustainable Integrated Water Resources Management in HELP Basins" which was held from 12 to 22 September 2010 in Lodz, Poland;
- The project leader of Ninh Thuan MAR Project was supported to participate and present the Vietnam MAR project in the “7th International Symposium on Managed Aquifer Recharge (ISMAR7)” which was held from 9 to 13 October 2010 in Abu Dhabi, United Arab Emirates; and
- The FIGCC Chairman, Asian Pacific FRIEND was supported to participate at the 6th International conference on FRIEND, 25-29 October, and the FIGCC (FRIEND Inter-group Coordinating Committee), 27 October 2010, held in Fez, Morocco.

1.4 Asian Pacific Flow Regimes from International and Experimental Network Data (AP FRIEND)

As follow up to the 17th Regional Steering Committee Meeting in Wuhan, China, and the actions taken from the Committee under the coordination of APFRIEND Coordinator (D. Jamieson) a draft of the Catalogue of Flood Estimation methods was compiled.

1.5 Flood Disaster Prevention and Mitigation Measures in the Asia and the Pacific Region Project

1.5.1 Flood Disaster Prevention and Mitigation Measures in the Asia and the Pacific Region

Within the framework of IHP VII in particular to its crosscutting programme Asia Pacific FRIEND and International Flood Initiative, two interlinked activities on “Flood Disaster Prevention and Mitigation Measures in the Asia and the Pacific Region Project” is currently being implemented in their second phase from May 2010 to March 2011. The projects will be implemented in collaboration with the National Institute for Earth Science and Disaster Prevention (NIED), Tsukuba, Japan, Humid Tropics Centre Kuala Lumpur, Malaysia and Universiti Tenaga Nasional (UNITEN), Malaysia. Both activities of the project have been presented and discussed during the UNESCO-IHP 17th Regional Steering Committee for Southeast Asia and Pacific in Wuhan China.

In its 2nd phase, the “Assessment of Flood Forecasting and Warning Systems for Asia Pacific Region” is currently being implemented in Cambodia, China, Thailand and Rep. of Korea, involving experts from the respective countries. The assessment will involve in-situ assessments in the four river basins and meetings with stakeholders which will be discussed during the regional workshop. The site visits has been carried out from August 2010 to January 2011. The outcome of the assessment is expected to be ready in March 2011 highlighting the current state of flood forecasting, inter-comparison of various system used in the countries and recommendation of the most appropriate system. The Regional Steering Committee for SEAP in its 17th meeting in Wuhan, China recommended that the report and assessment address the social consequences of the flood forecasting systems that are in place considering the people downstream, the damages and risks to both people and assets.

The second activity is the “Disaster Reduction Hyperbase (DRH)” which has been carried out in collaboration with the National Institute for Earth Science and Disaster Prevention (NIED). The DRH is a web based platform consisting of DRH Database, DRH Forum, and DRH Links. DRH is not just a regular website. The web system carries a conceptual design, i.e. the basis of web system and its contents, which was developed under extensive discussion with an international group of major researchers and NGO leaders. Its main part is the DRH Database that accommodates technology and knowledge useful for Disaster Risk Reduction (DRR). The DRH Database incorporates multi-hazard DRR databases through a compilation procedure with a template form that should be submitted to DRH Manager, Facilitator(s) and Leader(s). The database proposed should meet the DRH criteria,

“Understandable to users”, “Implementable”, and “Shown to be useful”. The objective of this second activity is to establish the IHP-DRH collaboration scheme and to facilitate the outcomes from IHP Flood Projects including the first activity mentioned above to the DRH websites.

In its 2nd phase, the “Disaster Reduction Hyperbase” continue to facilitate implementation of research outputs from the Project “Flood Disaster Prevention and Mitigation Measures in ASPAC Region” under the framework of the International Hydrological Programme (IHP) as DRH Contents, namely, as a database component in the Disaster Reduction Hyperbase (web-based facility for dissemination of appropriate disaster reduction technology and knowledge).

1.6 Activities within UNESCO Jakarta

1.6.1 Hydrogeological project for artificial aquifer recharge in Hong Phong District, Binh Thuan Province, Viet Nam

The Binh Thuan Province, whose principal city is Phan Tiet, is located along the coastal plain in the lower part of Central East Viet Nam. It extends for approximately 8,000 km², with a total population of one million. The Province is divided in 7 districts, each of them subdivided in further sub districts. Hong Phong sub district (Bac Binh District), located at 25 km NE from Phan Tiet and reaching a height of approximately 200 m above sea level, has an area of approximately 300 km² and comprises 3 villages.

Before 1975, the area was covered by a dense forest, which was abruptly cut to make place to rice pads which were never developed and resulted massive desertification took place. Due to an uneven rainfall distribution (1112 mm/year of average) and a three months period (from December to March) characterized by very little precipitation (23 mm in 4 months averagely), the area suffers considerable water shortage during the dry season, never experienced prior the complete removal of the land cover (forest). Due to the particular geological settings (permeable sands) and the impossibility to storage surface water during the dry season (due to rapid run-off and high evaporation rates), an artificial recharge and further water storage in the sand aquifer is envisaged.

The project consists of three major components, as follows:

1. Research and investigation carried out by Vietnamese and foreign experts
2. Development of a pilot project with the aim of supply water to the Hong Phong sub district
3. Capacity building through different international and local training courses/workshops. Participation of Vietnamese scientists to international conferences/symposium and meetings on MAR (Managing Aquifer Recharge) techniques is also envisaged.

Besides the scientific and capacity building approach, the project is now providing the delivery of 220 m³/day of fresh water to the Hong Phong communities, through a system inaugurated in November 2006.

A hydrogeological field investigation was also carried out in June 2010, a total of 19 samples of groundwater were collected for isotopic analyses and 5 groundwater samples for chemical analysis. The interpretation of results together with the overall data acquired during the field work will allow reporting to local authorities on future and correct use of water resources in the Binh Thuan Province, with particular emphasis on the studied area.

As the project is coming to an end in December 2010, the official transfer of the project (including materials and instrumentations) was carried out from UNESCO to the Ha Noi Institute of Geophysics, Vietnamese Academy of Science and Technology in June 2010, and will be finally transferred to the Department of Agriculture and Rural Development of Binh Thuan, DARD, owner of the UNESCO Project, in 2011

1.6.2 Hydrogeological investigation and drilling campaign in the coastal area of Ninh Thuan Province, Viet Nam, June 2010

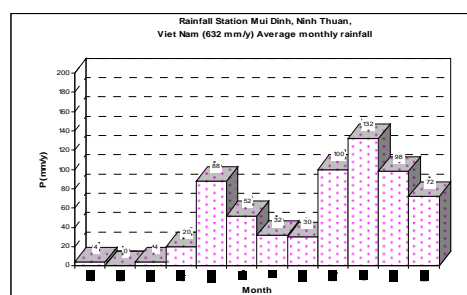
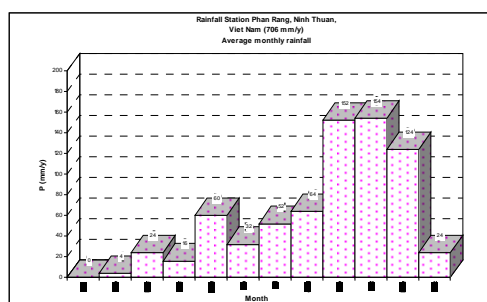
1.6.2.1 Introduction

The Ninh Thuan Province, located in the southern part of Vietnam Central Coastal region, borders Khanh Hoa in the north, Binh Thuan in the south, Lam Dong in the west and the South China Sea in the east.

The province has a total surface of 3,360 km² with over half a million inhabitants (571,200 in 2006), 6 administrative units, 1 city and 5 districts. The city of Phan Rang Thap Cham, as provincial city, represents the political, economic and cultural centre of the province.

The morphology of Ninh Thuan can be characterized as gradually sloping from north-west to south-east, with three typical topologies such as mountains (63% of the area), plain areas (14%) and coastal plain areas (23%).

Ninh Thuan has a typical tropical monsoon climate with two different seasons, the rainy season (Sept–Nov) and the dry season (Dec–Aug), with annual average temperature around 26 -27⁰C; annual average rainfall of 700–800 mm in the coastal area (706 mm in Phan Rang, 632 mm in Mui Dinh and 762 in Ca Na) gradually increasing to more than 1,800 mm in the mountainous areas.



1.6.2.2 Geology and Hydrogeology of the investigated area

The geological setting of the investigated area, located mainly along the coastal zones of Ninh Thuan is characterised by a magmatic bedrock of cretaceous age (granite, granodiorite and granosyenite) overlain by a Pleistocene-Holocene marine deposits of both terrigenous and calcareous origin. Recent and ancient sand dunes also occur in the southern part of the Province (Lu Thien, Son Hai and Mui Dinh) as well as in the northern coast (from My Hoa to Vinh Hai).

The hydrogeology of the investigated area is characterised by the occurrence, in the sediments, of several unconfined aquifers at different elevations (maximum elevation reached by the investigation was around 40 m a.s.l. – Tram Bang) exploited through both drilled wells (up to 28 m deep) and hand dug wells (the majority) with diameter ranging from 0.7 to 6 m and depths ranging from 3 to 9 m from ground level.

The natural morphological lowland settings along the coastal areas with the development of salt evaporation ponds as well as uncontrolled pumping for agricultural purposes causes seawater intrusion in the coastal aquifers. In the investigated areas located at higher elevation (15-20 m a.s.l) and at a distance of several kilometres from the sea salinity of groundwater can also reach up to 0.5 g/l .

1.6.2.3 June and July 2010 Investigation and Drilling Campaign in Ninh Thuan Province

The hydrogeological investigation in Ninh Thuan coastal area was carried out from 12 to 14 June 2010 and aimed at the further characterisation of the area in terms of water quality and water occurrences, the design and setting up of a groundwater monitoring system and the definition of different investigations to be done for the implementation of the project.

Both already known water points and new ones were sampled for chemical and isotopic analysis. A total of 49 samples were collected for isotopic analyses, 11 of which represent new points and 38 as a repetition of the old ones. 11 samples were also taken for chemical analyses.

Continuous data for electrical conductivity, temperature and water level were also compiled from the data loggers previously installed in monitoring wells NH1, NH2 and NH3.

During the field campaign the location and design of two new monitoring wells (NH4 and NH5) was agreed.

The drilling campaign of these 2 new wells was undertaken from 19 to 24 July 2010. These wells will provide data which will allow a further understanding of the hydrogeological regime of the area.

In July 2010, the redevelopment of 2 of the monitoring wells drilled during the previous drilling campaign in 2009 was also undertaken. These wells, namely NH1 and NH3, were found to be filled with fine materials during the sampling campaign of June 2010. Both wells were re-developed by means of airlifting until the water pumped was considered to be clear enough for sampling purposes.

Once the potentiality of the aquifer(s) is assessed a further study will be conducted on water needs and usage and quality implication when such aquifer undergoes over pumping. This implies a comprehensive and integrated approach to local communities and understanding of their usual practises in water use and consumption, with the attempt to define adaptation measures to overcome natural resources overexploitation (groundwater). Measures that will be evaluated with ad hoc studies such as pumping allowable water quantity per land use and or with MAR practises such as infiltration trenches parallel to the shoreline fed with water derived from the upper dam reservoir in order to reduce sea water intrusion in the aquifers.

1.6.3 Rainfall station in UNESCO Jakarta Office

Since February 2007 a simple rainfall station (manual pluviometer) is operational in UNESCO Jakarta Office. The parameters acquired by the station are:

- P in mm
- T in °C
- EC in $\mu\text{S}/\text{cm}$
- TSD in mg/l
- pH

Besides the above parameters obtained on daily events, rain water monthly samples are available for isotopes analyses from February 2007 to January 2010.

This station is also operating as a contribution to the HARIMAU Project (Hydrometeorological ARray for ISV-Monsoon AUtomonitoring) by Japan EOS Promotion Program (JEPP) and implemented by JAMSTEC (Japan Agency for Marine-Earth Science and Technology), and Indonesian partners BPPT (Agency for the Assessment and Application of Technology), BMG (Agency for Meteorology and Geophysics) and LAPAN (National Institute of Aeronautics and space).

From September 2007 daily events are collected for JAMSTEC which will perform stable isotopes (^{18}O and ^2H) analyses on rain water.

In 2010, UNESCO Office, Jakarta continued the activity and collected both single and monthly events from January until now.

1.7 Review and Evaluation Meeting on IHP Activities supported by the Japanese Fund in Trust (FIT)

An evaluation report on the activities implemented within the framework of the IHP Programme and supported by the Japanese FIT during the period 2009-2010, was presented by UNESCO Office, Jakarta, at the meeting held in UNESCO Office, Jakarta, from 28 to 29 June 2010. The report describes the activities carried out in the Asia Pacific Region within two main areas:

- the Regional Steering Committee (RSC) of IHP for Southeast Asia and the Pacific;
- the IHP Training Courses, annually organised by the Nagoya University in Japan; and
- the Flood Forecasting and Warning System (including the DRH Project)

The resolutions adopted during the meeting are as follows:

- UNESCO Jakarta Office will analyze the result of the questionnaires and the status of downloading textbooks in detail, utilize the outputs and discuss with the Japanese organizers the theme of future courses and promote the collaboration with other units/offices;
- UNESCO Jakarta Office will explore procedures to evaluate the IHP TC at the end of the IHP midterm plan in 2013, and examine whether to continue the TC;
- UNESCO Jakarta Office will explore the idea of creating a mechanism to enable the dissemination of training modules and encourage the translation to the local language to increase the impact;
- UNESCO will provide information on funding target for SWITCH-in-Asia; and
- UNESCO Jakarta Office will communicate more closely with the donor on the announcement of the RSC meeting and the TC.

1.8 IHP Nagoya Training Courses Databases

19 IHP Nagoya Training Courses have been conducted since 1991 and were attended by 208 participants from 27 countries representing various research institutions and governmental organizations.

In order to improve the accountability and visibility of the IHP Nagoya Training Courses and to evaluate the potential impact these courses had on participants' research and career the Hydrology Unit of UNESCO Office, Jakarta, has set up a database containing the following information of the training course participants: up-to-date contact details, scientific and professional background, and feedback on the training course attended. This information was obtained by means of an online feedback form to be filled in by training course participants

Evaluation of the feedback form showed that 50 % of the participants are affiliated to a university, 46% to governmental organizations or government related research institutes and around 9 % come from other institutions or organizations such as from the private sector.

Participants reported that the Training Course has contributed to their work and professional development by having:

- improved professional knowledge,
- provided valuable input and inspiration for research, projects and lectures,
- improved career possibilities,
- enlarged the originally narrow national view, and
- provided access to international professional hydrology network.

The knowledge and experiences they have gained during the training course they shared back home through

- initiation of professional discussions,
- provision of seminars/lectures,

- presentations on conferences (e.g. Conference of the International Commission on Irrigation and Drainage), and by
- dissemination of training materials.

From 2007, the training courses online feedback form was replaced by a comprehensive report that participants have to prepare after having attended the training course. The report will be then uploaded to the ihp Nagoya forum upon agreement with the participants.

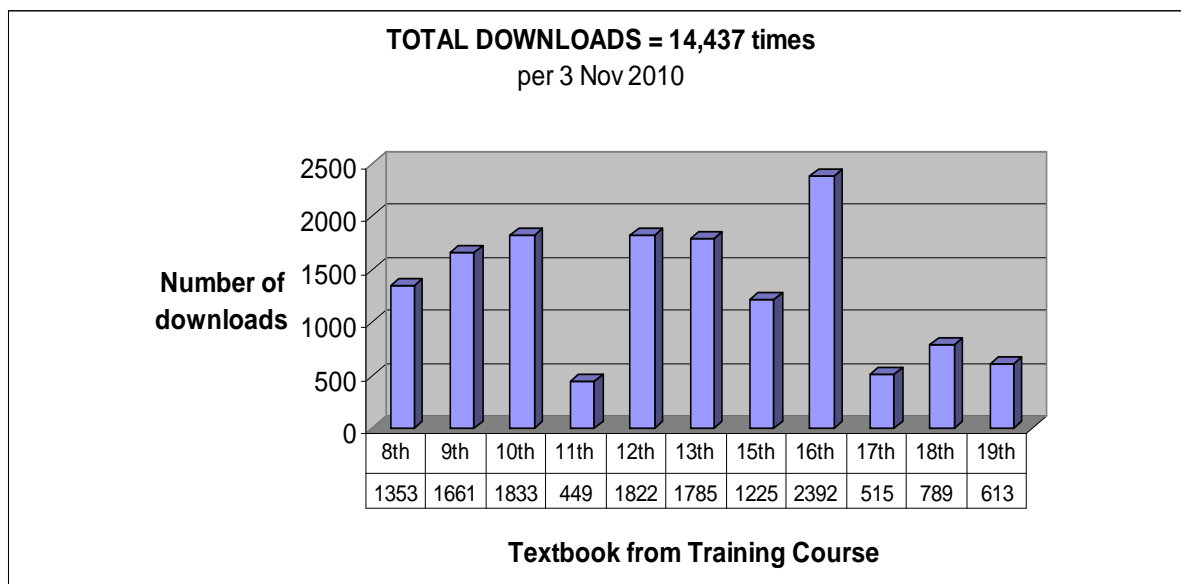
IHP Nagoya Forum

In June 2007 in collaboration with the Nagoya University UNESCO Office, Jakarta has started the design of the IHP Nagoya Training courses website (www.ihpnagoyaforum.org), which was launched in July 2008. The website provides:

- information on training courses and up-coming events,
- training course materials for download (textbooks of past training courses),
- a discussion forum in which participants can exchange ideas, expertise, etc. and
- guidelines for preparing the participants' report after having attended the training course,
- photo gallery of past training courses.

Announcement of the training course has been placed on the website of the UNESCO IHP Nagoya Training Courses. UNESCO Office, Jakarta, sent the website address to IHP National Committees approximately 3 months before the course.

Electronic textbooks will be uploaded to the website before the course, and the presentation files of the lecture will be uploaded immediately after the lecture. Those who are interested in the training course can raise questions with contents of the textbook during a certain period (e.g., for a half year) through an interactive forum on the website (IHP Nagoya Forum) after the course without attending the training course. This improves the training course to get wider attention in the world, to be more efficient and interactive for people who cannot attend, and to enhance the capacity building method of the course which in this way enables anybody to learn the course through internet. Participant list, participant report, and question and answer will be uploaded to the website for exchanging mutual understanding (provided participants agreement).



The use of such implementation methods (website, distance e-learning) represents therefore a wider expansion and dissemination of the training courses, enabling wider attendance from many parts of the world.

2. PUBLICATIONS SINCE OCTOBER 2009

Proceedings of International Conference on “Hydrology and Disaster Management” (H&DM 2009), IHP-VII – Technical documents in Hydrology No. 3, UNESCO Office, Jakarta, 2009

Final Report of the UNESCO-IHP 17th Regional Steering Committee Meeting for Southeast Asia and the Pacific, 5-6 November 2006, UNESCO Office, Jakarta, 2009

State of Art Report: “Assessment of Flood Forecasting and Warning System for Tropical Region”, 2010

3. CONTACT REFERENCES

UNESCO Office, Jakarta
Regional Science Bureau for Asia and the Pacific
Jalan Galuh (II), n. 5
Kebayoran Baru
Jakarta 12110, Indonesia
P.O. Box 1273/JKT
Tel. (+62 21) 73 99 818
Fax (+62 21) 72 79 64 89
Home Page: www.unesco.or.id
E-mail: jakarta@unesco.org

Hydrology Unit

Programme Specialist in Hydrological and Geological Sciences

Mr. Giuseppe Arduino

E-mail: g.arduino@unesco.org

☎ (+62 21) 73 99 818, ext. 837

Programme Assistant for Hydrology and Geology

Mrs. Mona Pattipeiluhu

E-mail: m.pattipeiluhu@unesco.org

☎ (+62 21) 73 99 818, ext. 818

Project Assistant for Hydrology

Ms. Eva Mia Siska

E-mail: em.siska@unesco.org

☎ (+62 21) 73 99 818, ext. 863

Correspondence via fax: Fax no. (+62 21) 72 79 64 89, attn: Mr. Giuseppe Arduino

ANNEX 4

**SECRETARIAT REPORT
BY
UNESCO BEIJING OFFICE**

18th IHP Regional Steering Committee Meeting for Southeast Asia and Pacific

Hanoi, Viet Nam 8-12 November 2010

UNESCO Office Beijing Secretariat Report from East Asia

Introduction: UNESCO Office Beijing is a cluster office representing for East Asian countries, China P.R., Democratic People's Republic of Korea, Japan, Mongolia and Republic of Korea. All five countries are very well represented in the RSC and individual country reports will be presented by members and this report is from the UNESCO Secretariat.

1. Capacity Building activities:

1.1. 2nd Summer School on Land Surface Observing, Modelling and Data Assimilation, 13th to 16th July 2010, Beijing, China

It is estimated that in less than thirty years two thirds of the world's population will be living in water stressed conditions, many of whom are residence in the Middle East, and west Asia. In view of the severe challenges, in 2005, G-WADI extended its Asian outreach as Asia-GWADI, based on consensus of representatives from Afghanistan, China, India, Iran, Kyrgyzstan, Mongolia, Pakistan, Tajikistan and Uzbekistan. Collective agreement has been reached among the representatives on the urgency of increased regional cooperation. As a result, Asia G-WADI has built itself into a knowledge hub inventorying data modelling and assessment tools, at the same time of providing technical guidelines for adaptation methodologies in arid and semi-arid parts of Asia. To improve relevance and scale-based appropriateness of data modelling and assessment tools developed, Asia-GWADI has identified representative basins from the arid and semi-arid areas as pilot. Lesson learnt through pilot application were sent back into the Asia G-WADI research loop.

The 2nd summer school was held in this general background. It is aimed to share experiences and knowledge learnt derived from Asia G-WADI network with professionals from developing countries in arid and semi-arid areas such as Middle-East, along with West Asia. Prof. Dr. Soroosh Sorooshian, from the University of California, Irvine, attended the summer school. As world-renown hydrologist and co-founder of the GWADI initiative, Prof. Dr. Sorooshian introduced development of hydrological models against the factor of rainfall and runoff. He has also introduced to participants advanced methods such as parameter estimation and parameterization for hydrological models. It is worth noting that many participants are young researchers and PhD students. Such constituent has setup a nice platform addressing future cooperation under Asia GWADI, along with sustainability of the initiative itself.

1.2. 3rd Asian G-WADI Network Meeting, 17th July 2010

The 3rd Asia G-WADI network meeting was held on 17th July 2010. Prof. Dr. Sorooshian made opening remarks where he emphasized again the objectives and scope of G-WADI, along with its linkage with other world leading hydrological research institutes. He's also thrown the questions reflective for future G-WADI development including:

- a. What should be the main contribution of the G-WADI pilot basins?
- b. What distinguishes G-WADI pilot basin from others (e.g. HELP)?

- c. What should be a set of minimum criteria for considering and designating G-WADI basins?
- d. How will we be able to evaluate these criteria to check that objectives are met?

In the subsequent part of this meeting, Dr. Anil Mishra gave a brief introduction to Asian G-WADI and the objectives that UNESCO wanted to achieve through the network. Dr. Jayakumar and Dr. Bhanu Neupane provided an account of the origin of the Asian G-WADI and provided more information on the core objectives of the Network to: jointly work on research, communication and application of research, capacity building and knowledge management. They highlighted that the objective of the meeting was to discuss the status of the individual pilot projects. Prof. Xin Li also provided an update on the progress of Asian G-WADI including the establishment of a G-WADI website, extension of Asia G-WADI network and pilot basins, organization of a series of international conferences and trainings. In response to Prof. Sorooshian's reflective question, Prof. Xin Li also raised his proposals for future Asian G-WADI development including:

- i. Compile a publication comprising best practices for water resources management from all the selected pilot basins
- ii. Seek out seed fund, and improved fundraising to support regional joint efforts
- iii. Build a Regional Center on Endorheic Basins in Arid and Semi-Arid Regions.

As other network meetings, member countries of Asia G-WADI, including Afghanistan, China, Iran, Jordan, Kazakhstan, Kyrgyz, Mongolia, Tajikistan, Nepal and Pakistan presented their countries cases on climate change impacts observed, water resources situation and management measures applied, progress made as well as further supports needed. As summary, it was agreed in the meeting to change name of G-WADI project steering committee into project advisory group. The group will be strengthened with improved communication functions, serving as bridge to connect G-WADI concerns with UNESCO programming process. In addition, the group would also help improve linkage between G-WADI and IHP National Commissions. Besides, the group would play a monitoring role on progress of pilot basins. Iran offered the host for next G-WADI network meeting.

1.3. Training Workshop on Integrated Water Resources Management and Adaptation to Climate Change, 15th to 17th, Shanghai, China

With per capita water resources of only a quarter of the world's average level, China is faced with serious water challenge. Climate change, along with the enhanced variabilities it brought in runoff and rainfall, has become a crucial stressor for sustainable water resources management in China. To support China's adaptation works in the water sector, UNESCO launched the intervention in the Yellow River basin on assessing based-scaled vulnerabilities and support relevant adaptation plans. Started in 2008, the project has reached a number of successful outcomes. Among others, a holistic water assessment template that covers both quantity and quality aspects, along with the agriculture, forestry, aquaculture and ecosystem parts, has proved to be successful. During its pilot operation, the template has helped bring together concerned stakeholders, and facilitate implementation of IWRM. This training is held to disseminate this template among seven major river basins in China, and officials from the Ministry of Environmental Protection (MEP)- another line Ministry pivotal for the operation of IWRM. Thirty participants from river management authorities of the seven major river basins, coupled with those from MEP attended the training. In addition to introducing experiences related to the template developed by UNESCO project in the Yellow River, the training has also invited experts from UNESCO-IHE who explained participants concepts, guiding principles and theories pertaining to IWRM.

This workshop has effectively improved knowledge and awareness among water managers from seven Chinese major river basins on IWRM and its operational methods. It is interesting to note that

in the discussion part of this training, participants from different river basin authorities reported similar changes in runoff and precipitation. For instance, it was observed by both the Yellow River in the north and Pearl River in the south reduction of rainfall in spring times, while enhanced incidents of extreme weather events such as snowstorms and typhoon in winter times. This may reveal, from another perspective, relevance of the assessment template to water resources situation in other basins. Another feature of this training is participation of MEP. Mandated with the monitoring, reduction and prevention of pollution, MEP is an important component in the IWRM paradigm. Nevertheless, inter-Ministry cooperation between MEP and Ministry of Water Resources need to be improved for the implementation of IWRM, and a no-regret adaptation in the water sector. It is expected that this training could serve for this goal with participation from MEP

2. Research / Pilot Projects:

2.1. Transboundary Aquifers in Asia- A preliminary Inventory and Assessment Report

In recognition of their critical role transboundary aquifers are often referred to as “hidden treasures” underground. Unfortunately, the sustainable management of transboundary aquifers is often left off policymakers’ agendas. Compared with surface rivers, which attract a lot of attention due to their visibility, there are far fewer national policies and regulations dealing with the management of aquifers. Transboundary aquifers are given even less attention due to the perceived difficulties in sharing these resources between two or more countries

To tackle the challenge, the International Shared Aquifer Resources Management (ISARM) programme was launched jointly in 2000 by UNESCO and the International Association of Hydrogeologists. The programme aims at improving knowledge and cooperation for sustainable management of transboundary aquifers. In recent years hundreds of scientists, with the support of UNESCO-IHP, have dedicated themselves to this cause generously providing their expertise, research findings and insights to protect this invaluable treasure. Contributions from Asian hydrogeologists have played a key role in the growth of ISARM. Their professionalism and commitment in establishing high-level coordination, partnership and knowledge sharing paradigm has resulted in the publication of the “Transboundary Aquifers in Asia-a preliminary inventory and assessment”. As a regional atlas, this volume presents extensive geological, geographic and hydrogeological data and parameters crucial to the future sustainability of transboundary aquifers in Asia. When combined with other regional atlases for Africa, America and Europe, this volume will contribute to a global inventory of transboundary aquifers.

2.2. Utilization of Sediment resources in the lower part of the Yellow River

The Yellow River is famous for the heavy sediment load it carries. It is estimated that annual amount of sedimentation yielded from both the upper and middle streams of the Yellow River has reached 1.6 billion ton, while annual sediment emptied into the Bohai sea is only 0.4 billion ton. The contrast illustrates almost 1.2 billion ton of sediments were deposited in lower reaches of the Yellow River, contributing to the well-known suspended river phenomenon. Besides, the heavy sediment loads have created a number of challenges including reservoir management and pollution reduction. However, it needs to be noticed as well that sediment, if well utilized, could be useful resources for land reclamation, dikes & reservoir strengthening. In this context, sediment utilization could solve double challenges of reducing sediment hazards while generating an innovative kind of resource.

In this background, the project “Utilization of Sediment resources in the lower part of the Yellow River”, coordinated jointly by UNESCO and the International Research and Training Centre for Erosion and Sedimentation (IRTCES), was launched in 2010. The project is aimed to

sum up methods and experience of sediment utilization operated in other rivers in the world, and identified points of intervention to support sediment utilization programs in the Yellow River. For now, a report on utilizing sediment in lower reaches of the Yellow River is in the editing process, and will be soon submitted to UNESCO for reference.

ANNEX 5

COUNTRY REPORTS

NATIONAL REPORT ON IHP RELATED ACTIVITIES AUSTRALIA

1. ACTIVITIES UNDERTAKEN IN THE PERIOD July 2008 – May 2010

For the 19th Session of the Intergovernmental Council for the International Hydrology Programme, Australia is not a member of the Council, but will attend as an Observer.

1.1 Meetings of the IHP National Committee

IHP activities in Australia are carried out under the guidance of the national UNESCO Science and Technology Network. In order to facilitate the implementation of UNESCO activities in Australia and the region, a national IHP Australian Network was established in 1995 and this network acts as the IHP National Committee for Australia. There are no formal meetings of the IHP Australian Network. Activities are conducted largely between the members by telecommunications (e-mail). The Australian National Commission (NATCOM) for UNESCO (www.dfat.gov.au/intorgs/unesco) has 12 members, two parliamentary representatives and four honorary members. Mr Bruce Stewart and Professor Ian White have represented the IHP National Network at these meetings.

1.1.1 Decisions regarding the composition of the IHP National Committee

The IHP Australian Network includes the following members. Summary details of all current members are listed below.

Name	Expertise	Organization
Bruce Stewart	Water Resources Assessment	Bureau of Meteorology
Tony Falkland	Island Hydrology	
Trevor Daniell	Urban, Low and High Flow Hydrology	University of Adelaide
Ross James	Hydrological Data & Networks	Bureau of Meteorology
Peter Martin	Public Relations	CRC for Weed Management
Ian White	Hydrology/Water Quality	Australian National University
Jeff Camkin	Ecohydrology / Water Policy / HELP Coordination	University of Western Australia Centre for Excellence for Ecohydrology/ CRC for Irrigation Futures
Ian Cordery	Flood/Drought Hydrology	University of New South Wales
Peter Dillon	Groundwater	Centre for Groundwater Studies
Anne Jensen	Ecotones	Wetlands Care Australia
Shahbaz Kahn	Sustainable irrigation systems	CSIRO now UNESCO (from April 2008)
Ray Volker	Groundwater	University of Queensland

1.1.2 Status of IHP-VII activities

The IHP Australian Network brings together many of the key hydrological research groups within Australia. As such, Australia is able to contribute towards IHP activities through the research programs currently existing in Australia. For example, the eWater Cooperative Research Centre (CRC) and other centres for research undertake activities which are closely aligned to the themes of IHP-VII. A description is provided below of some activities pertinent to IHP-VII. The Australian Bureau of Meteorology and CSIRO have also established a Water Information Research and Development Alliance (WIRADA) which undertakes research of direct relevance to the activities of the IHP. Australia faces major challenges in ensuring sustainable water supply in the face of drying climate and rising demand for water. In response, the Australian Government's initiative, *Water for the Future*, provides national leadership in water reform for all Australians. *Water for the Future* (<http://www.environment.gov.au/water/australia/index.html>) is built on four key priorities:

- Taking action on climate change

- Using water wisely
- Securing water supplies
- Supporting healthy rivers

Theme 1 - Adapting to the Impacts of Global Changes on River Basins and Aquifer Systems

A subset of the hydrological data collected by the State and Territory water agencies and the Bureau of Meteorology is contributed to international data centres for use in global and regional studies. The eWater Cooperative Research Centre (<http://www.ewatercrc.com.au/>) is continuing its research program that includes modelling hydroclimatic variability and impact on water resources and aquatic ecosystems and rare events and resilience in hydrological and ecological risk assessment. The Indian Ocean Climate Initiative (IOCI) (<http://www.ioci.org.au>), a partnership of research organisations, is researching the impact of climate variability and climate change on the water resources of the southwest region of Australia. CSIRO (<http://www.csiro.au/>), Australia's national research organisation, has research programs addressing global and regional climate change, climate change impacts on natural resources including water and climate change adaptation strategies. Australian National University (ANU) together with Ecowise Environmental have been researching vulnerability and adaptation to global change in small island countries and have contributed to AusAID's Pacific vulnerability and adaptation project. The ANU, Ecowise Environmental and the University of Adelaide have been investigating the vulnerability of water supply catchments in the Australian Capital Territory to global change. The Water Information Research and Development Alliance (WIRADA) brings together CSIRO's research and development expertise in water and information sciences and the Bureau of Meteorology's operational role in hydrological analysis and prediction. The Water data transfer standards project is defining and developing transfer standards and procedures for supply of specified data from water information providers. A Hydrologists workbench project will develop tools to automate common workflow processes to access and use hydrological data and models. A Precipitation and actual evapotranspiration products project is developing new methods and tools to produce data products to underpin hydrologic assessment and forecasting.

Theme 2 - Strengthening Water Governance for Sustainability

The National Land and Water Resources Audit (<http://www.nlwra.gov.au/>) and http://audit.ea.gov.au/ANRA/atlas_home.cfm) and the Water and the Economy study have produced a considerable body of data and information about the value, use, distribution and quality of water within Australia. Research on property rights of water and the structure, operations and social and economic impacts of water trading markets continues to receive a lot of attention in Australia and is a potential resource for similar projects in other countries. The ANU, the French agency CIRAD and Ecowise Environmental has undertaken research on the use of multi agent systems and companion modelling to support negotiations and reduce conflict over groundwater use in low atolls. The WIRADA water resources assessment and water use accounting project is developing methods and technologies, to enable the Australian Bureau of Meteorology to provide integrated surface and groundwater resource assessments, water accounts and water resource outlooks.

Theme 3 - Ecohydrology for Sustainability

The ANU and Ecowise Environmental have ongoing projects in conjunction with UNESCO-IHP investigating shallow groundwater recharge, water quality, impacts of land-use and extraction and socio-cultural aspects of groundwater management and impacts of drought in low coral islands. The ANU together with NSW Department of Primary Industry has been investigating estuary policy and management strategies to improve the health of estuaries. Research into hydrological process in and the sustainable management of wetlands is being undertaken in a number of universities and eWater Cooperative Research Centre and the ANU in conjunction with UNSW and the NSW Sugar Industry has been investigating the use of constructed wetlands to treat drainage from farm lands. The urban environment and water sensitive urban design are also areas of current research.

Theme 4 - Water and Life Support Systems

The Centre for Groundwater Studies (<http://www.groundwater.com.au>) has an extensive research program including research on groundwater/surface water interaction and is investigating how better to manage groundwater resources especially using aquifer storage and recovery. The ANU is researching artesian groundwater processes and modelling of groundwater changes in the lower Great Artesian Basin and in south eastern Australia. ANU, with Ecowise Environmental, are investigating shallow groundwater recharge, socio-cultural aspects of groundwater management and impacts of climate variability in low coral islands as a follow up to a UNESCO-IHP initiated project. As a result of a National Water Initiative (NWI) agreed by Australian federal and state governments all Australian water agencies are required to develop comprehensive water management plans. The plans are being developed through a process of extensive stakeholder consultation and watershed modelling. The process being employed and the resultant plans provide a valuable resource for similar projects elsewhere in the world.

Theme 5 - Water Education for Sustainable Development

Each of the Cooperative Research Centres (CRC) is required to undertake an active program of training to ensure their research and technology are transferred into practise as soon as possible. The water related CRCs are:

eWater CRC (<http://www.ewatercrc.com.au/>)

CRC for Water Quality and Treatment (<http://www.waterquality.crc.org.au/>)

CRC for Irrigation Futures (www.irrigationfutures.org.au/)

These CRCs are a partnership between universities and other research centres that also have educational and training programs. Some of the research centres are listed separately below.

Centre for Groundwater Studies (<http://www.groundwater.com.au>)

The purpose of the centre is to provide research, education and specialist services for Australian and International land and water industries with the objective of improving the management of resources affected by groundwater processes.

Centre for Environmental Applied Hydrology (<http://www.civag.unimelb.edu.au/ceah>)

The Centre for Environmental Applied Hydrology is a research centre within the Departments of Civil and Environmental Engineering and Geography and Environmental Science at the University of Melbourne. Specific expertise covers all aspects of surface and groundwater hydrology, hydraulics and geomorphology.

Fenner School of Environment and Society, Australian National University (<http://cres.anu.edu.au>) conducts research and postgraduate training in spatial-temporal variability and characterisation of climate, integrated catchment management, groundwater modelling and hydrology, floods and droughts, coastal hydrology and land use, salinity, cultural and indigenous water issues, water and land policy and related socio-economic interactions, ecological economics.

The International Centre of Excellence in Water Resource Management (ICE WaRM) (<http://www.icewarm.com.au/>) is made up of a consortium of universities and has a strong focus on education and training. It promotes itself to international water resource management students to further their education in Australia and is also developing online courses for delivery in Australia and overseas.

International Water Centre (www.watercentre.org/) is a joint venture between University of Queensland, Griffith University, Monash University, University of Western Australia, International RiverFoundation, Moreton Bay and Catchments Partnership and the Queensland Government. The Centre aims to take Australia's expertise in whole of water cycle management to organizations in the rest of the World through Applied Research, Education and Training and Knowledge Services.

Professor David Waite, Director of the Centre for Water and Waste Technology & Dr Ashish Sharma, from School of Civil & Environmental Engineering at UNSW, are collaborating with Hohai University of Nanjing to develop joint research & Masters' level training programs in WATER MANAGEMENT through the Australia China Consortium for Water Research (ACCWR)

A new National Centre for Groundwater Research and Training has been established to accelerate the assessment of Australia's groundwater resources and to harmonise definitional issues, governance and management. The Centre is based at Flinders University, South Australia, and aims at developing a new generation of skilled groundwater scientists and policy makers/managers who will develop the underpinning knowledge and practices so vital to the ongoing sustainable management of our groundwater resources. Key functions of the Centre will be to train postgraduate and postdoctoral scientists in advanced hydrogeological and related technologies as well as improving knowledge of groundwater connectivity and policy and management issues confronting water managers.

- *Crosscutting Program Components – FRIEND and HELP*

Collaboration in the Asian Pacific FRIEND project by provision of data, hosting a node of the Internet based Water Archive, and assisting in research activities. There are now five Australian HELP basins. The Ord (Western Australia, coordinator), Tully (Queensland) and Murray Darling Basin were accepted as new HELP basins in the 2009 call for proposals and the Lower Burdekin (Queensland) and Fitzroy (Queensland) were accepted as continuing basins. Jeff Camkin and Justin Story play a coordination role for the HELP program in Australia.

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

1.2.1 National/local scientific and technical meetings

- 32nd Hydrology and Water Resources Symposium, December 2009 Newcastle, New South Wales.
- 9th National Conference on Hydraulics in Water Engineering, 23 - 26 September 2008 at Darwin Convention Centre. Within this overall theme the conference sub-themes are: Climate Change, Methods in Hydraulics, Applied Hydraulics, Geophysical Hydraulics and Coastal Hydraulics.
- 10th Australasian Environmental Isotope Conference and 3rd Australasian Hydrogeology Research Conference with the theme of *applications of stable and radiogenic isotopes*, 1-3 December 2009, Perth.
- The biennial convention of the Australian Water Association (AWA) (www.awa.asn.au) is the Australian water industry's largest and most prestigious event. It is an internationally recognised and well attended occasion, attracting delegates from across Australia and around the globe. The Ozwater 2010 Convention & Exhibition, was held 8-10 March 2010 in Brisbane.
- 12th International Riversymposium, Brisbane, 21-24 September 2009. The symposium includes the Thiess International Riverprize.
- National Water Week 18-24 October 2009 (www.nationalwaterweek.org.au)
- Greenhouse 2009 convened by CSIRO held 23-26 March 2009 in Perth had the theme Climate Change and Resources.
- MODSIM2009, 13-17 July 2009, Cairns, Queensland. International Congress on Modelling and Simulation.
- 3rd NATIONAL WATER EDUCATION CONFERENCE, WATER EFFICIENCY 2008 and WICD 2008. All three conferences were held 30 March - 2 April 2008 on Queensland's Gold Coast. Education website ([Website 1](#)), Efficiency website ([Website 2](#)), WICD website ([website 3](#)).
- ENVIRO08 A conference and exhibition for showcasing the Australian environment industry. Will be held 5-7 May 2008, Melbourne (www.enviroconvention.com.au/).
- A number of meetings of the National Committee on Water Engineering, Institution of Engineer's have been held during this period. Some of the key purposes of these meetings are to coordinate and organise hydrology and water resources symposia and conferences, to coordinate the ongoing revision to the national hydrological design guidelines Australian Rainfall and Runoff, prepare Position Papers on key hydrological issues and to manage the publication of Australian Journal of Water Resources. Position Papers are now all available on the Institution of Engineers, Australia web site: (<http://www.eng.newcastle.edu.au/~ncwe/ncwePosPaper/ppHome.htm>).

1.2.2 Participation in IHP Steering Committees/Working Groups

Prof Shahbaz Khan was Chair of the International Steering Committee of the Hydrology for the Environment, Life and Policy (HELP) Program and the Regional Coordinator for the Australasian region. Since April he has been in UNESCO Paris as Chief, Sustainable Water Resources Development and Management Section, Division of Water Sciences. Mr Jeff Camkin, University of Western Australia, now plays a coordination role for HELP in Australia (Jeff.Camkin@gmail.com).

CSIRO is the Australian research organisation linked to the Water and Development Information for Arid Lands – A Global Network (G-WADI) project set up by the IHP (www.gwadi.org/).

Professor Ian White was elected to the Governing Board of UNESCO IHE, Institute for Water Education, Delft, The Netherlands in 2006 and is a Member Editorial Board UNESCO- Cambridge University. Press International Hydrology Series.

Prof Trevor Daniell was elected Chairman of the Friend Inter-Group Coordinating Committee at its meeting in Havana, Cuba in December 2006. The 7th FIGCC Meeting was held in Adelaide on April 9th, 2008.

As president of the WMO Commission for Hydrology, Mr Bruce Stewart attended a Joint WMO/UNESCO Liaison Committee meeting in January 2010 and also chaired a meeting of the IFI Coordination Group held by e-mail and SKYPE in December 2009/January 2010.

1.2.3 Research/applied projects supported or sponsored

As a follow-up to the UNESCO/SOPAC research projects in Kiribati and Tonga, Professor Ian White, ANU is Project Manger of an ACIAR (Australian Centre for International Agricultural Research) sponsored project titled: Equitable Groundwater Management for the Development of Atolls and Small Islands. Its overall aim is to provide the basis for the sustainable use and equitable sharing of groundwater resources and their associated catchments between competing sectors, particularly agriculture, combining research on climate, groundwater, cropping and irrigation practices, economics, cultural traditions and social customs, and the aspirations and needs of stakeholders. A start has been made with the first phase of the project in Kiribati focussing on equitable groundwater use in North and South Tarawa. The project is being carried out in conjunction with the French agency CIRAD, the South Pacific Applied Geoscience Commission and government agencies in Kiribati and Tonga. This work is using Multi Agent Systems and a companion modelling approach to develop Negotiation Support Systems to minimise conflicts over water resource development and use.

The Australian Water Research Facility, a partnership between AusAID and the International Water Centre (www.watercentre.org/research/awrf) has a project to research catchment-based risk assessment in the Solomon Islands. The project will develop a framework for determining priorities for water resources management action in catchments.

White I., Falkland A., Metutera T. and Metai E. (2005). Effects of Landuse on Groundwater Quality in a Low Coral Atoll. Coliforms, Nutrients and Metals. ACIAR Project LWR1/2001/050, Equitable Groundwater Management for the Development of Atolls and Small Islands, prepared for the Australian International Agency for Agricultural Research, May 2005

White I., Falkland A., Perez P., Dray A., Metutera, T. , Metai E., and Overmars M. (2005). Challenges in freshwater management in low coral atolls. Journal of Cleaner Production, Special Edition Water Management in Coastal Zones.

White I., Falkland A., Metutera, T., Metai E., Perez P., Dray A. and Overmars M. (2005). Climatic and Human Influences on Water Resources in Low Atolls. In Proceedings of the International

Seminar On: Climatic And Anthropogenic Impacts on the Variability Of Water Resources Umr Hydrosiences Montpellier / UNESCO / OMM Maison des Sciences de L'eau de Montpellier, 22 - 24 November 2005.

1.2.4 Hydrology for Environment, Life and Policy (HELP)

Australia continues to contribute to the projects established under the HELP banner. Current HELP Basins are: Murray Darling Basin (coordinated by Awadesh Prasad, Murray Darling Basin Authority), Tully Basin (coordinated by Jim Williams, CSIRO), Lower Burdekin Basin (Coordinated by Keith Bristow, CSIRO), Fitzroy Basin (coordinated by Chris Carroll, QLD Department of Environment, Resources and Mines) and the Ord River (coordinated by Jeff Camkin, University of Western Australia and Dick Pasfield).

A HELP Forum "River Basin Planning", coordinated by Australia and sponsored by UNESCO, was held in Brisbane on 24 July 2009. The forum brought together experts from Australia, NZ, Asia, Europe and the US to share HELP basin and other experiences in river basin planning. A selection of these experiences will form a chapter in a forthcoming UNESCO HELP program book on IWRM. A meeting of HELP Australia and New Zealand coordinators, and an open forum on HELP in Australia, are planned for Perth in October 2010, coinciding with RiverSymposium.

Ord River HELP Basin activities include: nomination of the Ord River as a UNESCO Ecohydrology Program Demonstration Site (pending) in May 2010; a HELP workshop with Ord stakeholders in July 2010 to develop a HELP workplan; and joint papers and presentations with a comparable basin in Portugal (Guadiana).

Fitzroy HELP Basin activities include: visit from Dr Mike Bonnell from the UNESCO HELP Centre for Water Law, Policy and Science, University of Dundee, in March 2010; a series of 'Catchment Champion' workshops held by the Fitzroy Basin Association and Dept of Environment and Resource Management to identify environmental values and water quality objectives for the basin; and using catchment modelling an economic assessment was conducted to assess prioritisation of onground investment in grazing to reduce sediment and nutrient loads to the reef lagoon.

Lower Burdekin HELP Basin activities include: a UNESCO HELP water forum with a keynote address by Professor Shahbaz Khan, Global HELP Coordinator in 2010; international visits by Dr Ken Knox (University of Denver) in 2008 and Dr Mark Dent (University of KwaZulu-Natal) in 2008; establishment of the Burdekin Water Futures group to guide HELP and other whole of catchment activities; creation of a groundwater science plan and modelling proposal for the Burdekin.

Murray Darling HELP Basin activities include: The Murray- Darling Basin Authority (MDBA www.mdba.gov.au) is currently undertaking the biggest ever water reform in the Murray-Darling Basin by way of preparing the first statutory Basin Plan. The Plan will be a strategic 10 year plan for the integrated and sustainable management of water resources in the Murray-Darling Basin. A central element of the Basin Plan is setting of environmentally diversion limits (SDLs) on the amount of water that can be taken from the Basin's water resources. As precursors to the Basin Plan (to be released in July 2010), several investigations and activities have been completed. The key activities completed during 2009-10 include:

- A Basin Plan Concept Statement (<http://www.mdba.gov.au/files/publications/basin-plan-concept-statement.pdf>) was released in end June 2009. The concept statement introduces and explains in general terms, the purpose of the Basin Plan, what it will contain, and when and how it is being developed and the key approach being taken by the Murray-Darling Basin Authority (MDBA) in developing the Basin Plan.
- An issue paper (<http://www.mdba.gov.au/files/publications/sustainable-diversion-limits-issues-paper-12-11-09.pdf>) on SDL was released for public consultation in November 2009. The paper explores issues around developing SDLs for the Murray-Darling Basin and

describes the relationship between SDLs and the other elements of the proposed Basin Plan.

- A comprehensive socioeconomic baseline report, Socio-Economic Context for the Murray–Darling Basin (<http://www.mdba.gov.au/files/publications/Socio-economic-context-report-b2.pdf>) was prepared and released for public information in September 2009.
- Environmental water needs for the Basin was assessed by identifying key environmental assets, including water-dependent ecosystems and ecosystem services. The report, Assessing environmental water needs of the Basin (<http://www.mdba.gov.au/files/publications/Assessing-environmental-water-needs-of-the-Basin-April-2010.pdf>) was released in April 2010.
- Comprehensive hydrological modelling of groundwater and surface water systems were undertaken to investigate various physical (eg climate) and policy scenarios for determining SDLs.
- A comprehensive program of stakeholder engagement (<http://www.mdba.gov.au/programs/engagement>) has been established through which various stakeholders including the community are informed of the development of the Basin Plan and their inputs are taken. Community meetings and forums for industry peak bodies are being regularly held.

1.2.5 Collaboration with other national and international organizations and/or programmes

As President of the WMO Commission for Hydrology and also Chair of the Australian IHP Network, Mr Bruce Stewart provides a link between the UNESCO IHP and WMO's Hydrology and Water Resources Programme and the International Flood Initiative. Tony Falkland and Ian White are members of the Water Working Group of the Science, Technology and Resources Network of the South Pacific Applied Geoscience Commission. Ian White is a member of the Asian Pacific Association of Hydrology and Water Resources. The Centre of Excellence for Ecohydrology (University of Western Australia) is establishing a Memorandum of Understanding with the UNESCO-IHP International Centre for Coastal Ecohydrology.

1.2.6 Other initiatives

1.3 Educational and training courses

1.3.1 Contribution to IHP courses

The Bureau of Meteorology provided input to the meteorology and climatology components of the SOPAC/UNESCO/WMO Hydrological Training Programme that was funded by NZAID and run over the 3 years to 2006 in Fiji.

1.3.2 Organisation of specific courses

A groundwater training course for the Ministry of Public Works and Utilities, Republic Of Kiribati was held at the Australian National University in 12-21 June 2007. The training course was designed to increase capacity in groundwater assessment, monitoring and management and included the maintenance and calibration of Ministry equipment.

1.3.3 Participation in IHP courses

1.3.4 Other

The Centre for Groundwater Studies (a joint venture between 9 research/educational institutions, government water management organizations and private consultants) organises a wide range of groundwater related training courses. Details of courses can be found at the web site <http://www.groundwater.com.au/conf/content.asp>. The centre has established strong links with institutions in the region, particularly in Indonesia, Malaysia, Thailand and China.

Funding support was provide to enable Mr Amos Ona from the PNG WWF to gain experience through participation in and presentation of a paper at the RiverSymposium held in Brisbane, September 2007.

The Brisbane-based International Water Centre announced a new Masters of Integrated Water Management course in December 2006. The course brings together expertise from Australia's leading universities to build capacity for today's water resource managers MIW website. The course starts August 2007.

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

1.4 Publications

White I., Falkland A., Metutera, T. , Metai E., Perez P., Dray A. and Overmars M. (2005). Climatic And Human Influences On Water Resources In Low Atolls. *In Proceedings Of The International Seminar On: Climatic And Anthropogenic Impacts On The Variability Of Water Resources Umr Hydrosciences Montpellier / UNESCO / OMM, Montpellier, 22 - 24 November 2005.*

Daniell T., and White I. (2005) Bushfires and their Implications for Management of Future Water Supplies in the Australian Capital Territory. *In Proceedings Of The International Seminar On: Climatic And Anthropogenic Impacts On The Variability Of Water Resources Umr Hydrosciences Montpellier / UNESCO / OMM, Montpellier, 22 - 24 November 2005.*

F Ghassemi and I White (2007). Inter-basin Water Transfer: Case Studies from Australia, United States, Canada, China and India., Cambridge University Press, UNESCO International Hydrology Series, Jan 2007

Cordery, I; Weeks, B; Loy, A; Daniell, T; Knee, R; Minchin, S; Wilson, D (2007) Water Resources Data Collection and Water Accounting, Australian Journal of Water Resources; Volume 11, Issue 2; 2007; 257-266.

Daniell; Trevor, Nathan Rory, Chiew Francis and Osti Alexander, (2008) Chapter 11, Low Flow Forecasting, in World Meteorological Organisation, 2008, Manual on the Estimation and Prediction of Low Flows, Contribution to the topic Disaster Mitigation: Floods and Droughts (hydrological aspects), WMO

White I., Falkland A., Perez P., Dray A., Metutera T., Metai E., And Overmars M. (2007). Challenges In Freshwater Management In Low Coral Atolls. *Journal Of Cleaner Production* 15, 1522-8.

White I., Falkland A., Metutera T., Metai E., Overmars M., Perez P., and Dray A. (2007). Climatic and Human Influences On Groundwater In Low Atolls. *Vadose Zone Journal* 6, 581–590.

White I., Falkland A., Metutera T., Katatia M., Abete-Reema T, Overmars M., Perez P., and Dray A. (2008). Safe Water for People in Low, Small Island Pacific Nations: The rural-urban dilemma. *Development*, 51, (In press)

1.5 Participation in international scientific meetings

1.5.1 Meetings hosted by Country

See Section 1.2.1 of this report for international conferences hosted.

1.5.2 Participation in meetings abroad

Trevor Daniell participated in the Coordination Committee of the GRDC in Koblenz, 19 to 21 September 2007

Trevor Daniell and Francis Chiew participated in the FRIEND 2006 Meeting in Cuba on Climate Variability and Change-Hydrological Impacts.

Chris Carroll (presented), Keith Bristow (presented), John Blackwell and Jeff Camkin participated in the HELP in the Southern Hemisphere Symposium, South Africa 2007.

Keith Bristow and Jeff Camkin both presented at the UNESCO-HELP Symposium on Water Governance, Portugal, in 2009 and Jeff Camkin was a member of the Coordinating Committee for the Symposium.

Jim Williams (Tully Basin Coordinator), Justin Story (co-coordinator for HELP in Australia) and Jeff Camkin (coordinator for HELP in Australia and Coordinator for HELP in Australia) met with the Global HELP Coordinator in Paris in 2009.

Jeff Camkin participated in the HELP Symposium in Douro, Portugal in 2010.

1.6 Other activities at a regional level

A project titled: Enhanced Application of Climate Predictions in Pacific Island Countries is currently in progress to meet the general goals of improving weather and climate services and products. The AusAID funded project is developing a climate prediction capacity in participating countries, and in particular, is providing a framework for incorporating climate prediction information into planning across a broad range of agencies and industries. The climate prediction system being provided under the project is based upon the seasonal climate prediction system of the Australian Bureau of Meteorology, which has successfully issued climate predictions for some years. (www.bom.gov.au/climate/pi-cpp/)

The Pacific HYCOS Project proposal developed by WMO in 2001 has received funding through the European Union. The Pacific HYCOS Project was launched at a workshop in Brisbane, Australia 16-19 April 2007 organized Bureau of Meteorology (BOM) Australia, World Meteorological Organisation (WMO), National Institute for Water and Atmosphere Research (NIWA), and Pacific Islands Applied Geoscience Commission (SOPAC). The meeting and workshop was funded by WMO, BOM and SOPAC.

1.6.1 Institutional relations/co-operation

The Centre of Excellence for Ecohydrology (University of Western Australia) is entering into a Memorandum of Understanding with the UNESCO International Centre for Coastal Ecohydrology, Portugal, to support collaboration on coastal ecohydrology.

1.6.2 Completed and ongoing scientific projects

Refer section 1.2.3 re ongoing Pacific Island projects.

2. Future Activities

2.1 Activities foreseen until December 2010

- 13th INTERNATIONAL RIVERSYMPIOSIUM, Perth, 11-14 October 2010.
- National Water Week, October 2010
- 34th IAHR Biennial Congress, 33rd Hydrology and Water Resources Symposium and 10th Conference on Hydraulics in Water Engineering, Brisbane, 26 June to 1 July 2011
- IUGG 2011 Earth on the Edge, Melbourne, 27 June to 8 July 2011
- HELP Australia public forum, October 2010 in Perth
- HELP Australia Coordinators meeting, October 2010 in Perth
- Ord River Basin HELP Workshop, July 2010 in Kununurra
- Monthly meetings of the Burdekin Water Futures group

2.2 Activities Planned for 2010-2011

- Continuation of assistance to Pacific Island Projects.
- Continuation of involvement in Asian Pacific FRIEND.
- Continuation of involvement in HELP
- Participation in the FRIEND Symposium 2010, Fes, Morocco, 25-29th October.
- Participation in the Global HELP Symposium planned for South America, 2011
- Increasing involvement in UNESCO Ecohydrology Program through proposed demonstration sites, if successful

2.3 Activities envisaged in the long term

No information available at this time.

CHINA

National Report on IHP Related Activities

for

The 18th RSC-IHP meeting for the Southeast Asia and the Pacific

Hanoi Vietnam 11-12 November 2010

Chinese National Committee for the IHP

Contents

1. ACTIVITIES UNDERTAKEN IN THE PERIOD October 2009 – November 2010	15
1.1 Meetings of the Chinese National Committee for IHP	15
1.1.1 Decision regarding the composition of the Chinese National Committee.....	15
1.1.2 Status of IHP-VII activities.....	15
1.2 Activities at national level in the framework of the IHP	16
1.2.1 National/local scientific and technical meetings.....	16
1.2.2 Participation IHP Steering Committees/Working Groups	19
1.2.3 Research/applied projects supported or sponsored	19
1.2.4 Collaboration with other national and international organization and/or programs ..	19
1.2.5 Other initiatives.....	21
1.3 Education and training course.....	21
1.4 Publication	22
1.5 Participation in meetings abroad.....	22
1.6 Other activities at a regional or international level.....	22
2 FUTURE ACTIVITIES	23
2.1 Activities planned to until December 2010	23
2.2 Activities foreseen for 2010-2011	23
2.3 Activities envisaged for the long term.....	23

1. ACTIVITIES UNDERTAKEN IN THE PERIOD October 2009 – November 2010

1.1 Meetings of the Chinese National Committee for IHP

1.1.1 Decision regarding the composition of the Chinese National Committee

The current IHP national committee consists of **29 distinguished water experts** who are active in hydrology and water resources work in China. There was no particularly decision has been made during the past one year.

1.1.2 Status of IHP-VII activities

China national committee has arranged projects and activities in all themes and almost all focal points of IHP-VII through national committee members, focal points and working groups around the country. Some activities are provided in the following paragraphs.

The Third WASER Council Meeting and General Assembly Held in September, 2010, at Stellenbosch, South Africa (IRTCES). The Third Council Meeting of the World Association for Sedimentation and Erosion Research was held in the afternoon of September 5 in Stellenbosch, South Africa. President of the Second Council, Prof. Des Walling, Vice President of the Second Council, Prof. Chih Ted Yang, President of the Third Council, Prof. G. Di Silvio, Vice Presidents of the Third Council, Prof. Zhaoyin Wang, Prof. Gerrit Basson, and Prof. Ulrich Zanke, Secretary General Third Council, Prof. Chunhong Hu, members of the Third Council, Prof. Hajime Nakagawa, Prof. Jim Bogen and Prof. M.J. M. Romkens, Prof. Xiaoying Liu, Treasurer and some other staff of the secretariat and some observers attended the meeting.

The meeting reviewed the minutes of the Second Council Meeting and the revised statutes. The Council approved the nominations for Honorary Members and the nominations for the third WASER best paper award for papers published in the International Journal of Sediment Research; received and approved the nominations for the second International Qian Ning Prize for Sedimentation and Erosion Technology, announced the outcome of the election of the Officers and Members of the Third Council Members voted by all members of WASER. Prof. G. Di Silvio was elected as President of the Third Council. Further to the organizational business, the meeting outlined the draft work plan for 2010 to 2013. The Council Member Prof. Hajime Nakagawa reported the sponsors, organizer and theme of the 12th International Symposium on River Sedimentation to be held in Japan in 2013. The council meeting discussed and adopted in principle the above two reports and confirmed that the fourth Council Meeting and General Assembly will be held in Japan in 2013.

On 7 September 2010, the General Assembly of WASER was held during the 11th International Symposium on River Sedimentation. Members and participants from over 30 countries attended the Assembly. The President of the Second WASER Council, Prof. Des Walling opened the symposium, presented his general report of the Second Council, and announced the election result of the Officers and Members of the Third Council. Prof. G. Di Silvio reviewed the draft work-plan from 2010 to 2013 and other key points related to the Association. He appealed for all scientists and engineers involved in the field of erosion and sedimentation to support and join the Association in order to promote its growth and development and encourage the future development of the field of erosion and sedimentation.

1.1.3 Decision regarding contribution to/participation in IHP-VII

After it has been decided to fully participate in all themes of IHP-VII, the annual IHP national

committee meeting held in **Nov 2009** in Wuhan has brought together most of the members of the China-IHP national committee to share their understanding, idea of IHP work in China and in general. The meeting **encouraged** to develop broader international cooperation with both developing and developed countries. Following the meeting suggestions, a set of collaboration on information exchange, technical development on hydrometry, conceptual development and exchange on flood risk management, and climate change impact research **have been carried out in a bilateral way between China and other countries.**

1.2 Activities at national level in the framework of the IHP

1.2.1 National/local scientific and technical meetings

(1) State meeting on “water conservancy for water authority Directors” was held on 17 Jan, 2010 in Changsha city, Hunan Province. The objective of this meeting was to: (1) implement the new concepts of the central government, (2) review work progress of 2009, (3) reach mutual understanding to the current water management situation so as to promote the



development of water management based on the newly established concepts of “serving public needs” for sustainable social-economic development, and (4) make assignment for the year of 2010 work.

Mr. Chen Lei reviewed the water work in 2009 and summarized the status of the water management work. He further promoted the new concept of “serving public needs” for sustainable social-economic development, and encouraged applying scientific approaches on the “12th 5-year” state water development planning work; finally he listed the work focuses for 2010.

Mr. Chen Lei reviewed the water work in 2009 and summarized the status of the water management work. He further promoted the new concept of “serving

public needs” for sustainable social-economic development, and encouraged applying scientific approaches on the “12th 5-year” state water development planning work; finally he listed the work focuses for 2010.

According to Mr. Chen Lei, the new concepts of “serving public needs” is an important objective and requirement for the future work of water professionals. To realize such concepts, Mr. Chen Lei required the water authorities to accomplish the 3 major tasks of (1) repairing reservoirs in dangerous; (2) secure drinking water safety in countryside; and (3) reinstallation and technical improvement at large irrigation schemes. In addition, Mr. Chen Lei identified 4 other management targets for the water authorizes including (1) promote management for middle and small size rivers; (2) reinstallation and technical improvement for middle-sized irrigation schemes; (3) promote water saving strategy in irrigation; (4) strengthen new countryside and county electricity and gas technical development and replacing resources with small hydropower resources. Mr. Chen Lei also made clear requirements for the preparation of the “12th 5-year” national water work development plan with strict and innovative technologies focusing on sustainable development needs and the concepts of “serving public needs”.

(2) State Work Meeting on Water Resources Allocation was held on 28 Dec 2009 in Guangzhou city. The meeting was sponsored by the bureau of water resources, MWR, and was organized by the water resources management center, MWR. The objective of this meeting was to review water resources allocation work, learn and exchange ideas/experiences on the water resources allocation in practices, analyze the new challenges and issues under current situation, thus to make realistic future work plan. Mr. Sun Xuetao, the director general of the Bureau of Water Resources, MWR attended the meeting and delivered opening speech. Experts from 13 state organizations such participated in the work meeting. Topics related to policies and

strategies of water resources allocation, water allocation operation basics and approaches etc. have been discussed.

In this meeting, experiences on water allocation from practices of Yellow River, Blace river (North China) and Pearl river (South China) are reviewed and exchanged. It has been noticed that the concept of integration has been well adopted in the current water allocation practices. It is also noticed that due to the rapidly increased water resources pressures it is important for China to implement the most strict water management policies and strategies. Methods and technologies on water resources optimization considering multiple objectives of water supply, environmental flow and other water users are necessary.

(2) State work meeting on hydrology was held in Zhenzhou on 27 March, 2010. To promote the concept of “Marco hydrology” which aims serving public needs and to further promote the hydrological technical development, Bureau of Hydrology, MWR organized the state work meeting on hydrology. Vice manometers, Mr. Liu Ning attended the meeting and delivered



important speech. Directors from Commission of State Development and Reforming, Ministry of Country Land Resources, Ministry of Environment Protection, Ministry of Transportation, State Meteorological Bureau, and water authorities from provinces and direct administrative cities, bureau of hydrology from river basin commissions, have participated in the meeting.

During the meeting, Vice Minster Mr. Liu Ning reviewed the work progress of 2009 on hydrology, analyzed the opportunities and challenges that are both faced by hydrology, and identified for the state the work focus for 2010. Details of the work focus and requirement have been further discussed in-depth by other three deputy director of the bureau of hydrology, MWR, particularly on hydrological planning, water resources monitoring, urban hydrology, flood control and drought relief etc.

(4) “Data sharing on hydrology and water resources” project kickoff meeting was held on 11 June, 2010 in Beijing. The project is one of the “State Science and Technology basic condition platform development” projects sponsored by the Ministry of Science and Technology (MST). The executive organization is the bureau of hydrology, MWR. Work group of the project reviewed stage progress. Discussion and exchanges on the contents of the project that are planned to be implemented in 2010 have been made. Requirement for future work has been as well identified.

(5) Workshop on “Social-economic development and water protection for Changjiang River Basin” was held on 27 May in Chongqing city. The workshop was sponsored by Changjiang Water Resources Commission, and organized by the bureau of water resources protection, CWRC, Committee of Minjin Party of Chongqing city, and WWF. More than 60 experts from different state ministries and WWF participated in the workshop.

Focusing on the theme of “social-economic development and water environment protection”, the workshop discussed “developing ecological filters for three gorges reservoir area and integrated development of urban and rural areas”, “construction of reservoirs upstream of three gorges reservoir in mid-upper Changjiang River, operation and flood/drought management”, “water environment capacity, green economy and method revolution of regional development”,

“promote integrated basin management”, “coordination between inter-administration region on water pollution prevention and regional development”, and “adaptation to climate change for ecological system in fresh water”.

(6) “The 3rd Workshop on the hydro-ecological processes and environment for arid area” was held in Xinjiang on 26 June, 2010. Sponsored by Chinese Natural Science Foundation and Xinjiang Geological Research institute of China Science of Academy, 2 Chinese academia from China science of academy and 15 abroad professionals from USA, Canada, Singapore, Switzerland, Australian etc., and various experts from different Chinese institutions participated the workshop. The workshop shared and discussed issues on the topics of climate change impact to water resources and hydro-ecological system in Xinjiang and other inland rivers, and reinstallation of ecosystem to the social-economic development for Xinjiang.

The Chinese academia Prof. Liu Changming opened the workshop with keynote speech on “water resources and hydro-ecology process and sustainable development in Xinjiang”. Field trip has been conducted to the glacier at Tianshan, Talimu river basin and Kongque river basin. The workshop was held right after the central government meeting about the development of Xinjiang Province. The workshop has resulted consolidated policies and strategic advices for the sustainable utilization of water resources in the arid area of Xinjiang province, and protections to the vulnerable ecosystem.

(7) “Workshop on Mid-Asian Water Resources Issues” was held during 26-27 Aug, 2010, in Nanjing. Sponsored by the international cooperation bureau of science and technology and the communication center of international economy and technology of the Ministry of Water Resources, the workshop was organized by Hohai University in Nanjing. 38 professionals from all over the country of China participated in the workshop. During the workshop, professionals from different departments discussed water issues in middle Asia. Relationship between China and Hashakistan and International cooperation between China and Mid-Asian countries were reviewed, and identified future focus for cooperation and research in this region.



(8) Workshop on “State Groundwater monitoring program preparation” for Haihe and Huaihe river basins was held during 10-13 June in

Tianjin. The objectives of this workshop were to prepare for the feasibility study report for state groundwater monitoring programme. The workshop was sponsored by the bureau of hydrology, MWR. Professionals from provincial bureau of hydrology participated in the workshop. The reasonability of the state Groundwater Monitoring network was assessed. Analysis and verification have been made to monitoring network established for special geological condition, assessments have been also made on the newly established or readjustment of the monitoring wells, technology on information collection and data transferring, informatics system development etc.. A common understanding to the current groundwater monitoring at nation-wide has been reached after the workshop.

1.2.2 Participation IHP Steering Committees/Working Groups

Organizational work for the preparation of the short course of “Regional Study Course on Climate Change, hydrological drought and flood”. Jointly convened by DoE, UNESCO and NVE, the short courses aims to understand climate change impact on hydrological regime and adaptation to CC for flood management and drought relief. The course is planned to take place during 28 Nov-3 Dec 2010 in Thimpu, Bhutan. Each member country of Himalaya Hindu Kush (HKH) region will send a few participants to participate this short course.

1.2.3 Research/applied projects supported or sponsored

The **website** of the Chinese National Committee for IHP has been supported by UNESCO Beijing office and has been updated regularly. It was updated regularly for distributing messages to the public. Official home page is <http://www.chinaihp.org>. Announcement of web-based training courses and other conference information are shared with hydrologist at national-wide on this website.

A couple of research projects for participation of AP-FRIEND, Himalaya-FRIEND have been supported by the National Committee:

- August 2010, as part of the **Flood Forecasting and Warning System (FFWS)** project, researchers from Indonesia visited the Bureau of Hydrology, CWRC in Wuhan, when BOH introduced them with the flood forecasting and warning system of Changjiang River, and discussed issues related to the FFWS project interests.
- During the year, through the coordination of IHP secretariat, China experts participated in the **Flood Frequency project with Chinese method as contributing to the DRH project.**

1.2.4 Collaboration with other national and international organization and/or programs

(1) Participated in the Workshop on the Strategy and Action Plan of the WMO Flood Forecasting Initiative in December 2009. IHP expert (Dr. Yan Huang) participated the workshop and contributed the WMO Flood Forecasting Initiative programme set up with Chinese concerns and experiences. Discussion continued after the workshop, and so continuous contribution has been provided via participation the discussions, reviewing process of the Flood Forecasting Initiative of WMO later on.

(2) Technical exchange program between U.S. Geological Survey (USGS) and the bureau of hydrology (BOH), Changjiang Water Resources Commission (CWRC), August 2010. After last year the technical visit from staff of BOH-CWRC, 2 USGS experts visited BOH-CWRC and BOH-MWR by the end of August 2010. The objectives of the technical visit were to continue the cooperation on hydrometric technologies, and to promote future cooperation between hydrologists from two countries. The meeting reviewed the progress of the cooperation between USGS and MWR in the past years, and discussed possible future cooperation.

After discussion and exchange of ideas, three major topics/areas have been identified for future cooperation including (1) *Hydrological monitoring techniques* on method of establishing stable rating curves and monitoring technology on sediment, water quality and groundwater; (2) joint research on *hydrometry uncertainty* including data exchange and joint technical analysis; and (3) research on *hydrological extremes*.

(3) Workshop of the “China-UK cooperation on research of water demands” was held in 28-29 June in Beijing.



The workshop was originated by the bureau of international cooperation, MWR. Started in Feb 2006, the project was established between UK and China on water resources management, and has obtained fruitful results which may be further applied in Chinese water management practices. The workshop reviewed the project

progress and discussed focus for future work.

(4) Workshop of China and Germany on Water Resources and Ocean was held in Tianjin University, on 27 Sep 2010.

The workshop is a continuous activity held every two years for scientists from China and Germany. In Sep 2010, organized by Tianjin University, with the ultimate goal of obtaining eco-balanced system, the theme topic of the workshop consists of innovative techniques on ocean engineering, wave theory and modeling, sediment drainage. The workshop lasted for 6 days. Experts from China and Germany come together shared knowledge and experiences on the theme topics.

(5) Workshop of China and Australia on “Hydrology and water resources for irrigation and Climate change” was held in Tianjin University, on 27 Sep 2010.

The workshop is a continuous activity held every two years for scientists from china and Australia. During the workshop, topics of hydrological circle, remote sensing, climate models and water monitoring technologies have been presented and discussed. In addition, experts from agriculture presented some research work on water resources situation, GPS technology, remote sensing on evapo-transpiration, soil moisture monitoring, agricultural disaster and food safety. Future cooperation were discussed and foreseen. The workshop has also conducted a field trip to some experimental stations on various issues.

(6) Workshop of China and Denmark on “Groundwater management” was held on 9 Sep in Beijing.

The workshop was sponsored by Danish and Greenland Geological Survey, DHI and VCS water supply and Wastewater Treatment Company. The vice minister of WMR and minister of Danish ministry of environment were invited to deliver opening speeches for the workshop. The idea of this workshop was to introduce and discuss the Danish concept of “groundwater management for sustainable water supply”. Experts from international cooperation bureau of Science and Technology, bureau of water resources of MWR, Taihu basin water authority, Shanghai Water Authority, Officers from Danish Consulate in Shanghai, Chairman of Danish environment and planning committee participates the workshop. Various topics and ideas related to groundwater management in both countries have been discussed and exchanged.

In his opening speech, the vice minister of WMR, China, Mr. Jiao Yong pointed out that groundwater plays an increasing important role in water supply for social-economic development. People should pay more attention to prevent from creating environmental issues in groundwater abstraction and utilization. He has also pointed out that Chinese government is

making increasing efforts on abstraction, utilization, saving, protection and management of groundwater by a set of water resources management planning, policy and strategies. According to Mr. Jiao, Chinese government has defined protection region/areas for groundwater abstraction, enhanced management on water resources assessment and licenses for water abstraction, and has established monitoring network on groundwater monitoring. However, as Mr. Jiao Yong also pointed out, China is facing increasing pressure for groundwater management due to the rapid social-economic development. He emphasized the importance of learning from Danish experiences, and encourage experts from both sides to continue research cooperation on groundwater management and other techniques.

1.2.5 Other initiatives

NIL.

1.3 Education and training course

1.3.1 Contribution to IHP courses

In July 2010, Dr. Yan Huang, supported by IHP China national committee, provided short training course on flood forecasting and flood management technology for **UNESCO IHE Alumina in Katmandu, Nepal**. The short course was organized by UNESCO IHE, and nearly 20 IHE alumina from the Asian Pacific region participated in the course.

1.3.2 Organization of specific courses

In Aug-Sep 2010, supported by IHP China national committee, the bureau of Hydrology, Changjiang Water Resources Commission has organized a training course on hydrological monitoring and flood forecasting technologies for participants from **North Korean**. The course consists of indoor lecturing and onsite field trip. The indoor learning consists of courses on information management, meteorological forecasting and hydrological forecasting theory, technology and practices; the onsite field trip consists of flow monitoring, sediment monitoring, water quality monitoring, methods and technologies as well as hand-on practices. The participants from North Korean has also introduced Chinese colleagues with their experiences and framework on flood forecasting and hydrometric works. The course has turned out effective and successful according to the North Korean participants. **It is expected to become a continuous course that may take place at an annual-base.**

With support from the Ministry of Water Resources, the **national training course for assessing river and lake basic information** was held in Nanjing in Sept 2010. The course lasted for 3 days and consists of 8 lecturing considering techniques, approaches and flowchart of river and lake information assessment. More than 400 participants from different river commissions and provinces of China have participated in the course.

A New Proposal on training course of Flood Forecasting Technology was made on providing a training course for participants from **Mekong River Basin**. The training course is proposed to be given in the Bureau of Hydrology, Changjiang Water Resources Commission in 2011. It is currently in funding applying process.

1.3.3 Participation in IHP courses

Under the administration of the Ministry of Water Resources, about ?? participants were sent to UNESCO-IHE and other water institutions with academic recommendation and support from IHP-China.

No observation of how many have actually participated in (or have received) but the web-based distance learning notices received from UNESCO Jakarta office have been widely distributed through IHP China website and emails from IHP China secretariat.

1.4 Publication

To be completed.

1.5 Participation in meetings abroad

IHP representative attended the 19th Inter Governmental Council (IGC) Meeting in July 2010 in Paris. Dr. Huang Yan, the deputy secretary of IHP China national committee, attended the 19th IGC meeting as observer and contributed the meeting with perspectives of china water experiences. During the meeting, exchanges and discussions have been made with other member countries on possible collaborations on various topics.

1.6 Other activities at a regional or international level

1.6.1 Institutional relations / co-operation / exchanges

A joint research project has been established between Bureau of Hydrology, MWR China, and U.S. Geological Survey. The project aims to developing uncertainty analysis methods on surface flow monitoring in open channels. Data sharing will be carried out in both countries and other countries that are interested in the same problem (e.g. UK). In this project, data exchange, technical development and verification to the proposed analysis approaches for uncertainty analysis will be carried out. The outcome is expected to be further developed into a technical specification as international standard.

1.6.2 Completed and ongoing scientific projects

A joint programme entitled “climate change partnership framework” (2008-2010). The joint programme has been developed by the nine UN Agencies with Spanish fund in coordination with the respective counterpart Ministries/National/Local Agencies, scientific community, and the private sector, and under the coordination of the UN Theme Group on Energy and Environment, the Ministry of Commerce (MOFCOM) and the Office of National Climate Change Coordination Committee at the National Development and Reform Commission (NCCCC/NDRC). Yellow river is selected as the case study area. The case study of the Yellow River basin regarding Climate Change Impact and Water Resources Assessment will identify the water resources situation, development strategies and policies etc. of the river basin, provide suggestions of approaches and methodologies, and help to build effective indicator system for the Yellow River basin and adapting the river basin management to climate change.

Continue supporting the Flood Forecasting and Warning system, and Flood design as contribution to DRH programme;

2 FUTURE ACTIVITIES

2.1 Activities planned to until December 2010

The National Committee will continue and pay high attention for regional (and international) cooperation under IHP framework.

2.2 Activities foreseen for 2010-2011

Projects related to IHP-VII themes will be continuously supported by the Ministry of Water Resources through IHP national Committee. IHP national committee will continue to encourage scientific and technical symposia and workshops. Meanwhile, initiatives for IHP-VIII themes will be encouraged by the National Committee. Cooperation among the Southeast Asia and the Pacific will be top priority. In summary, the activities will include (but not only) as below:

- Annual IHP national committee meeting shall be held in 2011. The objective is to strengthen participation from members and cooperation between them. Initiative of participation and supporting IHP activities shall be highlighted and discussed.
- Continue to implement collaborative researches project with IRTCES on erosion and sedimentation.
- Continue researching and collaboration on climate change impact on the hydrological cycle and water resources following the theme of IHP Phase VII.
- Encourage and initiate project following the new themes of Phase VIII, which will focus on water scarcity and environmental issues.
- Further continue collaborations with international counterparties (e.g. Switzerland, the Netherlands,) to promote and develop integrated water management concepts from different perspectives such as risk management (Swiss), water quality (NL) and environmental concerns.
- Continue collaboration with USA (and UK) on hydrometric technical development.
- Cooperate with regional IHP national committees to develop a development strategy on Small Hydropower
- Participate in national planning on water resources management, hydrological professional development
- Participate in national rural drinking water planning and national drinking water sources area protection planning
- Participate in national rural drinking water safety evaluation and planning, continue developing water quality protection technology
- Providing training course for participants from Mekong river basin member countries on flood forecasting technology
- Other activities that will be organized at national/local (or basin-wide) levels by the committee members

2.3 Activities envisaged for the long term

China IHP National Committee will continue contributions to IHP activities, especially, may host RSC meeting/workshops/conferences, or join co-team for regional and international cooperation. In the phase IHP-VII and the coming new phase of IHP-VIII, some working groups will be

established for more cooperation activities. The committee will also promote and encourage young scientists to be actively involved in IHP work at national and international level.

Furthermore, according to the current increasing role of IHP China in regional and international environment/projects/collaborations, it seems necessary to further promote IHP at a broader platform. Thus, the secretariat will propose to the committee to further promote IHP to gain more public attention and attract more participation from scientists and professionals from research institutions, in addition to the governmental organizations.

**REPORT OF THE
INDONESIAN IHP NATIONAL COMMITTEE
HANOI, VIETNAM
8 – 12 NOVEMBER 2010**

1. ACTIVITIES UNDERTAKEN IN THE PERIOD OCTOBER 2009 – OCTOBER 2010

1.1 Meetings of the IHP National Committee

The organizational structure of the Indonesian National Committee for IHP consist of a Chairman, a Vice Chairman, two Secretaries, and 14 members from vrious research institutes, universities and sectoral-departments. These institutes consist of the Indonesian Institute of Sciences (LIPI), University of Indonesia, Bogor Institute of Agriculture, Bureau of Meteorology, Ministry of Public Works, Agriculture, and Forestry.

The composition of the National Committee is:

Chairman : Hery Harjono
Vice Chairman : Arie Setiadi
Secretary I : Gadis Sri Haryani
Secretary II : Deddy Setia Permana

Members:

1. Dr. H. Arief Rachman	Ministry of National Education
2. P.E. Hehanussa	Indonesian Institute of Sciences (LIPI)
3. Hidayat Pawitan	Bogor Agriculture Institute (IPB)
4. Danaryanto	Ministry of Energy and Mineral Resources
5. Satriyo Hadipurwo	Ministry of Energy and Mineral Resources
6. Sudarto Notosiswoyo	Technology Institute of Bandung (ITB)
7. Endro Santoso	Bureau of Meteorology and Geophysics
8. Bogie Soedjatmiko	Indonesian Institute of Sciences (LIPI)
9. Igna Hadi Suparyanto	Indonesian Institute of Sciences (LIPI)
10. Edi Iswanto Wiloso	Indonesian Institute of Sciences (LIPI)
11. Indreswari Guritno	University of Indonesia (UI)
12. Istiqlal Amien	Ministry of Agriculture
13. Imam Anshori	Ministry of Public Works
14. Yudha Mediawan	Ministry of Public Works

The committee hold bimonthly coordination meetings and in additional several technical meetings as needed for the planning and implementation of seminars and workshops organized under coordination of the committee. The committee routine meetings is attended by the Chairman of the Indonesian Committee for UNESCO and by Program Specialist of the UNESCO Jakarta Office. Members of the national committee through regular meetings distribute informations gathered during the meeting as well as report to the meeting hydrological and related activities in their organizations.

The mailing address is as follows :

Dr. Gadis Sri Haryani
Indonesian National Committee for IHP
Research Centre for Limnology LIPI
Indonesian Institute of Sciences

Cibinong, 16911, INDONESIA
E-mail: gadis@limnologi.lipi.go.id

And/cc to

Bureau of Science and Technology Cooperation and Promotion, the
Indonesian Institute of Sciences (LIPI)
Jln. Gatot Subroto No. 10, Jakarta, 12710, INDONESIA
Telp.: 62-21-5225711/5251834
e-mail: bkpi@lipi.go.id

1.1.1 Status of IHP-VII activities

Theme 1. **Adapting to impacts of global changes on river basins and aquifer systems**

1. Global change and feedback mechanism of hydrological processes in stressed systems
2. Climate change impacts on hydrological cycle and consequent impact on water resources
3. Hydro hazards, hydrological extremes and water related disasters
 - Research Center for Water Resources conducted Development of Underground Dam Technology & Aquifer Storage and Recovery (ASR)
 - Research Center for Water Resources conducted Mitigation of Drought as an Impact of Climate Change
4. Managing groundwater systems' response to global changes
5. Global change and climate variability in arid and semi arid region

Theme 2. **Strengthening water governance for sustainability**

- Cultural, societal and scientific responses to the crisis in water governance
- Capacity dev., for improved governance; enhanced legislation for wise stewardship of water resources
- Governance strategies that enhance affordability and assure financing
- Managing water as shared responsibility across geographical and social boundaries
 - Research Center for Water Resources conducted Research of the Water Resources Optimization and Potential at Pawonsari-Balonrejo, in 2009
- Addressing the water energy nexus in basin wide water resources

Theme 3. **Ecohydrology for sustainability**

1. Ecological measures to protect and remediate catchment processes
 - Research Center for Limnology-Indonesian Institute of Sciences (LIPI) conduct Ecohydrology Study For Jratunseluna's Watershed Environment Management, 2009
2. Improving ecosystem quality and services by combining structural solutions with ecological biotech.
3. Risk based environmental management and accounting
4. Groundwater-dependent identification, inventory and assessment ecosystems
 - Research Center for Water Resources conducted Study of Aquifer Storage and Recovery (ASR) Applied Technology for the Prevention of Groundwater Crisis, and Citarum River Basin Flood Control Technology
5. Global change and climate variability in arid and semi arid region

Theme 4. **Water and life support system**

1. Protecting water quality for sustainable livelihoods and poverty alleviation
2. Augmenting scarce water resources, especially in small island developing states
3. Achieving sustainable urban water management
4. Achieving sustainable rural water management

Theme 5. **Water education for sustainable development**

1. Tertiary water education and professional development
2. Vocational education and training of water technicians
3. Water education in school
4. Water education for communities, stakeholders and mass-media professional

1.1.2 Decisions regarding contribution to/participation in IHP-VII

1.2 Activities at national level in the framework of the IHP

1.2.1 National/local scientific and technical meetings

1.2.2 Participation in IHP Steering Committees/Working Groups

Annual meetings of the Regional Steering Committee for IHP in the Asia Pacific region are held in rotational base locations. Indonesia has always participated in these yearly meetings.

1.2.3 Research/applied projects supported or sponsored

1.2.4 Collaboration with other national and international organizations and/or programmes

1.2.5 Other initiatives

1.3 Educational and training courses

- Hadiid Agita Rustini & Yudha Mediawan participated in The 19th IHP Training Course on ' Water Resources and Water-Related Disasters under Climate Change-Prediction, Impact Assessment and Adaptation', 29 November-12 December 2009 Kyoto, Japan
- Reliana Lumban Toruan participated in Advanced Study Course on 'Ecohydrology and Biotechnology for Sustainable Integrated Water Resources Management in HELP and Ecohydrology Basins', Poland, 13 – 22 September 2010

1.3.1 Contribution to IHP courses

1.3.2 Organization of specific courses

1.3.3 Participation in IHP courses

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

1.5 Publications

1.6 Participation in international scientific meetings

- Prof. Peter Hehanussa presented a paper entitled 'A Pristine High-Elevated Ancient Lake Complex, Lake Paniai, Papua, Indonesia' in 13th World Lake Conference, Wuhan China, November 2009

- Dr. Agung Bagiawan presented a paper entitled 'Impact of climate change and land use on Hydrological and Water Resources Management Characteristics Change', in International Conference on Hydrology and Disaster Management, Wuhan, China, 2-6 November 2009
- Dr. Gadis Sri Haryani presented a paper entitled 'Asia Pacific Center for Ecohydrology (APCE): An Emerging Ecohydrological Platform Towards Adaptive and Integrated River Basin Management' , on GCOE-ARS Workshop on January 12 – 14, 2010, Kyoto, Japan

1.7 Meetings hosted by the country

1.7.1 Participation in meetings abroad

- Prof. Hery Harjono, Chairman of Indonesia IHP National Committee, attended 19th IGC_IHP Meeting in Paris, 5-9 July 2010
- Prof. Peter Hehanussa, Dr. Gadis Sri Haryani & Dr. Agung Bagiawan participated UNESCO IHP 17th RSC Meeting for Southeast Asia & The Pacific (SEAP), Wuhan, China. in conjunction with a International conference on 'Hydrology and Disaster Management' took place in Wuhan, China (2 -6 November 2009).

1.8 Other activities at regional level

1.8.1 Institutional relations/cooperation

1.8.2 Completed and ongoing scientific projects

2. FUTURE ACTIVITIES

2.1 Activities planned until December 2010

- Participation in IHP-Training course

2.2 Activities foreseen for 2011-2012

- Asia Pacific Centre for Ecohydrology, Indonesian National Committee for IHP-UNESCO, Indonesian Institute of Sciences, Indonesian National Committee of Indonesia, will organize National Symposium on Ecohydrology "Integrating Ecohydrological Principles for Good Water Governance" on March 2011 in Jakarta, Indonesia
- Participation in IHP-RSC meeting Asian Pacific FRIEND
- Participation in IHP-Training course at Nagoya University

2.3 Activities envisaged in the long term

- Participation in IHP-RSC activities and IHP Intergovernmental Council meetings.

**NATIONAL REPORT ON IHP-RELATED ACTIVITIES
(20101111 version)**

Japan

Various activities of UNESCO have been implemented under the support of the Japanese National Commission for UNESCO with financial contribution in the form of Fund-in-Trust (JFIT) for the Promotion of Science for the Sustainable Development. The following summary includes the activities of Japanese National Committee for the International Hydrological Programme (IHP) of UNESCO undertaken during the period of November 2009 to November 2010, including a number of important events/items before and after it.

1. ACTIVITIES UNDERTAKEN IN THE PERIOD NOVEMBER 2009– NOVEMBER 2010

1.1 Meetings of the IHP National Committee

1.1.1 Decisions regarding the composition of the IHP National Committee

The composition of the Japanese IHP National Committee is as follows:

Members of the IHP National Committee since June 2010.

	Name	Position	E-mail
Chair *	TAKARA Kaoru	Prof., DPRI, Kyoto Univ.	takara.kaoru.7v@kyoto-u.ac.jp
*	NAKANISHI Hisae	Prof., Doshisha Univ.	hinakani@mail.doshisha.ac.jp
*	YAMAGATA Toshio	Prof., Univ. of Tokyo	yamagata@eps.s.u-tokyo.ac.jp
	UYEDA Hiroshi	Prof., HyARC, Nagoya Univ.	uyeda@rain.hyarc.nagoya-u.ac.jp
	OKI Taikan	Prof., IIS, Univ. of Tokyo	taikan@iis.u-tokyo.ac.jp
	KAWAMURA Akira	Prof., Tokyo Metropolitan Univ.	kawamura@c.metro-u.ac.jp
	KOIKE Toshio	Prof., Univ. of Tokyo	tkoike@hydra.t.u-tokyo.ac.jp
	SHIMIZU Yoshihisa	Prof., Kyoto Univ.	shimizu@biwa.eqc.kyoto-u.ac.jp
	TACHIKAWA Yasuto	Assoc. Prof., Kyoto Univ.	tachikawa@hywr.kuciv.kyoto-u.ac.jp
	TANAKA Shigenobu	Deputy Director, ICHARM	s_tanaka@pwri.go.jp
	TANAKA Tadashi	Prof. Emeritus, Univ. of Tsukuba	tadashi@geoenv.tsukuba.ac.jp
	TANIGUCHI Makoto	Prof., RIHN	makoto@chikyu.ac.jp
	NAKAYAMA Mikiyasu	Prof., Univ. of Tokyo	nakayama@k.u-tokyo.ac.jp
	HORI Tomoharu	Prof., WRRRC, DPRI, Kyoto Univ.	hori.tomoharu.3w@kyoto-u.ac.jp
	WATANABE Tsugihiko	Prof., RIHN	nabe@chikyu.ac.jp

Notes:

- * Member of the Japanese National Commission for UNESCO;
- ICARM: The International Centre for Water Hazard and Risk Management (UNESCO Category II Centre);
- RIHN: Research Institute for Humanity and Nature;
- HyARC: Hydrospheric Atmospheric Research Center, Nagoya University;
- IIS: Institute for Industrial Sciences, University of Tokyo;
- DPRI: Disaster Prevention Research Institute, Kyoto University; and
- WRRRC: Water Resources Research Center, DPRI.

Secretariat of the Japanese National Committee for IHP, UNESCO:

c/o Mr. MINAMI Tetsuhito
 Japanese National Commission for UNESCO,
 Ministry of Education, Culture, Sports, Science and Technology (MEXT)
 3-2-2 Kasumigaseki, Chiyoda-ku, Tokyo 100-8959, Japan
 E-mail: "Natcom Japan" <jpNatcom@mext.go.jp>
 TEL: +81-(0)3-6734-2585 / FAX: +81-(0)3-6734-3679
http://flood.dpri.kyoto-u.ac.jp/ihp_japan/index.htm

1.1.2 Status of IHP-VII activities

Various activities relating to IHP-VII (2008-2013) Themes have been implemented since 2008 as follows.

THEME 1: Adapting to the Impacts of Global Changes on River Basins and Aquifer Systems

FA 1.1 – Global changes and feedback mechanisms in hydrological processes in stressed systems

- Global water cycle assessment: IHP contribution to GEOSS [Univ. of Tokyo]
- Interaction between hydrological cycle and physical/biochemical oceanography by cooperation between IHP and IOC [JAMSTEC, Univ. of Tokyo, Kyoto Univ.]

FA 1.2 – Climate change impacts on the hydrological cycle and consequent impact on water resources

- Climate change research focusing on impacts on water-related disaster risk using “Earth Simulator”: MEXT Kakushin Project (2007-2011).
- Global Earth Observation System of Systems (GEOSS) and Asian Water Cycle Initiative (AWCI) 3rd GEOSS Asia-Pacific Symposium, Kyoto, Japan, 2-4 February 2009:
http://www2.restec.or.jp/geoss_090415/index.html
- GWSP-Asia: HydroChange2008 Conference, Kyoto, Japan, 1-3 October 2008:
http://www.gwsp.org/gwsp_asia.html
- Groundwater research such as GRAPHIC.
- GWES (Groundwater in Emergency Situations).
- Collaboration with Mongolian UNESCO Chair on Groundwater.
- Second Phase of PUB project in cooperation with IAHS [Kyoto Univ.].

FA 1.3 – Hydro-hazards, hydrological extremes and water-related disasters

- A Global Center of Excellence (GCOE) Program at Kyoto University “Sustainability/Survivability Science for a Resilient Society Adaptable to Extreme Weather Conditions” adopted for 2009-2014
- A new task force on frequency analysis for non-stationary hydrological time series in ICHARM initiated since 2009
- Improving the predictability of hydrological extremes in ungaged or poorly gaged basins using new measurement technology and promoting the local use of satellite information for improved river basin management in partnership with GEOSS
- Case studies on human security and water-related disasters
- Best practices on water risk management
- Provide ICHARM coordination as focal point for possible networking activities
- Flood forecasting and management [MEXT Kakushin Program, ICHARM, PWRI, IFNet]

FA 1.4 – Managing groundwater systems’ response to global changes

- Groundwater resources assessment under the pressure of humanity and climate change (GRAPHIC) [Research Institute for Humanity and Nature (RIHN)]

FA 1.5 – Global change and climate variability in arid and semi-arid regions

- Hydrological and ecological impact assessment of long-term global warming on river basins in the world [Kyoto Univ.]

THEME 2: Strengthening Water Governance for Sustainability

FA 2.1 – Cultural, Societal, and scientific responses to the crises in water governance

- Community-based integrated river basin management as a HELP follow-up [Univ. of Tokyo, Kyoto Univ.]

FA 2.2 – Capacity development for improved governance; enhanced legislation for wise stewardship of water resources*

- Research on “virtual water”
- Collaboration with IHP-LAC for Rio de La Plata Basin Workshops
 - Relative impact evaluation in water resources dynamics and social system with large development in river basins [Kyoto Univ.]

THEME 3: Ecohydrology for Sustainability

FA 3.1 – Ecological measures to protect and remediate catchments process

- Participation in ecohydrology research development
- Effect of forest devastation on water resources and environmental issues [Univ. of Tsukuba, Kyoto Univ., Kyushu Univ., Univ. of Tokyo, Tokyo Univ. of Agriculture and Technology]
- Ecohydrology symposia and sessions at AOGS meetings

FA 3.4 – Groundwater-dependent ecosystems identification, inventory and assessment*

- Frontier of sustainable groundwater management systems based on groundwater flow process in arid/semi-arid region in cooperation with China and Mongolia [Univ. of Tsukuba, Hiroshima Univ., Kumamoto Univ.]

THEME 4: Water and Life Support Systems

FA 4.3 – Achieving sustainable urban water management

- Hydrogeological and sociological survey on development processes of East-Asian cities co-existing with floods [Kyoto Univ.]
- Vulnerability assessment of urban groundwater resources in Asia and Oceania [Geological Survey of Japan]
- New CREST (Core Research for Evolutional Science and Technology) research projects supported by the JST (Japanese Science and Technology Agency) since 2009
- A special UNESCO session at the Rainwater Harvesting Conference was held in Tokyo, Japan, 9 September 2009.

FA 4.4 – Achieving sustainable rural water management*

- Development of a new flood management method utilizing paddies into river management against global warming [National Institute for Rural Engineering (NIRE), Univ. of Tsukuba, Univ. of Tokyo]

THEME 5: Water Education for Sustainable Development

FA 5.1 – Tertiary water education and professional development

FA 5.2 – Vocational education and training of water technicians

FA 5.3 – Water education in schools

FA 5.4 – Water education for communities, stakeholders and mass-media professionals

- Nagoya University Training Courses and a Doctor degree course in Graduate School of Science in cooperation with a number of Japanese universities
- ICHARM Training Programmes and a one-year Master Degree Program on water-related risk management in cooperation with the National Graduate Institute for Policy Studies (GRIPS) supported by JICA.
- Capacity building and education for observation experts for continuous monitoring of terrestrial environments in Asia [Univ. of Tsukuba]

Other regional and cross-cutting themes activities include:

- (1) **Catalogue of Rivers:** The format of the Catalogue of Rivers for Southeast Asia and the Pacific, Vol. 6 was announced at the 15th Session of IHP Regional Steering Committee (RSC) for Southeast Asia and the Pacific (SEAP) in Manila, the Philippines, on 22-23 November 2007. **Japanese contribution to Vo. 6 will be: the Yoshiigawa and other two rivers.** The information of previous five volumes locates at:
http://flood.dpri.kyoto-u.ac.jp/ihp_rsc/riverCatalogue/index.html
- (2) **Asian Pacific FRIEND:** Prof. Takara and Dr. Kobayashi attended the Asian Pacific FRIEND Workshop, Ho Chi Minh City on 5-6 March 2009.
- (3) **Hydrology for Environment, Life and Policy (HELP):** No activities during this period.
- (4) **Prediction in Ungauged Basins (PUB) by IAHS:** Prof. Takeuchi (ICHARM), Dr. Tachikawa (Kyoto Univ.) and others in PUB-Japan attended a PUB meeting held in Chéngdū, China on 7-9 November 2008.
- (5) **International Flood Initiative (IFI), International Sediment Initiative (ISI) and International Programme on Landslides (IPL):** ICHARM is playing a role of the Secretariat of IFI. IFI was launched at a Session organized by UN agencies, ICSU, WFEO and the International Consortium on Landslides (ICL) at the World Conference on Disaster Reduction (WCDR) in Kobe, Japan in January 2005. Since then both IFI and IPL are promoted continuously and actively. IPL also have a linkage with the International Sedimentation Initiative (ISI). Prof. Takara attended ISI Workshop held in Beijing, China on 5-6 November 2008. His colleague attended a Workshop on Sediment Problems and Sediment Management in Asian River Basins co-convened by ICCE, ISI and WASER at IAHS General assembly in September 2009.

1.2 Activities at national level in the framework of the IHP

1.2.1 National/local scientific and technical meetings

- (1) The JFIT Annual Review and Evaluation Meeting on the Proposed Science Sector Activities of UNESCO Office Jakarta for the period 2009-2011 was held in the UNESCO Jakarta Office in May 2009. Two MEXT officers (Ms. Watanabe and Ms. Iwashita) attended. The status and progress of the UNESCO science programmes in the region were reported and evaluated. Jakarta Office explained the IHP-WINGA ASPAC (Water Interoperability Networks for Global Change Adaptation in Asia and Pacific Region) project, which includes four components: RSC activities, IHP Training Course, Flood Prevention and Mitigation Measures in ASPAC region, and Sustainable Water to Improve Tomorrow's Cities Health – Integrated Programme for Asia (SWITCH – IPA). Flood Prevention and Mitigation Measures in ASPAC region includes AP-FRIEND, Flood Forecasting and Warning System and Disaster Reduction Hyperbase (DRH) managed by Prof. Kameda, National Research Institute for Earth Science and Disaster Prevention (NIED).
- (2) IHP Training Course task forth meetings were held twice in Uji (Prof. Uyeda, Prof. Takara, Prof. Kojiri and Dr. Takemon) and in Kyoto (Prof. Uyeda, Prof. Takara) to discuss the organization the 19th Course in Kyoto from 29 November to 11 December 2009, as well as the future plan of the course.
- (3) IHP Training Course task forth meetings were held twice in Kyoto to discuss the organization the 20th Course in Nogoya on 6-20 November 2010, as well as the 20th Anniversary events at Mielparque Kyoto on 14 November and at RIHN on 15-16 November. [Taniguchi, Watanabe, Uyeda, Takara, Hori]
- (4) The 27th IHP National Committee meeting was held at MEXT to discuss various issues relating to the 19th Session of IHP Intergovernmental Council (July 2010) and IHP-VIII (2014-2019) on 24 June 2010.
- (5) Sep. 2010: IHP-DRH Project management meeting (Kyoto & Tokyo) [Arduino, Mori (UNESCO Jakarta), Takara, Kameda]

1.2.2 Participation in IHP Steering Committees/Working Groups

Regional Steering Committee (RSC) for IHP in Southeast Asia and the Pacific (SEAP):

- (1) The 17th RSC was held in Wuhan, China in conjunction with the International Conference “Hydrology and Disaster Management” (H&DM 2009) on 2 to 6 November 2009. The RSC adopted a resolution "Archiving hydrological disaster management/reduction technologies". Dr. Heng Liu (China) was elected as the RSC Chairperson. [Takara, Tanaka]
- (2) IHP Eighth Phase (IHP-VIII) Task Force meeting at UNESCO Headquarters on 20-21 May 2010. [Oki]
- (3) Flood Forecasting and Warning System (FFWS) Workshop in Kuala Lumpur, Malaysia on 24-25 May 2010 [Takara, Kameda]
- (4) The 2nd IHP Flood Project – DRH Implementation Workshop (2nd IHP-DRH Workshop) was held at the occasion of the 5th APHW International Conference in Hanoi on 9 November 2010 [Takara, Kameda, Kobayashi].
- (5) The 18th RSC is held in Hanoi, Vietnam in conjunction with the 5th APHW International Conference on “Hydrological Regime and Water Resources Management in the Context of Climate Change” (HWCC 2010) on 8 to 12 November 2009. [Higashi (MEXT), Takara, Kawamura, Tachikawa]

1.2.3 Research/applied projects supported or sponsored

N/A

1.2.4 Collaboration with other national and international organizations and/or programmes

The Japanese IHP National Committee has been closely collaborating with:

- (1) Some committees in the Science Council of Japan (SCJ),
- (2) The national government and its branches relating to hydrology and water resources administration,
- (3) Nagoya University for IHP Training Courses and Graduate School and other universities and research institutes,
- (4) The Japan Water Forum (JWF),
- (5) World Meteorological Organization (WMO), and
- (6) International NGOs/NPOs such as the International Association of Hydrological Sciences (IAHS), the International Water Resources Association (IWRA) and the International Consortium on Landslides (ICL).

1.2.5 Other initiatives

ICHARM: International Centre for Water Hazard and Risk Management under the auspices of UNESCO was established in Tsukuba, Japan in March 2006, after getting accreditation by the member states of UNESCO at the 33rd General Conference of UNESCO. Dr. Kuniyoshi Takeuchi, the former chairman of the Japanese National Committee for UNESCO-IHP, was assigned as the founding Director of ICHARM. In its inception, ICHARM has been playing core roles in research, training, and information networking activities on water-related disasters at global levels. The activities are expected to contribute in the prevention and reduction of water-related disasters, focusing on flood related disasters at the initial stage. It is important to cooperate with existing UNESCO water Centers such as IHE in the Netherlands, IRTCES in China, HTC in Malaysia and RCUWM in Iran, etc. The outline of ICHARM is as follows.

- 1) Objectives: The objective of the Centre is to function as the world centre of excellence to provide and assist implementation of best practicable strategies to localities, nations, regions and the globe to manage the risk of water related disasters including flood, drought, landslide, debris flow, storm surge, tsunami and water contamination. The Centre conducts research, capacity building and information networking activities in an integrated manner for preventing and mitigating the impacts of water related disasters and thus to achieve sustainable and integrated river basin management.
- 2) Functions:
 - (i) to promote scientific research and to undertake effective capacity-building activities at the institutional and professional levels;
 - (ii) to create and reinforce networks for the exchange of scientific, technical and policy information among institutions and individuals;
 - (iii) to develop and coordinate cooperative research activities, taking advantage particularly of the installed scientific and professional capacity of the IHP networks, WWAP, the IFI/P and relevant programmes of non-governmental organizations, international institutions and networks;
 - (iv) to conduct international training courses for practitioners and researchers on the global level; and
 - (v) to organize knowledge and information transfer activities including international symposia or workshops, and to engage in appropriate awareness-raising activities;
- 3) Structure: The center is established as a part of the Public Works Research Institute (PWRI) and operated under the responsibility of its Chief Executive, with the advice from the Advisory Board. See other information at: <http://www.icharm.pwri.go.jp/html/about/index.html>

The events related to the ICHARM are summarized as below.

- (1) The International Symposium on Flood Defense was held in Toronto, Canada, on 6-8 May 2008.
- (2) The UN/ISDR Comprehensive Tsunami Disaster Prevention Training Course was held at Tsukuba from 2 June to 11 July 2008.
- (3) MoUs were signed with UNESCO-IHE and RCUMW on 9 June 2008 in Paris.
- (4) The International Symposium, "Local Practices of Integrated Flood Risk Management under Changing Natural and Social Conditions" was held in Tokyo, Japan, on 30 September 2008.
- (5) The 2nd International Advisory Board meeting was held in Tsukuba on 1 October 2008.

- (6) The Third International Flood Initiative (IFI) Advisory and Steering Committees meeting in Tsukuba, Japan, on 2 October 2008.
- (7) A seminar on the Integrated Flood Analysis System (IFAS) was held at ICHARM on 3-8 October 2008.
- (8) The 5th Flood Hazard Mapping training course (a JICA training program) was held at ICHARM from 28 October to 28 November 2008.
- (9) The 3rd Follow-up Seminar of the Flood Hazard Mapping training course was held in Manila, Philippines, on 17-19 February 2009.
- (10) ICHARM served as the topic coordinator for the “Managing Disasters” session at the 5th World Water Forum on 16-22 March 2009 in Istanbul, Turkey.
- (11) A research collaboration agreement was signed with Yamanashi University on 27 March 2009.
- (12) An open house of ICHARM was held on 14 April 2009 at ICHARM.
- (13) A seminar entitled “Testing and Demonstrating a Technology to Cope with Debris Flows in Mountainous Regions” was held in Manila, Philippines, on 12 June 2009.
- (14) IFAS training workshops were held in Tsukuba, Japan, on 3-7 August 2009 and in Kathmandu, Nepal, on 27-28 August 2009.
- (15) A “Training Workshop on Risk Assessment and Flood Mitigation Strategies” was held in Kuala Lumpur, Malaysia, on 10-13 August 2009.
- (16) ICHARM Director participated in the 3rd World Climate Conference in Geneva, Switzerland on 31 August 2009.
- (17) The “Local Disaster Management Plan with Flood Hazard Map” training course (a JICA training program) was held at ICHARM on 9-27 November 2009.
- (18) An agreement on a joint regional technical assistance project was signed with ADB on 13 November 2009. As a part of this project, a local workshop was held in Indonesia on 2-4 March 2010 to implement IFAS in the Solo River basin.
- (19) ICHARM has conducted a one-year master’s program, “Water-related Disaster Management Course of Disaster Management Policy Program,” since 2007 in collaboration with JICA and GRIPS. Seven students in the class of 2008 graduated on 16 September 2009 with a master’s degree in disaster management. The class of 2009 started the program on 6 October 2009 with 13 students.
- (20) An MoU was signed with the International Research and Training Center on Erosion and Sedimentation (IRTCES) on 17 September 2009 at ICHARM.
- (21) The new doctoral program in disaster management started its admission process in December 2009 in collaboration with GRIPS.
- (22) The ICHARM Quick Reports on Floods 2009 was held at ICHARM on 10 December 2009.
- (23) An academic research agreement was signed on 25 January 2010 with the Disaster Prevention Research Institute (DPRI) of Kyoto University at DPRI.
- (24) An international workshop on sustainable tsunami countermeasures was held in Banda Aceh, Indonesia, on 9-11 March 2010.
- (25) The first announcement of the 5th International Conference on Flood Management scheduled to be held on 27-29 September 2011 was made on 7 May 2010.
- (26) The IRDR (Integrated Research on Disaster Risk) subcommittee has been established in the Science Council of Japan as a domestic committee of Japan and ICHARM Director Takeuchi has been elected as the subcommittee chair. The 2nd subcommittee meeting was held on 24 May 2010.
- (27) A preliminary MoU was signed with the HidroEx newly set up in Brazil on 25 May 2010 at ICHARM.

1.3 Educational and training courses

1.3.1 Contribution to IHP courses

Eighteen UNESCO IHP Nagoya Training Courses have been held since 1991 every year. Topics of the course were relevant to Water Resources for Sustainable Development, Hydrology and Water Resources under Vulnerable Environment, and Water Interactions (Systems at Risk and Social Challenges). About ten participants from East and Southeast Asian countries took lectures and practices every year in the training course. A few students of IHP special program for foreign students in Nagoya University (see (1) below) participated in the course every year. In late years, some of trainees are participating in the course at their own expenses. The training course is expected to continue due to strong requests of East and Southeast Asian countries. Activities of the UNESCO IHP

Nagoya Training Course are uploaded on the website, <http://www.ihpnagoyaforum.org/>. Based on these experiences, the training course will be further renewed to fit to the themes of IHP Phase VII (2008-2013).

(1) Doctor of Science degree on atmospheric and hydrospheric science:

The Graduate School of Science and the Graduate School of Environmental Studies of Nagoya University accepts students from Asia and the Pacific region, with the financial support from the Ministry of Education, Culture, Sports, Science and Technology of Japan (MEXT).

(2) IHP Training Courses:

The Hydrospheric Atmospheric Research Center (HyARC) of Nagoya University offers IHP Training Courses for both foreign students of Graduate School of Science, Nagoya University and trainees chosen by UNESCO Regional Science Bureau for Asia and the Pacific in Jakarta. The training courses are financed by the Japanese Fund-in-Trust (JFIT) for IHP.

In 2009, UNESCO Office, Jakarta in collaboration with Nagoya University and Kyoto University has successfully organized the 19th IHP Training Course with the theme "Water Resources and Water-Related Disasters under Climate Change -Prediction, Impact Assessment and Adaptation-". The course consists of a series of lectures, practical sessions and technical visits, which was held mainly at the Disaster Prevention Research Institute (DPRI), Kyoto University from 29 November to 12 December 2009. Two training Course lectures were broadcasted through Internet from DPRI to some countries in the region such as Indonesia, The Philippines, Malaysia and Nepal.

In 2010, the 20th IHP Training Course on "Groundwater as a key for adaption to changing climate and society" provides e-learning opportunities with interactive sessions. The training course is held in Japan (Nagoya) from 7 to 20 November 2010. Participants are able to follow the lectures with two possible connections. (1) **Through Video Conference:** In collaboration with SOI-Asia and CONNECT-Asia, UNESCO Office Jakarta broadcasts the whole training courses in numerous video conference spots in the region. This option offers good connection equipped with Video Conference facilities for convenient lectures and interactive sessions. Registration can be done through the CONNECT-Asia website (www.connect-asia.org). UNESCO Office Jakarta can inform through an email of the procedures and the nearest Video Conference spot. (2) **Through Point-to-Point Connection:** Point-to-point connection can be offered, with a web-seminar technology that allows participants to follow the lectures directly from their computer. This option also offers interactive session so that participants may response during the discussion session through text message, audio, and audio-video, depending on the facilities the participant has in his/her computer. However, the connections available for this option are only limited to **100 connections**.

1.3.2 Organization of specific courses

ICHARM has been providing a training course on flood hazard mapping (5 weeks every year) since 2004. In November 2007, 16 trainees participated from 8 countries in Asia Pacific region.

ICHARM also has been conducting a one-year master's program, "Water-related Disaster Management Course of Disaster Management Policy Program," since 2007 in collaboration with JICA and the National Graduate Research Institute for Policy Studies (GRIPS). Seven students in the class of 2008 graduated on 16 September 2009 with a master's degree in disaster management. The class of 2009 started the program on 6 October 2009 with 13 students. The new doctoral program in disaster management started its admission process in December 2009 in collaboration with GRIPS.

(1) The 3rd ICHARM Advisory Board was held on 29 September 2010 in Tsukuba.

(2) ICHARM has launched Ph.D. course in Disaster Management on 4 October 2010.

1.3.3 Participation in IHP courses

N/A

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

- (1) Prof. Takara visited UNESCO-IHE on 2 June 2009, giving a lecture "Water-Related Disasters in Asia and Pacific Regions" at Lunch Seminar.
- (2) International Symposium "Water, Cultural Diversity and Global Environmental Change: Emerging Trends, Sustainable Futures?" was held at the Research Institute for Humanity and Nature (RIHN), Kyoto on 1-3 October 2009, co-organized by RIHN, UNESCO-IHP and UNU-IAS. Open Symposium for the general public was held at Kyoto International Conference Hall on 2 October 2009. The former UNESCO-IHE Rector Dr. Richard Meganck attended this international symposium as Keynote Speaker and Panelist. This symposium is also linked with UNESCO-MAB. [Watanabe, Takara, Nakayama]
- (3) Former UNESCO-IHE Rector Richard Meganck visited Kyoto University President Hiroshi Matsumoto on 2 October 2009 to discuss future cooperation between UNESCO-IHE and Kyoto University. [Takara]

1.5 Publications

1. «For the Sustainable Groundwater Resources Management: Through the UNESCO Chair in Mongolia» -2007 University Student Exchange Programme-, Published by Prof. Tadashi Tanaka, Terrestrial Environmental Research Center (TERC), the University of Tsukuba, March 2008.
2. «For the Sustainable Groundwater Resources Management: Through the Japanese Activities on Countermeasures for the Remediation of Public Hazards» -2008 University Student Exchange Programme-, (Eds.) Maki Tsujimura and Tadashi Tanaka, Terrestrial Environmental Research Center (TERC), the University of Tsukuba, October 2008.
3. «UNESCO Chair Workshop on Sustainable Groundwater Management in Arid and Semi-arid Regions» Proceedings, Institute of Geo-ecology, MAS, Ulaanbaatar, Mongolia, 1 October 2008, (Eds.) Tadashi Tanaka, Ramasamy Jayakumar and Badamgarav Erdenechimeg, IHP VII Technical Document in Hydrology, No. 1, UNESCO Office Beijing, 64 pp., 2009.
4. «Satellite Remote Sensing of Atmospheric Constituents» -The Textbook for 18th IHP Training Course in 2008-, Hydrospheric Atmospheric Research Center, Nagoya University and United Nations Educational Scientific, November 2008.
5. «IWRM Guidelines at River Basin Level» Part 1: Principles, UNESCO-IHP, WWAP and NARBO, 24 pp., ISBN: 978-92-3-104100-6.
6. «IWRM Guidelines at River Basin Level» Part 2-1: The Guidelines for IWRM Coordination, UNESCO-IHP, WWAP and NARBO, 173 pp., ISBN: 978-92-3-104101-3.
7. «IWRM Guidelines at River Basin Level» Part 2-2: The Guidelines for Flood Management, UNESCO-IHP, WWAP and NARBO, 76 pp., ISBN: 978-92-3-104102-0.
8. «IWRM Guidelines at River Basin Level» Part 2-3: Invitation to IWRM for Irrigation Practitioners, UNESCO-IHP, WWAP and NARBO.

1.6 Participation in international scientific meetings

1.6.1 Meetings hosted by the country

- (1) HydroChange 2008 "Hydrological Changes and Managements from Headwater to the Ocean" was held in Kyoto, 1-3 October 2008 [Dr. Taniguchi (RIHN)].
- (2) IAH (International Association of Hydrogeologists) meeting in Toyama, Japan in October 2008 including GRAPHIC discussion [Dr. Taniguchi (RIHN)].
- (3) The 1st World Landslide Forum was held at UNU, Tokyo on 18-21 November 2008. ICHARM and other UNESCO-related organizations (ICHARM, Ritsumeikan Univ. and UNU) attended it as well as a pre-event on 17 November 2008. [H. Ooe (MOFA), J. Watanabe (MEXT), Takeuchi, Takara]

- (4) Japan is managing PUB (Prediction in Ungaged Basins) activities of IAHS. Asian PUB is developing quite well under Dr. Yasuto Tachikawa's initiative. Domestic PUB meetings were held in March 2009.
- (5) A Post-GAME project, MAHASRI led by Dr. Jun Matsumoto (Univ. of Tokyo) is now activated with many participants from Asian countries. They are collaborating with IHP FRIEND as well as with PUB.
- (6) Asian Water Cycle Symposium. See further at <http://monsoon.t.u-tokyo.ac.jp/AWCI/>.
- (7) GWSP-Asia (Global Water System Project) Working Group activities includes discussion on data collection and future research direction [<http://www.chikyu.ac.jp/USE/GWSP/GWSPasia.htm>; Dr. Makoto Taniguchi (RIHN)].
- (8) International Symposium "Water, Cultural Diversity and Global Environmental Change: Emerging Trends, Sustainable Futures?" was held at the Research Institute for Humanity and Nature (RIHN), Kyoto on 1-3 October 2009, co-organized by RIHN, UNESCO-IHP and UNU-IAS. [Watanabe, Takara, Nakayama]
- (9) UNESCO Chair Workshop on International Strategy for Sustainable Groundwater Management: Transboundary Aquifers and Integrated Watershed Management was held at the University of Tsukuba, Japan on 6 October 2009. The representatives of UNESCO Chair in Mongolia and Mr. Chusei Yamada, Special Assistant to the Ministry of Foreign Affairs (Former Special Rapporteur on Shared Natural Resources of the International Law Commission) attended. [Tadashi Tanaka, Takeuchi, Takara]
- (10) The 9th IIASA-DPRI Forum on Integrated Disaster Risk Management in Kyoto, 12-16 October 2009. During this conference, there was DRH Consortium Symposium on 12 and 15 October 2009. Collaboration between DRH and IHP is discussed and approved. [Takara]
- (11) The IWRA (International Water Resources Association) International Symposium and Experts Meeting on Integrated River Basin Management in Monsoon Asia was held at the University of Tokyo on 14 and 15 December 2009, with a financial support by the River Fund. This meeting was jointly organized with the GEOSS-AWCI; other co-organizers were UNESCO-IHP, JSCE, IAHR and IAHS. [Takahasi, Takeuchi, Musiake, Koike, Takara, Nakayama, Oki]

1.6.2 Participation in meetings abroad

Japan has played important roles in the IHP Intergovernmental Council (IGC) as a member. In particular, Prof. Kuniyoshi Takeuchi had been the Chairperson of the Council and Bureau of IHP from 1998 to 2000 then served as Vice Chairperson (2000-2002). Prof. Takara as Vice Chairperson for 2008-2010.

Japan participated in the establishment of the Regional Steering Committee (RSC) for Southeast Asia and the Pacific in 1993. The first RSC chairperson was Prof. Yutaka Takahasi (Univ. of Tokyo), who used to be the Vice Chairperson of the IGC (1990-1991) elected from the Group IV, Asia and the Pacific. Since the establishment of RSC, at least a couple of Japanese National IHP Committee members have attended and participated actively in all of the annual meetings of the RSC. Prof. Takeuchi had served as the RSC Secretary (1993-1999) and the Chairman of the Technical Subcommittee (TSC) for Asian Pacific FRIEND (APF) Phase I (1997-2001) in the framework of the RSC, while Prof. Takara is playing a role of the RSC Secretary (1999-), and a member of TSC-APF Phases I (1997-2001) and II (2002-).

- (1) The Second Session of the Global Platform for Disaster Risk Reduction, Centre Internationale de Conférences (CICG), Geneva, Switzerland, 16-19 June 2009. ICHARM organized a special event "Charting Global Agenda for water-related Disaster Risk Reduction" on 19 June. [Takeuchi, Takara]
- (2) IHP National Committee's Meeting held at RCUWM in Tehran, Iran on 27-28 July 2009. Prof. Takara reported the activities of RSC in Southeast Asia, of Japanese IHP National Committee, and of ICHARM. The Meeting decided to initiate some action for launching International Drought Initiative (IDI).
- (3) Final Conference COST Action C22 Paris 2009 "Road Map Towards A Flood Resilient Urban Environment" at UNESCO Headquarters, 25-27 November 2009. Prof. Takara was invited to give a keynote speech "Flood Resilience in the Mega Cities in Asia" on 27 November.
- (4) The 44th IHP Bureau meeting at UNESCO-IHE, Delft, The Netherlands on 3-5 June 2009. [Takara]

- (5) FRIEND Database Harmonization Workshop at UNESCO Headquarters, 7-8 June 2010. Dr. Hidetaka Chikamori (Okayama Univ.) attended as the representative of AP-FRIEND.
- (6) The 10th IHP-IAHS George Kovac Colloquium “Hydrocomplexity: New Tools for Solving Wicked Water Problems” at UNESCO Headquarters, 2-3 July 2010. [Nakajo]
- (7) The 19th Session of the IHP Intergovernmental Council at UNESCO Headquarters, 5-9 July 2010. [Takara, Takeuchi and others]
- (8) The 5th International Conference of Asia Pacific Association of Hydrology and Water Resources (APHW2010) was held in Hanoi on 8-10 November 2010. IHP-DRH and MAHASRI Sessions were also convened.

1.7 Other activities at regional level

1.7.1 Institutional relations/cooperation

N/A

1.7.2 Completed and ongoing scientific projects

N/A

2. FUTURE ACTIVITIES

2.1 Activities planned until December 2011

- (1) UNESCO Chair in Mongolia 2010-2011
- (2) The Third Session of the Global Platform for Disaster Risk Reduction, Centre Internationale de Conférences (CICG), Geneva, Switzerland, 8-13 May 2011.
- (3) The 5th International Symposium on Flood Defense: Tsukuba, Japan on 27-29 September 2011.
- (4) The Second World Landslide Forum to be held at FAO Headquarters in Rome, Italy on 3-9 October 2011.
- (5) The 19th Session of the IHP Regional Steering Committee (RSC) for Southeast Asia and the Pacific will be held in Kyoto, Japan in October/November 2011.

2.2 Activities foreseen for 2011 onward

- (1) Participation in RSC-SEAP activities including Asian Pacific FRIEND, the Catalogue of Rivers, IHP-DRH activities.
- (2) The 21st IHP Training Course in Kyoto: “Ecohydrology for sustainability” (to be confirmed) in 2011.
- (3) Implementation of projects related to IHP-VII.
- (4) The 2nd Asia Pacific Water Summit, dates and place T.B.D.
- (5) Research on HELP basins.
- (6) Collaboration with UNESCO-MAB and UNESCO-IOC activities.

2.3 Activities envisaged in the long term

- (1) Participation in IHP-VII projects and RSC activities.
- (2) Information dissemination through a web page of the National Committee.

**The 18th Regional Steering Committee Meeting
for
UNESCO - IHP for Southeast Asia and the Pacific
Hanoi, Vietnam
November 2010**

**Country Report On
IHP Related activities of Lao PDR**

1. Activities undertaken in the period November 2009-October 2010

1.1. Meeting of the IHP National committee:

- 1.1.1. Decision regarding the composition of the IHP National Committee
 - Lao National Committee for UNESCO - IHP still not established, However DMH has collaborated with various line agencies in the country carry out and contribute all activities concerned to the UNESCO – IHP for Southeast Asia and the Pacific as observer.
- 1.1.2. Status of IHP-VII Activities:
 - The activities related to the IHP- VII is ongoing
- 1.1.3. Decision regarding contribution to/ participation in IHP – VII
 - Involve and contribute related activities to IHP - VII

1.2. Activities at national Level in the framework of the IHP

- 1.2.1. National local scientific and technical meeting
 - Organized Technical meeting on Hydro – Meteorology for 17 provinces in the whole country, January 2010
- 1.2.2. Participation in IHP steering committees/working groups
 - Attended the UNESCO-IHP Regional Steering Committee Meeting for Southeast Asia and the Pacific, Wuhan, China, 5 – 6 November 2010
 - Attended the short training course on Early Warning System for Flood Forecasting, organized by ICHARM, Hanoi, Vietnam, 6 – 7 November 2010.
- 1.2.3. Research / applied project supported or sponsored
 - Technical Cooperation Project on Hydro-Meteorology with JICA
- 1.2.4. Collaboration with other national and international organization and / or program
 - Collaborate with Flood Management and Mitigation Program and Information Knowledge Management Program of MRC

- 1.2.5. Other Initiative
- Proposed research project on agro-meteorology in southern part to JICA
 - Proposed project of establishment of early warning system to world bank
 - Implementation of IWRM for some river basin

1.3. Education and Training Courses

- 1.3.1. Contribution to IHP courses
None
- 1.3.2. Organization of specific courses
- Organized national training course on modeling and piloting of MRC's new Mekong flood forecasting system, June 2010
 - Organized national training course on improvement of hydro-meteorological data collection and analysis for 8 northern provinces, July 2010
 - Organized national training course on application of Flash Flood Guidance and its Procedures, September 2010

1.4. Publication

- Published hydro-meteorological year book 2008

1.5. Participation in International Scientific Meeting

- 1.5.1. Meeting hosted by the country
None
- 1.5.2. Participation in meeting abroad
- Attended the 1th Mekong River Commission Summit, April 2010, Hua Hin, Thailand
 - Attended the regional gathering and data handler meeting among lower Mekong countries, May 2010, Phnom Penh, Cambodia
 - Attended the regional training course on discharge measurement and sediment collection along Mekong river, August, 2010, Siem Riep, Cambodia
 - Attended the Typhoon Committee Meeting, September 2010, Macao

1.6. Other activities at Regional level

- 1.6.1. Institutional relation / cooperation
- Cooperate with Asian Disaster Preparedness Center
- 1.6.2. Completed and ongoing scientific projects
- Flood Management and Mitigation Program Phase I will finish at the end of this year and Phase II will be continued next year 2011

2. Future Activities

2.1. Activities planned until/December 2010

- Continue to collaborate with national, regional and international organizations

2.2. Activities foreseen for 2010 – 2011

- Continue to cooperate with UNESCO – IHP for Southeast Asia AND the Pacific
- Continue to cooperate with Typhoon Committee
- Continue to cooperate with Mekong River Commission
- Continue to collaborate with World Meteorological Organization

2.3 Activities envisaged in the long term

None



United Nations
Educational, Scientific and
Cultural Organization



MALAYSIA REPORT

**NATIONAL COMMITTEE FOR
MALAYSIA INTERNATIONAL HYDROLOGICAL PROGRAMME**

**ON
IHP RELATED ACTIVITIES
FOR 17th REGIONAL STEERING COMMITTEE MEETING**

YEAR 2010

Copyright 2010 UNESCO-IHP Malaysia

Prepared by :
Secretariat of UNESCO-IHP Malaysia
Department of Irrigation and Drainage Malaysia
Ampang Kuala Lumpur Malaysia

CONTENT

	PAGE
FOREWORD	2
VISION / MISSION	3
STRATEGIES / GOAL / OBJECTIVE	
CHAPTER 1	4
NATIONAL COMMITTEE	
EXCO MEETING	
WORKING COMMITTEE	
SECRETARIAT	
CHAPTER 2	8
COLLABORATION PROGRAMMES	
THESIS AWARD, WORLD WATER DAY 2010	
WATER RESOURCES AWARENESS PROGRAMME	
CHAPTER 3	11
WORLD WATER DAY 2010	
CHAPTER 4	12
REGIONAL STEERING COMMITTEE MEETING (RSC)	
THE IHP INTERGOVERNMENTAL COUNCIL (IGC Paris)	
CHAPTER 5	14
COURSES ATTENDED BY UNESCO-IHP MALAYSIA PARTNERS	
INTERNATIONAL COOPERATION	
PARTICIPATION IN MEETING ABROAD	
CHAPTER 6	16
FUTURE ACTIVITIES	
ACTIVITIES FORESEEN FOR 2010-2011	
ACTIVITIES ENVISAGED IN THE LONG TERM	
CHAPTER 7	17
OPERATIONAL PROSEDURE – AMENDED 2009	
LIST OF PARTNERS	

This publication may be reproduced in whole or in part and in any form for educational or non-profit purpose without special permission from the copyright holder; provided acknowledgment of the source is made and a copy is sent to the UNESCO-IHP Malaysia. No use of this publication may be made for resale or any other commercial purpose whatsoever without prior permission in writing from UNESCO-IHP Malaysia.

FOREWORD



I am pleased to present herewith the UNESCO-IHP Malaysia Country Report for 2010 which summarises the major activities and achievements of the UNESCO-IHP Malaysia for year 2010.

Realising that water resources management requires commitment from various parties, the UNESCO-IHP Malaysia has taken steps to enhance its water resources awareness and promotion programmes to encompass more target groups.

The theme of World Water Day 2010, "Clean Water for A Healthy World" for instance, highlighted the important role in education, training and public awareness to water resources. The year 2010 also witnessed of success story in Hydrology and Water Resources Thesis Award, UNESCO-IHP Malaysia in creating awareness on hydrology among university students by encouraging them to participate in the award for most practical thesis related to hydrology and water resources. It is hoped that this new approach will create a more enabling environment in creating greater water resources management and hydrology research among young generation.

Instilling a sense of responsibility and obligation for social well being will lead to a more water resources conscientious nation. Members of the public can play an important role in the protection of our water resources and environment. Let the concern for the environment be portrayed in our daily life by observing environmentally friendly practices.

I would like to take this opportunity to record my appreciations to everyone who have given invaluable support and commitment to the programme of UNESCO-IHP Malaysia. These programmes are indeed both important and urgent to ensure a sustainable water resources for healthy environment and an enhanced quality of life.

With Best Wishes

Dato' Ir Hj Ahmad Husaini Sulaiman
Chairman UNESCO IHP Malaysia.



MALAYSIA INTERNATIONAL HYDROLOGICAL PROGRAMME UNESCO's Intergovernmental Scientific Programme In Water Resources

VISION

That the uniqueness, diversity and water resources are conserved towards maintaining health, prosperity, security and well-being for the present and the future.

MISION

To promote, ensure and sustain sound water resources management in the process of nation building

STRATEGIES

- Sustainable Development through Conservation of Water Resources
- Integration of Water Resources Factors in Development Planning
- Promotion of Water Resources Education and Awareness
- Inter-agency and Federal-State Cooperation
- Public participation in water resources management
- Bilateral, Regional and International Cooperation

GOAL

To play a leading role in the promotion of and advancement in hydrological sciences in the country and the region.

OBJECTIVES

- To represent Malaysia on all issues related to the programmes of IHP UNESCO and participate actively in those programmes
- To promote and coordinate research programmes on hydrology and water resources in the country and region
- To promote and coordinate practices on hydrology and water resources
- To promote and coordinate programmes on education, training and public information on hydrology and water resources

CHAPTER 1

NATIONAL COMMITTEE

The Malaysia International Hydrological Programme is the National Programme Committee and UNESCO's state member for intergovernmental scientific cooperative programme in water research, water resources management, education and capacity-building and science programme.

Primary Objectives are :

- to act as a Member States for IHP, cooperating professional and scientific organizations and individual experts can upgrade their knowledge of the water cycle, thereby increasing their capacity to better manage and develop their water resources
- to develop techniques, methodologies and approaches to better define hydrological phenomena
- to improve water resources management
- to act as a catalyst to stimulate cooperation and dialogue in water science and management
- to assess the sustainable development of vulnerable water resources
- to serve as a platform for increasing awareness of global water issues

EXCO MEETING - MEETINGS OF THE IHP NATIONAL COMMITTEE

The programme structure of the Malaysia National Committee for IHP consists of a Chairman, Secretaries, Vice Secretary, 8 Executive Committee and 3 Working Committee from various research institutes, universities and sectoral-departments. These programme EXCO consist of the Department of Irrigation and Drainage Malaysia (DID), UNESCO-Humid Tropics Center Kuala Lumpur (HTC KL), National Commission of UNESCO Malaysia (Nat Com), Ministry of Science and Innovation (MoSTI), University of Technology Malaysia (UTM), National Hydraulic Research Institute Malaysia (NAHRIM), Department of Meteorology (MMD), Mineral and Geoscience Department Malaysia (MGD), Malaysian Nuclear Agency (Nuclear Malaysia).

The Malaysia National Committee for IHP is on the threshold of restructuring its activities based on considerations:

- (i) Retuning the program within the new path of IHP Programme phase VII;
- (ii) Obtaining better participation from key stakeholders.

The present composition of the National Committee is:

Chairman : Dato' Ir Hj Ahmad Husaini Sulaiman
Secretary : Ir Hj Hanapi Mohamad Noor
Vice Secretary : Mohd Nazim Keling

EXCO Members:

- | | |
|------------------------------------|--|
| 1. Dato' Nordin Hamdan | - Department of Irrigation and Drainage |
| 2. Mohammad Zulkifli Mohammed | - National Commission for UNESCO Malaysia |
| 3. Dr Mohamed Roseli Zainal Abidin | - Humid Tropics Center Kuala Lumpur |
| 4. Dr Mohd Zahit Ali | - Ministry of Science, Technology and Innovation |
| 5. Dr Wan Zakaria Wan Mohd Tahir | - Nuclear Agency Malaysia |
| 6. Assc. Prof Dr Ismail Abustan | - Universiti Sains Malaysia |
| 7. Prof Dr Mazlin Mokhtar | - Universiti Kebangsaan Malaysia |
| 8. Mr Rahman Din | - Ministry of Energy, Green Technology & Water |

Working Committee:

- | | |
|-------------------------------|--|
| 1. Prof Dr Zulkifli Yusop | - Universiti Teknologi Malaysia |
| 2. Assc. Prof Dr Wardah Tahir | - Universiti Teknologi MARA |
| 3. Hj Ahmad Jamaluddin Saaban | - National Hydraulic Research Institute Malaysia |
| 4. Jailan Simon | - Meteorologi Malaysia |

The Committee hold bi-monthly coordination meetings and additional several technical meetings as needed for the planning and implementation of seminars and workshops organized under coordination of the committee. The committee routine meetings is attended by the Chairman of the Malaysia Committee for IHP. Members of the national committee through regular meetings distribute information as well as report to the meeting on hydrological and related activities in their organizations.

2010

- 1st EXCO Meeting for 2010 was held on 4 February 2010, Kuala Lumpur.
- 2nd EXCO Meeting 2010 was held on 26 March 2010, Muar, Johore
- Annual Meeting 2010 was held 23 June 2010 UTHM, Batu Pahat Johore
- 3rd EXCO Meeting 2010 was held on 29 July 2010, UKM, Bangi Selangor

BIENIEM HYDROLOGY CONFERENCE

1st BHC was held on 26 June 2010 at Universiti Tun Hussien Onn Johore to replace Annual General Meeting according to UNESCO-IHP Malaysia "Operating Procedure – amended 2009."

UNESCO-IHP MALAYSIA CORPORATE PARTNERSHIPS

To implement its programmes, the UNESCO IHP Malaysia collaborates with an extensive range of public and private partners, in particular with other intergovernmental agencies, practitioner and NGO's programmes.

The partners of UNESCO-IHP Malaysia consist of water related and research institution from various government departments, universities and research institutions. Meetings were periodically held to discuss and implement programme and projects in line with the IHP-VII (2008-2013) UNESCO strategic plan. More projects related to IHP-VII themes be supported by Ministry Natural Resources and Environment and Ministry of Science and Innovation through IHP National Committee.

STANDING COMMITTEE

The UNESCO-IHP Malaysia plans its activities through its Committee, and they are carried out by the three standing committees comprise:

1. Committee on Research under the chairmanship of the Director of Humid Tropics Center, Kuala Lumpur (HTC KL).
2. Committee on Education, Training and Public Information headed by the Universiti Teknologi Malaysia (UTM).
3. Committee on Standardization of Hydrological Practices headed by the Department of Irrigation and Drainage Malaysia (DID).

SECRETARIAT OF THE UNESCO-MALAYSIA NATIONAL COMMITTEE FOR IHP

The Secretariate provides information and facilities needed to perform the programme's activities, and its duties range from the daily responsibilities of maintaining a professional office.

Mohd Nazim Keling
Secretariat of UNESCO-IHP Malaysia
Water Resources Management and Hydrology
Department of Irrigation and Drainage Malaysia
68000 Ampang Kuala Lumpur Malaysia
E-mail: ihp@water.gov.my
<http://www.unesco-ihpmalaysia.org>
Tel : +603 4289 5545 Fax: +603 4256 2645

UNESCO-IHP MALAYSIA'S WEB PORTAL

The UNESCO-IHP Malaysia official portal was developed as a channel to provide programme information to the partners and public. The web base portal which was developed using Content Management System was launched since March 2006 and updated on 2010.

The UNESCO-IHP Malaysia portal had been developed with emphasis on its programme. It had a unique feature of single window access and a gateway connecting it to other UNESCO-IHP Regional Office and UNESCO Water Center.

The UNESCO-IHP Portal can be surfing at URL:<http://www.unesco-ihpmalaysia.org>

CHAPTER 2

COLLABORATION PROGRAMMES

During year 2010, the UNESCO-IHP Malaysia contributed to a number of activities in the context of the IHP Malaysia Partnership collaboration programmes.

STATUS OF IHP-VII ACTIVITIES

Selected activities related to the IHP-VI programme are implemented by and in various departments, universities, and research institutions, members of the IHP National Committee. During the bi-monthly committee meeting, reports of activities from each group were delivered for the knowledge and use by other members and for related IHP-VII activities.

1. A series of workshops on Review of the National Water Resources Study (2000-2050) and Formulation of National Water Resources Policy was held starting February 2010: This is a contribution for IHP VII Theme 2: Integrated Watershed and Aquifer Dynamics.
2. A contribution to IHP VII Theme 5: Water Education and Training: under the flag of the UNESCO-IHP Malaysia, consisting of stakeholders related to water have took place in the annual World Water Day since year 1994. Its main objective is to conduct campaign through training, educating and dialogue, and seminar programs to augment public participation. Annual themes were changed according to the prevailing national needs. Three strategic target groups have been prioritized, namely school children and their teachers, decision makers cum academics, and farmers.
3. Decisions regarding contribution to/participation in IHP-VII

ACTIVITIES AT NATIONAL LEVEL IN THE FRAMEWORK OF THE IHP

National/local scientific and technical meetings under Research Committee has held various activities since 2001 attended by selected prominent local universities academia participants in the committee. The speed of physical developments in the country did put more attention to local single structures while less to its surroundings as well as to upstream and downstream related problems. This was the result of sector or departmental approach where coordination with other disciplines and sectors was forgotten. This mistake was lately recognized and better coordination through understanding of the very close relation between hydrological dynamics and ecological function has been understood. The formalization of HTC KL as a category II UNESCO Water family is being prepared under the IHP programme.

The Water Resources Management and Hydrology, Department of Irrigation and Drainage organized national hydrological training programmes every year. The WRMH is planning to strengthen it through national activities. The Ministry of Nature Resources and Environment (NRE) endorsed and supported the Department of Irrigation and Drainage Malaysia proposal to conduct a Study of Implementation IWRM and Water Resources Policy for Malaysia.

PARTICIPATION IN IHP STEERING COMMITTEES/WORKING GROUPS

Annual meetings of the Regional Steering Committee for IHP in the Asia Pacific region are held in rotational base locations. Malaysia has always participated in these yearly meetings.

The Department of Irrigation and Drainage Malaysia has developed an Integrated Flood and River Monitoring Center (iFFRM) for Klang Valley for forecasting and warning. This centre will be operational the end of year 2010.

National Guidelines of Water Quality Sampling in Malaysia was published by the UNESCO-IHP Malaysia Committee on Hydrological Standardization and Practices on 2007.

EDUCATIONAL AND TRAINING COURSES /PROGRAMME

CONTRIBUTION TO IHP COURSES/PROGRAMME:

The total of 2 National Level UNESCO-IHP Malaysia Training Courses have been held for session 2010. Module of the course were relevant to Water Resources for Sustainable Development, Hydrology and Water Resources under Vulnerable Environment, and Water Interactions (Systems at Risk and Social Challenges).

About 200 participants from primary and secondary students and teachers took hand-on training and practices every year in the training course. 40 students is under IHP special program for facilitators "training for trainees" programme, participated in the course every year. The training course is expected to be continued as part of outreach programme and co-curriculum for students. Based on these experiences, the training course will be further renewed to fit to the themes of IHP Phase VII (2008-2013).

PROGRAMME YEAR 2010

1. Universiti Sains Malaysia Community Programme : 'Rivers Is For Keeps' The Sg. Sedim – Sg. Pinang Expedition : Capacity Building For Early Youngsters, USM P.Pinang, 14th – 17th Jun 2010.

The programme was organised by University Sains Malaysia in collaboration with the Ministry of Education Malaysia, Department of Irrigation and Drainage, National Commission of UNESCO Malaysia and other government agencies. This programme was participated by 40 students from primary schools and facilitated by ten facilitator. New activities which complimented this programme included hydrological expeditions at Sg. Sedim. The Students learned to know various types of local forestry flora and fauna.

The students also visit the Botanical Garden, Penang and also visited water treatment plant at the surrounding area and learned about the important "water for life". This programme received overwhelming response from students and teachers and will be continued in the future activities

2. Sustainable Water Management Awareness for Young Leader was organized by Educational, Training and Public Information Committee programme which involves the participation of nine government agency held at Sekolah Menengah Batu Unjur Klang on 20 October 2010.

The SWAC Programme was developed through the SMART Programme (Start Managing All Resources Today), a programme which cover on how to manage our resources, both natural and man-made. The programme began with a focus on Water Resources Management and educating students with hand-on training to the importance of water resources management and environment.

THE HYDROLOGY THESIS AWARD

UNESCO-IHP Malaysia is creating more awareness on hydrology among university students by encouraging them to participate in the award for best thesis related to hydrology and water resources. The award is sponsored by private sectors as part of their corporate community contribution. Three categories of award consist of PhD Research, Master Research and Post-Graduate Research.

WATER AWARENES RADIO QUIZ AND ESSAY WRITING

In collaboration with National Broadcaster and Local FM Radio the UNESCO-IHP Malaysia organized a Radio Water Awareness Quiz Programme for listeners with 30 minutes radio programme every day, between 3.30 p.m-4.00 p.m on Radio FM. Each week a specific water and environmental topic of public interest would be discussed on three channel of Radio FM with three local languages. The quiz contests were organized one month programme for every Monday to Friday conjunction with World Water Day celebration.

CHAPTER 3

WORLD WATER DAY 2010

With a Theme " Clean Water for a Healthy World ", Malaysia celebrated the World Water Day (WWD) 2010 from 26 to 27 March at Dataran Tanjung Mas, Muar, Johor. This community programme was officiated by the Deputy Prime Minister of Malaysia, High Honourable Tan Sri Muhyiddin Mohd Yassin.

This year celebration, Ministry of Natural Resources and Environment (NRE) and Ministry of Energy, Green Technology and Water (KeTTHA) together with United Nations Educational, Scientific and Cultural Organization-International Hydrological Programme (UNESCO-IHP) have team up with the concerted effort to organise this event. The Department of Irrigation and Drainage (DID) was the lead Government Agency to coordinate the overall event planning and organising.

A number of organisations took part in the celebration namely MWA, UNESCO-IHP Malaysia, KeTTHA, FOMCA, IWK, Malaysian Water Partnership (MyWP), Department of Irrigation and Drainage Malaysia (JPS), Ministry of Health Malaysia (MOH), Department of Environment Malaysia (DOE), National Hydraulic Research Institute of Malaysia (NAHRIM), Ministry of Natural Resources and Environment (NRE), Department of Mineral and Geoscience Malaysia, Ranhill Water Services, SAJ Holdings Arachem Malaysia, Agency Nuclear Malaysia, TCK E-Solutions , Chemical Company of Malaysia and Daztech Solutions.

Some of the programmes conducted throughout the two days event were presentation on Water Quality Monitoring Day, Youth Leader Camp, Radio Quiz including a seminar on "Harmonising Environmental Considerations with Sustainable Development Potential of River Basins".

The High Honorable Deputy Prime Minister as a President of National Commission of UNESCO Malaysia reiterated on the need to ensure that the country's water resources were managed in an integrated and holistic way to ensure sustainability in the supply. He also stressed on the importance to adhere to the quality and standard to ensure the water is safe for consumption.

The High Honorable had called on the Malaysian citizen to voluntarily implement rain harvesting at the level workplaces or homes. Indeed rain harvesting for commercial as well as industrial purposes can be a big savings on their bottom lines. Water bills can come down by as much as 30% and this is significant. At the home environment, rain harvesting will come in handy for toilets flushing, car washing, watering of lawn and flowers as well cleaning the driveway and drains flushing.

CHAPTER 4

REGIONAL STEERING COMMITTEE MEETING (RSC) FOR SOUTH EAST ASIA AND THE PASIFIC

The RSC is a regional intergovernmental cooperation mechanism of UNESCO-IHP Southeast Asia and the Pacific, currently becoming a successful example of regional and global cooperation in hydrology and water resources. RSC convenes one work meeting annually, which mainly aims at facilitating the fulfillment of IHP activities in this region, coordinating the cooperative actions of national committees, jointly developing researches of hydrology and water resources as well as exchanging research achievements and cooperative experience in this field. RSC directs and organizes member countries in this region to carry out joint projects of hydrological topics with a focus on flood, sedimentation and water resources, which are concerned by the whole.

17th REGIONAL STEERING COMMITTEE MEETING

MEETING FOR SOUTHEAST ASIA AND PACIFIC WUHAN, CHINA, 5-6 NOVEMBER 2009

The UNESCO-IHP Malaysia represented by Mr Azmi Jafri, representing the Chairman of IHP Malaysia.

The 17th Regional Steering Committee(RSC) Meeting for UNESCO - IHP Southeast Asia and the Pacific was successfully convened from Nov. 5 to Nov. 6, 2009 in Wuhan, China. The Meeting was organized by Chinese National Committee for UNESCO-IHP(stationed in Bureau of Hydrology, MWR) with great support from Department of International Cooperation, Science and Technology of MWR, Bureau of Hydrology of Chang Jiang Water Resources Commission, NHRI and International Center on Small Hydro Power. More than 40 delegates from 19 countries like Australia, Cambodia, Korea, Japan, Laos, Indonesia, Malaysia, Mongolia, Myanmar, New Zealand, Papua New Guinea, Philippines, South Korea, Thailand and Vietnam and UNESCO Jakarta and Beijing Offices attended the meeting.

UNESCO Jakarta and Beijing Offices circulated the global IHP activities. Respective national committee for UNESCO-IHP made a national report and exchanged activities in hydrological field. Delegates listened to the annual work report by UNESCO Category Two Center, formulated plans of activities in this region, examined the ongoing projects and elected RSC president. Nominated by member countries, Prof. LIU Heng, vice President of Chinese National Committee for UNESCO-IHP, was elected as the new President of RSC.

THE IHP INTERGOVERNMENTAL COUNCIL (IGC Paris) Paris 2010

Date : 27 – 28 July 2010

Malaysia is represented by Ir Hanapi Mohammad Noor, the Director of Water Resources Management and Hydrology, Department of Irrigation and Drainage in Malaysia and as the Secretary of the Malaysian IHP National Committee. The present IHP biennial session was attended by representatives from 36 countries and observers from various organizations.

At the Council meeting four main issues were covered at the Intergovernmental Council Meeting:

- How the IHP 7th phase should proceed.
- Promotion of water related education. This is part of the UNESCO Decade of Education for Sustainable Development (2005-2014).

CHAPTER 5

LIST OF ACTIVITIES YEAR 2010

2010

1. National Expo in conjunction with World Water Day 2010 on
 - 20 March – 4 Apr 2010
2. National Exhibition World Water Day 2010
 - 27 Mac 2010 (Malaysia Water Association)
3. National Water Resources and Environment Essay Competition
 - March – Apr 2010 (Ministry of Education)
4. Open Day for Water Treatment Plant
 - 27 March – April 2010 (National Commission of Water Services)
5. International Symposium on Harmonizing Environmental Considerations with Sustainable Development Potential of River Basins
 - 23-25 March 2010 (Lestari - Universiti Kebangsaan Malaysia)
6. Asia Water Resource Management Seminar (AWARE 2010)
 - 6 – 8 April 2010 (Kuala Lumpur Convention Center)
 - DID Malaysia dan AMB Exhibitions Sdn Bhd
7. Flood Forecasting and Warning System Workshop 2010
 - 22-23 April 2010 (Universiti Tenaga Nasional)
8. 1st National Conference on Hydrology and Environment 2010
 - 23-24 June 2010 (Universiti Tun Hussien Onn Malaysia)
9. Short Course on Introduction Water Sensitive Urban Design
 - 30 June- 1 July 2010 (Universiti Tenaga Nasional)
10. Training Programme for Developing Capacity of Young Leader for the Practical Implementation of Integrated Water Resources Management in Malaysia
 - 20 October 2010 Klang Selangor (Universiti Teknologi MARA)
11. Training Programme for Developing Capacity of Government Officers for the Practical Implementation of Integrated Water Resources Management in Malaysia
 - 2 – 3 Nov 2010 Sri Pujangga UKM (Universiti Kebangsaan Malaysia)
 - 1 – 2 Dis 2010 Labuan Sabah (Universiti Kebangsaan Malaysia)

PARTICIPATION IN MEETINGS ABROAD

Malaysia has played important roles in the IHP Intergovernmental Council (IGC) as a member. Malaysia participated in the Regional Steering Committee (RSC) for Southeast Asia and the Pacific in 1993. Since the establishment of RSC, a representative of Malaysia National IHP Committee members have attended and participated actively in all of the annual meetings of the RSC.

- (1) Secretary of UNESCO-IHP Malaysia Ir Hanapi Mohamad Nor, attend a IHP Intergovernmental Council (IGC), Paris on 27 – 28 July 2010.

COOPERATION WITH THE UNESCO-IHE INSTITUTE FOR WATER EDUCATION AND/OR INTERNATIONAL/REGIONAL WATER CENTRES UNDER THE AUSPICES OF UNESCO.

International Seminar on Research and Development in Hydrology in Malaysia was held on 18 Jan 2010. The seminar was a platform to share with local student research and UNESCO-IHE experience and expertise in Hydrology in Malaysia. All researchers, engineers, academicians and professionals have worked together with local researchers to exchange of ideas, expertise and findings Hydrology and Water Resources in Malaysia. It was being convened to keep local researchers abreast with the international trends in R & D. It provide a good platform for sharing information and knowledge opportunities through local and international networks.

The joint seminar was organized with the Malaysian Hydrological Society (MHS), Malaysia International Hydrological Programme (UNESCO-IHP), Department of Irrigation and Drainage (DID) Malaysia, Universiti Tenaga Nasional (UNITEN), Centre for Stormwater & Geohazard Management (CSGM) and UNESCO-IHE Institute for Water Education.

The seminar had covered 5 topics related to hydrology with two prominent hydrologists from UNESCO-IHE (Prof. Dr. Stefan Uhlenbrook and Dr. Raymond Venneker) and three local researchers are invited to share their experiences and research activities. The UNESCO-IHE, Prof. Dr. Stefan Uhlenbrook gave a presentation entitled of Challenges for predicting hydrological impacts of global changes in tropical environments.

CHAPTER 6

FUTURE ACTIVITIES - ACTIVITIES PLANNED UNTIL DECEMBER 2012

- (1) Legislation for Malaysia National Standard for National Guidelines of Quality Assurance for Hydrological Management
- (2) Preparing Guidelines of Quality Inspection for Hydrology Management
- (3) Preparing Guidelines of hydrology data validation
- (4) Preparing Guidelines of Water Balance Condition.
- (5) Participation in IHP-RSC Meeting, Asian Pacific FRIEND and Catalogue of Rivers
- (6) Participation in Training course in 2011 and 2012 at Nagoya University
- (7) Participation in program at the International Center for Water-related hazards and risk management (ICHARM)

ACTIVITIES FORESEEN FOR 2011-2012

- (1) Participation in IHP-RSC meeting Asian Pacific FRIEND and Catalogue of Rivers
- (2) Participation in IHP-Training course at Nagoya University
- (3) The 5th On Job Training (OJT) IHP Training Course: "The Tank Model"
- (4) Implementation of projects related to IHP-VII.
- (5) Implementation of Malaysia-UNESCO Cooperative Program funding by Government of Malaysia for South-South Country and Small Island. (MUCP)
- (6) Collaboration with IOC activities- INWARDAM.
- (7) The 2nd Hydrology Conference 2011

ACTIVITIES ENVISAGED IN THE LONG TERM

- (1) Malaysia National committee for IHP will promote activities to public coordinate participations at national level to augment people's awareness through, educations and trainings on hazards caused by global warming, as well as hazards caused by geological events, These include sea level rise, flood and drought hazard, debris control, tsunamis, water and food security, and access to save water. Area of priorities is mega cities, and coastal areas.
- (2) Participation in IHP-VII projects and RSC activities.
- (3) Nagoya University IHP Training Courses.
- (4) Information dissemination through a web page of the National Committee.
- (5) Participation in IHP-RSC activities and IHP Intergovernmental Council meetings.

CHAPTER 7

OPERATING PROCEDURE OF THE MALAYSIAN NATIONAL COMMITTEE FOR INTERNATIONAL HYDROLOGICAL PROGRAMME – REVISED 2009

1. Name

The Committee shall be known as the **UNESCO-Malaysian National Committee for International Hydrological Programme** and shall be referred here after as the **UNESCO-IHP Malaysia**.

2. Objectives

The objectives of the UNESCO-IHP Malaysia are:

- a. To represent Malaysia on all issues related to the programmes of IHP under the UNESCO and participate actively in those programmes.
- b. To promote and coordinate research programmes on hydrology and water resources in the country and region.
- c. To promote and coordinate practices on hydrology and water resources.
- d. To promote and coordinate programmes on education, training and public information on hydrology and water resources.

3. Partnership

- 3.1 The partnership of UNESCO-IHP Malaysia shall be opened to other Ministries, Governmental agencies, Academia and Private agencies involved in hydrology and water resources activities.
- 3.2 Subject to the approval of UNESCO-IHP Malaysia Committee (EXCO), non-governmental organizations may be accepted as Associate Members of UNESCO-IHP Malaysia.

4. Organisation Structure

- 4.1 The Director General of the Department of Irrigation and Drainage (DID) shall be the Chairperson of UNESCO-IHP Malaysia.
- 4.2 The Director of Hydrology and Water Resources Division of DID shall be the secretary of UNESCO-IHP Malaysia.
- 4.3 The Executive Committee (EXCO) of UNESCO-IHP Malaysia shall consist of the Chairperson, Secretary, Deputy Secretary, Eight (8) other members and the Chairperson for the standing committees. The EXCO shall meet regularly to plan and implement programmes related to hydrology and water resources.
- 4.4 The Chairperson and Secretary of the UNESCO-IHP Malaysia shall also be the Chairperson and Secretary of the EXCO.

- 4.5 The other eight EXCO members shall consist of four permanent members and four selected members by Chairperson of the UNESCO-IHP Malaysia.
- 4.6 The four permanent members are:
 - a) Malaysian National Commission for UNESCO (SKUM)
 - b) Department of Irrigation and Drainage (DID)
 - c) Humid Tropic Center Kuala Lumpur (HTC KL)
 - d) Ministry of Science, Technology and Innovation (MoSTI)
- 4.7 The four EXCO members selected by the Chairperson shall serve for a term of two years. They are eligible to be selected but for a maximum of two terms.
- 4.8 The Chairperson is empowered to set up standing committees to fulfill the objectives of UNESCO-IHP Malaysia. The EXCO is empowered to appoint the chairpersons of the standing committees.
- 1.9 The EXCO may from time to time establish sub-committees or working groups to handle issues pertaining to hydrology and water resources. Non-governmental organisations may be co-opted into this sub-committees or working groups. The EXCO is also empowered to dissolve the sub-committees and working groups when deemed appropriate.
- 1.10 DID shall provide secretariat support for the UNESCO-IHP Malaysia and the EXCO.
- 1.11 Bi-Annual Malaysia Hydrological Conference will be held to promote fellowship among all researchers, practioners and individuals with the aim of exchanging knowledge and experiences pertaining to recent advances in field of hydrology and water resources.

1.0 Financial Management

- 1.1 The UNESCO-IHP Malaysia Chairperson shall operate the IHP Trust Account, which was approved by the ministry of Finance since 1988, Under Section 9.3 of the Financial Procedure Act 1957

LIST OF UNESCO-IHP MALAYSIA PARTNERS

The Malaysian National Committee for IHP was formed in 1975, and comprises of 30 governmental agencies and institutions of higher learning and private sector as listed :

1. Malaysian National Commission for UNESCO
2. Ministry of Science, Technology and Innovation
3. Ministry of Housing and Local Government
4. Ministry of Energy, Green Technology and Water
5. Ministry of Agriculture and Agro-Based Industry
6. Ministry of Education
7. Ministry of Finance
8. Ministry of Health
9. Prime Ministry Economic Planning Unit
10. Department of Irrigation and Drainage
11. Department of Agriculture
12. Department of Environment
13. Department of Forestry
14. Forest Research Institute of Malaysia
15. Department of Minerals and Geosciences
16. Malaysian Center for Remote Sensing
17. Malaysian Meteorological Service
18. Malaysian Nuclear Agency
19. Public Works Department
20. Universiti Kebangsaan Malaysia
21. Universiti Malaya
22. Universiti Putra Malaysia
23. Universiti Sains Malaysia
24. Universiti Teknologi Malaysia
25. Universiti Tun Hussein Onn Malaysia
26. Universiti Teknologi MARA
27. National Hydraulics Research Institute of Malaysia
28. Humid Tropics Center Kuala Lumpur
29. Tenaga Nasional Berhad
30. Federal Land Development Authority

Implementation IHP in Mongolia

Main activities and outputs in 2009 – 2010

I. Main activities and outputs in 2010:

A. In national level:

- Organized and participated numbers of meetings related to “Strengthening Integrated Water Resource Management in Mongolia”. in 2010. The project implementation is ongoing by Government of Mongolia and Government of Netherlands, financed by Government of Netherlands.
- Developed IRBM plans in particular Khovd River basin supported by WWF Mongolia office and IHP Committee.
- Organized training workshop on “Integrated water resource management planning in the Khovd river basin” Khovd, March, 2010
- National consultant and author on development “National Human development report-2010”, section “Water and Human development”
- Participation and monitoring Midterm review MDG, Mongolia focusing “Water & Sanitation” /UNDP, UNICEF and WHO in Mongolia/
- Co-organized international workshop on “Climate change impact on water resources in Kharaa River basin” with “MoMo” project “Kharaa River basin” sponsored by Germany
- Developed report “Assessment water supply distribution lines and water loss in Darkhan city”
- Consultation meeting on river basin management Upper Tuul River basin organized by World Bank in Mongolia.
- Consultative meeting with UNDP, UNICEF and WHO on case study assessment institutional capacity water sector of Mongolia, UNDP office in Mongolia
- Trained and provided certificate for 30 senior engineers in water sector, January 2010, in Research and Training Center in IWRM
- Involvement and Development of “National Water program”, National Water Committee and Ministry of Environment and Tourism
- IHP Committee members is making contributions to revision of law on “Water”

B. Regional and International activities:

- 5 participants from different water related institutions of Mongolia attended International workshop on Land surface observing, Modeling and data assimilation, Normal University in Beijing, China, 13-16 July, 2010, supported by China-MAIRS project.

- UNESCO Chair in Sustainable Groundwater Management established in 2007 at the University of Tsukuba, Ibaraki, Japan and the Institute of Geo-ecology, Mongolian Academy of Sciences, Ulaanbaatar, Mongolia. UNESCO Chair organized International workshop on “Bridging Environmental Leaders” in 26-27 Oct. 2010, Japan-Mongolia center, Ulaanbaatar, Mongolia

-Long-term Water balance experimental study in the Selbe river basin jointly organized by Mongolian (G. Davaa, Institute of Meteorology and Hydrology) and Japanese (Prof. I. Kaihotsu, Hiroshima University) IHP committees, since 2000 till present continued.

- Improvement of capacity building in Water sector of Mongolia is ongoing process and 12 students have been trained in various foreign Universities in Netherland, Japan, India and China and etc;

- 2 participants attended **the course organized by International Centre for Water Hazard and Risk Management (ICHARM) of PWRI, Japan, sponsored by UNESCO Jakarta Office, in Hanoi, Vietnam, 6-7 Nov. 2010.**

C. Presented and prepared papers:

1. G. Davaa, Climate change impacts on water resources in Mongolia, Proceedings of the International Conference on “Borderless Selenga River”, held at Ulan-Ude, Russia, 25th July, 2010, pp. 78-83.
2. T. Tsengel and G. Davaa hand book on “Hydrometer”, Ulaanbaatar, 2010

D. Forthcoming activities:

- Organize seminar involving governmental, non-governmental and donor organizations and agencies to Share the information for open-discussion and to disseminate the outcomes water related projects and activities to the public and make a link
- Implement project to improve “water education” to raise the public awareness

National Committee for IHP, Mongolia

Address: C.P.O.Box-1650, Ulaanbaatar-13, Mongolia, tel/fax 976-11-323519, email: b_green@mongol.net and watersect@yahoo.com

NATIONAL REPORT ON IHP RELATED ACTIVITIES

MYANMAR

1. ACTIVITIES UNDERTAKEN IN THE PERIOD November 2009 - October 2010

1.1 Meeting of the IHP National Committee

1.1.1 Decision regarding the composition of the IHP National Committee

1.1.2 Status of IHP-VII Activities

1.2 Activities at National Level in the framework of the IHP

1.2.1 National/local scientific and technical meetings

1.2.2 Participation in IHP steering committees/working groups

1.2.3 Research / applied projects supported or sponsored

1.2.4 Collaboration with other national and international organizations and / or programmes

1.2.5 Other initiatives

1.3 Educational and Training Courses

1.3.1 Contribution to IHP courses

1.3.2 Organization of specific courses

1.3.3 Participation in IHP courses

1.4 Publication

1.5 Participation in International Scientific Meeting

1.5.1 Meetings hosted by the country

1.5.2 Participation in meetings abroad

1.6 Other activities at regional level

1.6.1 Institutional relation / cooperation

1.6.2 Completed and ongoing scientific projects

2. FUTURE ACTIVITIES

2.1 Activities planned until / December 2009

2.2 Activities foreseen for 2010-2011

NATIONAL REPORT ON IHP RELATED ACTIVITIES

MYANMAR

1. ACTIVITIES UNDERTAKEN IN THE PERIOD November 2009 - October 2010

1.1 Meeting of the IHP National Committee

1.1.1 Decision regarding the composition of the IHP National Committee

The Myanmar National Committee for IHP (MNC-IHP) has been organized on 24 March 2003 comprising a Chairman, a Vice Chairman, a Secretary and (17) members from 8 Ministries and 2 City Development Committees. The present composition of MNC-IHP is as follow;

Chairman: U Thein Swe, Minister for Transport

Vice Chairman: U Nyan Htun Aung, Deputy Minister for Transport

Secretary: U Tin Ngwe, Acting Director General of Department of Meteorology and Hydrology

Members: Representatives from departments and committees concerned are as follows;

1. Deputy Minister for the Ministry of Science and Technology
2. Deputy Minister for the Ministry of Agriculture and Irrigation
3. Director General of the Directorate of Water Resources and Improvement of River System
4. Professor of Civil Engineering Department, Yangon Institute of Technology
5. Professor of Civil Engineering Department, Mandalay Institute of Technology
6. Director General of the Irrigation Department
7. Director General of the Water Resources Utilization Department
8. Director General of the Department of Forestry
9. Secretary of National Commission for Environmental Affairs
10. Director General of the Department of Progress of Border Areas and National Races
11. Director General of the Department of Hydroelectric Power
12. Director General of the Department of Health
13. Professor of Department of Mathematics, Yangon University

14. Mayor of Yangon City Development Committee
15. Head of Department of Engineering (Water & Sanitation),
Yangon City Development Committee
16. Mayor of Mandalay City Development Committee
17. Head of Department of Engineering (Water & Sanitation),
Mandalay City Development Committee

Under MNC-IHP, the (5) Working Committees (WC) were organized according to the (5) Themes of IHP-VI. Each working committees consists of (10) members from the member departments and committees. The MNC-IHP normally held one session each for the National Committee (NC) and Working Committee (WC) during 2003-2005. Activities related to the themes of IHP-VII are implemented by the members of the working committees. The WC prepared the (27) research papers and shared the knowledge and experiences to the other national committee members during 2003-2005. The session could not be hold during 2006 to 2010. But the MNC-IHP will try to implement the water related activities in line with the themes of IHP.

1.1.2 Status of IHP-VIII Activities

- Monitoring Water Quality of Rivers in Myanmar
- Monitoring the changes of Water resources in Myanmar
- Monitoring the low flow characteristics
- Assessment of the climate change impact on the flood events
- Developing the flood hazard map in order to reduce loss of lives and properties due to flood disaster
- Implementing the hydrological disaster risk management activities by using GIS and Remote Sensing Technologies

1.2 Activities at National Level in the framework of the IHP

1.2.1 National/local scientific and technical meetings

-

1.2.2 Participation in IHP steering committees/working groups

Participants from DMH attended the UNESCO-IHP 13th, 14th, 15th and 17th Regional Steering Committee Meetings for Southeast Asia and Pacific during 2005 to 2009

1.2.3 Research / applied projects supported or sponsored

-

1.2.4 Collaboration with other national and international organizations and / or programmes

Myanmar is the member country of EANET (Acid Deposition Monitoring Network in East Asia) since 2005. So Myanmar collaborate with EANET's activities.

1.2.5 Other Initiatives

-

1.3 Educational and Training Courses

1.3.1 Contribution to IHP courses

- Training workshop on installation on integrated flood analysis system was held on 22 to 24 June 2010 at Nay Pyi Taw, Myanmar. This training workshop was organized by JAXA and DMH, and supported by JAXA and technical support by ICHARM. 16 participants attended at this training workshop. The main objectives of this training workshop are to build capacities to be able to undertake hydrological prediction/forecasting in poorly-gauged basins through practicing IFAS (Integrated Flood Analysis System) and to enhance quick and effective implementations of flood forecasting and analyzing system for flood risk management and disaster mitigation.
- Training on sampling and analysis method for wet deposition Monitoring was held on 24-27 November 2009 and 25-28 October 2010 at Yangon, Myanmar. This training was organized by ADORC and DMH.

1.3.2 Organization of specific courses

-

1.3.3 Participation in IHP courses

-

1.4 Publication

-

1.5 Participation in International Scientific Meeting

1.5.1 Meeting hosted by the country

- 2nd Joint Working Group Meeting on Capacity Building for the Meteorology and Hydrology (Myanmar) was held on 13 July 2010 at Nay Pyi Taw, Myanmar. This meeting was organized by TICA and DMH. In

this meeting, the participants discussed about the capacity building on the early warning system for Meteorology and Hydrology.

1.5.2 Participation in meetings abroad

The Secretary of MNC-IHP is a Permanent Representative of WMO and so he has contact and coordinate with WMO's activities.

The representatives of MNC-IHP participated in

- International Conference on Hydrology and Disaster Management, China, 2-6 November 2009
- Training Course on Climate Change and its Impact, Thailand, 2-13 November 2009
- Training Program on local Emergency Operation Plan with Flood Hazard (First Year), Japan, 8-28 November 2009
- WMO Workshop on Climate Monitoring and Analysis of Climate Variability, Implementation of Watch System in RA II with focus on monsoon affected region, China, 11-13 November 2009
- Eleventh Session of the Intergovernmental Meeting (IG-11), Thailand, 19-20 November 2009
- Third Monsoon Onset Monitoring and its Social and Ecosystem Impacts, Philippine, 19-20 November 2009
- Training Course on Basic Operation of Weather Radar and Use of Radar Products, China, 30 November-4 December 2009
- Climate Change Workshop, China, 30 November – 6 December 2009
- Conference of the Parties COP 15, Germany, 7-18 December 2009
- Meeting of the GEOSS Asian Water Cycle Initiative (AWCI) International Coordination Group(ICG), Japan, 15-18 December 2009
- Cyclone and Disaster warning Technology of Radio and Television “Training for Broadcast Engineer”, Japan, 1-19 February 2010
- Training Workshop on Operational Tropical Cyclone Forecasting at RSMC Tropical Cyclone, India, 1-12 February 2010
- Workshop on the Air Pollution in East Asia, Japan, 25-26 February 2010
- International Workshop “Towards the successful implementation of WMO information System in Asia”, Japan, 9-11 March 2010 The thirty-seventh session of the WMO/ESCAP Panel on Tropical Cyclones, Thailand, 15-19 February 2010
- Training Program on Climate Change and disaster Prevention, Korea, 9-27 March 2010

- The 4th GEOSS Asia Pacific Symposium(GEOSS-AP4 and 6th GEOSS AWCI International Coordination Group (ICG), Indonesia, 10-13 March 2010
- IPCC Workshop on Sea Level Rise and ice sheet Instabilities, Malaysia, 21-24 June 2010 Meeting of the Joint Forum on Atmospheric Environment Issues in Asia and the Pacific, Thailand, 10-11 March 2010
- The Ninth Session of the Working Group on Future Development of EANET, Thailand, 7-8 April 2010
- The first Meeting of the Drafting Committee for the Second Periodic report on the State of Acid Deposition in East Asia, Japan, 22-23 April 2010
- Energy efficient Technology for Climate Change mitigation Training, Thailand, 3-6 May 2010
- NAPA Training Workshop in Implementation of National Adaption Programmes of Action (NAMAs) for the Asia LDCs, Laos, 4-8 May 2010
- Heavy Rainfall Surveillances and Early Warning's during the South West Monsoon Season, Thailand, 7 June – 2 July 2010
- Official Seminar on Climate Change for Asian and African Countries (OSCC), China, 29 June -19 July 2010
- Southeast Asia Network of Climate Change focal Point, Cambodia, 30 June -1 July 2010
- Joint Project Meeting 2010 (JPTM 10) for Sentinel Asia STEP-2, Philippines, 6-8, July 2010
- Training Program on Crop Weather Modelling, Thailand, 10-24 July 2010
- BOBLME Project Oceanographic Expert and Workshop, Australia, 12-16 July 2010
- PTC Working Group on DPP (WG-DPP) Meeting to Finalize the Annual Operating Plan (AOP) 2010 and Training on Preparation of Disaster Management Drills and Observance of DDP's National Crisis Management Drill 2010 (C-MEX10), Thailand, 18-20 August, 2010
- Training Program on Analysis of COMS Data, Korea, 26 Aug-18 September 2010
- Workshop on Risks and Impacts from extreme Events in Drought in ASEAN Counties , Thailand, 1-2 September 2010
- The Eleventh Senior Technical Manager's Meeting (STM-10), Japan, 2-3 September 2010

- Expert Group Meeting on the Regional Cooperative Mechanism on Drought Disaster Monitoring and Early Warning, China, 14-16 September 2010
- 4th International Course on Flood Mitigation and Storm Water Management 2010, Malaysia, 4-22 October 2010
- Training Workshop on Mesoscale Numerical Weather Prediction- Phase-1, Korea, 27 September-8 October 2010
- Regional Dissemination Workshop on Remote Sensing of the Cryosphere- Assessment and Monitoring of Snow and Ice in the HKH Region, Nepal, 4-6 October 2010
- UNFCCC Notification on United Nations Climate Change Talks, Bangladesh, 4-9 October 2010
- New AWCI website and the 7th AWCI ICG Meeting, Japan, 5-6 October 2010
- The Acid Deposition Monitoring Network in East Asia, Japan, 17 October - 18 December 2010
- Individual Training Program, Japan, 25 October- 5 November 2010
- Tenth Session of the Scientific Advisory Committee (SACIO), Thailand, 13-15 October 2010

1.6 Other activities at regional level

1.6.1 Institutional relation / cooperation

-

1.6.2 Completed and ongoing scientific projects

-

2. FUTURE ACTIVITIES

2.1 Activities planned until / December 2010

-

2.2 Activities foreseen for 2010-2011

- The MNC-IHP will try to implement the water related activities in line with the themes of IHP
- IHP national committee will continue to encourage scientific and technical symposia and workshops
- The members of MNC-IHP will attend the 19th Regional Steering Committee for Southeast Asia and the Pacific.
- The members of MNC-IHP will participate in the international and national activities of IHP.

**18th IHP REGIONAL STEERING COMMITTEE MEETING FOR
SOUTH EAST ASIA AND THE PACIFIC
HANOI, VIETNAM
(8 November 2010 – 9 November 2010)**

NATIONAL REPORT OF NEW ZEALAND

1. Activities undertaken in the period November 2009– November 2010

1.1 Meetings of the IHP National Committee

1.1.1 Composition of the IHP National Committee

There were no changes to the composition of the IHP Committee, although Dr Ibbitt has indicated that he wishes to resign as Chair now that he is in the process of retiring. The most likely change will be that Mr Jamieson will take over as Chair, particularly as he has recently been appointed to the UNESCO-New Zealand sub-commission for science. The search is now on for a replacement secretary.

1.1.2 Status of IHP-VI activities

The following projects continue to be funded, although some have changed titles:

WG 1.1 Information on New Zealand's Freshwaters: Water Resources Database;

WG 2.7 Land Use Intensification: Sustainable Management of Water Quality and Quantity

Quality combined with agricultural research

Quantity – now part of a “Waterscape” project quantifying water availability in New Zealand.

WG 2.8 Reducing the Impacts of Weather Related Hazards – funding reconfirmed, see section 1.6.2.

(Refer IHP-V Technical Documents in Hydrology No.2 UNESCO Jakarta Office 1999 for details).

WG 1.1 – “Information on New Zealand's Freshwaters: Climate and Water Resources Archives” is a national programme of climate and hydrometric data collection. The data produced from this programme are of increasing importance to guide decision-making on development (especially proposed hydropower and expanded irrigation) and to contribute to the assessment of effects of human related activities on rivers and lakes. In addition there is wide interest in the effects of climate change on water resources and consequent effects on hydropower and agriculture.

As reported in previous years, the implementing agency (National Institute of Water and Atmospheric Research - NIWA) implemented a policy of “free” data access for most users from 1 July 2007. The increase in data requests is summarized in Table 1.

Table 1: Comparison of data requests from Climate and Water Resources databases in years ending 30 June 2007, 2008, 2009.

	Climate	Water Resources	Total
2006/7	118,000	68,000	186,000
2007/8	360,000	88,000	448,000
2008/9	999,000	84,500	1,083,500
2009/10	1,600,000	3,500,000*	5,100,000

* Change in reporting to be consistent with Climate data requests

1.1.3 Decisions regarding contribution to participation in IHP-VI and IHP-VII

Components of the New Zealand hydrological research programme have had good alignment with IHP-VII themes (“Continuity with change”). The bulk of hydrological research in New Zealand has been funded through the Foundation for Research Science and Technology (FRST), which is being merged with the Ministry of Research, Science and Technology (MoRST) to form a Ministry for Science and Innovation. The merger of these organizations is part of a wider set of reforms that include greater delegation for investment decisions and work programmes by research agencies whose mandate is to fund research that is in the national interest. However, as in the past, projects must continue to demonstrate that results will address national needs, and alignment with IHP themes is possible only to the extent that these themes are relevant to resource management requirements in New Zealand. Additional sources of support (e.g. WMO, internal support from NIWA and other institutes) are important to maintain links with colleagues in the Asia-Pacific region.

1.2 Activities at national level in the framework of the IHP

1.2.1 National/local scientific and technical meetings

Scientific and technical meetings are generally held within the context of professional societies (particularly the New Zealand Hydrological Society) and resource management affairs (e.g. workshops to brief groups established to guide government decisions on future land and water use).

The Secretary and Chairman of the IHP National Committee have met regularly to discuss IHP matters.

1.2.2 Participation in IHP Steering Committees Working Groups

The Chairman is a member of New Zealand's UNESCO Science Sub-Commission where he is able to promote hydrological matters at a national level.

Dr Ibbitt and Mr Jamieson attended the 17th RSC meeting held in Wuhan, China and attended the 15th Technical Sub-Committee meeting associated with the 17th RSC meeting. Mr Jamieson is acting as coordinator for the APFRIEND project and Disaster Reduction Hyperbase component on Flood Design methods.

1.2.3 Research/applied projects supported or sponsored

None directly sponsored by IHP.

1.2.4 Collaboration with other national and international organizations and/or programmes

New Start for Freshwater

In June 2009 the New Zealand government launched a new focus on freshwater known as the "New Start for Freshwater". This was reported in the New Zealand Country report last year. The overall objective is to ensure that water contributes to New Zealand's economic growth and environmental integrity

IHP activities under IHP-VI (and IHP-VII) and capabilities related to these activities have been used extensively to inform this new process. This includes science briefings for a stakeholder-led collaborative process under the Land and Water Forum (LWF) (previously known as the Sustainable Land Use Forum) which is being used to develop a shared understanding of the issues and strategic outcomes wanted for New Zealand, and options for achieving those outcomes.

Central government has actively intervened where it was not satisfied with progress made by local government. At the time of last years report it had appointed commissioners to take over the running of the Canterbury Regional Council because of the delays in getting a water plan completed for the New Zealand region with the highest level of hydropower generation and irrigation water use. In late October 2010 the water plan was finally completed.

Central government has continued support for a process known as the "*Canterbury Strategic Water Study*" (CSWS), which is seeking to balance development needs against environmental values. Rather than rely on industry driven irrigation projects, the CSWS is seeking to identify water storage and distribution options that allow large scale irrigation development in a

coordinated and environmentally sustainable manner. Over the last year there has been media speculation that this process is focused on liberalising water allocation in Canterbury for the benefit of irrigators.

Republic of Korea Water Resources Association (KWRA) – collaborative research strategy with New Zealand Hydrological Society (NZHS)

The KWRA and NZHS have had a Memorandum Of Understanding (MOU) in place since 2007. There have been regular exchanges between the organisations. The importance of the relationship has been recognised by the NZ Ministry of Foreign Affairs and Trade (MFAT).

Links with other International and Regional organisations

The Chairman and Secretary of the National Committee are in regular contact with Charles Pearson, the Regional Hydrological Advisor to the President of the WMO Region V (Asia Pacific). Contact is also maintained directly and indirectly with SOPAC's Suva based Water & Sanitation Unit, through its role of representing the SW Pacific Island states on water related issues.

.SOPAC – Pacific HYCOS project

The Chair and Secretary maintained interest in this project which is coming to a conclusion in late 2010. Unfortunately feedback from Pacific Island personnel indicates that the project has not been able to match the significant project input in equipment and training with the ongoing operational support needed to ensure data continues to be collected and water information processed into a useful format. Hydrologists in NIWA are continuing to look for opportunities to communicate the value of operational support for ongoing hydrological data collection when opportunities allow, both in New Zealand and in the Pacific.

1.2.5 Other initiatives

EcoConnect

EcoConnect is a system that makes accurate weather forecasts for environmental forecasting. This system is based on the United Kingdom Meteorological Office's Unified model. This model has now been adopted in Australia and South Africa so there is standardization in the Southern Hemisphere that should be productive for future joint work.

1.3 Educational and training courses

1.3.1 Contribution to IHP courses

None.

1.3.2 Organisation of specific courses

Courses and workshops run in New Zealand generally meet national needs. Because of the country's relative remoteness and distinctive resource management requirements, courses are not always suitable for participation by people from overseas.

National Institute of Water and Atmospheric Research (NIWA) Courses / workshops

Over the course of a year NIWA provides many courses for regional government agencies and their own staff. These cover topics from general hydrological training to courses on specific topics of wide interest.

1.3.3 Participation in IHP courses

See 1.3.1.

1.4 Publications

Contributions to IHP publications have been principally through the Regional Steering Committee and the Asia-Pacific FRIEND. Other publications related to IHP activities include:

The "Climate Update" monthly bulletin

The National Climate Centre (NCC) has published a further 12 issues (124 to 135) of the monthly circular entitled "The Climate Update". (<http://www.niwa.co.nz/ncc/cu/archive>) This publication summarises each month of New Zealand's climate, including soil moisture and river flows. It also predicts the following three month's climate, soil moisture and river flows, and states how good the previous month's forecast was. Publication is now made electronically only.

The "Island Climate Update" monthly bulletin

The National Climate Centre (NCC) has published a further 12 issues (109 to 120) of the monthly circular entitled "The Island Climate Update" (ICU). This NZAID funded bulletin provides an overview of the present climate in tropical South Pacific Islands and a forward outlook, and continues to be published, and circulated widely throughout the South Pacific. (<http://www.niwa.co.nz/our-science/climate/publications/all/icu>).

The ICU, produced by NIWA's NCC in collaboration with SOPAC, is a multi-national project with important contributions from the meteorological services of countries around the region. The bulletin provides El Nino/Southern Oscillation and seasonal rainfall forecasts, discusses climate developments each month, and provides a tropical rainfall outlook for the next three months and tropical cyclone outlooks during the cyclone season. It also includes an editorial on some topical aspect of relevance and interest to end-users.

“Water Resources Update” bulletin

The National Centre for Water Resources (NCWR) has changed publication of the bulletin entitled “Water Resources Update” to a quarterly basis (<http://www.niwa.co.nz/our-science/freshwater/publications>). This publication summarises seasonal groundwater, river flows, water clarity, water temperature and slime (periphyton), and focuses on a number of topical issues confronting New Zealand scientists and water management.

Access to climate and water resources information

The NIWA real time environmental data site EDENZ (Environmental Data Explorer New Zealand) is available to the public on the web (<http://edenz.niwa.co.nz/>).

EDENZ provides visitors with near real-time access to Foundation for Research, Science & Technology (FRST) Public Good Science and Technology (PGS&T) funded data that are collected from the NIWA nationwide network of monitoring stations, installed as a component of the Nationally Significant Database programme.

Data on this site are automatically transferred using a national telemetry network and are un-audited. The goal of this programme is to provide comprehensive and accessible data as a basis for improved knowledge on New Zealand's climate and freshwater resources.

The programme collects, stores, and disseminates data from national monitoring networks, and comprises two nationally significant, core databases - the Climate Database and the Water Resources Archive. The data include air temperature, barometric pressure, wind direction, rainfall, lake and river water levels, river flows and sediment loads, and river water quality variables.

A key aspect of the archiving programme is application of stringent quality control procedures ensuring national consistency and providing assurance that data can be confidently used for scientific and planning purposes.

An additional system deployed by NIWA for enabling access to the results of modeling based on data is: <http://wrenz.niwa.co.nz>. This website enables access to model results including catchment sediment yield, rainfall and runoff, river water quality, flood frequency and suitability for kayaking. It also allows an initial assessment of hydropower potential for all streams in New Zealand.

1.5 Participation in international scientific meetings

1.5.1 Meetings hosted by the country

New Zealand Hydrological Society Annual Symposium

The annual conference of the New Zealand Hydrological Society (NZHS) was held from the 23-27 November 2009 in Whangarei, New Zealand with the theme “Managing with uncertainty”. A delegation of four Korean Hydrologists from the KWRA attended the conference including President Dr Hongkee Jee who was accompanied by Dr Jaekyoung Noh, Dr Kyungrock Paik, and Dr Chang-Sam Jeong. The internal costs of the KWRA visit were funded from a grant obtained from the NZ Ministry of Foreign Affairs and Trade. During this visit a new memorandum of understanding was negotiated for a further five years. The original one was for three years as was set to expire in Feb 2010.

1.5.2 Participation in meetings abroad

Dr Ibbitt and Mr Jamieson represented New Zealand at the 17th RSC meeting held in Wuhan, China on 5- 6 November 2009 and attended the 16th Technical Sub-Committee meeting associated with the 17th RSC meeting.

Three delegates from the NZHS travelled to Korea in May comprising President Dr Tim Davie who was accompanied by Peter Davidson and Michael Ede. Other international delegates were present from Japan, China and USA. The USA delegates were attending for the first time with an official signing of a MOU between the KWRA and the American Water Resources Association. This is leading to the KWRA conference becoming a more international event.

New Zealand Hydrologists participated in a range of international conferences related to IHP themes. An initial management response in some science organizations to further limit overseas travel due to the effects of the Global Financial Crisis (GFC) was later generally reversed as scientists made representations about the value of international linkages. Significant conferences and exchanges included:

- The 7th International Gravel-bed Rivers Workshop (GBR7), Canada
- Research fellowship at the Australian Rivers Institute at Griffith University in Brisbane, Australia
- “Water2010” conference in Quebec City on “Hydrology, Hydraulics and Water Resources in an Uncertain Environment” (IAHR). Incorporating the 10th International Symposium on Stochastic Hydraulics and the 5th International Conference on Water Resources and Environmental Research.

- European Geosciences Union conference in Vienna, Austria
- Dr Ross Woods continues to Chair a Predictions in Ungauged Basins (PUB) programme initiated by Prof. Takeuchi
 - “Benchmark” report being prepared to consolidate work to date and identify prediction challenges for the future continuing

1.6 Other activities at regional level

1.6.1 Institutional relations/co-operation

There is considerable contact between New Zealand and other UNESCO Member Countries in the Asia-Pacific region, principally through overseas development assistance and consulting. For example, the Tideda hydrological database management system has been or is being installed in various agencies in Australia, Cambodia, Indonesia, Malaysia, Vietnam, Cook Islands, Fiji, Samoa, Solomon Islands, Papua New Guinea, Vietnam and Vanuatu. Many such contacts have been enabled via the IHP, even though subsequent work has been in the context of bi-lateral arrangements and Pacific HYCOS.

1.6.2 Completed and ongoing scientific projects

The Reducing Impacts of Weather Related Hazards programme (WG2.8) was reviewed and additional support gained for its ongoing operations. The programme concentrates on forecasting of extreme weather, floods and landslides.

The programme on “Reducing impacts of climate change on the urban and built environment” is continuing development of a “toolbox” of procedures that show practitioner different options for tackling climate change issues they are faced with.

NIWA is working hard to maintain hydrology staffing in four groups (Hydrological Processes, Applied Hydrology, Freshwater Ecology, and Sediment) based in Christchurch. While NIWA has expanded hydrology related capability and capacity, government led approaches to emerging national scale hydrology issues including surface/groundwater interaction, water allocation and water quality and efficient use of hydropower resources continue to change and evolve creating ongoing new challenges in how science results are actually applied.

2. Future Activities

2.1 Activities foreseen until December 2010

New Zealand Hydrological Society Annual Symposium

The annual conference of the NZHS will be held in Dunedin, New Zealand from the 6-10 December 2010. This year's conference theme "Water: The Blue Gold" focuses on issues such as the value of water, managing the modern day gold rush for water allocation and changing water uses.

Four delegates from the KWRA are expected at the NZHS annual conference in Dunedin including Mr. Jong So Kim, the secretary general of KWRA. His participation is to determine any administrative changes at KWRA to improve potential to promote international collaboration. The other expected delegates are Dr Sangman Jeong, Dr Chang-Sam Jeong and Dr Jeong Joon Kim.

18th Regional Steering Committee Meeting

Attendance at the 18th RSC meeting in Hanoi from 8-12 November 2010 and associated meetings.

2.2 Activities planned for 2011

Scientific activities planned at the national level are, as explained in Section 1.1.3, within the context of the research programme funded by the Foundation for Research Science and Technology (FRST). A significant proportion of this activity will be in areas that are included within the IHP, but are not explicitly implemented as a component of the IHP.

Future activities are expected to depend very much on decisions reached by the Regional Steering Committee, and we are committed to participate in its deliberations, with the intention of being involved in future scientific work at the regional level.

NIWA Courses

A range of training courses will be offered by NIWA. For a full list of courses refer to <http://www.niwa.co.nz/education-and-training>. These courses are also open to overseas participants.

2.3 Activities envisaged in the long term

Continuation of the:

- NZAID funded Pacific Hydrological Training Programmes as required;
- NZAID funded monthly "Island Climate Update" publication with stronger links to end users.
- Monthly New Zealand "Climate Update" and "Climate Outlook" (web) publications.
- Quarterly "Water Resources Update" (web) publication.

Eighteenth Meeting of IHP Regional Steering
Committee for the Southeast Asia and the Pacific
11-12 November, 2010
Hanoi, Vietnam

**Country Report on Papua New Guinea International
Hydrological Program Activities: 2009-2010**

Prepared & presented by:
Maino Virobo
Acting Chairman
Papua New Guinea IHP National Committee

1. Introduction

The Department of Environment and Conservation participated in the activities of the International Hydrological Program Decade through then Bureau of Water Resources from 1965-1974, the forerunner of the International Hydrological Program (IHP). With the launching of the latter in 1992, the Papua New Guinea (PNG) IHP National Committee was formed in January 1992 with a view to participating actively in IHP.

The current membership of the PNG IHP National Committee is eight (8), and drawn from various government agencies and institutions of higher learning. Over the period 2009-2010, PNG experienced significant decline in UNESCO participation, particularly the short term regional UNESCO IHP training programs, and at the national level the changing government development policies and initiatives affected all hydrological programs and activities in the country.

A major Department of Environment and Conservation (DEC) reorganization restructure as a result of whole of government approach in terms of economic sustainability and environment management at the end of 2008 and early 2009 resulted in a significant shift in government's priority, which called for the promotion of environmental sustainability and economic growth, climate change adaptation and development. As a result water component at monitoring, development and policy levels were greatly affected. Despite that, various water sectors have maintained their activities and programs to ensure their mandates remained functional.

2. Activities Organized by the National Committee

Significant water events organized at national levels were;

- (a) DEC Organizational Restructure Functional 2010
- (b) World Water Day commemoration in March 2010
- (c) World Environment Day commemoration in June 2010
- (d) PNG National Commission for UNESCO requested new membership and appointment of new chair person

No committee meetings were held.

3. Other Hydrological and Water Related Activities Conducted by Individual Water Agencies

3.1 Flooding a Natural Disaster

European Union's B-envelope project funding, to assist maintain 6 hydrometric stations for flood disaster mitigation, and leading towards the establishment of the Integrated Water Resources Management pilot basin was completed.

A robust 4X4 off road vehicle was delivered to the project in early 2010 and has been used extensively for hydrology field work.

3.2 Climate Change Adaptation Strategy

Inland and coastal flooding has been identified as the major natural hazards as a result of climate change and global warming. In responding to the government's directive cost effective adaptation measures have been identified for the high risk and flood prone areas, where major funding agencies such as AusAID, ADB, World Bank and other smaller donors have agreed to support PNG's climate change adaptation initiatives.

3.3 Sub Regional Programs

Continuous monitoring of SOPAC initiated Ramu Hydrological Monitoring Stations Rehabilitation project and B-envelope disaster mitigation monitoring stations.

3.4. General Assistance

As a result of a boom in natural resources development in PNG such as in the energy sector, DEC field hydrologists from time to time have been engaged to conduct water resources assessments surveys and conduct onsite hydrological measurements, which are major components of an integrated environment base line data and information collection.

4. Participation in Regional Programs

4.1 Research and publications

We did not participate in the above programs and activities during this period.

4.2 Meetings and short term training

Maino Virobo attended the 17th International Hydrological Program Regional Steering Committee Meeting and International Conference on Hydrology and Disaster Management in Wuhan, China from 02-06 November 2009.

No short term courses attended.

5. Future Tasks

- Attend the 18th IHP RSC Meeting in Hanoi, Vietnam from 11-12 November 2010.
- Attend the final Pacific HyCOS Steering Committee meetings
- Potential to participate in the upcoming UNESCO IHP training courses.
- Continue data collection, processing and management for disaster risk reduction.
- Contribute to regional activities as and when required.

6. Concluding Remarks

Once again, I take this opportunity to thank UNESCO Jakarta office for meeting all the costs to enable me to participate in the RSC meeting and most significantly to attend the international conference.

NATIONAL REPORT ON IHP RELATED ACTIVITIES

PHILIPPINES

NOVEMBER 2010

**Philippine National Committee
for the
UNESCO International Hydrological Programme
Republic of the Philippines**

1. ACTIVITIES UNDERTAKEN IN THE PERIOD OCTOBER 2009 – OCTOBER 2010

1.1 Meetings of the IHP National Committee

1.1.1 Decisions regarding the composition of the IHP National Committee

The institutional members of the Philippine National Committee for the UNESCO-IHP are agencies and organizations (public and private) which are mandated with, and are engaged in research, development and management activities in the water sector:

Bureau of Soils and Water Management (BSWM), Department of Agriculture (DA)
Bureau of Research and Standards (BRS), Department of Public Works and Highways (DPWH)
Environmental Management Bureau (EMB), Department of the Environment and Natural Resources (DENR)
Flood Control & Sabo Engineering Center (FCSEC), Department of Public Works and Highways (DPWH)
Laguna Lake Development Authority (LLDA)
Local Water Utilities Administration (LWUA)
LPA & Associates (private sector)
Metropolitan Waterworks and Sewerage System (MWSS)
Mines and Geoscience Bureau (MGB), Department of the Environment and Natural Resources (DENR)
National Economic and Development Authority (NEDA)
National Hydraulic Research Center, University of the Philippines (UP-NHRC)
National Irrigation Administration (NIA)
National Mapping and Resource Information Authority (NAMRIA)
National Power Corporation (NPC)
National Water Resources Board (NWRB)
Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA), Department of Science and Technology (DOST)
Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (PCARRD), Department of Science and Technology (DOST)
Philippine Council for Aquatic and Marine Research and Development (PCAMRD), Department of Science and Technology (DOST)
Philippine Water Partnership (PWP)
Mapua Institute of Technology, School of Civil Engineering, Manila
University of Santo Tomas (UST), Department of Civil Engineering (UST), Manila
University of the Philippines at Los Baños (UPLB), College of Engineering and Agro-Industrial Technology (UPLB-CEAT), Los Baños, Laguna
Ateneo De Manila University (ADMU) - Manila Observatory, Quezon City
Central Luzon State University (CLSU), Muñoz, Nueva Ecija
De La Salle University (DLSU), Department of Civil Engineering (DLSU), Manila
University of San Carlos (USC), Department of Civil Engineering & Water Resources Research Center (USC), Cebu City

Officers of the Philippine National Committee for UNESCO-IHP:

Chairman: Leonardo Q. Liongson (UP Diliman)
Treasurer: Lino P. Aldovino (LPA & Associates)
Secretariat: NHRC and PWP staff (on secondment)

Agency Lead Representatives:

Ramon B. Alikpala, MWSS
Virgilio Basa, NAMRIA
Antonio Morano, DPWH-BRS
Resito David, DPWH-FCSEC
Prisco Nilo, PAGASA
Virgilio Rivera, MWCI
Lennie Santos-Borja, LLDA

Finance Sub-Committee members:

Leonor Cleofas, MWSS
Dolores Hipolito, DPWH-FCSEC
Ms. Lyn Almario, MWCI
Francisco Arellano, MWSI
Romualdo Beltran, NPC
Lino P. Aldovino, PNC-UNESCO-IHP Treasurer

Technical Sub-Committee members::

Guillermo Q. Tabios III, UP-NHRC & C.E. Dept.
Romualdo Beltran, NPC
Samuel Contreras, BSWM
Emiterio Hernandez, LLDA
Milo Landicho, NIA
Peter Lim, University of Sto. Tomas, C.E. Dept.
Rosa Perez, PAGASA
Roberto Soriano, Mapua I.T.- School of C.E.

Program Sub-Committee members::

Peter Paul Castro, UP- NHRC & C.E. Dept.
Maria Antonia Tanchuling, UP- En.E. Program
Susan Abano, NWRB
Joylynn Accad, NEDA
Margarette Bautista, PAGASA
Isidora Camaya, NIA
Efren Carandang, NAMRIA
Maristel Espiritu, LLDA
George Estioko, NWRB
Myrna Lansangam, LWUA
Nicanor Mendoza, DENR-EMB
Jesusa Roque, NWRB
Teresita Sandoval, BSWM
Beverly Sarausad, Univ. of Sto, Tomas

Status of IHP-VII activities

In response to the questionnaire from the UNESCO-IHP Paris office, the following has been indicated in 2008 as the Philippines Country Priorities for IHP-VII Themes:

Theme 1: ADAPTING TO THE IMPACTS OF GLOBAL CHANGES ON RIVER BASINS AND AQUIFER SYSTEMS (General priority of the Philippines in all focal areas)

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

(General priority of the Philippines in all focal areas)

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 (priority of the Philippines for focal area 3.1)

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

(General priority of the Philippines in all focal areas)

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

(General priority of the Philippines in all focal areas)

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: FRIEND (Asia Pacific FRIEND - priority of the Philippines)

1.2 Activities at national level in the framework of the IHP

1.2.1 National/local scientific and technical meetings

Climate Change: Scenarios, Uncertainties, Parameters and Other Things, Forum on Climate Change and Water Resources, 25 September 2009, Mandarin Oriental Suites, Cubao, Quezon City.

Water Resources Management with Climate Change, TAO Pilipinas 2009 YP Workshop, 23 October 2009, Antipolo, Rizal.

Typhoon Ondoy & Marikina River Flooding (Part 1) and Climate Change Scenarios & Parameters (Part 2), 27 October 2009, Joint Union of Local Authorities of the Philippines (ULAP) and League of Cities of the Philippines (LCP) Dialogue, Wack Wack Golf and Country Club, Mandaluyong City.

National Conference on Climate Change and Poverty Alleviation, 16 November 2009, Manila Hotel, Manila, organized by National Academy of Science and Technology Task Force on Climate Change.

Climate Change Scenarios, Design Parameters and Water-Related Studies, 5th National Meteorological-Hydrological Convention, Understanding the Climate Change Issues: A Key to a Better Planning and Investment, 19-20 November 2009, Philippine Meteorological Society, University Hotel, UP Diliman.

Science Information Forum on Flood Mitigation, 10 December 2009, National Academy of Science and Technology (NAST) of the Philippines, Traders Hotel, Pasay City.

Symposium #1 on Post-Ondoy Assessment, UP Program on Disaster Risk Management (DRM-UP), 8 February 2010, Auditorium, Malcolm Hall, College of Law, organized by the Colleges of Science, Social Sciences and Engineering, University of the Philippines Diliman.

San Roque Dam Operations and Agno River Basin Flooding during Typhoon Pepeng, Flood Summit, 12 February 2010, Philippine Institute of Civil Engineers, Max Restaurant, Quezon Memorial Circle, Quezon City.

Marikina River and Laguna Lake Floodings during Typhoon Ondoy, Rizal-Laguna Tri-Sectoral Rehabilitation Initiative Stakeholders' Conference, 29-30 March 2010, DA-Agricultural Training Institute, Quezon City.

World Water Day 2010, Lakbayan sa Tubig or water trail, with Metro Manila Student Leaders and Educators, 25 March 25, 2010, organized by Philippine Water Partnership (PWP) & Manila Water Company, Inc. (MWCI), La Mesa Dam and Reservoir (water supply of Metro Manila, East Zone) and San Mateo Septage Treatment Plant (Metro Manila East Zone, North sector).

Roundtable Discussion on MDG#7 (Ensure Environmental sustainability) Focus on Lowland, Urban and Industrial Environments, 04 May 2010, Traders Hotel, Roxas Blvd., Pasay City, organized by the National Academy of Science and Technology Philippines (NAST) for the purpose of: 1. Discussing progress on MDG # 7 Monitoring; 2. Assessing MDG #7 (Ensure Environmental Sustainability) with focus on lowland, urban and industrial environments; 3. Providing recommendations to meet the goals of MDG # 7.

Water W.A.T.C.H. - Water Conference on the Wise Adaptation of Technologies for Clean H₂O, 14-16 May 2010, Baler, Aurora, Philippines, organized Congressional Commission on Science & Technology, and Engineering (COMSTE) - Republic of the Philippines, Institute of Civil Engineering, University of the Philippines, and other organizations and agencies.

32nd Annual Scientific Meeting (ASM) under the theme "Millennium Development Goals (MDGs) and Beyond: Are We Making Progress?", 14-15 July 2010, Manila Hotel, Manila., organized by the National Academy of Science and Technology Philippines (NAST).

Symposium: Reducing Risks and Disasters due to Rainfall Variability - protecting life, food and property from flood and drought, 28 July 2010, organized by UP Diliman and UP Los Banos, UP NISMED Auditorium, University of the Philippines, Diliman.

Specialty Workshop on Status of Research and Education on Climate and Ecosystem Change Adaptation in the Philippines, 9 August 2010, Beta Epsilon Multimedia Room, College of Engineering, University of the Philippines, Diliman. This workshop is part of the Comparative Studies on Development Strategies considering Impacts of Adaptation to Climate Change (CSDS-IACC) project initiated by the United Nations University Institute for Sustainability and Peace, Tokyo.

Climate Change: Scenarios, Uncertainties, Parameters and Other Things, Forum on Climate Change and Water Resources, 25 September 2010, Mandarin Oriental Suites, Cubao, Quezon City.

Dialogue: One Year After the Big Floods. What really happened? Where are we now?, organized by Philippine Water Partnership (PWP), 22 September 2010, Sulu Riviera, Diliman, Quezon City.

Joint National Academy of Science and Technology (NAST) and Philippine Water Partnership (PWP) Roundtable Discussion (RTD) on Priority Legislation for the Philippine Water and Sanitation Sector, 22 November 2010, Discovery Suites, 25 ADB Avenue, Ortigas Center, Pasig City, Objectives: 1. To develop an updated list of development issues and set of recommendations for water sector reforms (Water Code and other water-related laws) to be presented to both executive and legislative branches of government; 2. Identify potential champions for water reforms in Congress, water-related government agencies and NGOs.

1.2.2 Participation in IHP Steering Committees/Working Groups

Leonardo Q. Liongson (UP Diliman) – Philippine national representative to the RSC (2002-2009); and elected as Chairman of RSC (two-year term: 2008 and 2009) during the 15th RSC Meeting held in Manila, Philippines on 22-23 October 2007, attending to chair both the 16th RSC Meeting in 2008 at Ulan Bataar, Mongolia, and the 17th RSC Meeting in 2009 at Wuhan, China, and attending the 18th RSC Meeting in 2010 in Hanoi, Vietnam, and as National Representative to the 19th IGC Meeting of UNESCO-IHP held on 5-9 July 2010 in UNESCO HQ, Paris, France, where he was elected as a member of the Draft Resolution Committee.

Guillermo Q. Tabios III (UP Diliman), RSC member - has served as co-coordinator with RSC member Prof. Trevor Daniels of Adelaide University in the RSC-assigned task group for APFRIEND (2005-2010) on the development of Rainfall Intensity Duration Frequency (IDF) and with Mr. Dennis Jamieson of New Zealand on the Flood Frequency (FF) relations in the SEAP region.

Guillermo Q. Tabios III (UP Diliman), RSC member – has served as Philippine focal person in the Assessment of Flood Forecasting and Warning System (FFWS) for Tropical Regions, organized by the the UNESCO-IHP Humid Tropics Center, Malaysia.

First Meeting of the “Assessment of Flood Forecasting and Warning System (FFWS) for Tropical Regions” held at Kuala Lumpur, Malaysia, April 20-24, 2009.

Second Meeting of the “Assessment of Flood Forecasting and Warning System (FFWS) for Tropical Regions” held at Bogor, Indonesia, July 15-18, 2009.

Third Meeting of the “Assessment of Flood Forecasting and Warning System (FFWS) for Tropical Regions” held at Danang, Vietnam, October 9-11, 2009.

Tabios, G.Q. (2010). Report on Assessment of Flood Forecasting and Warning System for tropical Regions: Case of Marikina River Basin, International Hydrology Programme, UNESCO-Jakarta Office, Universiti Tenaga National, Selangor, Malaysia, May 24-25, 2010.

Daniel C. Peckley Jr. (UP Diliman). Rain-induced landslide susceptibility: a guidebook for communities & non-experts, 9 November 2010, 2nd IHP Flood Project – DRH Implementation Workshop (2nd IHP-DRH Workshop, part of HWC2010 and RSC18 framework).

1.2.3 Research/applied projects supported or sponsored

Institute of Civil Engineering (UP-ICE) and National Hydraulic Research Center (NHRC)

Flood Hydrology of the September 26, 2009 Extreme Event, by Leonardo Q. Liongson, Team Enery Professorial Chair, Institute of Civil Engineering, 21 July 2010, Beta Epsilon Multimedia Hall, Juinio Hall, College of Engineering, University of the Philippines, Diliman.

Hydraulic Analysis of a Cascade of Flood-Control Dams

Project Leader: L. Q. Liongson, Institute of Civil Engineering
Duration of research: one year (June 1, 2010-May 31, 2011)

Flash Flood Analysis for Varied Morphology of Steep Catchments

Project Leader: L. Q. Liongson, Institute of Civil Engineering
Duration of research: one year (June 1, 2010-May 31, 2011)

Enhancement, Incorporation of Optimization Module and Calibration of MWSI Water Distribution Network Model, 2008-2009, UPERDFI-NHRC project for Maynilad Water Services, Inc. (MWSI), University of the Philippines, Diliman, Quezon City, Philippines.

Ambuklao and Binga Rehabilitation Project, Sedimentation and Reservoir Operation Studies, 2009, UPERDFI-NHRC project for NORCONSULT Management Services (Phil.) Inc., University of the Philippines, Diliman, Quezon City, Philippines.

National Academy of Science and Technology (NAST)

NAST Research Fellowship on the Metro-Manila Floods caused by Tropical Storm Ketsana (Ondoy) and other Flood Events of 2009.

National Research Council of the Philippines (NRCP)

Publication/Updating of the Philippine Compendium of Science and Technology
(Chapters on Hydrology, Hydraulics and Water Resources Management)

National Water Resources Board (NWRB)

NWRB-JICA *Study on Integrated Water Resources Management for Poverty Alleviation and Economic Development in Pampanga River Basin*,

Phase I (the phase for the basic study to assess the present conditions of the study area);

Phase II (the phase for formulation of the IWRM Plan).

January 2009 – February 2011.

Department of Environment and Natural Resources (DENR) and National Water Resources Board
ADB-assisted project - Philippines: Master Plan for the Agusan River Basin.

Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA),

Continuing Priority Programs of the Flood Forecasting Branch

- Upgrading of *Flood Forecasting Operations*.
- Establishment of *Communication Network Thru SMS Link* Between PAGASA Weather and Flood Forecasting Center (WFFC) Bldg. (Quezon City) and Magat Dam in Isabela.
- Calibration of the following hydrologic models, to be applied operationally to the various flood forecasting points of the Pampanga, Agno, Bicol and Cagayan River Basins:
MLRegression, Storage Function and Sacramento Model.

Establishment/Enhancement of *Community-based Early Warning System (CBEWS)* under the READY Project (UNDP), covering the following Provinces: Laguna, Ilocos Sur, Zambales, Cavite, Bohol

Conduct of *flood hazard mapping* (READY Project) in the following provinces: Ilocos Sur, Laguna, Cavite, Pampanga, Iloilo.

Improvement of the *Flood Forecasting and Warning System (FFWS)* of the Pampanga and Agno River Basins, to include the ff. activities:

Construction of the Pampanga River Flood Forecasting Center.

Implementation of JICA project in the Pampanga and Agno river basins

Strengthening of the *FFWS for Dam Operation*, including Magat Dam through the improvement of dam facilities and conduct of training.

Establishment of *Early Warning System for disaster mitigation* in the south (Iloilo) under the Korean Government - project began March 2008.

1.2.4 Collaboration with other national and international organizations and/or programmes**Philippine Water Partnership (PWP) & Global Water Partnership South East Asia (GWP-SEA)**

15th Global Water Partnership (GWP) - SouthEast Asia Steering Committee Meeting, The Meeting discussed the GWP-SEA Strategy 2009-2013 during the Planning Session. 17-20 September 2008, Jakarta, Indonesia.

16th Global Water Partnership - South East Asia (GWP-SEA) Steering Committee Meeting, 10 October 2010, Oakwood Hotel, Ortigas Center, Pasig City, Philippines. Hosting the Philippine Water Partnership and attendance by SEA country partners.

United Nations ESCAP

Expert Group Meeting (EGM) on Monitoring of Investment and Results (MIR) in the Water Sector in Asia and the Pacific, as a supporting event for the ADB Water Week, 11-13 October 2010, ADB, Pasig City, Metro Manila, United Nations Economic and Social Commission for Asia and the Pacific in collaboration with Philippine Water Partnership (PWP), Global Water Partnership (GWP), FAO, ICHARM, UNESCO, IUCN and ADB.

JICA AUNSEED Net, ASEAN Foundation, JSPS Asian Core Program

UP ICE Centennial Conference on Harmonizing Infrastructure with the Environment, featuring the 3rd ASEAN Civil Engineering Conference, the 3rd ASEAN Environmental Engineering Conference and the 1st Seminar on Asian Water Environments (JSPS Asian Core Program), 11-12 November 2010, EDSA Shangri-la Hotel, Mandaluyong City, Metro Manila.

1.2.5 Other Initiatives

Bureau of Soils and Water Management (BSWM), *Drought Mitigation Measures*.

Bureau of Soils and Water Management (BSWM), *Integrated Watershed Management for Sustainable Soil and Water Resources Management of the Inabanga Watershed, Bohol Island, Philippines*.

Bureau of Soils and Water Management (BSWM), *Rainwater Harvesting*.

Bureau of Soils and Water Management (BSWM), *Rehabilitation/Upgrading of Regional and Provincial Soil and Water Analyses*.

Bureau of Soils and Water Management (BSWM), *Small Water Impounding Projects (SWIP)*.

Flood Control & Sabo Engineering Center (FCSEC), Department of Public Works and Highways (DPWH), *Project for Enhancement of Capabilities in Flood Control and Sabo Engineering of the DPWH*, JICA.

Laguna Lake Development Authority (LLDA), *Environmental User Fee Program* (as centerpiece of Environmental Management Program).

Laguna Lake Development Authority (LLDA), *River Rehabilitation Program*.

Laguna Lake Development Authority (LLDA), *Lake Fishery Management Program*.

Laguna Lake Development Authority (LLDA), *Laguna de Bay Shoreland Management*.

1.3 Educational and training courses

1.3.1 Contribution to IHP Courses

Tabios, G.Q. III, 2009, Workshop Presentor, UNESCO-IHP Asia Pacific FRIEND Workshop on Design Rainfall and Flood Frequency, Ho Chi Minh City, Vietnam, March 9-10, 2009.

Tabios, G.Q. (2010). Report on Assessment of Flood Forecasting and Warning System for tropical Regions: Case of Marikina River Basin, International Hydrology Programme, UNESCO-Jakarta Office, Universiti Tenaga Nasional, Selangor, Malaysia, May 24-25, 2010.

1.3.2 Organization of specific courses

Hydraulic Modeling with HEC-RAS Hydraulic Model, HEDCOR, Baguio City (March 24-26, 2010). G. Q. Tabios (course leader).

Application of Enhanced EPANET Pipe Distribution Network Model with Optimization for MWSI Engineers (February 18, March 1 and March 12, 2010). G. Q. Tabios (course leader).

1.3.3 Participation in IHP courses

19th IHP Training Course on Water Resources and Water-Related Disasters under Climate Change: Prediction, Impact Assessment and Adaptation, 9-12 December 2009. Disaster Prevention Research Institute (DPRI), Kyoto University. Philippine participant: Lestelle Torio, Institute of Civil Engineering, University of the Philippines.

20th IHP- Nagoya Training Course on “Groundwater as a key for adaptation to changing climate and society”, 7-20 November 2010. Philippine participant: Josephine R. Billones, Engineer II, National Water Resources Board, Philippines.

1.4 Papers and Publications

Liongson L. Q. (2011). *Flood Mitigation in Metro Manila*, Philippine Engineering Journal, June 2011 (in press).

Dulawan, J. M. T. and L. Q. Liongson (2010). *A 2-D Steady-State Seepage Flow Model for Rice Paddies and Terraces*, UP ICE Centennial Conference on Harmonizing Infrastructure with the Environment, featuring the 3rd ASEAN Civil Engineering Conference, the 3rd ASEAN Environmental Engineering Conference and the 1st Seminar on Asian Water Environments (JSPS Asian Core Program), 11-12 November 2010, EDSA Shangri-la Hotel, Mandaluyong City, Metro Manila.

Liongson, L. Q. (2009), *Extreme Hydrologic Events in the last 20 Years: Perspective for Water Research and Management*. Special Seminar at the School of Environmental Science and Management (SESAM), University of the Philippines, Los Baños, College, Laguna, Philippines, 7 September 2009.

Liongson, L. Q. (2009), *Limiting Factors in the Design of Horizontal Wells*, Paper presented in the Environment and Infrastructure Track, 3rd Engineering Research and Development for Technology (ERDT) Conference, Manila Hotel, Manila, Philippines, 11 September 2009.

Liongson, L. Q. (2009), *Limitations on Yields of Horizontal Wells with Filter Beds*, Proceedings of the International Conference on Hydrology and Disaster Management (H&DM 2009) & 17th RSC Meeting for UNESCO-IHP Southeast Asia and the Pacific, UNESCO-IHP Phase VII Technical Document No. 2, Wuhan, China, 2-6 November 2009.

Tabios, G.Q. III (2009), Optimization of Monthly Releases of the Multipurpose Angat Reservoir, Philippines, In Proc of International Conference on Hydrology and Disaster Management (H&DM2009), UNESCO-International Hydrology Program, Wuhan, China, Nov 2-6.

Tabios, G.Q. III (2009), Climate Change: Scenarios, Uncertainties, Parameters and Other Things, Forum on Climate Change and Water Resources, Mandarin Oriental Suites, Cubao, Quezon City, September 25.

Tabios, G.Q. III (2009), Water Resources Management with Climate Change, TAO Pilipinas' 2009 YP Workshop, Antipolo, Rizal, October 23.

Tabios, G.Q. III (2009), Typhoon Ondoy & Marikina River Flooding (Part 1) and Climate Change Scenarios & Parameters (Part 2), Joint Union of Local Authorities of the Philippines (ULAP) and League of Cities of the Philippines (LCP) Dialogue, Wack Wack Golf and Country Club, Mandaluyong City, October 27.

Tabios, G.Q. III (2009), Climate Change Scenarios, Design Parameters and Water-Related Studies, 5th National Meteorological-Hydrological Convention, Understanding the Climate Change Issues: A Key to a Better Planning and Investment, Philippine Meteorological Society, University Hotel, UP Diliman, November 19-20.

Tabios, G.Q. (2010), San Roque Dam Operations and Agno River Basin Flooding during Typhoon Pepeng, Flood Summit, Philippine Institute of Civil Engineers, Max Restaurant, Quezon Memorial Circle, Quezon City, February 12.

Tabios, G.Q. III (2010), Marikina River and Laguna Lake Floodings during Typhoon Ondoy, Rizal-Laguna Tri-Sectoral Rehabilitation Initiative Stakeholders' Conference, DA-Agricultural Training Institute, Quezon City, March 29-30.

Tabios, G.Q. III (2009), Climate Related Teaching and Research (or Lack Thereof) at Our Institution, In Proc of Climate Change and Sustainability: Role of Higher Education in Adapting to Climate Change, United Nations University, Tokyo, Japan, June 11, 2009.

Tabios, G.Q. (2010), Flooding Disasters by Typhoon Ondoy and Pepeng in the Philippines in 2009, International Symposium on Water Induced Disasters of 2009 in Japan, Taiwan and Philippines, Kyoto University, Uji Campus (March 15, 2010)

Tabios, G.Q. (2010), Report on Assessment of Flood Forecasting and Warning System for tropical Regions: Case of Marikina River Basin, International Hydrology Programme, UNESCO-Jakarta Office, Universiti Tenaga Nasional, Selangor, Malaysia, May 24-25.

Tabios, G.Q. III (2010), Integrated flood management: Urban dimensions of watershed systems, International Conference on Sustainability Science for Food, Forests and Floods: Intergrating Climate Adaptation and Pro-Poor Resources, East-West Center, Honolulu, Hawaii, May 27-28.

1.5 Participation in international scientific meeting

17th Regional Steering Committee Meeting for Southeast Asia and the Pacific Pacific, UNESCO IHP, and the International Conference on Hydrology and Disaster Management (H&DM 2009) Pacific, 2-6 November 2009, Wuhan, China. Attendance as country representative to present Philippine country report and a technical paper.

20th Steering Committee Meeting of the Global Water Partnership Southeast Asia (GWP SEA), 08 June 2010, Benpasar, Bali, Indonesia.. Attendance as national delegate and Chairman of the Philippine Water Partnership (PWP) which is the Philippine member of GWP SEA, as well as in behalf of the National Hydraulic Research Center, University of the Philippines which is a member institution of PWP.

ASEAN Workshop on Risk and Impact from Extreme Event of Floods in ASEAN Countries, 09-10 June 2010, Benpasar, Bali, Indonesia. Attendance as GWP-PWP Philippines participants.

19th Session of the Intergovernmental Council (IGC) of the International Hydrological Programme (IHP) of UNESCO, 05-09 July 2010, UNESCO Headquarters, Paris, France. Attendance as Philippine representative.

18th Regional Steering Committee Meeting for Southeast Asia and the Pacific UNESCO International Hydrology Programme (18th RSC Meeting for SEAP UNESCO-IHP) in conjunction with The International Conference on Hydrological Regime and Water Resources Management in the Context of Climate Change HWCC2010, held on 8-12 November 2010, in Hanoi, Viet Nam.

Climate Change and Sustainability: Role of Higher Education in Adapting to Climate Change, United Nations University, Tokyo, Japan, 11 June 2009.

International Symposium on Water Induced Disasters of 2009 in Japan, Taiwan and Philippines, Kyoto University, Uji Campus March 15, 2010.

International Conference on Sustainability Science for Food, Forests and Floods: Intergrating Climate Adaptation and Pro-Poor Resources, East-West Center, Honolulu, Hawaii, 27-28 May 2010.

1.5.1 Meetings hosted by the country

Global Water Partnership - South East Asia (GWP-SEA) Steering Committee Meeting, 10 October 2010, Oakwood Hotel, Ortigas Center, Pasig City, Philippines. Hosting and attendance by the Philippine Water Partnership.

Expert Group Meeting (EGM) on Monitoring of Investment and Results (MIR) in the Water Sector in Asia and the Pacific, as a supporting event for the ADB Water Week, 11-13 October 2010, ADB, Pasig City, Metro Manila, United Nations Economic and Social Commission for Asia and the Pacific in collaboration

with Philippine Water Partnership (PWP), Global Water Partnership (GWP), FAO, ICHARM, UNESCO, IUCN and ADB.

Water Week ADB: "Water Crisis and Choices" ADB and Partners Conference 2010, 11-14 October 2010. Asian Development Bank (ADB), Ortigas Center, Pasig City, Metro Manila.

UP ICE Centennial Conference on Harmonizing Infrastructure with the Environment, featuring the 3rd ASEAN Civil Engineering Conference, the 3rd ASEAN Environmental Engineering Conference and the 1st Seminar on Asian Water Environments (JSPS Asian Core Program), 11-12 November 2010, EDSA Shangri-la Hotel, Mandaluyong City, Metro Manila.

1.5.2 Participation in meetings abroad

No additional information is available.

1.6 Other activities at regional level

1.6.1 Institutional relations /co-operation

No complete information is available.

1.6.2 Completed and ongoing scientific projects

No additional information is available.

2.0 Future Activities

2.1 Activities planned for 2010-2011

Participation in the 19th RSC Meeting to be held in Japan in 2011.

Participation in currently RSC-supported programs and activities such as APFRIEND, Catalogue of Rivers for SEAP, FFWS, DRH and the IHP training courses conducted by the University of Nagoya.

2.2 Activities in the long term

Concerted efforts and initiatives for research and extension activities in flood management, water-related multi-hazard risk assessment and mitigation, climate change mitigation and adaptation, and sustainable development in the context of integrated water resources management (IWRM).

Continued support of, and participation in the UNESCO-IHP in general and the RSC in particular, in all present and future: activities: APFRIEND (rainfall IDF and flood frequency studies), Catalogue of Rivers for SEAP, DRH, IHP training courses conducted by host countries, and joint hydrologic training courses and researches among member countries.

NATIONAL REPORT ON IHP RELATED ACTIVITIES
IN
REPUBLIC OF KOREA

November, 2010

Korean National Committee
for
The International Hydrological Programme
Republic of Korea

1. ACTIVITIES UNDERTAKEN IN THE PERIOD NOVEMBER 2008 - OCTOBER 2010

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(2010), 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-VII activities

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-VII during the period(2008-2013) as listed in Table-1 and the potential activities to be undertaken by the Korean National Committee for the IHP as listed in Table-2 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 (JIIHP)

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-1 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(JIHP)				
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-2 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(JIHP)	
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

During the first, second and this year(2008-2010) of the seventh phase of IHP, the Korean National Committee for the IHP has been and being paid its efforts to achieve the objectives set by UNESCO for this phase of IHP and the following projects have been and being executed in Korean river basins and in the field of hydrology and water resources in Korea;

- (1) Global changes and feedback mechanism of hydrological processes
- (2) Climate change impacts on the hydrological cycle and consequent impact on water resources
- (3) Managing groundwater systems' response to global changes
- (4) Strengthening water governance for sustainability
- (5) Ecological measures to protect and remediate catchment process
- (6) Improving ecosystem quality and services by combining structural solutions with ecological biotechnologies
- (7) FRIEND and HELP basin studies

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(The K-Water), 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, Workshop and Working Group meetings held in the period of 2007~2010.

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 2007~2010 have been executed according to the above listed projects in 1.1.2. 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(The K-Water) 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 a new HELP basin(Kumho river)

which was accepted as a HELP basin in Korea by UNESCO.

- 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
- New HELP river basin 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 Korean 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(ICCHARM) 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.

- 2008 International Seminar on Climate Change and Water
- 2009 International Symposium on Hydrological Environment
- 2010 International Conference on Hydrology and Water Resources

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 2010, foreseen for 2011-2012 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, and also will execute a new HELP river basin project in collaboration with other Asia Pacific HELP projects.

The following international symposiums and workshops will be organized until December 2010 and during 2011-2013 as the IHP-VII activities of IHP-KNC.

- 2010 HELP Inauguration International Conference
- 2010 and 2011 International Symposium on Hydrologic Environment
- Korean Workshops of FRIEND and HELP during 2011-2013

**NATIONAL REPORT ON IHP RELATED ACTIVITIES
THAILAND**

November 2010

**Thailand national Committee
For the UNESCO International Hydrological Programme**

1. ACTIVITIES UNDERTAKEN IN THE PERIOD October 2009 – September 2010

1.1 Meeting of the IHP National Committee

In order to facilitate the implementation of IHP activities in Thailand, the Thailand national committee for the UNESCO-IHP which was established in 1963 reformed in 1998-2002 are carried out under the guidance of the National Water Resources Board (NWRB). Since that time DWR who is the NWRB's secretariat have worked as the chairman of IHP Thailand committee.

Formally, the committee now has 18 members, mostly are representative of governmental agencies with some hydrologist expert. The Bureau of Research Development and Hydrology (BRDH)'s Director under DWR is the secretary of the committee. In particularly, BRDH will play the major role in coordinating and applying future IHP Thailand activities.

For last year, only non formal meetings were performed by sub-committees network; on hydrological database, on researching, on human resources development, and on publishing and public relation.

1.1.1 Decision regarding the composition of the IHP National Committee

Thailand IHP members are agencies and organizations (public and private) which are engage in database, research, development and management activities in water sector. During the last year, new Thailand IHP's chairman in DWR was approved by the Ministry of Natural Resources and Environment(MONRE). Dr. Kasemson Jinnawaso was IHP's chairman from October 2009 - September 2010 and Mr. Boonchai Ngamvijroj was acting as the secretariat. Presently Mr.Jatuporn Buruthpat are IHP's chairman which have been approved since October 2010. The list of IHP members are summarized below:

Chairman: Mr.Jatuporn Buruthpat
Director General of Department of Water Resources (DWR)

Vice Chairman:Deputy Director General of Department of Water Resources (DWR)
Deputy Director General of Royal Irrigation Department (RID)

Secretary: Mr.Wiwat Sojuaya
Director of Research and Hydrology Development Division (BRDH), DWR

Other member:Royal Irrigation Department (RID)
National Park, Wildlife and Plant Conservation Department (DNP)
Department of Ground Water Resources (DGR)
Meteorological Department (TMD)
Marine Department (MD)
Hydrographic Department
National Research Council of Thailand (NRCT)
Bureau of Royal Rainmaking and Agricultural Aviation
Secretarial of the Thai National Commission for UNESCO
Electricity Generating Authority of Thailand (EGAT)
The Thailand Research Fund (TRF)
Thai Hydrologist Assembly
Dr.Veeraphol Taesombat, Kasetsart University (KU)

1.1.2 Status of IHP-VII activities

Many focal areas related to IHP-VII activities are going on by IHP network but not done directly on behalf of IHP committee.

On 21-22 June 2010, BRDH-DWR organized a workshop on “The Enhancement of remotely hydrological measurement efficiency, monitoring and automatic warning of flood landslide systems” in Prajuabkirkiran province. It is aimed to exchange of experience and integration of collaboration in

monitoring of flood hazard. On 13th January 2010, the faculty of engineering, Kasetsart University organized a seminar on “The water management under water crisis and climate change” in Bangkok.

In general global change in river basin especially drought and flood are increasingly in Thailand. Note that in 2010, drought and flood occurred even within the same year. On the beginning of this year, DWR and RID noted that average level of reservoir storage was -6 % due to decreasing of rainfall amount about -110 millimeters. Then they suggested farmers to reduce paddy field agriculture or should done 2-3 months delay. But during august to October, many areas have faced flood problem because the rainfall and runoff are approximately 26 provinces. By summary, drought problems impacts to 60 provinces and flood problem causes farmers lost almost all of their farm products.

This is partly due to the highly intensive land use and partly due to different rainfall period and physical characteristics among region of the country. The impacts of drought crisis cause to the amount of water in reservoirs in many areas of the country which are the important areas, especially for the agricultural sector has decreased significantly. So the water resources policy has approved the feasibility study of several projects, mainly the diversion between watershed and the conjunctive uses of surface and ground water. Up to date with the progress in vary stages such as researching, studying of environmental impact, public participation, detailed design and land acquisition are done. DWR, RID and GWD is the major agencies responsible for them. Large scale projects which are under study including water diversion between Thailand and Lao PDR. The ongoing researches investigating ground well, water quality, uprising of saline ground water and impacts, and socio-cultural in aspect of community water management have been done by DWR.

The researches worked so far indicate the board picture of effects of global warming in water resources that there is a potential increase by about 10-20 % of rainfall across all the regions in the country and rainy seasons would not change much. On 16th August 2010, Thailand Greenhouse Gas management Organization collaborated with relevant agencies to support the mission of academic information about climate change organized a conference on “The First Climate Thailand Conference 2010: National Risks, Opportunities and Challenges in Global Changes” at Nontaburi province.

It is found from the study of way of life living on flood and drought crisis areas that though such problem can not be avoided, some communities have already adjusted by changing their cropping season, land utilization types and their occupations in order to mitigate various impacts.

1.1.3 Decisions regarding contribution to/participation in IHP-VII

Due to non formal meeting existed in last year, none of decision was made. Anyway many activities were done corresponding to hydrology master plan which operation's goals are:

1. standardized network systems and hydrological data in various areas of each agency for increasing efficiency,
2. acquisitions of knowledge through researching for water resources management,
3. development of hydrologic capacity building continuously at different levels,
4. publishing to extend hydrological information countrywide consecutively and
5. cooperation with the international organization continuously.

1.2 Activities at national level in the framework of the IHP

In preparing to manage the impact of climate change, Thailand has prepared the National Strategy management for climate change (2008-2012) which was approved by the Cabinet. While the master plan during a period of 10 years (2010-2029) and 3-year action plan are also in preparation. The National Climate Change Master Plan purposed by Office of Natural Resources and Environmental Policy and Planning (ONEP) comprises of 3 strategies which are:

- Strategy 1: Create the ability to adapt to address and reduce the impact of climate change.

Strategy 2: Support for reducing greenhouse gas emissions and absorption sources of greenhouse gases on the basis of sustainable development.

Strategy 3: integrated management in a changing climate.

Moreover, drafting the 11th plan of the National Economic and Social Development (2012-2017) subjected global agenda on climate change is a major topic. For the national policy, national committee on climate change chaired by the prime minister has been established to prepare to the special negotiations and Institute of Good Governance for Social Development and the Environment has been appointed as a member.

1.2.1 National/local scientific and technical meetings

On 26th October 2010, the bane of Bangkok in the future: the changing nature or way of development was held in Bangkok. This event was organized by The Thai Academy of Science and Technology (TAST) in conjunction with the Science Society of Thailand under the Patronage of His Majesty the King and Thummasart University.

On 18th October 2010, policy research on climate change in Thailand under the context of sustainable development and low carbon economy was held in Bangkok. This event was organized by Southeast Asia START Regional Center and climate change study - Chulalongkorn University Thailand.

On 27th August 2010, "The study of developing guidelines for data preparation and a model for emission inventory in Thailand" was held in Bangkok. It was organized by King Mongkut's University of Technology Thonburi aimed to construct of database for emission inventory.

On 6th August 2010, there was a seminar on "Effectiveness of Community-based Adaptation to Climate Change" organized by Adaptation Knowledge Platform, Asia Pacific Adaptation Network, Care International, Climate Change Knowledge Management Center and USAID Thailand

On 22nd July 2010, the 1st Global Warming Forum on "Global warming: crisis or opportunity to the agricultural sector" was organized by Khonkaen University in conjunction with Thailand Research Fund.

1.2.2 Participation in IHP Steering Committees/Working Groups

Ms. S. Runghirunviroj from DWR attended the 17th RSC meeting held in Wuhan, China, 5-6 November, 2009. One last invitation was cancel because DWR can not support its expenditure.

1.2.3 Research/applied projects supported or sponsored

Flash floods and landslides that occurred in Thailand in various areas are intensive their effects day by day especially on a small watershed with mountainous or sloping land. Measures to reduce damage from such events are development of Early Warning system, which is simple in principle. The measured data of rainfall or runoff and soil moisture measurements are done, and then make their correlation of those data within each basin. The projects of installation of the Early Warning System for flood risk areas – landslides risk areas have been approved. Its aim is to cover 2300 villages throughout the country continuously since 2005 to present.

1.2.4 Collaboration with other national and international organizations and/or programmes

IHP Thai committee has collaboration with a wide range of national and international organizations including multiple projects with the Mekong River Commission, the Asian Working group on Water Resources Management and ADB projects.

The Flood Management and Mitigation Programme, is one of the collaboration which have done by Thai IHP organization. The programme has activities with other country within the Lower Mekong Basin. It's key implementing partners such as NCDM-Cambodia and DDMFSC-Vietnam where as The Mekong river commission (MRC) have been a key coordinator. The programme was designed for six years, covering the period from 2004 to 2010. Much of the total budget comes from the Netherlands and Germany, with the USA, the ADB, Japan, Denmark and the European Union.

There are five components. Establishment of a Regional Flood Mitigation and Management Centre in Phnom Penh is the first.. This first component also produces Annual Mekong Flood Reports and organizes the Annual Mekong Flood Forums, which provide a chance for national flood centers and their partners to discuss emerging needs and review the progress each country has made towards holistic and balanced flood management. The second component, Structural Measures and Flood Proofing, aims to reduce the vulnerability of society to floods. The third component works to strengthen cooperation and capacity to address and resolve differences in trans-boundary flood issues. The fourth programme component, Strengthening Competence in Flood Preparedness and Mitigation, works with communities, emergency response managers and civil authorities. Land Management, the fifth and final component, gives institutional, human and technical support to local authorities to promote sustainable land management.

Basin Development Plan (BDP) Programme Phase 2 (2006-2010), is another one collaborated with MRC. It is designed to institutionalize the participatory planning process established during BDP Phase 1 and further develop the assessment tools and IWRM-based planning capacity to produce a rolling IWRM-based Basin Development Plan. The three immediate objectives of BDP Phase 2 are:

- A rolling IWRM-based Basin Development Plan produced in support of sustainable development in the Mekong River Basin.
- Knowledge base and assessment tools further developed and used effectively in the MRCS, in National Mekong Committees (NMC) and in selected line agencies.
- Capacity built at MRC and NMC levels for IWRM planning and facilitation/mediation in areas where trade-off management is required.

Mekong – HYCOS (WORLD HYDROLOGICAL CYCLE OBSERVING SYSTEM) is to establish and operate a real-time flood information system in the Mekong basin with the different countries in a regional context (Cambodia, Lao, Thailand and Vietnam) and in a manner which is beyond the objectives of the MRC FMM Strategy and Programme. Backbone of the system is a network of hydrological and meteorological stations which some provide real time data to be primarily used for river monitoring and forecasting and products to be developed for flood forecasting in a way that the provided information can be directly used by authorities that are responsible for the transmission of flood warnings and the MRC to enable the provision of regional flood warnings and outlooks and some provide registered data to be collected/retrieved regularly upon the requirements of the programme activities.

Moreover, IHP Thai organization still have many projects collaborated with Typhoon Steering committee, APN Inter-Government on Global change, ASEM Waternet, and Network of Asian River Basin Organization.

1.2.5 Other initiatives

Water grid project

The Ministry of Natural Resources and Environment has initiated a project "Water Grid" to enable more than 100 million hectares of agricultural area with water. Mr. Suwit Khunkitti, Minister of Natural Resources and Environment launches the project which currently have preliminary survey and design. The agricultural areas that are more than 100 million hectares are currently irrigated area is 33 million hectares remain more than 70 million acres that have no water supply system in the area. The distribution of the Water Grid project will provide water to most farmers. The questionnaire was

sent to 79,000 people over the village with VCD for public information and do many public hearing to community health volunteer together with the head of the village. All concerned were asked for their opinion and more than five hundred thousand of questionnaire found that 95 percent responses agree with such project

1.3 Educational and training courses

No additional information is available

1.3.1 Contribution to IHP courses

None

1.3.2 Organization of specific courses

DWR have persuaded the communities living in flood, landslide and drought risk areas to measure rainfall and runoff by themselves. Up to 2010, approximately 750 communities then can monitor flood and drought status in parallel with real time monitoring system of DWR. Also community based researchers are trained to understand the water cycle and measurement instruments are delivered to villagers.

1.3.3 Participation in IHP courses

No additional information is available

1.4 Publications

Center for Technical Service, Chulalongkorn University. 2010. The study on impact of climate change and climate variability and extreme events in the future and adaptation of key sectors, a draft final report submitted to Office of Natural Resource and Environmental Policy and Planning. (in Thai)

Department of Water Resources. 2010. Hydrological and meteorological Year Book 2007. Bangkok.

Department of Water Resources and Naresuan University. 2010. The study and development of way of life and communities role on flood crisis areas: the case study in The Northern Region of Thailand. (in Thai)

Limgirakarn S., Limsakul A. and S. Thaweewong. 2009. The assessment of extreme weather in Thailand: analysis of risk and vulnerability of critical areas. Draft Final Report. Thailand Research Fund. Bangkok. (in Thai)

Nounmusig W. 2009. The Effect of ENSO on the Land Surface's Moisture in Thailand. Ph.D. Dissertation, The Joint Graduate School of Energy and Environment, King Mongkut's University of Technology Thonburi, Bangkok, Thailand. 128 pp.

Phratarasatapornkun T. and S. Pibalchonma. 2009. Trend of changes in sea level of the Gulf of Thailand. The documents of the Conference on Science and Technology of Thailand, No. 35, 15 - 17 October 2009, Chon Buri.

Phratarasatapornkun T., 2009. The variation in the climate of Thailand due to abnormal conditions on oceanography. Draft Final Report. Thailand Research Fund (TRF) 93 pages

T-Glob and Thailand Research Fund. 2010. Thailand climate Change Information. Volume 1 : Past climate. Bangkok. (in Thai)

1.5 Participation in international scientific meeting

1.5.1 Meetings hosted by the country

The First Mekong River Commission Summit 2010.

Thailand hosted the first Mekong River Commission (MRC) Summit between 2 - 5 April 2010 in Hua Hin, Prachuab Khiri Khan Province. The summit under the theme “Transboundary Water Resources Management in a Changing World” brought together regional political leaders, MRC dialogue partners China and Myanmar, its development partners, and experts in the field of integrated water management. The summit aimed to strengthen regional cooperation among member countries, upstream countries, civil society, the private sector, and other stakeholders. A range of challenges and opportunities facing the Mekong Basin today such as water level in Mekong river were discussed, particularly the long-term effects of climate change and the role of River Basin Organizations in poverty alleviation.

1.5.2 Participation in meetings abroad

The 8th Ministers’ forum on Infrastructure Development in the Asia – Pacific Region, 8 – 9 October 2010, Japan. Its theme is “ The adaptation of infrastructure to increasing water-related risks under the influence of climate change and organized by the Ministry of land, Infrastructure, Transport and Tourism, Japan.

1.6 Other activities at regional level

1.6.1 Institutional relations/co-operation

No information available

1.6.2 Completed and ongoing scientific projects

Refer section.....FMMP (2004-2010), the 2nd phase FMMP is preparing and launching in the next year.

2 FUTURE ACTIVITIES

2.1 Activities planned until December 2010

- Strengthening cooperation with other countries in Lower Mekong River Basin
- Promotion of public participation in Integrated Water Resources Management

2.2 Activities foreseen for 2010-2011

- Continuation of collaboration with RSC for Asia and Pacific region
- Continuation of involvement in Asian-Pacific FRIEND
- Enhancing activities contributed to IHP-VII
- Enhancing of flood and drought management effectively

2.3 Activities envisaged in the long term

- The research and study on water education for sustainable development

NATIONAL REPORT ON IHP RELATED ACTIVITIES

I. ACTIVITIES UNDERTAKEN IN THE PERIOD NOVEMBER 2009 - OCTOBER 2010

1.1 Meetings in the IHP National Committee

1.1.1 Decisions regarding the composition of the IHP National Committee

The Committee has remained unchanged during the period under review, with the Chairman being Dr. Tran Thuc, Director of Vietnam Institute of Meteorology Hydrology and Environment (IMHEN) - Ministry of Natural Resources and Environment (MONRE).

1.1.2 Status of IHP-VII activities

Prepare for the participation/contribution to IHP-VII activities.

1.1.3 Decisions regarding contribution to/participation in IHP-VII

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

1.2.1 National/local scientific and technical meetings

Scientific and technical meetings are generally held within the context of the Ministry of Natural Resources and Environment and professional societies (particularly the Viet Nam Natural Resources and Environment, Viet Nam Fluid Mechanics, and Viet Nam Geography Societies). The Chairman and the Secretary of the IHP National Committee meet regularly to discuss IHP matters.

1.2.2 Participation in IHP Steering Committees/Working groups

The members of the Vietnam National Committee for the IHP have attended and participated actively in all of the annual meetings of the Regional Steering Committee.

Participating in the Project Flood Forecasting & Warning System (FFWS) for Tropical Region. Vietnam shared flood forecasting experience in Thu Bon river basin with the Project.

Organizing and hosting the “Hydrology Regime in the Context of Climate Change” In conjunction with the 18th Regional Steering Committee Meeting.

1.2.3 Research/applied projects supported or sponsored

- *Impact of Sea Level Rise and Adaptation Measures*, Research project funded by DANIDA.
- *Impact of Climate Change on Water Resources and Adaptation Measures*. Research project funded by DANIDA.
- *Development of Operation rule for reservoir system on Ba river*, Research study funded by the Ministry of Natural Resources and Environment.
- *Determination of rainfall threshold for flash flood warning in Northern Mountainous Area*, Research Project funded by the Ministry of Natural Resources and Environment.
- *Development of flood management scenarios for Ma-Chu river basin*. Research study funded by the MARD
- *Proposing mechanism for conflict resolution in water resources utilization*. Research study funded by the Ministry of Natural Resources and Environment.
-

1.2.4 Collaboration with other national and international organizations

- Continuing contract with Met Office Hadley center (UK) to exchange and train on Precis model to downscaling climate data for Vietnam CC scenarios.
- Members/representatives of Vietnam NC IHP participated and contributed to many national councils.
- The VNNC IHP has yearly meeting with the Vietnam National UNESCO Commission,
- The Chairman and Secretary General of the National Committee are in frequent contact with the Vietnam's Permanent Representative to the WMO. This contact enables coordination of activities under the aegis of IHP and the WMO in Viet Nam,
- Cooperate with Ministry of Natural Resources and Environment of Viet Nam and other Agencies to organize a meeting on the occasion of the World Water Day,

1.2.5 Other initiatives

1.3 Education and training courses

1.3.1 Contribution to IHP courses

None.

1.3.2 Organization of specific courses

Collaboration with Met Office Hadley Center (UK) on training of downscaling Climate Data for development CC scenarios by using Precis model.

1.3.3 Participation in IHP courses

Integrated Flood Analysis System (IFAS)“ for Early Warning Flood System, Hanoi 6-7 Nov-2010.

1.4 Publications

Nil

1.5 Participation in international scientific meetings

1.6 Other activities at a regional level

1.6.1 Institutional relations/co-operation

1.6.2 Completed and ongoing scientific projects

Nil

II. FUTURE ACTIVITIES

2.1 Activities planned for 2010-2011

- Attending meetings IHP Regional Steering Committee for Southeast Asia and the Pacific.
- Participating in regional and national activities of IHP.

2.2 Activities envisaged in the long term

Unknown at this time.



ANNEX 6

INTERNATIONAL SEDIMENT INITIATIVE - ISI

International Hydrological Programme of UNESCO



Intergovernmental Council of IHP adopted the set-up of ISI
in Paris at June 2002

International Sediment Initiative

- Background
- Mission
- Vision
- Objectives
- Topics
- Activities and projects

Prof. Dr. M. Spreafico
University of Bern
Institute of Geography
CH- 3012 Berne

Background

Sediment production processes are not sufficiently understood. Sediment management practices should be improved

Erosion and sedimentation processes and management are increasingly important in all parts of the world



Erosion and sedimentation processes have significant socio-economic and environmental impacts



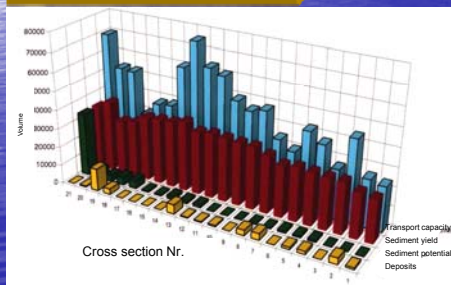
What is the mission?

Organization and promotion of international information exchange on sediment related matters, ensuring a most direct access to the policy makers in the member states, as well as motivating and activating the scientific and professional communities in the interested regions and countries.



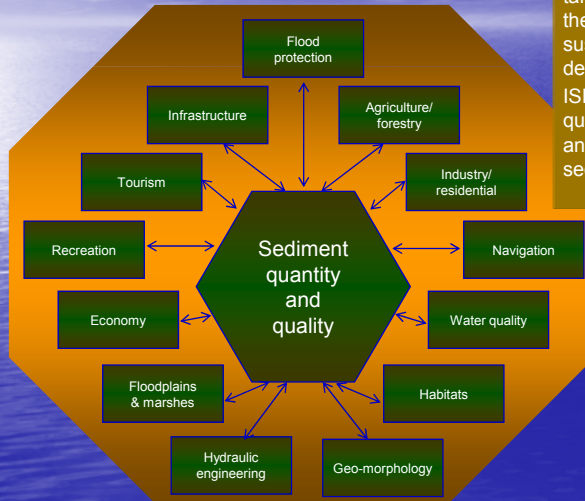
Monitoring and elaboration of sediments

Analysis and studies related to sediments



Methods and procedures in sediment management Policies

What is the vision of ISI?



ISI is a vehicle to advance sustainable sediment management at global scale, taking into account the commitments of the international community to sustainable water resources development.

ISI deals with sediment quantity and quality and focuses on economic, social and ecological aspects related to sedimentation

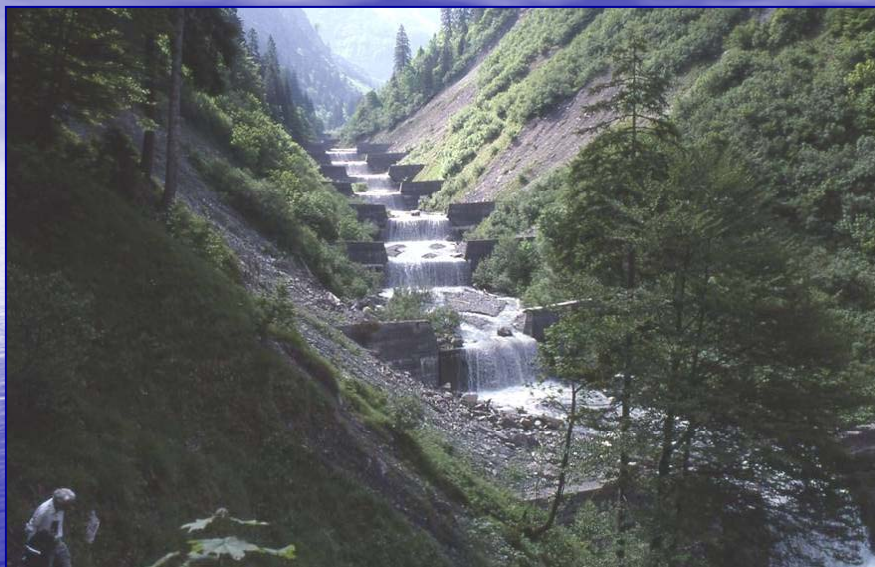
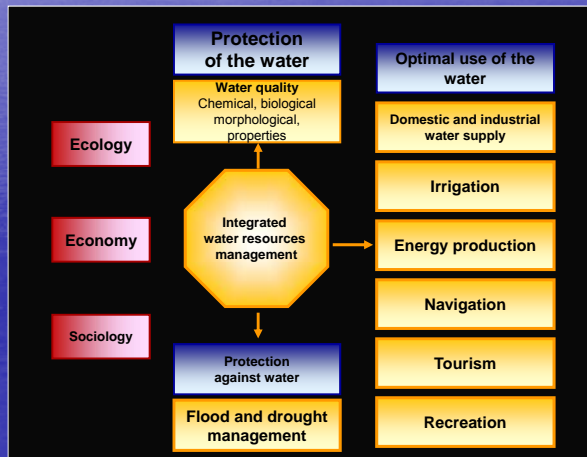
ISI International Hydrological Programme of UNESCO

ISI - Activities

- is a vehicle to advance the sustainable management of soil and sediment resources at local, regional and global scale, taking into account the commitments of the international community to sustainable water resource development
- Deals with both sediment quantity and quality and focuses on economic, social and ecological impacts and problems related to sediment
- aims to develop a decision support framework for sediment management
- aims to link science with policy & management needs

What are the objectives ?

Strengthening the awareness of sedimentation and erosion issues in integrated water resources management



Improving of sustainable management of soil and sediment resources

Education and training
Know how transfer
Provision of better advice
for policy development
and implementation



Topics of ISI

Sediment monitoring



Manual
suspended
sediment sampling



Equipment for integrated
sampling of suspended sediment

Sediment monitoring

Suspended sediment monitoring devices



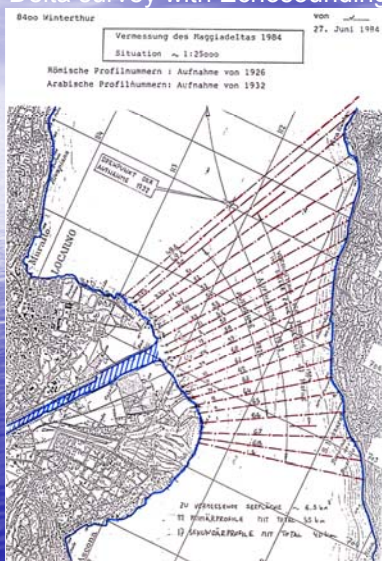
Turbidity meter



Automatic sediment sampler

Sediment monitoring

Delta survey with Echosounding



Sediment input:		
1926-32	$1.0 \times 10^6 \text{ m}^3$	167'000 m^3/y
1933-52	$4.9 \times 10^6 \text{ m}^3$	243'000 m^3/y
1953-84	$10.4 \times 10^6 \text{ m}^3$	324'000 m^3/y



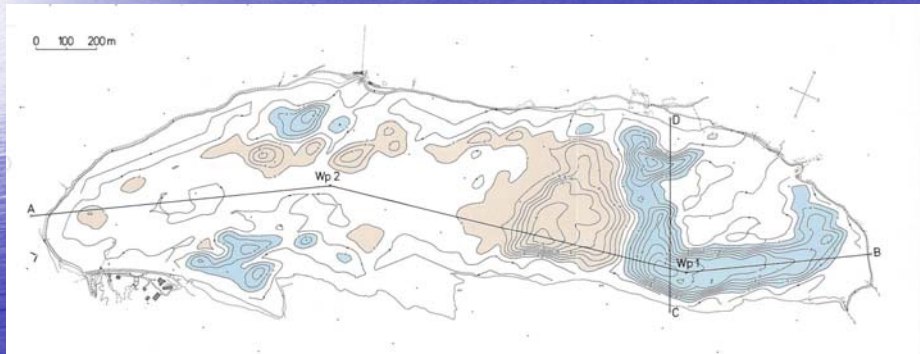
Maggia-delta

Sediment monitoring

Bathymetric survey

Bottom change in the Ritom reservoir 1907-1985

Blue = Erosion zones Brown = Accumulation zone



100920_International Hydrological Programme of UNESCO

13

Sediment monitoring

Core Drilling

Vertical gradated
deposition in the
delta of the Lake of
Walen



100920_International Hydrological Programme of UNESCO

14

Sediment monitoring

River bottom investigation

Special boat for bottom sediment sampling



BfG bed load sampler



Sediment monitoring

Wood debris / Driftwood

Blocked water intake of the water power station Massaboden

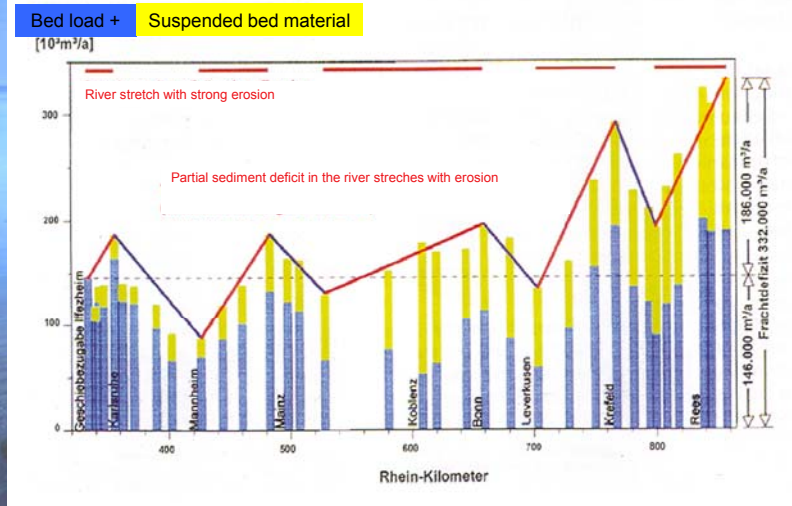


Driftwood in the city of Brig



Monitoring

Sediment balance in the River Rhine
Sediment load (Years 1981/90)



Witte, 2002, 150 Jahre Rheinstromverwaltung

Erosion



Gully erosion



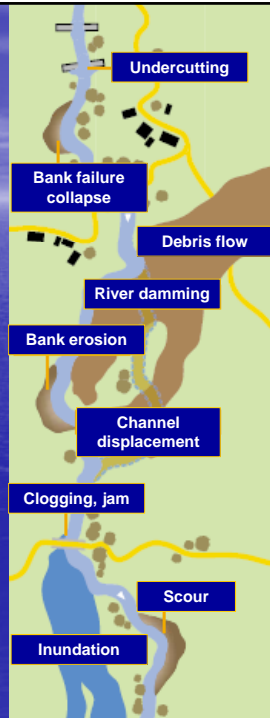
Bank erosion



Bed erosion

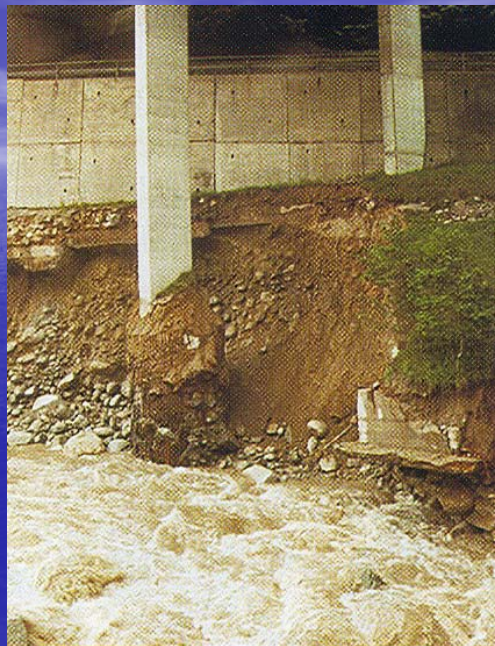
Flood and sediment

Impacts of floods



Flood and sediment

Undercutting



Flood and sediment



Bank failure collapse

100920_International Hydrological Programme of UNESCO

21

Flood and sediment

Debris flows



100920_International Hydrological Programme of UNESCO

22

Flood and sediment

Debris flow deposits



Debris deposit at Val Viale



Dynamic inundation

Criteria

- Depth of the deposits
- Deposits in curves

Flood and sediment

River damming by debris flow deposits from tributaries



Criteria

- Sediment load of tributary
- Transport capacity

Flood and sediment



Channel displacement

Flood and sediment

Glogging, jam by bridges (debris, wood)



Criteria

- Type of debris (bed load, wood)
- Deposits in curves

Flood and sediment

Flood of 2005
in Switzerland

Settling of
sediment

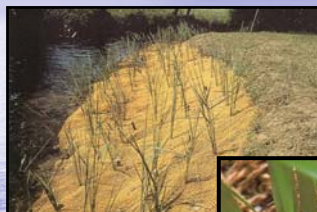


100920_International Hydrological Programme of UNESCO

27

Measures

Reduction of erosion



Supporting of
growth of
pioneer
vegetation



Reforestation



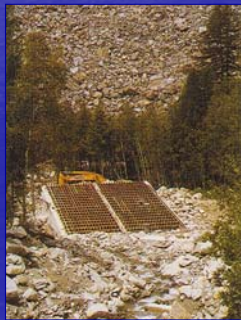
100920_International Hydrological Programme of UNESCO

28

Measures Stabilization



Check dams



Debris flow breaker



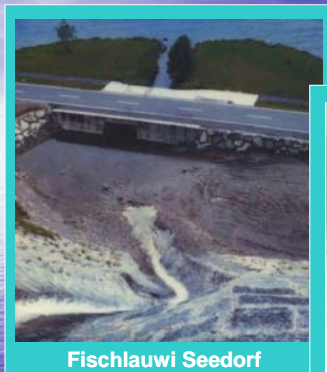
Opening of river bed

100920_International Hydrological Programme of UNESCO

29

Measures

Sediment retention basins



Fischlauwi Seedorf



Filderenbach Hochybrig



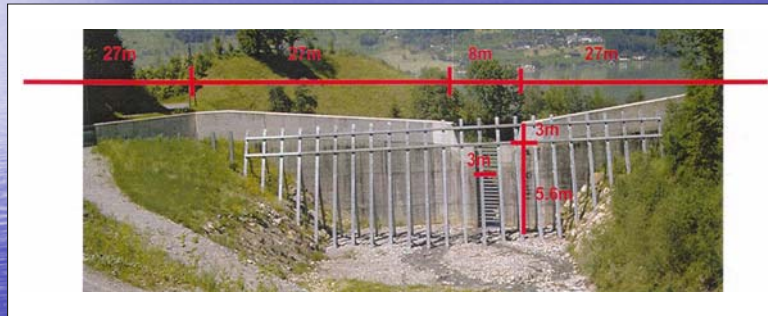
Berschnerbach Berschnis

100920_International Hydrological Programme of UNESCO

30

Measures

Sediment retention basin with special installation for the retention of floating material



Measures

Management

Sedimentmanagement between Iffezheim and Emmerich



Gravel addition



Start of input

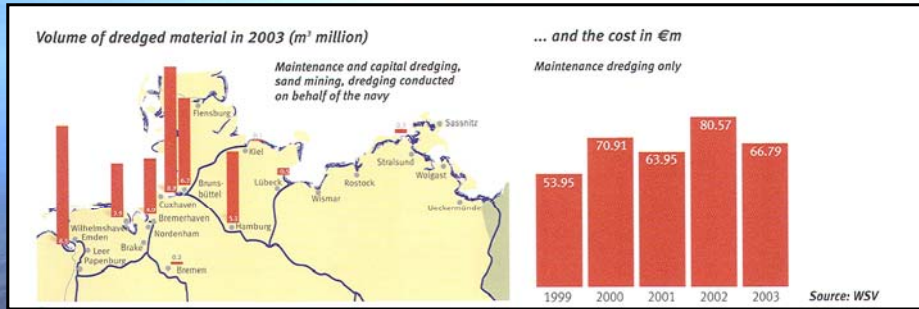


During

End of input

Measures

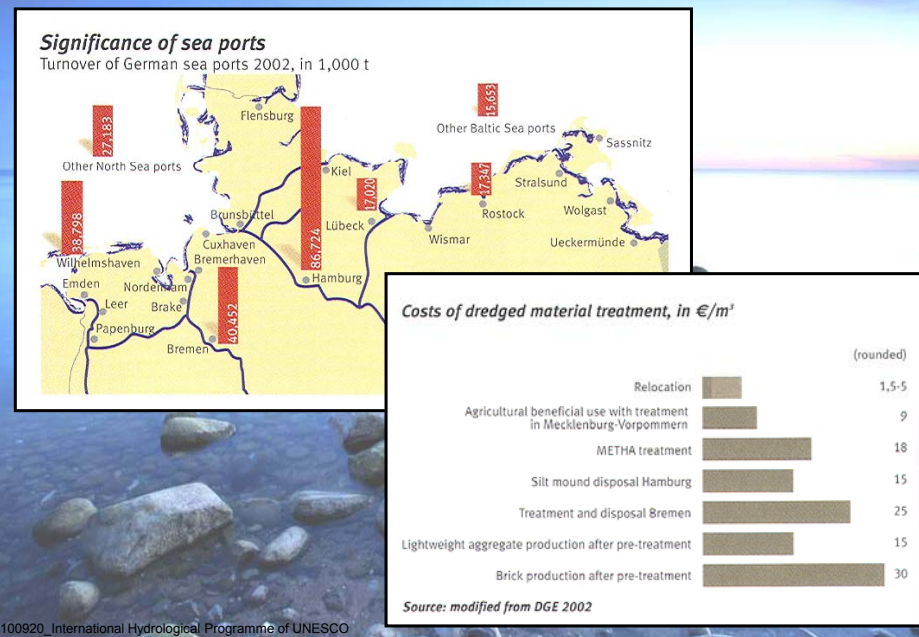
Shipping in sensitive areas Dredging in coastal waters-estuaries



Dredging strategies in Germany, FMTBH

Measures

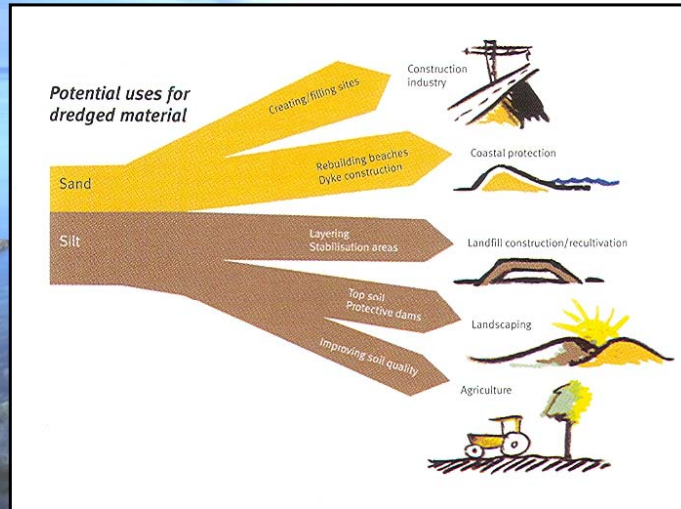
Dredging in sea ports



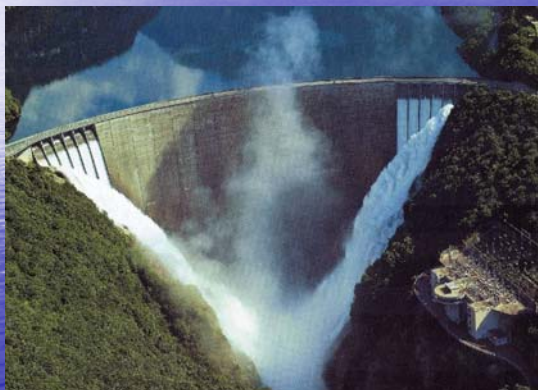
Measures

Benefit

Potential uses for dredged material

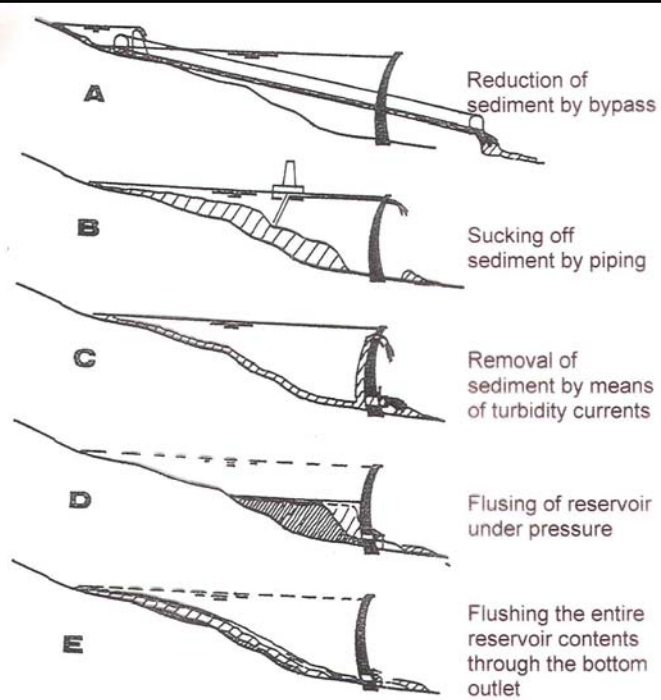


Sedimentation in natural and artificial lakes



Measures

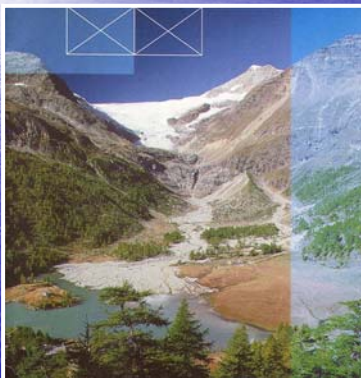
Procedures for the removal of sediment from reservoirs



100920_International Hydrological Programme of UNESCO

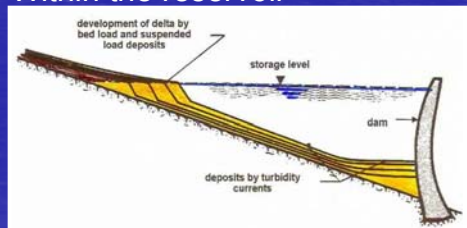
Sediment related environmental impacts of reservoirs

Upstream of the reservoir



Downstream of the reservoir

Within the reservoir



100920_International Hydrological Programme of UNESCO

38

Sediment in low land rivers and delta areas

Erosion transport and deposit of sediments in rivers and waterways for navigation



100920_International Hydrological Programme of UNESCO

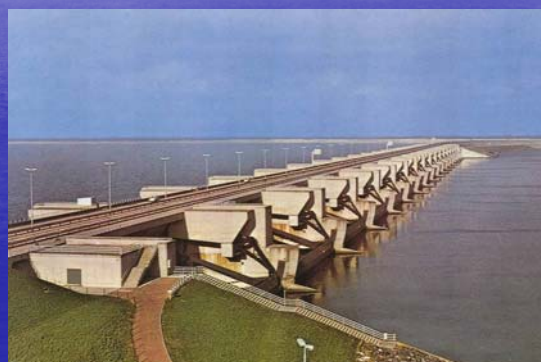
39

Sediment in low land rivers and delta areas

Rhine Delta Area



Polders



Dams
Fresh water / salinity

100920_International Hydrological Programme of UNESCO

40

Measures

Polluted mud disposal site at Rotterdam



100920_International Hydrological Programme of UNESCO

41

Main activities and projects

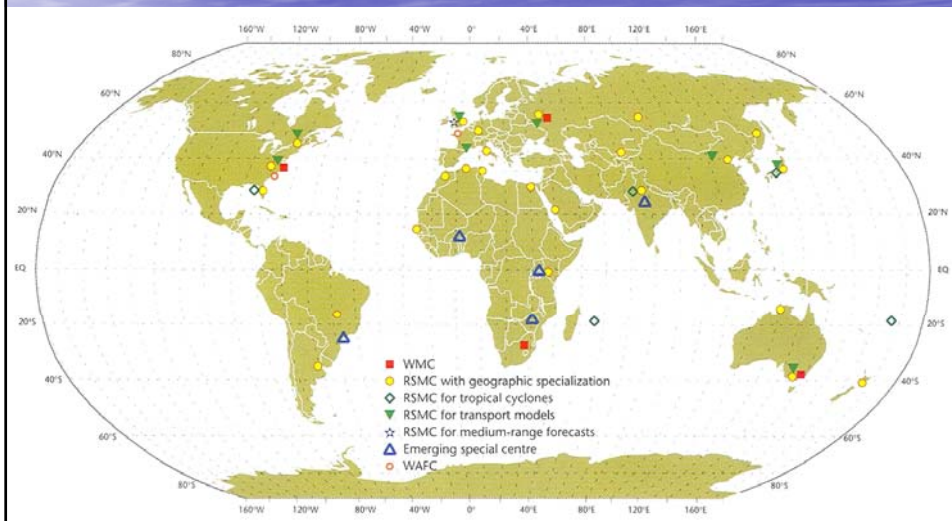
- Global evaluation of erosion and sediment transport
- Global erosion and sediment information system
- Case studies of large river basins as demonstration projects
- Review of erosion and sediment related research
- Education and training
- Networking

100920_International Hydrological Programme of UNESCO

42

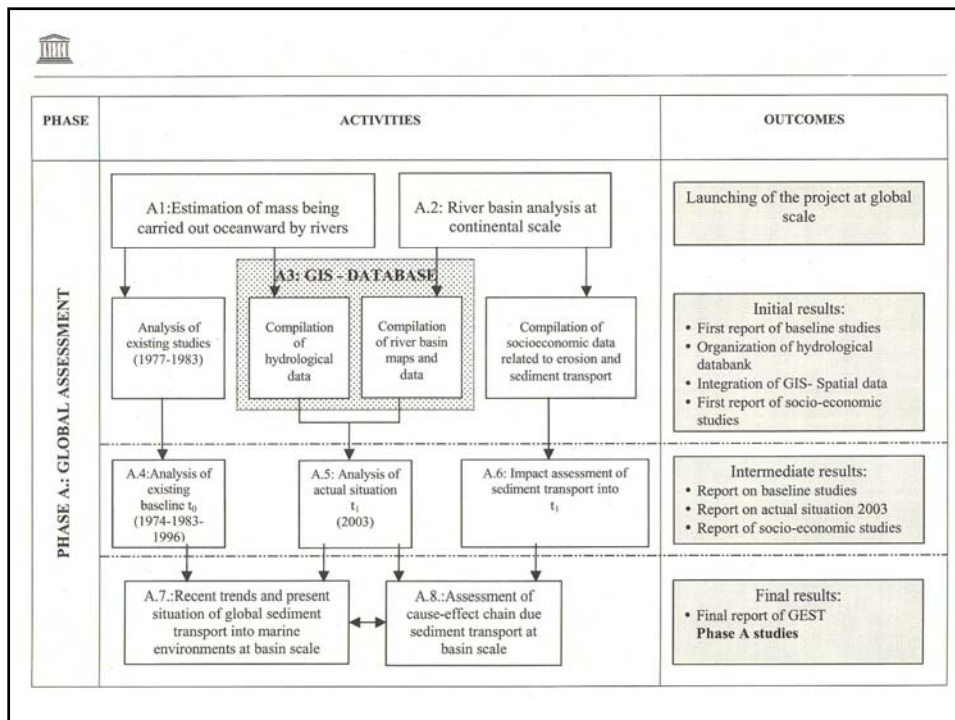
Global evaluation of erosion and sediment transport processes

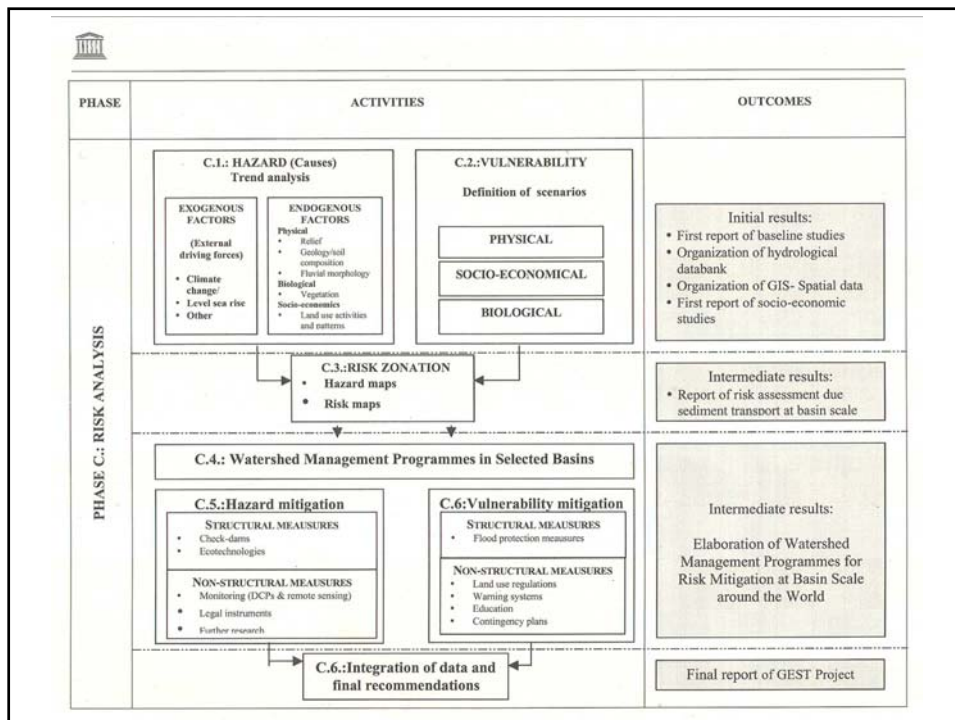
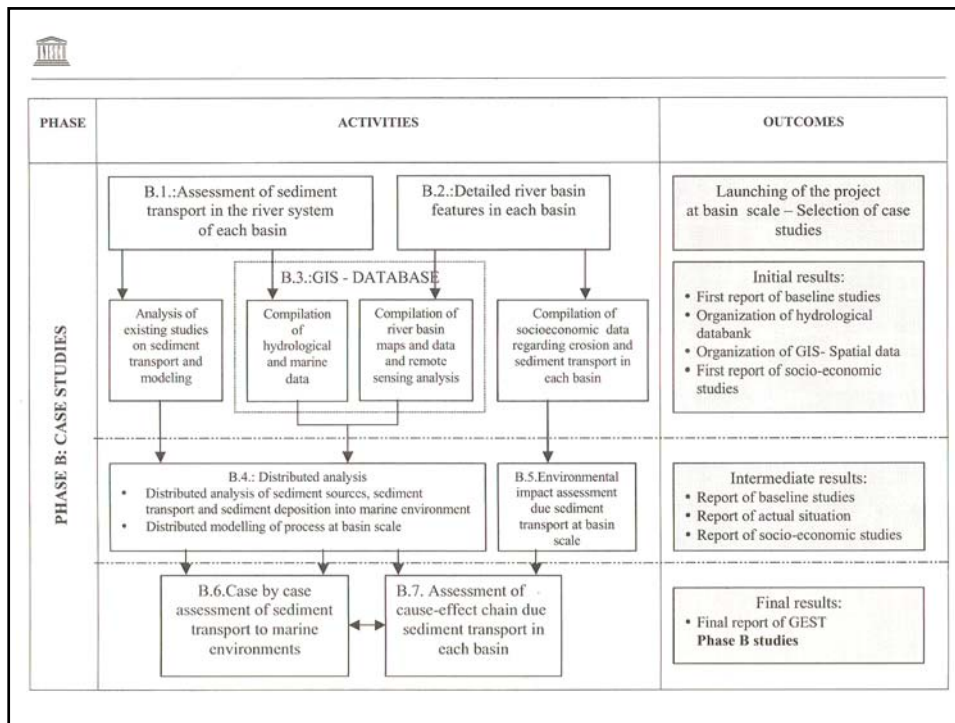
GEST



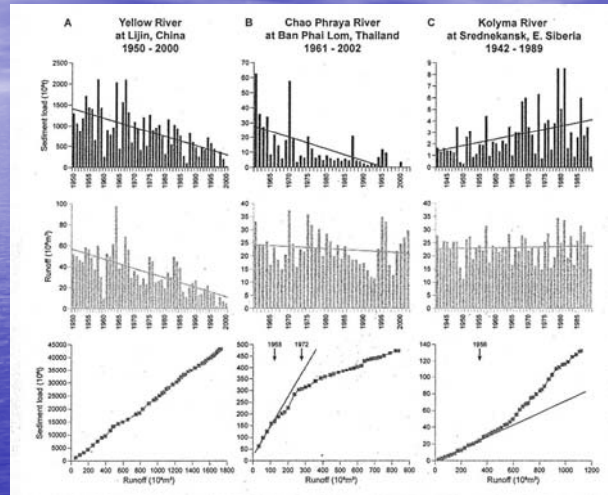
100920_International Hydrological Programme of UNESCO

43





Recent trends in the annual suspended sediment loads and annual runoff



Des Walling, 2009

100920_International Hydrological Programme of UNESCO

47

GEST – Achievements - 2010

- Web page <http://www.irtces.org/isi/> is in operational use
 - History, Objectives
 - Steering Committee
 - ISI Technical secretariat
 - Link List
 - Forthcoming events
 - Information system with materials, publications and linkages
- Quarterly ISI Newsletter
- Mid-term programme 2010 – 2012
 - Synthesis and analysis of the Case Studies
 - Implementation of expert systems

100920_International Hydrological Programme of UNESCO

48

Main activities and projects

Setting up a global erosion and sediment information system

The screenshot shows the ISI website interface. At the top, there are logos for UNESCO, ISI, and IRTCES. The main heading is "INTERNATIONAL SEDIMENT INITIATIVE". Below this is a navigation menu with items: Home, About ISI, Activities & Projects, Structure, News & Events, ISI Information System, and Publication. A login section includes fields for Member Name, Password, Word Verification (9775), and a "Choose a language" dropdown. The main content area is divided into three columns:

- INFO DEVELOPMENT:** Lists "Examples", "Trainings", "SMIO", and "Measurement".
- ISI INFORMATION SYSTEM:** Contains a paragraph about the system's purpose and a small image of a riverbank.
- INFO REPOSITORY:** Lists "Database examples" and "Case studies".
- NEWSLETTERS:** Mentions "NEWSLETTER (No. 9 June 26, 2008)".
- Database Links:** Lists "USGS", "GEMS WAT.", "EOLSS", "ICID", "ICOLD", and "NWS".
- Other Links:** Lists "UNESCO", "UNESCO-IHP", "WWAP", "UNESCO Office Beijing", "MWR PR China", and "IRTCES".

Page numbers "100" and "49" are visible in the bottom left and right corners of the browser window, respectively.

Case studies for large river basins

Monitoring
Data processing
Analysis of
environmental,
economic and
social impacts
Evaluation of
management
practices



Case studies of River Basins - Achievement

Finished

Mississippi river
Nile river
Yellow river
Rhine river
Volga river
Haihe river
Liouhe river

In preparation

Danube river
Rio Bermejo ?

Proposed

Zambesya

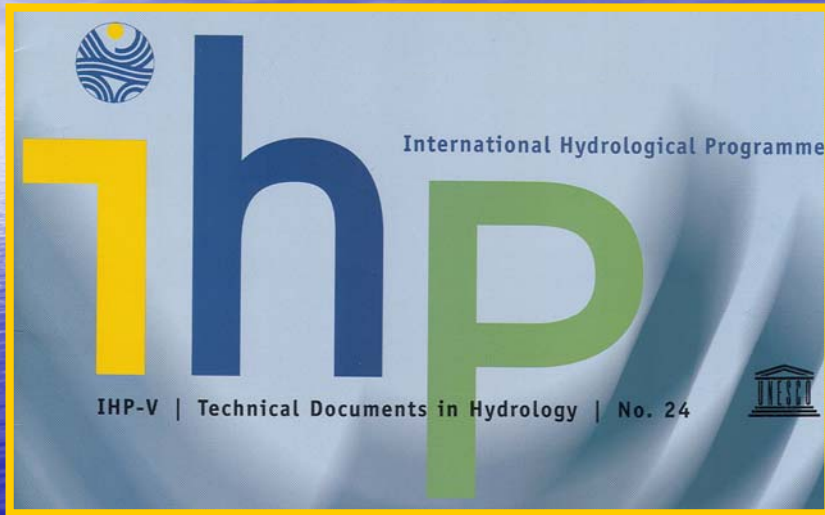
Case Studies

Mid-term programme 2010 - 2012

- Synthesis and analysis
- Negotiation with owners of the sediment data for the provision of relevant information
- Support for the experts working on the case studies for the Danube and Rio Parana
- Feasibility study for the case study Zambezi river

Review of sediment research

2 Reports prepared and published

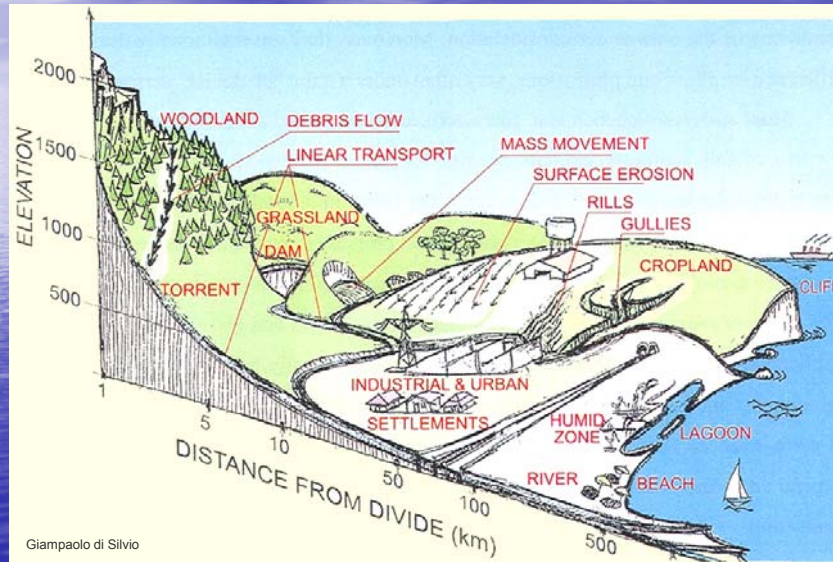


A southern perspective on erosion and sediment dynamics from catchments to coast



Gerrit Basson

A northern perspective on erosion and sediment dynamics from catchments to coast



100920_International Hydrological Programme of UNESCO

55

Main activities and projects

Education and capacity building for sustainable sediment management

Training courses, workshops, conferences



100920_International Hydrological Programme of UNESCO

56

Overview of ISI-Events

1. Ecological, sociological and economic implications on sediment management, Berne, Switzerland, January 2001
2. Debris flow monitoring
Berne, Switzerland, November 2001
3. Ecological, sociological and economic implications on sediment management in reservoirs,
Paestum, April 2002
4. International training course on river sedimentation and flood control,
Beijing, China, September 2003
5. International training course on sedimentation engineering Pyongyang, DPRK, October 2003
6. International Conference on Estuaries and Coasts
Hangzhou, China, November 2003
7. From watershed slopes to coastal areas: sedimentation processes at different scales,
Venice, December 2003

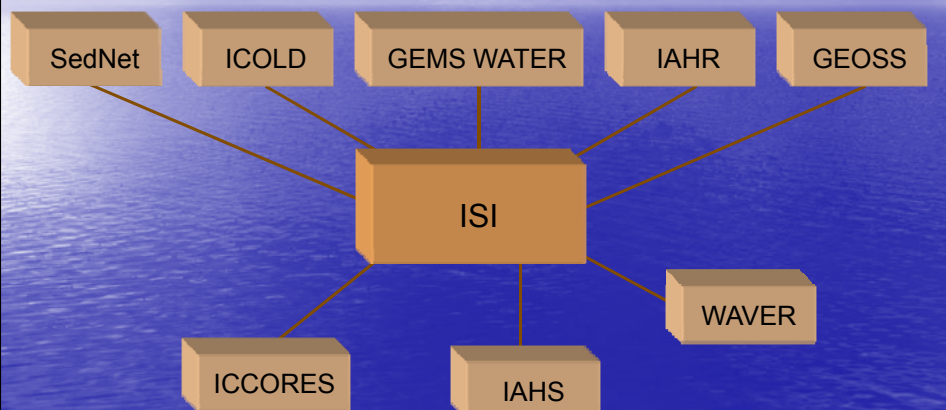
8. 9th International Symposium on River Sedimentation
Yichang, China, October 2004
9. International training course on landslide and debris flow
Pyongyang, DPRK, November 2004
10. Workshop on Erosion and transport of sediments
Buenos Aires and La Plata, Argentina, March 2005
11. International training workshop on watershed eco environment and water resources management
Beijing, China, September 2005
12. Workshop on sediment budgets
Sharm el Sheikh, Egypt, November 2005
13. National workshop on advanced sediment measurement techniques
Zhengshou, China, December 2005
14. Sediment issues in South-East Asia
Vientiane, Laos, February 2006
15. Training course on flood forecasting and preparedness
Pyongyang, DPRK, June 2006
16. ISI Conference
Khartoum, Sudan, November 2006

17. Second International Conference on Estuaries and Coasts
Guangshou, China, November 2006
18. Monitoreo y gestión de los sedimentos
Jiutepec, Morelos, México, March 2007
19. Workshop on sediment management
La Plata, Argentina, August 2007
20. 10th International Symposium on River Sedimentation
Moscow, Russia, August 2007
21. Erosion and torrent control as a factor in sustainable river basin
management,
Belgrade, Serbia, September 2007
22. Advanced training workshop on reservoir sedimentation
management
Beijing, China, October 2007
23. Curso "Sedimentação para gestores, decisores, técnicos e
comunicadores", Brasília,
Bresil, October 2007

24. Workshop on erosion, transport and deposition of sediments
Berne, Switzerland April 2008
25. Workshop on sedimentation processes
in Latin America and the Caribbean,
Panama City, August 2008
26. ISI presentation during the IHP workshop on "Adapting to the impacts
of global changes on river basins and aquifer systems,
UNESCO Paris, 8-9 September 2008
27. ISI workshop "The impacts of global change on erosion and
sediment dynamics: current progress and future challenges"
November 6, 2008
28. Seminar on global climate change and water resources
Beijing, China, July 2009
29. International Conference on Land Conservation-Landcon 0905
"Global Change Challenges for Soil Management
Tara mountain, Serbia, Mai 2009

30. Seminar on integrated river basin management under global climate change
Beijing, July 2009
31. International Advanced training workshop on integrated river basin management
Beijing, China, July 2009
32. 3rd International Conference on Estuaries and Coasts
Sendai, Japan, September 2009
33. Curso "Produccion de sedimentos; cuantification y correccion de los procesos" Santiago de Chile, November 2009
34. Within the framework of the Scientific Assembly of IAHS held in Hyderabad, ISI cosponsored a workshop on "Sediment problems and sediment management in Asian river basins".

Networking



ISI Steering Committee
Core Member Meeting
26-27 May, 2006
Beijing, China

IRTCES & ISI SECRETARIAT

International Research and Training
Center on Erosion and Sedimentation

May 2006

100920_International Hydrological Programme of UNESCO 63

Linkage and cooperation with international organizations

100920_International Hydrological Programme of UNESCO 64

Organisation

International hydrological Program
International Sediment Initiative
Website:

<http://www.irtces.org/isi/info.asp>

Organisation:

UNESCO-Headquarter in Paris
ISI-Steering Committee representatives from all continents,
elected by the IHP Intergovernmental council

UNESCO Coordination:

Dr. Anil Mishra
Programme Specialist
Section of Hydrological Processes and Climate
International Hydrological Programme (IHP)
UNESCO/Division of Water Sciences
1 rue Miollis
75732 Paris Cedex 15
France
a.mishra@unesco.org

Chairman of the ISI Steering Committee: Prof. Dr. Manfred Spreafico

Universität Bern
Geographisches Institut
Gruppe für Hydrologie
Hallerstrasse 12
CH – 3012 Bern
manfred.spreafico@bafu.admin.ch

Technical secretary of ISI:

Dr. Cheng LIU, Professor
Deputy Chief, Department of Research & Training
IRTCES, P.O. Box 366,
No.20 Chegongzhuang West Rd.
Beijing, 100044, China
chliu@iwhr.com; cliu.beijing@gmail.com



ANNEX 7

AGENDA OF THE IHP-DRH WORKSHOP



2nd IHP Flood Project – DRH Implementation Workshop (2nd IHP-DRH Workshop)

(as part of HWCC2010 and RSC18 framework)



Program

1. Date : 9 November 2010 (9:00-12:00)

2. Venue: Rm. Plaza 3, Sofitel Plaza, Hanoi, Vietnam

3. Organizers:

+Giuseppe Arduino (IHP ASPAC Flood Project Organizer/ Program Specialist, UNESCO Office, Jakarta),

+Hiroyuki Kameda (DRH-Asia Project PI and DRH Manager/ Visiting Researcher, EDM-NIED and Professor Emeritus, Kyoto Univ.), and

+Kaoru Takara (IHP-RSC Secretary and Kyoto Univ. DRH Project/ Professor, DPRI, Kyoto Univ.)

4. Supporting Organization: UNESCO Office Jakarta, MEXT, JFIT, Kyoto Univ. GCOE Program, NIED, DRH Consortium

5. Agenda of the Workshop / 9 November 2010

Moderator: Kaoru Takara, Kyoto Univ.

9:00- 9:15 Giuseppe Arduino: International hydrological programme (IHP) in the Asia Pacific region

9:15-9:30 Hiroyuki Kameda: DRH System status, IHP implementation in DRH contents, and perspective

9:30-9:45 Kaoru Takara: Introduction to the proposed activities/proposal

9:45-11:30 Presentations by DRH contributors on their DRH Contents development

(Each presentation: 15minutes)

+**(9:45-10:00)** Mohamed Nor and Rohayu Che Omar (Tenaga National Univ., Malaysia): Hazard monitoring rating system and landslide risk assessment and impact to flood

+**(10:00-10:15)** Dennis Jamieson (NIWA, New Zealand): APFRIEND: Flood Design proposed DRH component Status at November 2010

(10:15-10:30: Break)

+**(10:30-10:45)** Daniel C. Peckley and Gulliermo Q. Tabios III (UP, Philippines): Rain-induced landslide assessment for and by communities and non-experts: A proposed DRH-Asia contribution

+**(10:45-11:00)** Kaoru Takara and Ken Kobayashi (DPRI, Kyoto Univ., Japan): Flood hazard risk mapping methods – Japanese practice

+**(11:00-11:30)** Other potential contributions anticipated from IHP member countries & discussion
Giuseppe Arduino: A UNESCO JAKARTA contribution to DRH?

11:30-12:00 Discussion

+Action plans for IHP-DRH implementation

+Workshop proposal to RSC: More systematic involvement on DRH activities by IHP member countries including nomination of a focal point, identification of appropriate disaster reduction organizations at each IHP member country, etc.

***Adjourn**

ANNEX 8
RESOLUTIONS

RESOLUTION RSC XVIII-1

Sustainable Water Supply in Small Islands to cope with climate variability

The IHP RSC for South East Asia and the Pacific

- Recognizing** the serious hydrological and meteorological hazards and disasters situation in Asia and the Pacific region as result of climate change that contributes to water quantity, quality and sustainability problems particularly from small islands as reported by IHP Regional Steering Committee and related scientific meetings for many years, as well as the International Conference on Hydrology and Water Resources Management (H&WRM2010) held in Hanoi, Vietnam on 8-9 November 2010;
- Noting** the importance and value to disseminate various water resources management technologies or tools to the governmental bodies, private and business sectors, NGO's and the general public through some effective means;
- Discussing** appropriate available water resources and treatment technologies useful for disaster risk reduction and management within the framework of climate change adaptation;
- Recommends** to further develop information on hydrological and meteorological disasters, and identify management technologies and least cost measures and system for adaptation;
- Requests** that IHP RSC committee, the National Committees and UNESCO field offices in the region to support this proposal and encourage relevant organizations including potential funding agencies to provide suitable contents, which is beneficial not only to the would be affected countries and states, but also for all the members in the AP region.

RESOLUTION XVIII-2

-

Continuation of FRIEND and HELP as Cross Cutting Programs for the IHP

RSC SEAP Meeting of IHP

Noting	that as yet there is no reference to the cross cutting programs FRIEND and HELP in the Task Force Report for IHP VIII
Emphasising	that FRIEND is a major scientific strategy which lifts the profile of IHP within UNESCO,
Emphasising	that HELP is a major catchment based strategy for integrated water resources management
Welcoming	An urgent response of all the IHP committees of the region to the head of the Task force and Chairman of the Intergovernmental Council expressing their concern that FRIEND and HELP are not included as cross cutting programs in IHPVIII
Instructs	the Secretary and Chairman of the RSC IHP to raise this urgent matter directly and personally with the Chairman of the Intergovernmental Council and the Chairman of the Task Force for IHPVIII