



INTERNATIONAL HYDROLOGICAL PROGRAMME

**11th IHP Regional Steering Committee
meeting for Southeast Asia and Pacific**

Sigatoka, Fiji, 30-31 October 2003

FINAL REPORT

**IHP-VI ½Regional Steering Committee meeting½No. 11
Regional Steering Committee for Southeast Asia and the Pacific
UNESCO Office, Jakarta, 2003**

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**The 11th IHP Regional Steering Committee Meeting
for Southeast Asia and the Pacific**

Sigatoka, Fiji

29-30 October 2003

Chairman: Mr. Keizrul Abdullah (Malaysia)

Secretary: Mr. Kaoru Takara (Japan)

UNESCO representative: Mr. Giuseppe Arduino (UNESCO Jakarta)

Countries represented: Australia, Cook Islands, China, Federated States of Micronesia, Fiji, Indonesia, Japan, Lao PDR, Malaysia, New Zealand, Niue, Papua New Guinea, Philippines, Republic of Korea, Thailand, Vanuatu, Vietnam (Annex 1)

Observing countries
and other organizations: Canada, CCOP, SOPAC, WMO

1. OPENING

Chairman Keizrul Abdullah opened the meeting at 09:20 a.m. by welcoming all the participants, particularly those representing the Pacific countries.

2. ADOPTION OF AGENDA

The agenda was amended to include presentation and discussion of a number of additional items. The agenda as adopted is as shown in Annex 2.

2.1 ELECTION OF RAPPORTEUR

Mr. Bob Curry (New Zealand) was elected as Rapporteur for the meeting.

3. SECRETARIAT REPORTS

3.1 UNESCO OFFICE, JAKARTA

Mr. Arduino summarized results of the action items identified at the 10th RSC meeting in Port Dickson, Malaysia 2002, as follows:

ACTION ITEMS	BY WHOM	STATUS
1. Review and comments on the table of regional rainfall and runoff data	All contributing countries to report to UNESCO Jakarta (Mr. Arduino)	Completed
2. RSC should prepare budget proposals for activities to be implemented in 2004-2005	All countries to submit proposals to the RSC Secretary	Project proposals received from Indonesia and Malaysia

3. Inform deadline for future proposals under UNESCO's participation programme	UNESCO Jakarta (Mr. Arduino)	Completed
4. Editorial comments on AP-FRIEND Phase-1 report	All RSC delegates	The report was completed
5. Provide response to the questionnaire on AP-FRIEND Phase-2	Chairpersons of all the National IHP Committees	Responses were received from a number of countries before and after the TSC meeting.
6. Publication of the AP-FRIEND Phase-1 Report in Japan	Mr. Takeuchi and Mr. Takara.	Completed
7. Submit contributions for Catalogue of Rivers vol. V (full list with number and names)	All countries to provide their contribution to Mr. Takara	Contributions received. Will be discussed further at Agenda Item 8
8. Obtain source files of volumes 1 and 2 from Prof. Jayawardena	Mr. Takara	Information for Volume 2 received. Volume 1 still to be provided.
9. Prepare a multimedia presentation on RSC activities for the 3 rd World Water Forum	HTC (Mr. Mohd Nor)	Completed
10. Verify feasibility of the 11 th RSC meeting in Fiji (or, as an alternative, in Japan)	UNESCO Jakarta (Mr. Arduino), New Zealand delegates and Mr. Takara	Completed
11. Inquire UNESCO's HQ about the possibility of producing an IHP logo for the RSC	UNESCO Jakarta (Mr. Arduino)	No copyright issues so a logo may be produced

⇒ **ACTION: Mr Jayawardena to provide all available information for Catalogue of Rivers Volume 1 to Mr Takara.**

Mr Arduino provided a comprehensive report of activities carried out in the region since the last RSC meeting. The report is provided at Annex 3.

Mr Rishi Raj noted that regional training programs had been held in both Malaysia and Japan but that no representatives of Pacific Island countries (PIC) had been involved. He requested that for future training programs efforts be made to include at least one PIC representative.

Mr Ibbitt informed the meeting that for the recent training course on "preparation and maintenance of hydrological archives" held in Malaysia, October 2003, efforts were made to secure WMO sponsorship for PIC participation. He noted that unfortunately there was no response from WMO.

⇒ **ACTION: Organizers of regional training programs to try and include at least one representative from Pacific Island countries.**

Mr Arduino made a MS PowerPoint presentation to the meeting describing the features of the UNESCO Participation Program. He emphasized that the Participation Program (PP) is a way for countries to obtain funds outside UNESCO's regular program budget. He noted that the PP proposals are directed through each country's National Commission to UNESCO Paris and that the average value of PP grants is USD20-30k with a maximum of up to USD40k.

The PP funding cycle is 2 years with the deadline for receipt of proposal for the next period (2004-05) being 31 December 2003. Invitations to apply would be sent out from UNESCO Paris in November 2003 and proposals accepted for funding should be known during June/July 2004. Mr Arduino further noted that if there was more than one request from a country, there is a need to prioritise. He indicated that UNESCO would accept up to 15 proposals from each country, however 1-3, but maybe up to 5 had a good chance of approval. The meeting was informed that Malaysia, Indonesia and PNG have submitted PP proposals in the past. He further noted that more advanced countries could also apply but that applications should be on more of a regional basis.

Mr Takeuchi emphasized that while PP proposals are submitted by individual countries, proposals that were supported by a group of countries had a better chance of succeeding and Mr Nor advised that support from two countries or more was important to success with applications. This was noted as an excellent opportunity for PICs.

Mr Arduino felt that it might be possible for countries to obtain PP funding to assist with the cost of hosting RSC meetings whether organized in conjunction with international conferences/symposia.

Mr Nor noted that in his experience the grants were not always made in time and that countries may need to meet interim funding needs.

⇒ **ACTION: Countries are urged to consider projects that may be suitable for submission for funding under the UNESCO Participation Program.**

Mr Hehannussa informed the meeting that another regional meeting was currently underway; namely the meeting in Cambodia between the Man and Biosphere Project (MAB) and the IHP. The meeting is attempting to bring together activities in ecotones and hydrology.

Mr Arduino provided a comprehensive presentation on the UNESCO 32C/5 Main Line of Actions (budgetary period 2004-2005) of the Subprogramme II.1.1 Water Interactions: Systems at risk and social challenge and the UNESCO Jakarta Office work plan, in particular the activities that will be implemented under the specific MLAs.

Considerable discussion followed on the 4 Main Line of Actions (MLA) items (Annex 4), what projects they did and did not cover and which of many projects may or may not be funded under each.

Mr Arduino went on to describe the UNESCO Asia Pacific consultation meeting on science of staff from all UNESCO field offices in the region that was held in Bangkok, from 15 to 18 September 2003. The objectives of the meeting were to improve coordination and collaboration between the offices and also to achieve a more equitable distribution of funds between the offices and also across projects being planned by each office. The Jakarta Office work plan used at this meeting incorporated some information received from the countries as a result of Action Item 2 at the RSC 10th meeting. Mr Arduino acknowledged that the work plan was not distributed to the countries for comment before the Bangkok meeting. However, he stressed that the plan contains a broad range of proposals and is general in nature, while the details still have to be finalized also with indications from the committee during the present meeting.

4. REPORT OF THE THIRD WORLD WATER FORUM AND ITS FUTURE

Mr Takara described the completion and publication of the AP FRIEND Phase 1 Report, the CD-ROM of the history of the RSC and the textbooks from the Nagoya training courses. All of these publications were distributed at the World Water Forum in March 2003. Mr Takara invited Mr Tetsuya Ikeda to provide an overview of the World Water Forum and, the follow-up action planned and in progress.

Mr Ikeda informed the meeting that over 24000 people attended 351 sessions (under 38 themes) and there were 520 dialogues between decision makers and professionals. Of the 24000 participants 6050 came from 183 countries outside Japan. The success of the forum was due to the large number of volunteers and operational staff. A total of 500 new concrete actions and commitments were identified during the Forum. Many forum activities and outputs are online. To cater for those “not connected” hardcopy versions of some outputs such as the Water Voice report and session summaries and the Forum Statement have been produced. Mr Ikeda described the establishment of the Japan Water Forum that will build on the action and networks of the WWF to contribute towards solving both domestic and international water problems.

The delegates were informed of a follow-up meeting to be held in Chang-Mai, Thailand on 2 November. This meeting is being organized by the Global Water Partnership – SE Asia Technical Advisory Committee (GWP-SEATAC), and details are available from the web site. -

5. TECHNICAL PROPOSAL FROM THE RSC FOR 2004-2005

Mr Nor described the Draft Strategy for Water, Education, Training, Research & Capacity Building and presented the Humid Tropics Centre’s proposal for an Assessment of Flood Forecasting & Warning Systems for the humid tropics. Flood warning systems were submitted by Indonesia, Vietnam and Malaysia. A second project proposal by Malaysia is to conduct a Comparative Study of Water Law In ASEAN Countries with the objective of increasing the understanding of water managers in water law.

Mr Hehanussa presented the Indonesian proposal for a number of eco-hydrology projects that would eventually become “demo sites” for future regional training on ecohydrology. The main purpose is also to create a center for ecohydrology based in Cibinong, West Java. This proposal is discussed in more detail at Item 8A.

Comment that other items would be considered by the TSC meeting led to confusion about what item “Technical Proposal from the RSC for 2004-2005” meant which led to a lengthy and somewhat fraught discussion. Once the purpose of the discussion was clarified it was clear to some that this item was premature and that it should await presentation of the results from the TSC meeting. As a result the Chairman resolved to shift item 5 to nearer the end of the meeting after all the projects are known.

6. IHP GOVERNANCE AND IHP PACIFIC ISLANDS

IHP Governance

Chairman Keizrul outlined the functions of the IHP Governance Committee and circulated a memorandum dated 14 February 2003 from the ad hoc IHP Governance Committee (refer Annex 5) seeking feed back on various matters from member countries via their IHP Committees and the RSC meetings to be taken to the UNESCO IGC meeting, next June 2004.

Mr Arduino gave a presentation on the “Changing Status of the IHP Governing Mechanism” (PowerPoint presentation available in Annex 5) and recapped the history from changes in 1992 to the last document provided by the Ad Hoc Committee, in February 2003. Four options for change were outlined in the past: no change, fully centralised, fully regional and a combination of centralised and regional. He advised that a resolution was required to take to the next IHP IGC, June 2004, by providing a reply to the Ad Hoc Committee memo of 14 February 2003.

Discussion on IGC governance followed with Mr Heng expressing concern about the availability of funding if the region was extended beyond the electoral regional groups of UNESCO.

Chairman Keizrul advised that clause 1b of the 14 February 2003 memo should be read in conjunction with 1a, that is, sub-groups should be deployed where there were diverse characteristics.

Mr Raj expressed concerns about the PIC's only having observer status and no voting rights. Mr Overmars suggested SOPAC could represent PIC's as an observer.

Mr Takeuchi suggested that clauses 1a and 1b were ok but that 1d & 1e were too prescriptive. Chairman Keizrul commented that we were comfortable with the way we operate in the Asia Pacific region and Mr Ibbitt suggested that regional groupings should have a structured process for holding meetings and electing office bearers and 1c and 1d can be seen as the default processes. Mr Lee reminded the meeting that the RSC meeting was not the "Regional Meeting" and Mr Nor agreed stating that there was a need to be consistent with South and West Asia. Mr Arduino advised that future plans will include the organization of South and West Asia meetings and recommended that the Chairs attend each other's meetings. Mr Takeuchi suggested that there was a need to decide which countries were involved with each sub-region. Also Chairman Keizrul recommended that Chairs should attend each other's meetings.

Chairman Keizrul stated that the concept outlined in Clause 1e was generally in line with Option 3 (bottom-up). Mr Takeuchi remarked that there may be additional points to the six bullet points stated and suggested that the points be, not limited to, but including.

Discussion on clause f – participation and costs - followed and Mr Nor recommended minimizing costs which was later changed to optimizing costs by Chairman Keizrul as this would not unduly limit activities. Mr Ibbitt suggested some regions could have difficulties without UNESCO funds and recommended that it be reworded to say *Participation should preferably be funded by UNESCO*.

Clause 1g was discussed with Mr Takeuchi suggesting that we should not follow the prescribed structure if we do not like it. Further discussion on the meeting structure followed with Mr Lee commenting that we have good RSC meetings and that they could be a model for other regions and Mr Overmars suggested that the region be put up as a model.

Further discussion followed on the four options for changing the status of the IHP Governance mechanism. The meeting agreed that option 0 and 3 were the most likely preferred i.e. no change or change to full regional governance, and that it should be put to the vote. Mr Lee explained that he could not vote at this stage and would need to refer back to his Government. Mr Nor indicated support for Option 3 but said that he would need to consult his national Committee and Mr Ibbitt also indicated support for Option 3. Both Messrs Thuc and Liongson added their support to option 3 and Chairman Keizrul noted that the change would have to be put to the vote at General Council.

Mr Arduino advised that country's did not have to "vote" but needed to respond the letter of 14th February 2003 and that an indication in favour of the decentralized approach was already expressed at the RSC meeting in Nanjing in 1999.

⇒ **ACTION: Mr Arduino to review IHP Governance issues of the Southeast Asia and the Pacific Committee in the previous RSC meetings and Chairman Keizrul to prepare and submit a draft resolution to the Ad Hoc Committee prior the IHP IGC in June 2004**

Mr Takeuchi proposed that the RSC meeting be officially declared as a "Regional Meeting" under the definition of the IHP Governance paper.

The Chairman concluded from the discussion that, with minor wording changes, he can go the Ad Hoc Committee and advise that the Addendum is an acceptable process for regional governance.

IHP Pacific Islands

Mr Raj outlined the position of the Pacific Island countries and briefed the meeting on an informal PIC meeting, which took place on return from the field trip the day before. He described how the opportunity was taken to build on a similar meeting held in conjunction with the Christchurch RSC meeting in November 2000. Mr Raj described how the issue of greatest relevance was the representation of the PICs at future Regional Steering Committee Meetings. The procedural problem was that only countries with national IHP committee are eligible to attend an RSC meeting and, with the exception of PNG, the other PICs are generally too small to have a national IHP committee. The practical problem is the high cost of air travel in getting PIC's to meetings so that wide representation will never be cost effective.

He suggested that funding for attendance of the single delegate should be sought from UNESCO (Apia/Jakarta) and advised that the meeting held a ballot whereby the order of representation from the various PIC's was drawn. The plan is for each year's representative to contact, some 6-9 months before the next RSC, his/her counterpart in each PIC. Failure to do this will result in the next PIC on the list being asked to nominate a representative. It was agreed at the PIC meeting that SOPAC would assist with the operation of the scheme which will not preclude individual PICs sending additional representatives if they can find the funding. On the basis of the replies received from each PIC, the nominated representative would prepare a "country" report for presentation at the next RSC and would represent all the PICs at the RSC meeting. Following the RSC meeting the nominated representative would be expected to report back to the other PICs.

Mr Raj concluded by requesting that UNESCO be asked to support at least one representative to attend each RSC meeting.

General discussion on PIC representation followed with Mr Overmars requesting that the meeting consider inviting a PIC representative and seeking funding. Mr Arduino commented that he thought the plan to represent PIC's at RSC meeting was a good mechanism and asked whether the RSC accepts in the absence of an IHP committee.

Mr Takeuchi commented that he thought the proposal was acceptable, but that an IHP Committee be set up for the region. Mr Ibbitt commented on the difficulty for 15 small countries to each support an IHP Committee, stating that even New Zealand struggles in this respect.

Mr Raj stated that the PICs would propose to effectively form a PIC national committee. He explained that while email would have to be the main mode of communication, attendance at future RSC meetings would be rotated on the basis of a formula agreed at the meeting.

Mr Takeuchi commented that he thought there should be a contact point and Mr Raj replied that it was intended that SOPAC be the point of contact. Mr Overmars commented that the model for working with IHP/OHP (Operational Hydrology Programme of WMO) would be based on the activities outlined in the Pacific Regional Plan developed in Sigatoka in 2002.

⇒ **RESOLUTION: The meeting agreed to welcome a PIC representative at future RSC meetings.**

7. COUNTRY REPORTS

Delegates and observers presented the highlights of their country reports. The official Country Reports are attached in Annex 6.

7.1 AUSTRALIA

Mr James presented his country report and noted that as Australia is so sparse it did not have an IHP Committee as such but more of an IHP Network and he commended this approach to the PICs. Mr

James outlined research activities undertaken during the year and provided the meeting with web sites for further information. He also outlined activities in association with the International Year of Freshwater, referred to future activities in two HELP basins and mentioned several conferences and workshops being held in Australia prior to December 2004.

7.2 PR CHINA

Mr Heng noted the new composition of China's IHP Committee and outlined World Water Day activities. He drew the meetings attention to conferences, numerous workshops, training courses and the Chinese homepage of IHP, and expressed a willingness to co-operate with all other countries.

7.3 INDONESIA

Mr Hehanussa described his countries IHP Committee structure and advised that bimonthly IHP meetings were held. He also described the activities associated with the International Year of Freshwater including a presentation to the Director General of UNESCO during a 3day visit to Indonesia. Mr Hehanussa went on to describe the activities in Ecohydrology and the establishment of "demo-site" projects, which are to address the adverse effects of logging and mining on hydrology. He also announced that Indonesia was in the process of finalizing a new Water Law.

7.4 JAPAN

Mr Takeuchi described a very active year on AP FRIEND activities with work on the of Catalogue of Rivers - Volume V, distribution of Catalogue of Rivers Volume IV, and distribution of CD-Roms for Volumes III and IV. He also described the mammoth task of Japan's hosting the 3^d World Water Forum. Mr Takeuchi referred to a review being undertaken of the Fund in Trust to IHP to assess how the program has performed and how best to continue support.

7.5 REPUBLIC OF KOREA

Mr Lee outlined activities associated with IHP Phase V and Korea's potential contribution to IHP Phase VI. He also described activities following the incidence of a severe typhoon and Korea's intention to establish a Korean Hydrological Society.

7.6 LAO PDR

Mr Somphanh advised that a significant achievement in water resources management in Lao PDR had been the recent passing of the Water and Water Resources Law. He also outlined activities relating to flood forecasting along the Mekong River and inflow forecasting for the Nam Ngum reservoir.

7.7 MALAYSIA

Mr Nor outlined the high level of activities associated with the National Committee in the hosting of the 10th RSC meeting and International Conference on Urban hydrology for the 21st Century, in 2002. He also described a number of initiatives being taken in support of World Water Day, experiences with a recent PP grant application for support of the International Conference on Urban hydrology for the 21st Century, and proposed activities for IHP Phase VI.

7.8 NEW ZEALAND

Mr Ibbitt informed the meeting that there had been liaison with the New Zealand Hydrological Society (NZHS) about incorporating the IHP National Committee into the NZHS. He described initiatives in conjunction with the International Year of Freshwater and outlined activities associated with recent training courses and workshops provided for member countries in the region.

7.9 PAPUA NEW GUINEA

(Mr Wau, who was absent from the first day of the meeting because he was in Suva resolving a travel visa problem, presented his Country Report on the second day between Agenda items 12 & 13).

Mr Wau described how Papua New Guinea had identified 5 action plans for forwarding to the World Water Forum, one of which was on water quality and hydrological data collection. He explained how an in-country workshop was held to put in place strategies on how the PNG Government can implement these. He also informed the meeting that PNG had been successful in obtaining a

UNESCO PP Grant to undertake activities associated with organizing and hosting a Steep Slope Management workshop.

7.10 PHILIPPINES

Mr Liongson described the composition of the Philippines IHP National Committee and the numerous activities with national and international conferences, workshop and symposia. He also outlined the large number of Research & Development projects being undertaken and thanked UNESCO for its support in re-establishing the Philippines as a member of the RSC.

7.11 THAILAND

Mr Virat Outlined Thailand's participation in a large number of international conferences and symposia and drew the meeting's attention to Thailand's hosting of the First SE Asia Water Forum to be held in Chiang Mai in November 2003. He also expressed his country's strong desire to strengthen ties with neighboring countries in the Mekong sub-region.

7.12 VIETNAM

Mr Thuc described how their IHP National Committee will be re-organized to suit the recent Government restructuring of the Hydro-meteorological Service of Vietnam and the Institute of Meteorology and Hydrology into the newly formed Ministry of Natural Resources and Environment. He explained that this will result in there being more members on the IHP Committee.

7.13 PACIFIC ISLANDS

Mr Ioan, (the nominated spokesperson for PIC's) thanked the RSC meeting for the opportunity to present the PIC report on behalf of all the Pacific Island countries. He summarised the training courses, project collaborations and various hydrological activities being undertaken throughout the Pacific and went on to describe the Pacific Regional Action Plan on Sustainable Water Management held in Sigatoka in 2002 and the consultation that led to a Regional Action Plan and Ministerial Declaration signed by 16 countries. Key messages were identified under 6 themes and these were taken to the 3rd World Water Forum in Japan. In addition Mr Ioan explained that the Pacific Regional Plan has been incorporated in a partnership arrangement under the Type II initiative submitted by the PIC's to the Commission for Sustainable Development in Johannesburg during the World Water Summit for Sustainable Development. He also described the Pacific Dialogue on Water & Climate.

Mr Raj described the activities of WMO and advised that WMO planned to establish a regional office for Asia to be sited in Thailand, Malaysia or Singapore. He also informed that ESCAP & WMO have signed a MOU for co-operation on water resources. Mr Raj outlined the Australian Bureau of Meteorology proposed climate prediction with the general goal of improving weather and climate forecasting, NIWA's activities with the monthly publication "Island Climate Update" and numerous training courses and workshops, and SOPAC's role in the EU funded project "Reducing Vulnerability of Pacific ACP States through Island Systems Management". He also described the ACIAR and CROPPRO projects and the USA-Australia-NZ Trilateral Climate Action Partnership Programme.

8. PROPOSAL FOR THE ESTABLISHMENT OF A UNESCO CENTRE FOR WATER HAZARD AND RISK MANAGEMENT IN TSUKUBA, JAPAN

Mr Kitigawa gave a PowerPoint presentation on the preparation for the establishment of a UNESCO Centre for Water Hazard and Risk Management in Tsukuba, Japan. He summarised the history of the Public Works Research Institute (PWRI) with its focus on water hazards and gave the background and history of the need as identified by international forum to develop programs for mitigating the effects of extreme water related events. He spoke of UNESCO's General Conference' willingness to establish an IHP Centre on Water Hazards within PWRI through the support from the Government of Japan in partnership with IHP on pillar activities – research, training and information networking. Mr

Kitigawa advised that it was proposed that the Centre be launched in 2005 and sought non-financial support from the RSC.

Mr Lee expressed concern about the proliferation of Centres and asked whether there was any co-ordination with the various centres.

Mr Hehanussa strongly supported the Centre but cautioned that the process of securing UNESCO support takes a long time. Mr Heng advised that close contact and collaboration between the UNESCO centres was essential.

Mr Takeuchi expressed appreciation for the support and advised the need for the Japan National Committee to prepare a statement and recommendation for Item 15 – Adoption of Resolutions.

8A. PROPOSAL FOR THE ESTABLISHMENT OF A REGIONAL CENTRE ON ECOHYDROLOGY IN INDONESIA

Mr Hehanussa described the growing interest in ecohydrology by countries in the region, especially in Indonesia, Malaysia and Australia. He explained how Indonesia has logging, mining, and oil exploration developments on a large scale with industry interest in the effects on the ecosystem since 2001. He advised that the establishment of “demo-sites” in Indonesia was part of three proposals (Poland, Argentina and Indonesia) discussed at a meeting by UNESCO in Venice, May 2002. Mr Hehanussa advised that Indonesia funds would be used to construct the buildings and that non financial support from the RSC was sought.

Chairman Keizrul asked about the timing and Mr Hehanussa advised that the centre was discussed informally at the last IGC, the Indonesian Government would be funding the set-up in 2003 & 2004 and that a formal proposal needs to be prepared.

Mr Liongson requested that Indonesian prepare a proposal noting amongst other things how collaboration with other countries was foreseen.

Mr Takeuchi asked that coral activities be included for small islands.

Chairman Keizrul sought clarification on whether it was a Centre or demo-sites and Mr Hehanussa replied that it was a Centre with several demo-sites in various parts of the country to focus on particular issues.

Messrs Heng and James asked about the status of the three proposals for ecohydrology centres and Mr Hehanussa advised that each proposal was being treated separately. He reiterated that Indonesia was not asking for UNESCO funding, that why it was called a “demo-site”. Mr Arduino advised that the Polish Centre was established and was to be upgraded to an International Centre. Mr Hehanussa explained that it was his understanding that the hierarchal progression was demo-site to Centre to International Centre. Mr Virat noted that a demo site did not require an RSC resolution. Mr Lee requested that the RSC support ecohydrology in a resolution regardless of whether it is a Centre or demo-site. Mr Nguyen suggested that the RSC should give moral support “up front”, otherwise future support could be jeopardised.

Mr Thuc advised that he supported both the Japanese and Indonesian centres as it would boost activity in the SE Asia and Pacific region. This viewpoint was endorsed by Mr Takeuchi who stressed the need for documentation for a draft resolution.

END OF DAY ONE

9. REPORT FROM THE ASIA-PACIFIC FRIEND TECHNICAL SUB-COMMITTEE MEETING (APF-TSC)

Mr James informed the meeting of the APFriend Technical Sub-Committee (TSC) meeting held on Monday 27 October 2003 (Annex 7). At the meeting it was proposed to progress AP FRIEND to a Phase 2 plan. The TSC agreed on 3 areas of activity

- drought and low flows
- high flows
- Pacific Regional Action Plan

With the drought/low flows and the high flows, emphasis was on rainfall as a primary component, and in particular the determination of Intensity Frequency Duration (IFD) relationships, or as they are known in some countries - Intensity Depth Frequency (IDF) or Depth Duration Frequency (DDF) relationships.

The TSC noted that the Pacific Island Countries had a detailed strategy already developed, much of which would integrate with the first two areas.

Mr James noted that the TSC proposed that the Phase 2 Plan would commence with a focus on the availability of rainfall data and design rainfall procedures. He noted that the proposed focus on rainfall was supported as it is a key input to, or component of, many priority areas according to a preliminary questionnaire previously circulated to member countries.

Mr James stated that all countries present at the TSC meeting agreed to commit to one or more of the activity areas and outlined the following agreed action plan:

- 1 Circulate a second questionnaire – finalise and evaluate responses
- 2 Country input would be based on the questionnaire template to be distributed, and would seek information via email on the availability of:
 - data from organisations within each country
 - design standards and analysis technique guidelines used by each country
- 3 Prepare draft plan of actions based on country inputs
- 4 Develop detailed workplans for identified actions in each area of activity. It was noted that this should be done at a workshop. However, if funding was a problem then this stage would need to be completed entirely by email.
- 5 Source funding – explore options to fund activities – UNESCO PP Grant, EU 6th framework proposal, and internal country priorities (?).
- 6 Timeframe
 - Questionnaire – now!
 - Country input – Nov 2003 – Jan 2004
 - Draft Plan - April 2004
 - Detailed Plan Workshop - April / may 2004 (depends on funding)
 - Explore funding – now!

Mr James informed that the TSC recommended that “champions” would be required to co-ordinate each activity area and to work with the TSC Chairman, Mr Daniell, who would manage the plan of action. Volunteers were called for with Mr Daniell offering to champion one of the areas.

Mr Lee questioned the inclusion of the Pacific Regional Action Plan in the technical activities, and suggested that Messrs Takara and Daniell co-ordinate the high and low flow activity areas respectively. Mr James advised that inclusion of the Pacific Regional Action Plan in the activities of the region was discussed but not given the prominence of the other two activity areas.

Mr Nguyen suggested that Mr Takara champion the high flows as it fitted well with his other work and that Mr Daniell champion the low flows.

Mr James noted that both were busy people and asked whether there were any other persons willing to assist.

Mr Nor offered to assist Mr Takara.

Mr Takara added that study areas should also include landslides but should initially proceed with low and high flow areas. If there were good outcomes then the work could move on to other areas. He agreed to champion the high flow activities leaving Mr Daniell to champion the low flows activities.

Mr James concluded by saying that the TSC did not have time to discuss the agenda item AP FRIEND Water Archive Document nor preparations for Global Friend report. He advised that access to data from the Catalogue of Rivers was available on the Web site and that some additional data had been added. He advised that the Document Archive facility had now been added to the web site and that it has the capability of storing conference proceedings, technical reports, Catalogue of Rivers - Volumes I – IV and APF meeting notes. Mr James encouraged countries to send electronic files to the Humid Tropics Centre for inclusion in the AP FRIEND Document Archive.

Mr Takeuchi noted that collaboration with researchers was already working well in these areas in Japan, Australia and New Zealand.

Mr Hehanussa suggested that Mr Gustard (UK Friend), Mr Daniell and himself should compile what had been done on environmental flows.

Mr Nguyen suggested the two main areas could have other volunteers on subareas to which Chairman Keizrul agreed.

Mr Takara advised that this work should collaborate with that of the IAHS Decade of Predictions in Ungauged Basins (PUB) and Mr Takeuchi went on to describe the IAHS PUB. He appealed to everyone to include PUB concepts work where possible into their work in order to reduce the uncertainty of transferring data to ungauged catchments. Further information is available on <http://iahs.info>

Chairman Keizrul suggested that the high and low flow working groups investigate how to incorporate PUB concepts into their work.

10. PROGRESS OF THE CATALOGUE OF RIVERS, VOLUME V

Mr Tachikawa described progress on the Catalogue of Rivers Volume V and distributed a summary of each countries contribution to all five volumes (Annex 8).

He described the proposed timeframe towards publication:

January 10, 2004	Papers sent to Tachikawa
February 29, 2004	Editing finalised
March 31, 2004	Formatting finalised
April 20, 2004	Printing

Discussion followed on book vs CD with advice that the books cost ~US\$50 each.

Mr Lee suggested that the incoming Chairman should be a co-editor, and Mr Takara agreed. Mr Lee also suggested that Mr Keizrul should be a co-editor, as well as Mr Ibbitt. Mr Ibbitt replied that it took approximately 9 months to edit Volume IV and that with his other commitments it would be impossible for him to meet the above very ambitious timetable that was proposed.

Mr Ibbitt also commented on the quality of the CD's and suggested the reduction from 650Mb to 88 and 12 Mb for volumes 3 and 4 respectively, represented a serious loss of definition.

Mr Liongson asked whether editors could disseminate style requirements and Mr Arduino noted that Mr Ibbitt had a lot of experience in this area. Mr Thuc asked if this would speed up the process.

Mr Nor suggested just producing a CD and putting the Catalogue in the Water Archive as the books were both expensive and cumbersome, to which Mr Takeuchi noted that books were important for ready access, but that emphasis should be put into improving the quality of the CDs.

Mr Somphanh added that Lao PDR had lost the capability to contribute due to a lack of funds.

Chairman Keizrul advised that there would be no time for late submissions with limited time to check back with countries prior to the January 10 deadline.

Mr Takeuchi suggested reducing the number of editors from 5 (current editors are Messrs Nor, James, Tachikawa, Takara and Thuc) to those people know who did most of the work, but agreed to include the Chairman.

Chairman Keizrul agreed that a check should be made to ensure editorship reflects true editors.

Mr Takara volunteered to withdraw from being editor and advised that there was a possibility of Japan supporting Lao PDR financially.

11. STATUS OF RSC LOGO SELECTION

Mr Nor outlined the idea of a logo and the proposal to run a competition for its design. He advised that there had been no response to the initial requests and so proposed to extend the deadline in the hope that all countries would submit at least 2 entries.

Chairman Keizrul agreed to extend the deadline for entries to 31 March 2004.

⇒ **ACTION: Countries to submit ideas for a logo before 31 March 2004.**

12. PREPARATION FOR THE NEXT IGC, JUNE 2004

Mr Takara announced that there will be an IHP Bureau Meeting before the next IGC Meeting in June 2004 and Mr Arduino noted that now was the time for submissions to UNESCO. Mr Takara suggested that if the meeting has some action points then these should be included in the resolutions and Mr Lee noted that individual countries could send them directly to UNESCO.

Chairman Keizrul ruled that the RSC should send resolutions to the IHP Bureau. This would include a reply to the letter on IHP Governance.

13. ORGANISATION OF THE 12TH RSC MEETING IN 2004

Mr James advised that the 12th meeting of RSC will be held in Australia in 2004 and suggested the venue be Adelaide during 21-25 November. He advised that plans were to hold the RSC meeting in conjunction with the conference “Water Sensitive Urban Design - Cities as Catchments” and that more information could be obtained on [url:www.plern.com.au/wsud2004](http://www.plern.com.au/wsud2004). He advised that dates for abstracts would be sent out in the next 3-4 weeks (Nov/Dec 2003).

14. ORGANISATION OF THE 13TH RSC MEETING IN 2005

Chairman Keizrul called for country bids to hold the 13th RSC meeting in 2005.

Mr Hehanussa stated that, based on rotation, it was Indonesia's turn to host the 2005 RSC meeting (last hosted 4th RSC in 1996) so he offered Indonesia to host the 2005 RSC.

Mr Virat offered that Thailand hosts the 2005 RSC meeting and Mr Thuc supported Thailand's bid.

Chairman Keizrul suggested that both bidders describe their bid so that the RSC could better judge the relative merits.

Mr Hehanussa proceeded to describe Indonesia's bid for the meeting, which would be held in either Jakarta for economical reasons or Bali for ease of access. He proposed an ecohydrology theme in line with the centre and demo-sites described earlier in the meeting.

Mr Virat proceeded to describe Thailand's bid, which he proposed would be held in Phuket with a theme of floods and climate change.

Following discussion of the proposals it was agreed that by rotation Indonesia would host the 13th RSC meeting in 2005 and Thailand, if still interested would host the meeting in 2006. The meeting noted that flexibility was needed to allow new countries that joined the RSC to have the opportunity to host a meeting.

15. ADOPTION OF RESOLUTIONS

There were 7 resolution proposals from 3 countries and Mr Lee cautioned that the term "resolution" should be considered carefully.

Mr Nor proceeded to introduce the 5 draft Malaysian resolutions:

- M1 RSC IHP UNESCO for SEAP considers appointing an Assistant Secretary to support the Secretary.
- M2 RSC IHP UNESCO for SEAP considers facilitating engagement of an Associate Expert to the HTC in Kuala Lumpur.
- M3 RSC IHP UNESCO for SEAP considers promoting the setting up of a Chair in Hydrology & Water Resources in the Region.
- M4 RSC IHP UNESCO for SEAP considers giving a kind acknowledgment for the contribution towards RSC and UNECO as a whole.
- M5 RSC IHP UNESCO for SEAP considers giving full support to all activities planned by the HTC and to extend its assistance in whatever form to help the HTC achieve its objectives.

Since the introduction of the Japanese Water Hazard & Risk Centre under item 8 of the Agenda, a draft resolution was reintroduced by Mr Tachikawa:

- J1 Establishment of a UNESCO Centre in Japan for Water Hazard and Risk Management (Annex 9)

Mr Thuc suggested that UNESCO – IHP be included in the title for consistency and Mr Takeuchi agreed that the title still needed further consideration. Mr Hehanussa advised that the name should not be limited to IHP as for example CCOP can be involved. Mr Nguyen commented that IHP is the

programme whereas the Centre belongs to an organisation. The Centre is part of an institution not a programme.

Mr Takeuchi noted that careful editing was still required and Mr Lee recommended that this should be done by a person who spoke English as first language. He also suggested that the name could be decided later.

Mr James asked the question “Will the Centre go ahead if UNESCO does not accept the proposal?” and Mr Takeuchi replied that if UNESCO did not agree and the region does not support the Centre, it will not go ahead.

Chairman Keizrul asked whether the Centre was looking for UNESCO funding and Mr Takeuchi replied that they were not seeking funding from UNESCO.

Chairman Keizrul noted that the resolution was supported but needed editing before passing. Mr Hehanussa reintroduced the Indonesian proposal “Establishment of a “Demo site / Centre” for Ecohydrology, Cibinong, Indonesia” (Annex 10)

Mr Nor suggested deletion of the “Demo site” in favour of “Centre” and Mr Lee agreed suggesting “Regional Centre”. As for the Japanese proposal it was suggested that the wording of the resolution be looked at carefully.

Mr Virat commented that “Regional Centre” suggests a responsibility for all countries in the region and recommended that the Indonesians start with “Centre” and later move to “Regional Centre” if this is agreeable to the region.

Mr Arduino suggested dropping “demo-site” from the name as this is part of the activities undertaken by the Centre.

Both Messrs Nguyen and Thuc agreed with calling it a regional centre and Chairman Keizrul noted that the resolution for a Regional Centre for Ecohydrology in Indonesia was supported but needed editing before passing.

Mr Takeuchi referred back to the Malaysian proposals stating that they were Malaysian IHP resolutions not RSC resolutions and Chairman Keizrul suggested that the Malaysian proposals were from the National IHP for RSC support, not as resolutions to go to IHP Bureau. Mr Lee agreed.

Chairman Keizrul noted that the 5 Malaysian proposals were not resolutions and Mr Nor agreed. Mr Lee suggested that they should be considered under Agenda item 17 – Other Issues.

16. ELECTION OF THE RSC CHAIRMAN

It was noted that the sitting Chairman’s term in office (2 years) ends in 2003 and that a successor needed to be appointed for 2004-2005.

Mr Takara advised that New Zealand and Australia had nominated Mr Thuc of Vietnam and Messrs Heng and Takeuchi supported the appointment of Mr Thuc. Mr Lee also supported his appointment but suggested that it should be cleared with those countries which had not already had representation as Chair. Messrs Hehanussa (Indonesia), Raj (on behalf of Pacific Island countries), Mr Virat (Thailand) and Mr Liongson (Phillipines) all supported Mr Thuc’s appointment. Chairman Keizrul congratulated Mr Thuc who was appointed unopposed. Mr Thuc accepted the appointment and thanked everybody for their support and hoped that they would provide him with assistance in his new role.

17. OTHER ISSUES RAISED

Pacific HYCOS

Mr Raj in his capacity as WMO representative gave a presentation on the World Hydrological Cycle Observation System (WHYCOS) and noted how the Pacific HYCOS proposal was developed in 2000. He noted that WMO support for country monitoring networks could be available through this project.

Malaysian Proposals

Chairman Keizrul noted that the five Malaysian proposals deferred to this item would be presented at the next RSC meeting.

Technical Proposals from RSC 2004-2005

At this stage the meeting returned to Item 5 – Technical Proposals for RSC 2004-05, summarised in Annex 11.

18. CLOSING OF MEETING

Mr. Keizrul Abdullah, Chairman of the RSC, closed the meeting at 13:00 p.m. Friday 31st November. He thanked the participants for their contributions to the discussion during the meeting and thanked SOPAC for the excellent organization of the meeting.

Mr Overmars responded that it was a team effort, thanked the SOPAC staff involved and expressed the opinion that the conference and meeting had been successful in bringing the countries of Southeast Asia and the Pacific closer together and raising awareness of hydrology and water resource issues in the Pacific.

Mr. Takara, with acclamation from the committee, thanked Mr. Keizrul Abdullah for his guidance and effort during his two years Chairmanship of the RSC.

19. FOLLOW UP MEETING

The meeting was held in order to provide editing to the two resolutions concerning the establishment of both centers in Japan and Indonesia (Annexes 9, 10).

ACTION ITEMS

ACTION ITEM	BY WHOM	WHEN
1. Provide all available information for Catalogue of Rivers Volume 1 to Mr Takara.	Mr Jawardena	ASAP
2. Organizers of regional training programs to try and include at least one representative from Pacific Island Countries	Training program organizers	As required
3. Countries are urged to consider projects that may be suitable for submission for funding under the UNESCO Participation Program.	All countries	PP deadline 31 Dec 2003
4. Mr Arduino to review IHP Governance issues of the Southeast Asia and the Pacific Committee in the previous RSC meetings and Chairman Keizrul to prepare and submit a draft resolution to the Ad Hoc Committee prior the IHP IGC in June 2004	Mr Arduino Mr Keizrul	For IGC meeting
5. Countries to submits ideas for a logo	All countries	31March2004

ANNEX 1

PARTICIPANTS, 11TH MEETING OF THE IHP REGIONAL STEERING COMMITTEE FOR SOUTHEAST ASIA AND THE PACIFIC

NAME	COUNTRY
Keizrul Abdullah (Outgoing Chairman)	Malaysia
Kaoru Takara (Secretary)	Japan
Ross James	Australia
Van-Thanh Van Nguyen	Canada
Chen Shick Pei	CCOP, Thailand
A. W. Jayawardena	China
Liu Heng	China
Xiaoyuan Zhu	China
Zongxue Xu	China
Daryl Rairi	Cook Islands
Phillip Komor	Federated States of Micronesia
Ashok Kumar	Fiji
Malakai Finau	Fiji
Rishi Raj	Fiji – WMO representative
Dwikorita Karnawati	Indonesia
P. E. Hehanussa	Indonesia
Akira Kitagawa	Japan
Hidetaka Chikamori	Japan
Kimaro Tumaini	Japan
Kuniyoshi Takeuchi	Japan
Tarek Merabtene	Japan
Tetsuya Ikeda	Japan
Yasuto Tachikawa	Japan
Somphanh Vithaya	Lao PDR
Mohd Nor bin Mohd Desa	Malaysia
Andre Siohane	Niue
Bob Curry (Rapporteur)	New Zealand
Richard Ibbitt	New Zealand
Michael Wau	Papua New Guinea
Guillermo Q Tabios	Philippines
Leonardo Q. Liongson	Philippines
Soontak Lee	Republic of Korea
Marc Overmars	SOPAC, Fiji
Michael Bonte	SOPAC, Fiji
Virat Khao-Uppatum	Thailand
Boontham Sirichai	Thailand
Giuseppe Arduino	UNESCO Jakarta
Chris Ioan	Vanuatu
Bui Van Duc	Vietnam
Tran Thuc (Chairman elected)	Vietnam

ANNEX 2

AGENDA, 11TH MEETING OF THE IHP REGIONAL STEERING COMMITTEE FOR SOUTHEAST ASIA AND THE PACIFIC

- 1) Opening
- 2) Adoption of the Agenda
- 2a) Election of Rapporteur
- 3) Secretariat reports
- 4) Report of the Third World Water Forum (March 2003) and its future
- 5) Technical Proposal from the RSC for 2004-2005 – Discussion and approval
- 6) IHP Governance and IHP Pacific Islands
- 7) Country Reports (5-10 minutes each), discussion.
- 8) Proposal for the establishment of a UNESCO Centre for Water Hazard and Risk Management in Tsukuba, Japan
- 8a) Proposal for the establishment of a Regional Centre on Ecohydrology in Indonesia
- 9) Report from the Asia-Pacific FRIEND Technical Sub-committee Meeting (APF-TSC)
- 10) Progress of the Catalogue of Rivers, Volume V
- 11) Status of RSC Logo Selection
- 12) Preparation for the next IGC, June 2004
- 13) Organisation of the 12th RSC Meeting in 2004
- 14) Organisation of the 13th RSC Meeting in 2005
- 15) Adoption of Resolutions
- 16) Election of the RSC Chairman
- 17) Other issues raised
 - Pacific HYCOS
 - IAHS/PUB (This was shifted in Agenda item 5.)
- 18) Closing of the Meeting
- 19) Follow-up Meeting

ANNEX 3

SECRETARIAT REPORT BY UNESCO OFFICE, JAKARTA

**11TH IHP REGIONAL STEERING COMMITTEE MEETING
FOR SOUTHEAST ASIA AND THE PACIFIC**

Sigatoka, Fiji, 30-31 October 2003

UNESCO JAKARTA OFFICE

Secretariat Report

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

1.1 Follow-up to the 10th IHP-RSC meeting

A number of actions to be followed-up were identified during the 10th RSC meeting (Port Dickson, Malaysia, 18 October 2002). Here below is a brief report on the current status:

1. *Review and comments on the table of regional rainfall and runoff data*

The revised table was forwarded to the World Water Assessment Programme Secretariat in UNESCO Paris, and partly used for the compilation of the World Water Assessment Report presented at the 3rd World Water Forum in Kyoto, Japan, March 2003.

2. *RSC should prepare budget proposals for activities to be implemented in 2004- 2005*

Two proposal were submitted to UNESCO Jakarta so far; a) by the HTC in Kuala Lumpur concerning the “Assessment of Flood Forecasting and Warning Systems for the Humid Tropics Region” and b) by the Indonesian Institute of Science (LIPI) concerning the Ecohydrology approach to water resources management trough different projects with the aim of the establishment of a regional ecohydrological demo site for investigation and training purposes.

3. *Inform deadline for future proposals under UNESCO’s participation programme*

UNESCO Office Jakarta informed all the IHP National Committees by e-mail dated 13 June 2003. The deadline for the submission of proposal concerning the Participation Programmes is set to 31 December 2003 (generally the 31 December of the end of the UNESCO budgetary biennium).

4. *Editorial comments on AP-FRIEND Phase-1 report*

The comments were provided to Prof. Takeuchi and the report was printed in February 2003.

5. *Provide response to the questionnaire on AP-FRIEND Phase-2*

Four countries replied to the questionnaire, in particular Lao PDR, Malaysia, New Zealand and Viet Nam.

6. *Publication of the AP-FRIEND Phase-1 Report in Japan*

As per point 4.

7. *Submit contributions for Catalogue of Rivers Vol. V (full list with number and names)*

The countries which have submitted basin contribution for the Catalogue of Rivers Volume 5 are Australia (1 or 2), China (1), Indonesia (2), Japan (3 or 4), Korea Rep. (3), Malaysia (1), New Zealand (1), Papua New Guinea (1), Philippines (1), Thailand (4) and Viet Nam (2). Countries that still have to submit their contribution are Cambodia, Korea DPR and Lao PDR.

8. *Obtain source files of volumes 1 and 2 from Prof. Jayawardena*

Prof. Kaoru Takara’s action.

9. *Prepare a multimedia presentation on RSC activities for the 3rd World Water Forum*
With the agreement of MEXT, Japan, UNESCO Jakarta set up a contract with the HTC in Kuala Lumpur to deliver, as a contribution to the World Water Forum (Kyoto 16-23 March 2003), a multimedia presentation of the last 10 years of the RSC activities in CDs format. Five hundred copies of the presentation in CD format were produced, presented and distributed at the session for hydrology and water resources groups on the Asian day (18 March 2003), at the aforementioned World Water Forum.
10. *Verify feasibility of the 11th RSC meeting in Fiji (or, as an alternative, in Japan)*
Verified.
11. *Inquire UNESCO's HQ about the possibility of producing an IHP logo for the RSC*
UNESCO Jakarta was informed by Head Quarters in Paris that no copyright exists, therefore the production of an IHP logo for the RSC is possible.

1.2 Workshops, training courses and symposia

1.2.1 IHP Training Courses financially supported by the Japanese Funds in Trust (JFIT)

The theme of the 12th IHP Training Course funded by UNESCO and the Japanese Fund in Trust was '*Precipitation and Water Resources*'. The course was held in Nagoya and Kyoto from 23 February to 8 March 2003 and included lectures and practical experience in order to develop knowledge of hydrological systems and their sensitivity to climate changes and to contribute to solve current global environmental problems. UNESCO Jakarta provided sponsorship through MEXT JFIT (Japanese Ministry of Education, Sports, Science and Culture) for seven participants coming from different countries of the region, namely: Cambodia, Indonesia, Malaysia, Lao PDR, New Zealand, Thailand and Vietnam. Financial support was also given to PNG but did not attend. The next 13th IHP training course on '*Effects of Pollutants on Atmospheric Environment*' is scheduled in the period 7-20 March 2004.

1.2.2 2nd Asia Pacific Training Workshop on Ecohydrology, Cibinong, Indonesia, 21-26 July 2003

This international and 2nd Asia Pacific Training Workshop on Ecohydrology '*Integrating Ecohydrology and Phytotechnology into Workplans of Government, Private and*

Multinational Companies” held in Cibinong, Indonesia, was organised by the Indonesian Institute of Science (LIPI) with financial support from UNESCO, UNEP and LIPI.

The workshop, also organised in conjunction with the preparation of the establishment of the Asia Pacific Regional Centre for Ecohydrology in Indonesia, focused on Ecohydrology as an interdisciplinary approach in understanding water ecosystem, recognised as a suitable management tool based on dynamic integration of water and biota in a catchment framework.

Thirty-four papers with 23 presentations and 11 posters were presented during this workshop that was attended by 40 participants from Asia Pacific countries, Canada and Europe.

The workshop proceedings are expected to be published, as a UNESCO publication, in mid December 2003.

1.2.3 IHP course on “Preparation and Maintenance of Hydrological Archives Training Course”, HTC Kuala Lumpur, Malaysia, 13-17 October 2003

In the frame of IHP-VI, Theme 5 “Water Education and Training”, Focal Area 5.4 “Institutional development and Networking for WET” the course on “*Preparation and Maintenance of Hydrological Archives Training Course*” held in the HTC premises in Kuala Lumpur, Malaysia, from 13 to 17 October 2003, was organised by NIWA, New Zealand, with the support of the HTC in Kuala Lumpur and the financial contribution of UNESCO Jakarta.

The training course primer attempt was to facilitate the regional Institutions, responsible for hydrological data collection, in the organisation of their water archives, with particular focus on the procedure to adopt once the raw data are acquired.

As many of the Southeast Asian countries are trying to get their data holdings organised in order to meet their national needs on availability of water resources, the course was intended to train those responsible in the basic steps needed to manage the data in an efficient and sustainable manner and to make those available data accessible to potential users.

The training course was attended by 17 participants from 10 countries in the region, in particular from Cambodia (1), China (1), Indonesia (1), Korea Rep. (1), Lao PDR (1), Malaysia (8), Philippines (1), PNG (1), Thailand (1) and Viet Nam (1).

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

1.3.1 Asian Pacific Water Archive

The management and continuous improvement of the AP-FRIEND Water Archive strongly rely on appropriate expertise and professional capacity development of the human resources

responsible for managing the system. For this purpose, UNESCO Jakarta is providing financial support for two professional officers from the Regional Humid Tropics Hydrology and Water Resources Centre for Southeast Asia and the Pacific to attend specific training courses on computer server and operating system management and maintenance, organised in Kuala Lumpur in December 2003.

1.3.2 Catalogue of Rivers for Southeast Asia and the Pacific

The 5th volume of the Catalogue will be published in early 2004 both in digital (CD-ROM) and hard copy. So far contributions from 11 countries were provided with information regarding at least 20 basins.

1.4 Activities within UNESCO Jakarta

1.4.1 Siberut Island Water Supply

Within the framework of UNESCO's MAB Programme "Empowerment of customary environmental management in Siberut Biosphere Reserve" and in line with IHP-VI Theme 4 "Water and Society", Focal Area 4.1. "Water, civilizations and ethics", UNESCO Jakarta is implementing a project with the Siberut National Park concerning a community water supply system in Rogdok, Siberut, Mentawai Islands, West Sumatra. In line with this objective, and in close cooperation with the UNESCO Siberut field staff, a water supply project will be delivered by December 2003 and will also include training activities to the community in order to enable use and maintenance of the water supply system (captured spring with delivering pipes and distribution system in the village). The system is intended to supply fresh water to approximately 750 people in the village.

1.4.2 Pilot Project for Community-based Flood Mitigation and Preparedness – Phase I

In the framework of UNESCO's International Hydrological Programme (IHP), and in close collaboration with UNESCO Office, Jakarta, in particular with the Water Sciences, Education and CSI (Coastal and Small Islands) Units, conduct a *'Pilot Project for Community-based Flood Mitigation and Preparedness'* (Phase-1) in Bidaracina, East Jakarta.

The project is part of both IHP-VI Theme 3 Land Habitat Hydrology Focal Area 3.5 "Urban areas and rural settlements" and IHP-VI Theme 5, Focal areas 5.1 "Training Techniques" and 5.2 "Continuing education and training courses for the selected target groups" has been designed with the Institute of Technology Bandung (ITB-LAPI), Indonesia, and implemented together with other UNESCO' units such as Coastal and Small Islands (CSI) and Education (ED).

The main activities within this new project, which phase I will run from 2003 to 2004, will focus on non-structural flood mitigation and preparedness measures. These will include training community individuals to make them become themselves trainers for community-based action against floods, as

well as developing a range of environmental awareness-raising and educational initiatives, all to be carried out in one of Jakarta's most affected flood-prone areas.

1.4.3 *Water quality, water supply and water use*

In the framework of UNESCO's IHP, Theme 4 Water and Society focal Area 4.4 "Human security in water-related disasters and degrading environment", and in conjunction with the implementation of the Pilot Project for Community-based Flood Mitigation and Preparedness (Phase-1) in Bidaracina, East Jakarta, the project "*Water quality, water supply and water use*" implemented with ITB, Department of Environmental Engineering, aims to assess the water supply resources of a community in a highly populated area, with particular focus on how a community is facing water borne diseases both by surface and groundwater supply.

The project will carry out field investigations for the localisation and characterisation of water points (both from surface water and water wells), and water sampling for water quality chemical analyses. The project is expect to end in January 2004.

1.5 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 2001-2002, was presented by UNESCO Office, Jakarta, at the meeting held in UNESCO Office, Jakarta from 8 to 9 May 2003. 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 and
- the IHP Training Courses, annually organised by the Nagoya University in Japan.

The IHP Training courses have been conducted in Japan from 1991 in each Japanese fiscal year. From the 1st to the 6th course the topics were very general, but beginning with the 7th the courses were conducted with specified theme, as:

- 7th snow hydrology,
- 8th remote sensing,
- 9th limnology,
- 10th head water management,
- 11th hydrogen and oxygen isotopes in hydrology, and
- 12th precipitation and water resources.

As mentioned before in this report, the 13th course will be conducted with the theme "Effects of pollutants on atmospheric environment" in March 2004.

As a follow up experience acquired and the back up from the participants, the aim is now to re-draw the course topics with the consideration that many countries in Asia and Pacific region have experienced or are experiencing an economical taking off, and the environmental problems may have become wider and more complex.

The proposal is twofold:

- to submit a questionnaire to the participants that have attended the past edition of the courses,
- the organisation of a symposium with the theme “Hydrology in Asia” to be conducted in the Humid Tropics Centre, Kuala Lumpur (HTC) for some days during the period of April 2004 to March 2005 (i.e., Japanese fiscal year of 2004). A part of the TC will be devoted to the discussion on the current hydrological problems and the means to overcome them. The census of the results of this questionnaire will be presented there as one of the basis of the discussion.

2. PUBLICATIONS SINCE NOVEMBER 2001

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Asian Pacific FRIEND Report for Phase I(1997-2001). Takeuchi K., Xu Z.X. IHP-V Technical Documents in Hydrology No.9. Regional Steering Committee for Southeast Asia and the Pacific. UNESCO Jakarta Office, 2002

CD UNESCO –IHP Regional Steering Committee for Southeast Asia and the Pacific Region. Produced by the Humid Tropic Centre (HTC), Kuala Lumpur, 2003.

3. CONTACT REFERENCES

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ANNEX 4

UNESCO 32C/5 MAIN LINE OF ACTIONS 2004-2005

UNESCO IHP 

Water Interactions: systems at risk and social challenges
32C/5 Main Line of Actions
Budgetary Period 2004-2005

1st RSC Meeting, Singapore, 04-10-01 October 2003

1

UNESCO IHP

MAJOR PROGRAMME II - NATURAL SCIENCES
PROGRAMME III - SCIENCE, ENVIRONMENT AND SUSTAINABLE DEVELOPMENT

- SUBPROGRAMME III.1 WATER INTERACTIONS FOR AFRICA AND SOUTH-CENTRAL ASIA
- SUBPROGRAMME III.2 BIOGEOCHEMICAL SCIENCES: ECOSYSTEMS, FRESHWATER ECOSYSTEMS AND COASTAL ECOSYSTEMS
- SUBPROGRAMME III.3 EARTH SCIENCES: IMPROVING THE UNDERSTANDING OF HAZARDOUS PLANETARY AND LITHOSPHERIC DISASTERS PREVENTION
- SUBPROGRAMME III.4 TOWARDS SUSTAINABLE LIVING IN SMALL ISLAND AND COASTAL REGIONS
- SUBPROGRAMME III.5 INTEGRATED ENVIRONMENTAL OCEANOGRAPHIC OBSERVATION

2

UNESCO IHP
4 Main Line of Actions

- **MLA 1 - Global change and water: advancing hydrological sciences for improved assessment**
- **MLA 2 - Water for human needs**
- **MLA 3 - Water education and capacity-building for sustainable development and security**
- **MLA 4 - Land water interactions: towards sustainable development**

3

UNESCO IHP
Main Line of Action 1

Global change and water advancing hydrological sciences for improved assessment

1. Global changes and water resources
2. Integrated watershed and aquatic dynamics
3. International sediment Initiative
4. IRIHND
5. IIRLP
6. WWWF Resources studies

4

UNESCO IHP
Main Line of Action 2

Water for human needs

1. River basin and extreme events managements
2. Land habitat hydrology
3. Water conflict resolution

5

UNESCO IHP
Main Line of Action 3

Water education and capacity-building for sustainable development and security

1. Institutional capacity building
2. Capacity building: interaction with society
3. Water education and training

6

UNESCO IHP
Main Line of Action 4

Land water interactions towards sustainable development

1. Development of the global hydrological approach to a comprehensive of sustainable water resources management
2. Ecological and impact of erosion and sedimentation processes
3. Development of comparative studies and other initiatives in specific land forms (urban areas and others) and climatic settings concerning hazard, adaptability capacity, models, risk analysis management
4. Development of IHP Field action research on systems sensitive ecosystems subject to degradation and global change in particular in drylands and mountain, to promote ecosystem rehabilitation and sustainable environmental management
5. Implementing activities to consider the joint water use problems and/or requiring special attention for better restoration

7

UNESCO's ASPA Consultation Meeting on Science, Bangkok, 15-18 September 2003

- Day 1: discussion of science budget allocation criteria and mechanism among heads of office (US\$ 1.9 M for ASPA)
- Day 2: Science Programme Specialist Meeting. Each office provided the planning of activities in the different science sectors for the next biennium
- Day 3 - 4: Planning of each science sector

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UNESCO's ASPA IHP Consultation Meeting - Offices

- **Offices ASPA** : (RUS), (BEL), (AF), (JSA)
- **Abuja**, cluster for Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan
- **Tehran**, cluster for Iran, Afghanistan, Pakistan, Uzbekistan
- **New Delhi**, cluster for India, Bangladesh, Bhutan, Nepal, Maldives, Sri Lanka
- **Beijing**, cluster for China, DPR Korea, Japan, Mongolia, Rep. of Korea
- **Apia**, cluster for PNG, Australia, New Zealand
- **Jakarta**, cluster for Indonesia, Malaysia, Philippines, East Timor and Regional Science Bureau for Asia and the Pacific

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UNESCO's ASPA IHP Consultation Meeting - Strategies

- **Strengthening of the IHP National Committees by networking**
 - IHP to approach IHP National Committees through a network of IHP Co-ordinators for West and South Asia. IHP should meet every 2 years. IHP should be related to the SSA7 RSC
 - Have respective transboundary learning programmes. Come up with a reference ASPA platform for the IHPs through prior consultation meetings
- **Strengthening of the newly formed IHP National Committees**
 - Mongolia and Myanmar have new IHP NCTs, therefore to be included in the annual regional and global summits.
 - Action to strengthen the IHP NCTs in Ministry Offices also foreseen

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UNESCO's ASPA IHP Consultation Meeting - Strategies

- **Sharing of information**
 - Knowledge and skills will be made more user-friendly through interaction between the regional bureau (IAK) and the cluster offices (TJK, NEI, BEL and AF)
- **Capacity building**
 - Regularize information on a regular basis, either cluster/regional or bi-annual capacity building training courses during the next biennium
 - IHP will restore joint activities of the Regional Co-ordinators, Urban Water Management in Tokana, BTK (with UNESCO Co-ordinators), Research and Training Center on Inland and Coastal Wetlands
 - IAK on the IHP in RUS
 - IHP will continue to provide graduate courses in hydrology, jointly organized by UNESCO and Government

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UNESCO's ASPA IHP Consultation Meeting - Strategies

- **Activities**
 - Continued to build up and build on assessment, MVA, or forum, hydrology, etc. cluster
- **Water Portal – following Recommendation XV.5 (1981/7)**
 - Each IHP National Committee will be delivered with free web space on the IHP Water Portal (www.unesco.org/water/) by December 2008 or January 2009
 - Each IHP National Committee should identify a "Contact Person(s)" responsible for filling the "template" with their respective data, info, news, activities/projects and resources (publications and mail)
 - IAK will coordinate all activities with regard to the handling of information from the IHP National Committees, directly and via the IHP Water Portal.

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UNESCO IHP Jakarta work plans

- MEA.1 – Global change and water: advancing hydrological sciences for improved assessment**
- (1) Global changes and water resources**
IAK Activity 1 – Focus on hydrology for global change project at global level
(2) Integrated watershed and aquifer dynamics
IAK Activity 1 – Research on the integrated assessment in support of IHP activities (P01/P02/03, 04, 05, 06, 07)
- (3) International Sediment Initiative**
(4) IHP RUS
IAK Activity 1 – Support to the Asia Pacific IRLND Water Action (IHP – South Taiwan)
- (5) IHP FP**
IAK Activity 1 – Support to IHP project (Asia Basin Group 2004 and 2006, 2007)
- (6) WVAIP: Resource studies**

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UNESCO IHP Jakarta work plans

MEA.2 – Water for human needs

- (a) River basin and extreme events management**
IAK Activity 1 – Develop hydrological forecasting, warning systems in urban and rural areas (P01/P02/03)
- (b) Land habitat hydrology**
IAK Activity 1 – Water resources assessment in watershed, urban areas, coastal areas and small islands
- (c) Water conflict resolution**

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UNESCO IHP Jakarta work plans

- MEA.3 – Water education and capacity building for sustainable development and security**
- (a) Institutional capacity-building**
IAK Activity 1 – Strengthening of established IHP network, support to some former IHP National Committees including specific coordination activities
- (b) Capacity-building: Interactions with society**
IAK Activity 1 – Support to *Deep Submergence and Freshwater Filter Project in Bekasi City – east Jakarta*
- (c) Water education and training**
IAK Activity 1 – Training course in water resource management (Groundwater catchment training course and other relevant training courses)

15

UNESCO IHP Jakarta work plans

- MEA.4 – Land water interactions: towards sustainable soil, sediment and security**
- (a) Interdisciplinary ecohydrological approaches: a component of sustainable water resources management**
IAK Activity 1 – Support to IHP activities in the area of research on water resources and management (P01/P02/03, 04, 05, 06, 07, 08, 09)
- (b) Ecological and hydrological and sedimentation processes**
 to Development of component studies and other initiatives in specific land form, urban areas and other and climate setting, consider eg. land-use planning aspects in water resources management
- (c) Development of IHP FP collaborative research on water quality, ecosystems subject to degradation and global changes in particular in hydrological systems, to promote ecosystem sustainability and enhance the environmental management**
- (d) Capacity building on hydrological modeling and water resources**
 to implementing actions in ecosystems posing special water use problems and/or requiring special attention for their resolution
- IAK Activity 1 –** Support to IHP activities in the area of research on water resources and management (P01/P02/03, 04, 05, 06, 07, 08, 09)

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ANNEX 5

IHP GOVERNANCE

To the Ad Hoc IHP Governance Committee,

I apologize for being silent since last summer, but now it's time to start our real work, which should be based on the functions stated in our terms of reference:

3. FUNCTIONS

3.1 To prepare a report:

- *Reviewing, on grounds of efficiency, flexibility and practicability, the existing and possible alternative governance structures of IHP.*
- *Considering all other aspects related to the Governance of IHP, including a strengthening of the test system of Regional Meetings,*
- *Hereby taking into account the addendum to the report of the former Ad Hoc Governance Committee, presented at the 15th Session of the Intergovernmental Council of IHP, encompassing the functions of Regional Meetings – further revised and endorsed at the first meeting of the new Ad Hoc IHP Governance Committee, held 21st June 2002 – and annexed to these Terms of Reference, as well as all other relevant documents.*

3.2 During the preparation of the above-mentioned report, to build on opinions and information from as many IHP National Committees as possible, in particular as expressed through the reports of the Regional Meetings.

3.3 To submit recommendations, as appropriate, to the Council at its 16th session.

As mentioned in 3.1 we should also take into account the **Addendum to the report of the previous committee** recommending:

I. To continue with a system of Regional Meetings and Joint Regional Meetings of the IHP National Committees, as follows:

- a) *The composition of the Meetings will generally correspond to the electoral regional groups of UNESCO. Participation in the Meetings will be open to governmental representatives of all Member States of the pertinent region, as well as to other interested members from other regions. Representatives of relevant non-governmental and intergovernmental organizations may assist as observers.*
- b) *The IHP National Committees can decide the convening of subgroups or trans-regional meetings by taking into account the diverse hydrological, demographic, language, geographic or political characteristics. The conclusions of the Meetings should be informed to all countries in the regions.*

- c) *Generally, at least one session of the Meetings should be held between consecutive sessions of the Council.*
- d) *The Chairperson of the National Committee for IHP of the host country will be the Chairperson of the pertinent Meetings. The Meetings will elect other officers, as appropriate.*
- e) *The Meetings should contribute to the decision-making process and governance of the IHP by performing the following functions:*
- *To specify the needs of the regions and set the priorities for implementing their needs within the framework of IHP;*
 - *To encourage an active participation of the countries in the planning and implementation of the IHP;*
 - *To review and follow-up on the progress of all IHP-related activities in the region;*
 - *To follow-up on resolutions adopted by the IHP Intergovernmental Council;*
 - *To share the knowledge of best practices and experiences in management of water resources for enhancing the regional co-operation; and,*
 - *To make recommendations for consideration of the IHP Bureau.*
- f) *The Meetings will be preferably held in accordance with other technical or scientific meetings with the aim of ensuring a greater participation and optimising costs.*
- g) *The organization of the Meetings should not generate a substantive financial impact on the IHP regular budget. Participation should primarily be funded by the governments sending representatives. The host country and the pertinent regional office of UNESCO will facilitate the organization of the respective Meeting.*
- II. *To invite the National Committees to monitor the success of the Regional Meetings, for example based on the guidelines proposed by the Australian National IHP Committee (Annex I).*
- III. *To report on the outcomes of the regional meetings to the Bureau.*

To collect the views of the different member states, while at the same time encourage them to meet and discuss, I suggest that we as a first task devote our efforts to initiate regional meetings. To this effect I suggest that we call upon assistance from the regional hydrologists (a list is enclosed for your convenience). Please consult informally with other countries in your region in order to come to an agreement whether to hold a regional meeting corresponding to the UNESCO electoral region, appropriate sub-regional meetings, or a trans-regional meeting. When you feel a consensus has emerged, then make a strong effort to identify the country (or countries) that should host the meeting(s). Contacts to National Committees can be found at the web address http://webworld.unesco.org/ihp_db/nat_committees/

I suggest that all meeting take place in the second half of 2003, or at the latest during January and February 2004. This will give us a few months to finalise our report to the next Intergovernmental Council. Moreover, I urge you as soon as possible to contact the regional hydrologist and your regional fellow member in the ad hoc committee in order to pursue the planning (the list of committee members is enclosed for your convenience).

Please confirm the receipt of this letter to me with a copy to Ferline Tiard at the UNESCO in Paris (f.tiard@unesco.org). She will provide secretarial assistance to our further efforts. In the mail please also confirm your willingness to initiate the requested regional meetings in cooperation with the regional hydrologist.

Yours sincerely,


Dan Rosbjerg
Chairperson, ad hoc IHP Governance Committee

Enclosures

List of the regional hydrologists

List of members of the ad IHP ad hoc Governance Committee


cc: Regional hydrologists




"Changing the Status of the IHP Governing Mechanism"



11th IHP RSC Meeting for S. & A.¹
Sugata, Fiji, 30-31 October 2003



History




Brief presentation of the chronological events of IHP Governance

Previous Programme

Discussions to change the status of IHP within UNESCO started in 1992.


- Implanted 30 year ago,
- Need to evaluate the structure of IHP

⇒ enormous legal implication
The decision was postponed



External Evaluation

External evaluation of the role of IHP organs, such as the Intergovernmental Council and IHP National Committees, in the design, implementation and follow-up of programme activities.




Conclusion of External Evaluation

The council and its Bureau: important role in supervising the Programme

The IHP National Committees: limited role in the implementation of programme activities. (planning, monitoring and execution)

Not all Member States are involved in steering up the Programme

⇒ Desirable to establish
Regional Intergovernmental Councils




Election of New Governance

Dichotomy between different countries

- started to be too small and more
- attempt to look for a consensual solution

Proposed 3 options (besides the current situation):

- Option 0: No change
- Option 1: Fully centralized governance (with all 200 as members)
- Option 2: Fully decentralized governance (6 Reg. Councils)
- Option 3: Partial governance (10 annual tasks programme - but for a shorter period, as well as 6 Reg. Sub-regional Councils)




Two Option Selected

Option 0: (6 interventions in favour)

- 50/50/50,
- Negative financial impacts
- 200 as NC confirmed and number of members of Council increased.

Option 3: (17 interventions in favour)

- Other countries,
- Strengthened contribution of NC
- Development of their research activities in each country

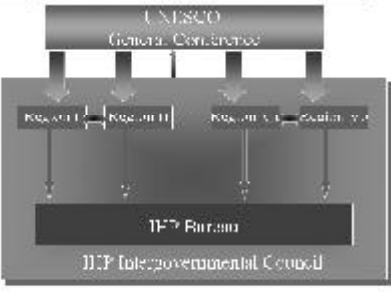



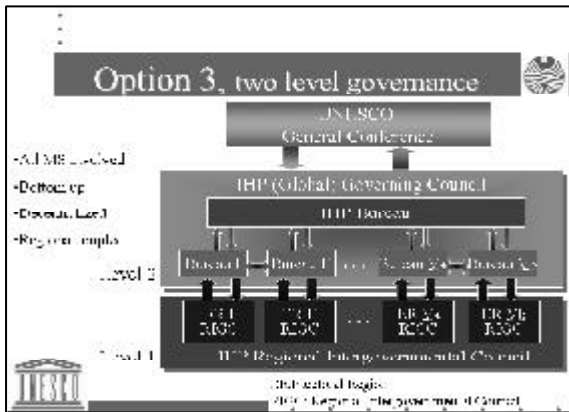
Option 0, no change

- Elections of IHP members by the General Conference

Flag Down
200 as NC are equally involved in:

- planning
- implementing
- evaluating the Programme



XXV Session of the IHP Bureau

Financial and administrative implication of the two option

- Option 1: Intergovernmental Council biennial duration 5 days
- Option 2: Same Council structure as current 5 days + Intergovernmental Regional Councils, 30 minutes before the General Council, 4 days for 5 days
- Option 3: more expensive than option 1 (US\$ 44,000 in 1997)
 - including professional fee meeting director
 - Activities part of program of all Year for States in planning and implementation of the IHP

UNESCO

Finalize the Dichotomy

Ad hoc Group, called "Governance group"

- Agreement to use report of an ongoing group of experts of all Member States in the 19th annual meeting of the IHP governance
- Function
 - to prepare report to UNESCO on the IHP NGC
 - to make a study on the IHP Structural Status of possible
- Agreement to hold a conference on the subject in the 20th session of 1997

UNESCO

Implementation of the new model of Governance

- Decision of the Executive response from MS. In 26th session of the Bureau (Sept. 99) requested the Secretariat to promptly send a letter to all NGCs asking them to reply to the June 1988 letter of the *ad hoc* Governance Committee, in order to conclude this issue at the 14th session of the IC
- Briefing sessions by the secretariat to the regional groups of the permanent delegation to UNESCO were also recommended.
- A new letter was sent in November 1999

UNESCO

UNESCO highlights

Which "expectations" concerning the Regional Intergovernmental Council

UNESCO

Proposal: 14th session of IC, June 2000

- Approved a Temporary voluntary system of Regional Meetings until the 15th session, June 2002 (taking into account that the 14th Session of the Executive Council generates a substantial impact on the IHP Regular Budget, all MSs are invited to support financially the convening of the Meetings)
- The IHP NGCs are invited to convening of bi-regional meetings (at least in form of experts)
- A reference held with other regional organizations
- Ask the IC in its 15th Session to evaluate the system with a view to decide its continuity (its upgrading or its cancellation)

UNESCO

Proposal: 14th session of IC, June 2000

Recommendations to strengthen IHP NGCs

- Governments to devote funds for the programmed activities
- Use of joint subjects and activities of NGCs from the same region or from different regions
- To promote shared activities of NGCs with other NGO or ICOs
- To create a special solidarity fund for allowing the participation of NGCs in the IC and regional meetings

UNESCO

Proposal: 15th session of IC, June 2002

- A report was presented by the *ad hoc* Committee
- The Council was fully aware of the need of all MSs to actively participate and guide the IHP Governance
- The Council endorsed the conclusions of the 14th session of the Regional Meeting
- After lengthy discussions with an over 20 delegation of the delegates representing different countries, the Secretary General and Director of the program of the proposed Regional Meeting, Geneva was also expressed by some delegates that substantial costs for these meetings would be involved
- The Council recommended by consensus the establishment of the *ad hoc* Committee (2000/15) and approved the use of the 14th resolution was adopted (2002/7)

UNESCO

ANNEX 6

COUNTRY REPORTS

NATIONAL REPORT ON IHP RELATED ACTIVITIES AUSTRALIA

1. ACTIVITIES UNDERTAKEN IN THE PERIOD NOV 2002 - OCT 2003

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 activities of the IHP network are reported on at meetings of the national UNESCO Science and Technology Network. The national UNESCO Science and Technology Network last met in Canberra on Thursday 3 May 2003.

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	ACTEW Corporation
Trevor Daniell	Urban/Flood 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 (and Water Research Foundation of Australia)
Erwin Weinmann	Flood management/water resource management	CRC for Catchment Hydrology
Ian Cordery	Flood/Drought Hydrology	University of New South Wales
Peter Dillon	Groundwater	Centre for Groundwater Studies
Anne Jensen	Ecotones	Wetlands Care Australia

1.1.2 Status of IHP-VI 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 Cooperative Research Centre (CRC) for Catchment Hydrology and other centres for research undertake activities which are closely aligned to the themes of IHP-VI. A description is provided below of some activities pertinent to IHP-VI.

- *Theme 1 - Global Changes and Water Resources*

A subset of the hydrological data collected by the State and Territory water agencies and the Bureau of Meteorology is regularly contributed to international data centres for use in global and regional studies. The Cooperative Research Centre for Catchment Hydrology (<http://www.catchment.crc.org.au/>) is undertaking research on the use of GCM outputs to provide "natural" hydrological parameters in near real time. 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.

- *Theme 2 – Integrated Watershed and Aquifer Dynamics*

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 Australian National University (ANU) is researching artesian groundwater processes in the lower Great Artesian Basin. ANU with Ecowise Environmental are investigating shallow groundwater recharge, socio-cultural aspects of groundwater management and impacts of drought in low coral islands as part of an UNESCO-IHP project. Most Australian water agencies are in the process of developing river basin management plans 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 3 - Land Habitat Hydrology*

The Australian National University and Ecowise Environmental have ongoing projects in conjunction with UNESCO-IHP investigating shallow groundwater recharge, socio-cultural aspects of groundwater management and impacts of drought in low coral islands. Research into hydrological process in and the sustainable management of wetlands is being undertaken in a number of universities and cooperative research centres in Australia (CRC for Freshwater Ecology, CRC for Catchment Hydrology, CRC for Coastal Zone, Estuary and Waterway Management). The urban environment and water sensitive urban design are also areas of current research.

- *Theme 4 – Water and Society*

The National Land and Water Resources Audit (<http://www.nlwra.gov.au/full> 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 is currently receiving a lot of attention in Australia and is a potential resource for other similar projects in other countries.

- *Theme 5 Water Education and Training*

Each of the Cooperative Research Centres (CRC) (<https://sciencegrants.dest.gov.au/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:

[CRC for Catchment Hydrology](http://www.catchment.crc.org.au/) (<http://www.catchment.crc.org.au/>)

[CRC for Coastal Zone, Estuary and Waterway Management](http://www.coastal.crc.org.au/) (<http://www.coastal.crc.org.au/>)

[CRC for Freshwater Ecology](http://enterprise.canberra.edu.au/WWW/www-crcfe.nsf) (<http://enterprise.canberra.edu.au/WWW/www-crcfe.nsf>)

[CRC for Tropical Rainforest Ecology and Management](http://www.rainforest-crc.jcu.edu.au/) (<http://www.rainforest-crc.jcu.edu.au/>)

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

These CRCs are 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.

Centre for Resource and Environmental Studies, 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, water and land policy and related socio-economic impacts, ecological economics.

- *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. Australia has contributed two areas, Mount Lofty Ranges (South Australia) and the Lower Murrumbidgee River Catchment to the HELP project.

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

1.2.1 National/local scientific and technical meetings

- 2002 ANCOLD Conference on Dams was held on 19-25 October 2002 in Adelaide. The theme for the technical conference was "*Dams-Future Directions in Demanding Environments*".
- International Workshop on Water for Cities 11-12 November 2002 & Conference on Sustainability of Water Resources 13-14 November at Murdoch University, Perth, Western Australia
- Ninth International Conference on River Research and Applications was held at Albury, NSW 6-11 July 2003. The theme of the conference was "The Nature of Variability in River Environments".
- Water Recycling Australia, 2nd National Conference, 1-3 September 2003, Brisbane showcased the latest development in research and development and practical applications of water recycling, including stormwater and rainwater across Australia and overseas.
- Sixth International River Symposium, 2-5 September 2003 with the theme Urban Rivers – balancing the expectations.
- Drought Management Workshop, 15-16 September 2003 Sydney with the theme Drought Management – Will Your System Cope.
- Ozwater Convention & Exhibition, Perth 2003 with the theme of Innovations in Water focused on innovative solutions to the many technical and financial issues confronting the industry.
- UN Association of Australia National Water Conference, 7-8 October 2003, Melbourne with the theme Towards a National Water Policy Framework: Vision to Implementation.
- The 2003 International River Health Conference, 19-21 October 2003, Mildura, Victoria. The Conference is Australia's only environment event for kids and by kids. The International River Health Conference provides hands on, student-centred learning to bring about a cultural change in the way we perceive our natural environment, and to raise awareness of the importance of environment education, and the value of the "Kids Teaching Kids" model of education.
- International Year of Freshwater
 - Postcard competition – primary school children studied water issues resulting in postcards being published for sale.
 - Promotion of IYFW objectives using IYFW badged promotional material (hats, magnets, balloons etc) by a wide range of catchment management authorities, water boards and local and regional water agencies
 - Sponsorship of breeding research into a rare freshwater tortoise by South Australia Water.
 - Development of promotional and educational material, including web sites, for teachers and schools by a number of educational organisations.
 - Trial water recycling projects by the City of Port Philip to save water used for watering of sports grounds, parks and gardens.
 - Performance of the "The Water Show" by the Splash Theatre Company to over 80 primary schools in South Australia in May and June. Sponsored by United Water "The Water Show" is an entertaining adventure about the water problems we could face in the future unless changes are made.
 - Student photographic competition based on IYFW themes with entries being used to produce a display poster.
 - Production of an Australian Water Map by Earth Systems Pty Ltd with sponsorship by a number of government departments. The map provides valuable information on the distribution and use of Australia's vital freshwater resources. The Australian Water Map was officially launched in mid June as a contribution to the IYFW.
 - School competitions to raise water awareness in Western Australia.

- 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>).
- The Australian Government has undertaken a national land and water resources assessment to enable improved decision making in sustainable use of the resources. This assessment was completed in early 2002 and a range of publications has resulted. Details of the assessment projects and output products are at <http://www.nlwra.gov.au/full/index.html>. The results of the assessment are available from the web based Australian Natural Resource Atlas at <http://www.nlwra.gov.au/atlas>.

1.2.2 Participation in IHP Steering Committees/Working Groups

Australian experts were nominated for a number of IHP-VI Theme Advisory Boards with Prof. Ian White being appointed as a Regional Representative to the Advisory Board for Theme 4 – Water and Society.

The following people have been nominated by Australia for inclusion in the IHP Expert Pool.

Name	Expertise
Prof. T.A. (Tom) McMahon	Stochastic hydrology, reservoir storage-yield analysis, rainfall-runoff modelling, regionalisation in hydrology, modelling water demand in urban areas, tools for assessing adoption of research results
Dr Peter Dillon	Groundwater, aquifer storage and recovery, brackish and saline aquifers, irrigation, storm water runoff, management of aquifer recharge for sustainability
Assoc.Prof Rodger Grayson	River flow routing, large scale distribution modeling, high resolution spatial measurement, modelling and analysis of soil moisture and hydrological response, environmental management
Professor Ian White	Downstream impacts of landuse, management of acid sulfate lowlands to minimise acid discharges, water use and extraction from freshwater lenses, convection of dense surface waste water into groundwater.
Mr Trevor Daniell	Post Graduate studies in Engineering Management and Planning, Environmental Engineering & Design, Water Resources Management
Dr Francis Chiew	Hydrologic modelling, climate variability and climate change impact, El Nino and seasonal streamflow forecasting, and urban stormwater quality
Mr Steve Appleyard	Groundwater Contamination levels, Storage of Dangerous Goods
Dr Tom Hatton	The measurement and modelling of tree water use, ecohydrology, and catchment hydrological modelling
Dr Jennifer McKay	water resources laws and policies, sustainable water markets, water allocation, corporatisation and privatisation of management and private dam safety policies, corporate governance, codes of conduct

Steve Barnett of South Australia Department of Water Land and Biodiversity Conservation is coordinating Australian input to the UNESCO IHP-VI preparation of the Hydrogeological Map of the World. He has been involved for many years in hydrogeological mapping of the Murray Darling Basin and is Chair of IAH Australian Chapter.

CSIRO is the Australian research organisation linked to the Water and development information for arid lands (WADI) project being set up by the IHP.

Dr. Xia Jun visited Australia 19-24 June 2003 for discussions with a number of people regarding the external evaluation report of IHP V

1.2.3 Research/applied projects supported or sponsored

Partial results of an applied research project in Kiribati have been published in IHP Technical Documents in Hydrology No 25 (*Groundwater recharge in low coral islands Bonriki, South Tarawa, Kiribati: Issues, traditions and conflicts in groundwater use and management, by Professor Ian White and other Australian and Kiribati authors*). This report makes a range of recommendations concerning social issues impacting on groundwater use and the future management of the groundwater resource.

The technical issues were earlier presented in a paper (*Recharge of fresh groundwater lenses: Field study, Tarawa atoll, Kiribati*) by Professor Ian White at The Second International Colloquium on Hydrology and Water Resources Management in the Humid Tropics, Panama, (sponsored by UNESCO-IHP and CATHALAC) in March 1999 and again at the Regional Conference on Hydrology and Environment of Small Islands, Tioman Island, Malaysia 29-31 May 2000.

A further IHP Technical Document in Hydrology No 26 (*Drought in Small Coral Islands: Case study, South Tarawa, Kiribati by Professor Ian White and two co-authors*) was published in 1999.

The study of recharge in Kiribati was one of two applied hydrology projects undertaken in the Pacific Islands that were given seed funding by UNESCO-IHP following a resolution supporting these projects at the 11th IHP-IC meeting.

The second applied research project dealing with groundwater contamination from sanitation systems was undertaken on the island of Lifuka in Tonga. Results of this project in Tonga have been published in IHP Technical Documents in Hydrology No 43 (*Integration of social and technical science in groundwater monitoring and management. Groundwater pollution study on Lifuka, Ha'apai, Tonga & Recharge study on Bonriki, South Tarawa, Kiribati, by Dr Leonie Crennan and other Australian and Kiribati authors*). This publication also addresses social science aspects of the Tarawa project.

More recently, a paper titled 'Hydrology of and conflicts over shallow groundwater use and management in low coral atolls.' By WHITE, I., FALKLAND, A., CRENNAN, L., METEUTERA, T., ETUATI, B., METAI, E., PEREZ, P., and DRAY, A. was presented at the conference *In Low-lying Coastal Areas- Hydrology and Integrated Coastal Zone Management. International Symposium, Bremerhaven Germany, 9-12 September 2002*. Deutches IHP/OHP-NationalKomitee, Koblenz, Germany.

Hydrology for Environment, Life and Policy (HELP)

Australia continues to contribute to the two projects established under the HELP banner. These are the Mount Lofty Ranges (South Australia) and the Lower Murrumbidgee catchment in the Murray Darling River Basin.

Mount Lofty

A case study of the third phase of an exemplar framework (in train for 8 years already as a partnership of Governments, Private sector and community) for integrating expertise of water policy makers, managers and scientists in the further development of an integrated natural resource management investment strategy for the mount lofty ranges, and a case study of the impact of on ground works under phases 1, 2 and 3 of MLRCP on water quality and quantity.

Key issues being addressed:

- creating and sustaining partnerships between stakeholders toward integrated Natural Resource Management including the private sector,
- using these to devise a integrated set of legislative instruments, and
- evaluating the above.

Contact point: Jennifer McKay (University of South Australia)

Lower Murrumbidgee Catchment

Cooperation between researchers, farmers and industry in the Lower Murrumbidgee catchment, and its power to achieve useful and practical on-ground results, is the focus of this HELP initiative. The southern New South Wales catchment has been named as the UNESCO HELP program's first global reference basin. This means that the region's farmers, researchers and irrigation companies will be used as an example to showcase practical solutions for water resources management under competing water uses and economic concerns. The research efforts in the area are addressing problems including rising water tables and salinity, reduced river flows, legislative reforms, competition between water users (including the environment) and falling deep aquifer pressure levels. The catchment is significant; with 2730 farms spread over 560,000 hectares in the Murrumbidgee and Coleambally irrigation areas. Almost a quarter of the water extracted from the Murray-Darling Basin each year is used to produce more than \$1 billion worth of crops – almost 16% of Australia's agriculture produce. The lower Murrumbidgee catchment presents an excellent example of community involvement in hydrological research and the development of integrated catchment management policies using a range of tools.

Contact Point: Dr Shahbaz Khan (CSIRO) (shahbaz.khan@csiro.au)

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

As one of Australia's members of the WMO Commission for Hydrology, Mr. Stewart provides a link between the UNESCO IHP and WMO's Operational Hydrology Programme. 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 sub-committee on the ethics of freshwater use of UNESCO's COMEST.

1.2.5 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 has been funded for the 1st year by NZAID. Scheduling of the 1st year 4 week course is still to be finalised but it is hoped to hold it from early October 2003, to allow students to attend the UNESCO RSC.

1.3.2 Participation in IHP courses

A number of international students attended the UNESCO accredited postgraduate courses in hydrology and water resources at the Joint Universities Masters Program (JUMP), Adelaide, South Australia.

1.3.3 Other courses

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.

1.4 Publications

Water Management in the Mekong Delta: Changes, Conflicts, and Opportunities

By Ian White. IHP – V | Technical Documents in Hydrology | No. ??? UNESCO, Paris, 2002

(This is an Australian and Asian Pacific region contribution to the HELP project.)

1.5 Participation in international scientific meetings

1.5.1 Meetings hosted by Country

1.5.2 Participation in meetings abroad

Trevor Daniell and Ross James attended the 10th Regional Steering Committee for Southeast Asia and the International Conference on Urban Hydrology in Kuala Lumpur, Malaysia during October 2002.

Bruce Stewart attended the third World Water Forum in Japan during March 2003.

1.6 Other activities at a regional level

A Catchment and Communities project in Vanuatu in cooperation with SOPAC is progressing.

1.6.1 Institutional relations/co-operation

No information available at this time.

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 2004

- Continuation of assistance to Pacific Island Projects.
- Continuation of involvement in Asian Pacific FRIEND.
- 2003 ANCOLD Conference on Dams is scheduled for 24-28 October 2003 in Hobart, Tasmania. The theme for the technical conference will be "*Technological Development – Its impact on Dam Management and the Triple Bottom Line*".
- 28th Hydrology and Water Resources Symposium, 10-13 November 2003, Wollongong. The main conference theme is "About Water", getting back to basics to assist our understanding of the fundamental relationships between water and related environments.
- ATSE Annual Symposium – Water the Australian Dilemma, 17-18 November 2003, Melbourne. The Symposium is broadly conceived to enable effective coverage of critical technical and policy issues at regional and national level and to seek integration of effort.
- Climate Impacts on Australia's Natural Resources, 25-27 November 2003, Surfers Paradise, Queensland. The aim of the conference is to provide natural resource managers with the most up-to-date scientific knowledge regarding climate change and climate variability impacts on natural and managed systems.
- IWA 6th Specialist Conference on Small Water & Wastewater Systems & 1st International Conference on Onsite Wastewater Treatment & Recycling 11-13 February 2004 at the Esplanade Hotel Fremantle, Western Australia
- Enviro 2004, 28 March – 1 April 2004, Sydney The Enviro Convention & Exhibition is a platform for five environment industry associations to run their annual or biennial conferences and showcase their technology, products, services and research in a combined trade exhibition.
- The biennial convention of the Australian Water Association (AWA) 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 Brisbane 2005 Ozwater Convention & Exhibition, with have the theme of Watershed – The turning point for water. The convention will cover the national water agenda and include all aspects of management, water and wastewater treatment, water infrastructure, drinking water quality, pollution control, reuse and water resources.
- 8th National Conference on Hydraulics in Water Engineering, 13-16 July 2004, Surfers Paradise Queensland. The conference theme "Hydraulics – The Next Wave" is intended to focus the conference on the latest techniques and challenges in hydraulics and to reflect the changes in public attitude and variability in climate that drive innovation in hydraulics.
- River Symposium, September 2004, Brisbane.

- 1st National Salinity and Engineering Conference, 9-12 November 2004, Perth (<http://www.congresswest.com.au/salinity2004>) The conference theme is “Salinity - an enormous environmental, economical and social challenge” with major themes of: Innovation, Design, Climate Change, Integrated Systems and Management, Engineering, Economics, Education and Training, and Environmental Impact and assessment.
- Water Sensitive Urban design 2004, 22 Nov-3 Dec 2004, Adelaide. The main theme will be the integration of land planning, stormwater use, ground water, economics, regulation and social issues.
- Management of Aquifer Recharge – includes the publication of 'Wise Strategies for Groundwater Recharge Enhancement', further workshops and symposia targeting arid and semi arid areas and possibly also small islands, triple bottom line evaluation of effectiveness of recharge enhancement in developing countries (also with FAO) and development and linkage of web pages on recharge enhancement.
- The UNESCO World Commission on Science and Technology is also pursuing the theme of hydrology through a program with the acronym of COMEST. This program has been largely the initiative of the Australian member of the Commission, Professor Barry Ninham from the ANU. Activities are planned in relation to the COMEST programme.

2.2 Activities Planned for 2005-2006

- Continuation of assistance to Pacific Island Projects.
- Continuation of involvement in Asian Pacific FRIEND.
- Training courses in the Pacific Island Countries.

2.3 Activities Planned for 2005-2006

COUNTRY REPORT

Chinese National Committee

1. ACTIVITIES UNDERTAKEN IN THE PERIOD October 2002—October 2003

1.1 Meetings of the Chinese National Committee for IHP

1.1.1 Decision regarding the composition of the Chinese National Committee

The National Committee has been reorganized this year, since some of members were retired or leave their original position. New national committee includes 22 members and has approved by the Ministry of Water Resources. The Namelist of National Committee members (22) is following:

Chairperson: Ms Liu Yaming, Director-General of Bureau of Hydrology of Ministry of Water Resources (MWR).

Vice Chairpersons :

Prof. Liu Changming, Academician of China Academy of Sciences

Ms. Meng Zhiming, Deputy Director-General, International Cooperation Dept., MWR

Prof., Dr. Liu Heng, Vice President of Nanjing Hydraulic Research Institute, MWR

Prof. Yan Yixin, Vice President of Hohai University

Prof. Jiang Jianjun, Director-General, Geology and Environment Dept. of Ministry of Land Resources (MLR)

Secretary-General:

Ms. Zhu Xiaoyuan, Director Division, Bureau of Hydrology, MWR

Deputy Secretary-General:

Mr. Liu Zhiguang, Director Division, International Cooperation Dept., MWR

Prof. Zou Ying, Chief Section of Hydrology and Water Resources Dept., Nanjing Hydraulic Research Institute, MWR

Members :

Mr. Liu Jiang, Director Division, China UNESCO National Commission

Prof. Xia Jun, Geography and Resources Institute of China Academy of Sciences

Prof. Huang Zhixing, Director-General, Hydrogeology and Engineering Geology Institute, MLR

Prof. Yue Zhongming, Director-General, Bureau of Hydrology, Changjiang Water Resources Commission, MWR

Prof. Niu Yuguo, Director-General, Bureau of Hydrology, Yellow River Water Resources Commission, MWR

Prof. Lu Guihua, Director, Institute of Sciences, Hohai University

Prof. Guo Shenglian, College of Hydropower and Water Resources, Wuhan University

Prof. Hu Heping, Director, Institute of Hydrology and Water Resources, Tsinghua University

Prof. Hu Chunhong, Deputy Director-General, ITRCES, UNESCO

Prof. Wang Hao, Director of Dept. of Water Resources, China Institute of Water Resources and Hydropower Research (China IWHR), MWR

Prof. Cao Shengle, Director of Civil Engineering and Construction College, Shandong University
Prof. Dong Zengchuan, Director of College of Water Resources and Environment, Hohai University
Prof. Yao Yongxi, Hydrology and Water Conservancy Automatization Institute, MWR

1.1.2 Decision regarding contribution to/participation in IHP-VI

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

1.2.1 National/local scientific and technical meetings

World Water Day and related activities National Committee was involved in the preparing of the activities for celebrating World Water Day, 22 March 2003 in Beijing. An expert delegation, including 5 national committee members or representatives, attended 3rd World Water Forum 2003 in Kyoto, Japan. Meanwhile, Minister of the Ministry of Water Resources, Mr. Wang Shucheng, headed the official delegation and delivered a keynote speech on promoting sustainable development under sustainable water resources use in the opening session. A project on rainfall use for people and livestock drinking water, agricultural economy development and ecosystem improvement in rural area was awarded by the World Water Council. Some succession training courses were organized in Gansu Province with scientific support from IHP national Committee.

5th National Symposium on Sedimentation Basic Law was organized by China Hydraulic Engineering Society, with support of IHP national Committee and ITRCES of UNESCO in Wuhan from 14-16 October, 2002. About 80 participants attended the symposium and focused presentation and discussion on Sediment movement rule, river bed evolution, sediment disaster and use etc. Some sedimentation issues for key projects, e.g., Three Gorge, Xiaolangdi, S-N Water Transfer, were reported. Proceedings, including 76 papers in Chinese, is available.

1st National Problem Seminar was held in Wuhan, Hubei Province in 16-18 October, 2003. The seminar focused on three fields: theory and technology of flood control and disaster mitigation; drought issues and water resources optional allocation; water pollution control and water environment protection. The organizers are mainly from IHP China National Committee. It is expected to be forum for regular water problem discussion.

1.2.2 Participation IHP Steering Committees/Working Groups

Prof. Chen Yuanfang, Hohai University, participated in the 10th meeting of IHP Regional Steering Committee for Southeast Asia and the Pacific in Kuala Lumpur, Malaysia, on Oct. 14-18, 2002 with a paper presentation.

Mr. Wei Xinping, engineer of Bureau of Hydrology of Ministry of Water Resources participated in Hydrological Archives Training Course at The Regional Humid Tropics Hydrology and Water Resources Center for Southeast Asia and the Pacific (HTC) in Kuala Lumpur, from 13-17 October, 2003.

1.2.3 Research/applied projects supported or sponsored

River Catalogue V of Southeast Asia and the Pacific has been discussed and 1 river basin in China,

which is Rong Jiang, will be catalogued under the regional cooperation framework.

Chinese Homepage of IHP on Internet has been supported by UNESCO Beijing office and will be updated regularly.

1.2.4 Collaboration with other national and international organization/programs

International Flood Forecasting and Management Training Course. The course was held in Yichang near Three Gorge Dam Site in Hubei Province from 16-19 September. Since the course was combined with an international symposium on GIS and RS application in Hydrology and Water Resources, some experts from USA, Japan, Belgium, UK and China presented their recent research achievement. 43 participants from provincial level and ministerial level hydrological organizations attended the course. The training contents included China flood forecasting system and application, distributed hydrological model and application in flood forecasting, digital metrological radar and application in flood forecasting in USA, new procedures of flood forecasting and flood management in Japan, etc. Hydrological Committee of China Hydraulic Engineering Society was organizer and IHP National Committee sent members to join the activities.

WMO/UN-ESCAP “Workshop on Regional Hydrological Cooperation Projects” in Beijing, 22-26 September 2003. The workshop topics included flood disaster mapping skill and application, mud and rock flow warning and prediction technology, flood forecasting, hydrological monitoring etc.

18th China-Japan Water Resources Cooperation Meeting. The meeting is an annual higher official activities which headed both by Dr. Gao Bo Director-General of International Cooperation of Ministry of Water Resources in Chinese side and head of water resources supervision department of Ministry of Civil Land and Communication in Japanese side. The annual meeting started from 1984, and has been responsible for cooperation and scientific exchange on water resources between two countries. The 18th meeting was concentrated on water resources sustainable development, water saving, water environment protection. IHP National Committee is member of Chinese delegation.

Participation of IAHS General Assembly, Sapporo, Japan, 3-11 July. Prof. Xia Jun, member of China IHP National Committee was selected as vice-president. China IHP/IAHS National Committees closely cooperated for joint activities, such as research projects, seminars/workshops, in the last years.

China-UK Workshop on Water Affairs and Supervision Mechanism. The workshop was held in Beijing 21-22 September, 2003. Mr. Zhai Haohui, Vice Minister of Ministry of Water Resources, and UK Ambassador in Beijing participated in opening ceremony. 150 participants from administrative, planning and management, research and education agencies attended the two days workshop. IHP national Committee was observer.

1.2.5 Other initiatives

1.3 Education and training course

1.3.1 Contribution to IHP courses

International training and research center for hydrology, water resources and water environment (ITRCHWE) continued the training course on River Basin Sustainable Water Resources Management.

Another center named Hangzhou Regional Center (HRC) for rural small hydropower research and training was combined their activities under IHP framework. Two training courses for developing countries are organized in Hangzhou, China annually.

1.3.2 Organization of specific courses

4th Advanced Technology Training Course on Flood Defense and Disaster Mitigation. The course was supported by National Flood Prevention and Drought Fight Office and held in Beijing from 13-17 October 2003. Special training contents were: National Flood Control System, Provincial and Basin level Flood Control System, Flood Warning and Forecasting System for large Reservoirs, Introduction of US HEC-RAS and FLO-2D Packages and Application. 20 participants joined the training. IHP National Committee is member of organizing committee.

1.3.3 Participation in IHP courses

As important members of IHP National Committee, Nanjing Hydraulic Research Institute and Hohai University signed a fundamental Chart with UNESCO-IHE and other knowledge centers for a global partnership framework for water science education and training in November 2002. Monthly telephone meeting on training topic, module and other issues has been held.

1.4 Publication

Water Resources Assessment – Handbook for Review of National Capacities, published by WMO/UNESCO in June 1997, has been translated to Chinese. The handbook is distributing for National and Provincial training and reviewing use.

1.5 Participation in international scientific meetings.

1.5.1 Meeting hosted by the country

Special Technical Workshop on Hydrological Progress. The workshop was co-organized by IAHS/IHP National Committees. Prof. K. Takeuchi, president of IAHS, was invited to give a lecture in Beijing 15 September, 2003. Prof. Takeuchi's presentation topic is Global Hydrological Research and Local Needs.

Workshop and Exhibition of Water Quality and Quantity Simultaneous Monitoring Technology and Application was organized by Bureau of Hydrology and National Committee in Lin'an, Zhejiang from 25-28 April, 2003. About 120 participants come from river basin commissions, provincial hydrology bureaus, USA YSC Ltd., USA Sodek Ltd., USGS, Malaysian ASMA Ltd, and China's universities and research institutes. Besides paper presentations, some monitoring equipment were practiced and tested in the field.

1st International Yellow River Forum has been held in the 21-24 October 2003 in Zhengzhou, China. National Committee sent more than 10 members and experts to join the activities. It attracted about 300 participants, in whom about 70 international participants, to share experiences on climate

change, hydrological cycle, flood control, drought and water resources management, wetland and ecosystem protection etc. It was a successful forum in international hydrological and water resources research. The national committee will continue to support and join the organizing activities in the future.

1.5.2 Participation in meetings abroad

Chinese participants with their papers on hydrology and water resources participated in IHP-V achievement in Southeast Asia and the Pacific in Kuala Lumpur, Malaysia on 14-18 October 2002.

1.6 Other activities at a regional level

1.6.1 Institutional relations / co-operation

To enhance relationship with IAHS at national level, Asian Water Resources Association (AWRA) at regional level, as well as WMO, IAEA, UN-ESCAP at UN system level would be highly concentrated. To cooperate with national committees for hydrological and water resources research in Southeast Asia and the Pacific are key fields.

1.6.2 Completed and ongoing scientific projects

FRIEND projects for flood/low flow forecasting/predictions in Southeast-Asian group work.

2. FUTURE ACTIVITIES

2.1 The National Committee will continue and pay high attention for regional cooperation under IHP framework. WWAP and WWDR is key issue at present.

2.2 More projects related to IHP-VI themes will be supported by Ministry of Water Resources through IHP national Committee. IHP National will continue to encourage scientific and technical symposia and workshops.

2.3 China IHP National Committee will make more contributions to IHP, specially, may host RSC meeting/workshops or join co-team for regional cooperation.

NATIONAL REPORT ON IHP RELATED ACTIVITIES REPUBLIC OF INDONESIA

1. ACTIVITIES UNDERTAKEN IN THE PERIOD November 2002 – October 2003

1.1 Meetings of the IHP National Committee

1.1.1 Decisions regarding composition of the National Committee.

The structure of the Indonesian National Committee for IHP are represented by Chairman, Secretary, and 15 active members. They constitute of professional from non-department institutes, universities, research institutes and sectoral departments. They are : the Indonesian Institute of Sciences (LIPI), Departments of Settlement and Regional Infrastructure, Education, Agriculture, Forestry, University of Indonesia and Bogor Agriculture University, and the Bureau of Meteorology and Geophysics.

The present composition of the National Committee is :

Chairman : Jan Sopaheluwakan
Vice Chairman : Dyah Rahayu Pangesti
Secretary I : Gadis Sri Haryani
Secretary II : Ridwan Jacob

Members :

1. P.E. Hehanussa Indonesian Institute of Sciences
2. Rahman Djuwansyah Indonesian Institute of Sciences
3. Indreswari Guritno University of Indonesia (UI)
4. Hidayat Pawitan Bogor Agriculture Institute (IPB)
5. Istiqlal Amien Ministry of Agriculture
6. Mohd. Ali Ministry of Settlement and Regional Infrastructure
7. Joesron Loebis Ministry of Settlement & Regional Inf.
8. William Putuhena Ministry of Settlement & Regional Inf.
9. Adi Sarwoko Ministry of Settlement & Regional Inf.
10. Eulis Retnowati Ministry of Forestry
11. Hery Harjanto Inst. for Meteorology and Geophysics
12. Jusman Sihombing Ministry of National Education
13. Hadikusumah Indonesian Institute of Sciences
14. Sudaryati Cahyaningsih Indonesian Institute of Sciences
15. Bogie Soedjatmiko E.T. Indonesian Institute of Sciences

The committee hold a bimonthly coordination meeting. Additional technical meetings are as needed for planning and implementation of seminars, workshops, and other activities organized and co-organized by the committee. Routine committee meetings are attended by representative of the Indonesian National Committee for UNESCO and Program Specialist of the UNESCO Jakarta Office. Members of the committee through regular meetings contribute and distribute reports and informations related to global, regional, and local hydrological activities and bridge closer contacts between them.

Mailing address of the committee is :

Indonesian National Committee for IHP-UNESCO
c/o Indonesian Institute of Sciences (LIPI)
Jln. Gatot Subroto No. 10, Jakarta, 12710, INDONESIA
Telp.: 62-21-52257111/ 5260804/ 8757075/ 5207226,
e-mail: limno@indo.net.id

1.1.2 Status of IHP-V activities

In the past IHP-V programs, activities have been carried out in the field of:

- Groundwater contamination due to urban developments
- Land use changes, deforestation, erosion, and sedimentation in the humid tropic
- Comprehensive assessment of ecohydrological processes.

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

1.2.1 National/local scientific and technical meetings

Members of the National Committee and many other Indonesian scientists took part in series of activities during March 2002 in Kyoto. It started by the APHW meeting (Asia Pacific Association on Hydrology and Water Resources) hosted by DPRI University of Kyoto. It was then directly followed by the very large global meeting of the World Water Forum III which was series of activities held not only in Kyoto city but also in various sites in the surrounding area. At the end of March 2002 the series of meetings was concluded by a SAC-Ecohydrology (scientific Advisory Committee) meeting at the ILEC-UNEP office in the vicinity of Lake Biwa, attended by Peter Hehanussa, coordinator for Ecohydrology-UNESCO of the Asia Pacific region.

1.2.2 Participation in IHP Steering Committees/Working Groups.

- The International Symposium on Comparative Regional Hydrology in Kuala Lumpur, October 2002 was attended by Jan Sopaheluwakan, Hidayat Pawitan, Dyah R. Pangesti, Joesron Lubis, William Putuhena, and Peter Hehanussa. They then also attended the 10th RSC Meeting 2002 which was held in Port Dickson, Malaysia.
- The Secretary General of UNESCO visited Indonesia on mid June 2003 and meetings were co-hosted by the national committee for UNESCO and by the committee for IHP. The preparations by Indonesia to start a regional center on Ecohydrology for the Asia Pacific region was reported.
- The National Committee for IHP held a special agenda on inputs for delegation to the Paris general conference.
- Increasing events of flood, drought, and landslides have triggered professionals to hold inter-department meetings to identify critical actions to be implemented. Members of the national committee took active participation in these activities.

1.2.3 Research/applied projects supported or sponsored

- An integrated activity between the scientific community and public participation for flood mitigation in Jakarta metropolitan was initiated by UNESCO with participation of member of IHP.
- Activities related to data on major rivers for publication is at the final stage for local publication.
- A booklet for use in the change of public attitude in water and related activities titled Reformation of Water Resources Management in Indonesia initiated by the national committee is to be published at the end of 2003.

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

- Activities to start a regional center for ecohydrology studies for the Asia Pacific region got a positive support from Indonesian Institute of Sciences, the Indonesia Power company, Jasa Tirta, as well as professionals from universities in the surrounding areas.

- 1.2.5 Other initiatives
- Preparation for an Indonesia River Data Book
 - Finalizing the feasibility study of an Asia Pacific Center for Ecohydrology
 - White paper or a book on policy of water resources reform

1.3 Educational and training courses

1.3.1 Contribution to IHP courses

- A regional Asia Pacific training workshop on ecohydrology have been held in July 2003. Members of the national committee took part as lecturers and instructors during the meeting.

1.3.2 Organization of specific courses

- A training workshop titled 2nd Asia Pacific Training Workshop on Ecohydrology was held on 21-26 July 2003. The theoretical part of the course was given in Cibinong, while field visit was to Jatiluhur Dam and field stay was in the Saguling Dam in West Jawa. 40 participants from 11 nations took part in the course.

1.3.3 Participation in IHP courses

- Eulis Retnowati attended 2th IHP Training Course on "Precipitation and Water Resources", in Nagoya and Kyoto, Japan, 23 February - 8 March 2003

1.4 Publications / papers

- River Basin Concept in an Archipelago Nation, a Search for Foothold, in APHW, Kyoto, Japan by Hehanussa P.E. and Haryani G.S. (2003),
- Flood and Drought Extremes, Governance Decentralization, and WRM of River Basins, an Indonesian experience, International Conference on Urban Hydrology, Malaysia, 14 – 16 October 2002, P.E. Hehanussa & Gadis Sri Haryani.
- Flood Forecasting and Warning System of Debris Flow in Volcanic Area, Comparative Regional Hydrology and Mission for IHP Phase VI of UNESCO, by Dyah Rahayu Pangestu, Agus Sumaryono, and Bambang Sukaca.
- New Findings of a Step-like Flat Lake Bottom, Lake Toba, Indonesia, 46th Conference on Great Lakes Research and 10th World Lake Conference, Chicago USA, 22-26 June 2003, Kaoru Takara and P.E. Hehanussa

1.5 Participation in international scientific meetings

1.5.1 Meetings hosted by the country

- 2nd Asia Pacific Training Workshop on Ecohydrology, Cibinong, West Java, July 21 -26, 2003. Attended by participants from Indonesia, Bangladesh, Cambodia, China, Malaysia, Thailand, Lao PDR, Vietnam, Mongolia. Two lecturers from Poland, Prof. M. Zalewski and Canada, Dr. Richard Robart. Sponsorship: UNESCO, UNEP, LIPI, and Indonesia Power.

1.5.2 Participation in meetings abroad

- Jan Sopaheluwakan, P.E. Hehanussa and Joesron Loebis attended International Symposium and RSC Meeting 2002, Malaysia.

- Hidayat Pawitan attended Special meeting on early warning system in Malaysia
- Jan Sopaheluwakan, G.S. Haryani, P.E. Hehanussa, Dyah Rahayu Pangesti and Joesron Loebis attended APHW2003 / First International Conference on Hydrology and Water Resources in Asia Pacific Region & World Water Forum, Kyoto, Otsu, Osaka, 12-22 March 2003
- P.E. Hehanussa took part in the 10th World Lake Conference and 46th Great Lakes Conference held in Chicago, 20-26 June 2003.

1.6 Other activities at regional level

1.6.1 Institutional relations/co-operation

- The National Committee in close cooperation with Indonesian Institute of Sciences and supported by Indonesia Power Co. is in the final stage of having a new organisation structure that will facilitate and coordinate ecohydrological activities in the Asia Pacific region.

1.6.2 Completed and ongoing scientific projects

- A (white) book that explain the bases for reformation of water resources management in Indonesia is being finalised. Papers from members of the committee will make up the major list of contribution the book.
- Have the 3rd Asia Pacific Training Workshop on Ecohydrology in 2005 as a conituing program of previous activities held in 2001 and 2003.
- In close cooperation with the above mentioned plan, to facilitate the 4^h SAC-Ecohydrology meeting in Indonesia. The 2nd meeting was held in 2003 in Ohtsu, Japan, the 3rd in 2004 is planned for Argentina.

2. FUTURE ACTIVITIES

2.1 Activities foreseen until December 2004

- An training course in ecohydrology is planned for 2004. Two sites is being considered, first the ecohydrological demo-site in Saguling Reservoir in West Jawa and second option is at Tenggarong located at the flood plain of the Mahakam River in East Kalimantan. Both areas are characterized by heavy pollution from urban, industry, coal mining, and logging. The first site is strategic for electric power generation while the second is related to endemic cpecies and urban water supply for the downstream cities. The training material is planned to identify sources of pollution, its deposition and re-transport, and an ecosystem approach to overcome the problems.

2.2 Activities planned for 2004-2005

- Development of an ecohydrological center and demo-site. Build physical support for organizational activities in Limnology CSC-LIPI Cibinong, and a field station in the vicinity of Saguling Reservoir.
- A plan for research on catchment degradation impacts to the downstream area is planned. The the Bandung Basin occupy the catchment and its deposition site is the Saguling Dam located downstream. Erosion, sedimentation, eutrophication, and water balance studies is foreseen. Spatial planning of the basin catchment area may be included.
- Re-inventing of an eco-technology for sustainable groundwater recharge sites from Situ's (small lake/ponds) in the Jabotabek area into the Jakarta artesian basin is being considered. Economic benefit with an environmental impact will be introduced.

- Studies related on the impact of heavily fish cage culture practice to the sedimentation of reservoirs, its effect to the water quality, and frequent upwelling that cause sudden fish kill is considered.
- Some part on the coastal wetland of Jawa and Kalimantan islands coincide with a fragile land-sea interaction zone. Exploitation of this zone for traditional fish pond farming (tambak) in the past few decades have grown into major economic activity. Ecohydrological studies on water dynamics and sediment (re-)transport could be an area of activity in the future. Sedimentation at estuary that have disrupt ocean going ships to enter inland harbours are the follow-up result of deforestation of the upland areas. This could be a special topics for study.
- An open possibility to hold 13th RSC meeting in Indonesia in 2005.

2.3 Activities envisaged in the long term.

- Activities related to the Center of Ecohydrology and its demo-sites in the near future might be a potential growth of activity coordinated by the national committee.
- A joint or merger of activities between the 'ecotone project' by the MAB and the 'ecohydrology' activities in the IHP is a potential inter institutional bridging activity between UNESCO's bodies.
- Global changes and its potential impacts to the region's climatic pattern is of interest.

2.3.1 Contribution to/participation in IHP-VI

A number of Indonesian contribution to the IHP-VI activities are as follows:

Theme	Title	Potential Indonesian Contribution
Theme 1	Global changes and water resources	
1.1 Focal Area	Global estimation of resources: water supply and water quality	Availability of water resources for agricultural and regional development Water resources assessment of major islands of Indonesia Long-term hydrologic balance of Java island water resources Contribute Indonesian hydrological data to global and regional studies
1.2 Focal Area	Global estimation of water withdrawals and consumption	Efficient water use movement campaigns Land and water resources development for food crops planning Study on water use efficiency of different rice varieties and water management systems in Indonesia Contribute Indonesian hydrological data and examples of water balance
1.3 Focal Area	Integrated assessment of water resources in the context of global land-based activities and climate change	Climate change studies using GCMs in Indonesian context Impacts study of climate change on small tropical islands Vulnerability assessment of water resources and coastal zone areas due to climate change and sea water rise Vulnerability and adaptability of natural ecosystems to climate change Using ENSO Climate data to improve food policy planning in Indonesia Basin water resources planning and management (BWRPM) project on the use of integrated cross-sector arrangement of water and land based on river basin approach
Theme 2	Integrated Watershed and Aquifer Dynamics	
2.1 Focal Area	Extreme events and land and water resources management	Floods and droughts anticipation and effects over Indonesia agriculture ecosystems Drought monitoring and early warning system for food security South Java flood control and mitigation study North Java flood control and mitigation study Upper catchment rehabilitation and reforestation studies
2.2 Focal Area	International River Basins and Aquifers	
2.3 Focal Area	Endorheic Basins	
2.4 Focal Area	Methodologies for integrated river basin management	Integrated river basin management studies at six provinces in Indonesia, for example the water allocation in Brantas and Citarum rivers, community participation in BWRPM in Central Java
Theme 3	Land Habitat Hydrology	
3.1 Focal Area	Drylands	Up-land agricultural hydrology studies Hydrology and erosion studies on extremely steep slopes Rainfall and runoff harvesting from up-land areas Upper basin hydrology and rehabilitation studies
Focal Area	Wetlands	Wetland hydrology of deltaic areas on South Sumatra

Theme	Title	Potential Indonesian Contribution
3.2		Experience on water resources management and development in extensive Central Kalimantan wetlands Water management and rehabilitation problems of Indonesia wetlands
Focal Area 3.3	Mountains	Water balance studies of tropical forest ecosystems Hydro-geochemical studies of tropical forest ecosystems and forest margins Evapotranspiration and throughfalls from different tropical forest trees Identification of recharge areas using remote sensing techniques
Focal Area 3.4	Small islands and coastal zones	Water resources and hydrology of small tropical islands Low-land hydrology and coastal zone management studies in Indonesia
Focal Area 3.5	Urban areas and rural settlements	Urban drainage management in Indonesia major cities for example Jakarta, Surabaya cities Planning of river front city of Palembang and Jakarta Flooding and urban drainage problems in some coastal cities in Indonesia Case studies of Palembang and Cilegon cities
Theme 4	Water and Society	
Focal Area 4.1	Water, civilization and ethics	Indigenous knowledge from some areas in Indonesia: cases from Java, Sumatra, Sulawesi and Nusatenggara Pranatawangsa of Java culture and water management system Palontara of South Sulawesi culture and water value system Nyale of Eastern islands culture
Focal Area 4.2	Value of water	Subak water management system of Bali island
Focal Area 4.3	Water conflicts prevention and resolution	Water conflicts and water regulation systems: case study of Jatiluhur irrigation areas – west Java Water uses Associations (WUA's) in farmers level in Indonesia Agricultural water conflicts and irrigation management systems in Jratunseluna areas – central Java: case study
Focal Area 4.4	Human security in water-related disasters and degrading environments	Poverty and starvations during prolonged droughts in Indonesia: case study of Irian Jaya areas Post flood water related disasters of Jakarta 2002 flood
Focal Area 4.5	Public awareness training on water interactions	Campaigns on water conservation and water use efficiency Related publications Experience in public awareness programs, for example in North Sulawesi and Central Java on BWRP formulation process
Theme 5	Water Education and Training	
Focal Area 5.1	Teaching techniques and material development	Training workshops Training modules Transfer of knowledge
Focal Area 5.2	Continuing education and training courses for the selected target groups	Water users associations at irrigation unit levels Agricultural field workers at district and sub-district levels
Focal Area 5.3	Crossing the digital divide	
Focal Area 5.4	Institutional development and networking for WET	Involvement of university related programs

NATIONAL REPORT ON IHP RELATED ACTIVITIES

JAPAN

Various activities of UNESCO have been implemented under the supports of the Ministry of Education, Culture, Sports, Science and Technology (MEXT). The following summary includes the activities of Japanese National Committee for UNESCO International Hydrological Programme (IHP) undertaken during November 2002 to October 2003.

1. ACTIVITIES UNDERTAKEN IN THE PERIOD NOVEMBER 2001 – OCTOBER 2002

1.1 Meetings of the IHP National Committee

1.1.1 Decisions regarding the composition of the IHP National Committee

The composition of the National Committee is indicated in 3. The Committee will appoint new members in December 2003.

1.1.2 Status of IHP-V and IHP-VI activities

- 1 Asian Pacific FRIEND (Flow Regimes from International Experimental Network Datasets): Asian Pacific FRIEND Report Phase 1 (1997-2001) was published as IHP-V Technical Documents in Hydrology No. 9. The Committee appreciates the contribution of Prof Takeuchi and Dr Xu (both in Yamanashi University) as the editors. Special Coordination Funds for Promoting Science and Technology (Prof Takara, DPRI, Kyoto University) was used for the publication. This report was distributed at the First International Conference on Hydrology and Water Resources in Asia Pacific Region (APHW2003), Kyoto, 13-15 March 2003; the Third World Water Forum (WWF3), Kyoto, 16-23 March 2003; The General Assembly of the International Union of Geodesy and Geophysics (IUGG2003), Sapporo, 30 June-11 July 2003; and the International Conference on Managing Water Resources under Climatic Extremes and natural Disasters, Sigatoka, Fiji, 27-28 October 2003.
- 2 Catalogue of Rivers: The Vol. 4 and CD-ROMs of Vol. 3 and Vol. 4 were distributed at APHW2003 and WWF3. Rivers for Vol. 5 were decided as Nagara-gawa, Natori-gawa and Yasu-gawa. A working group for the Catalogue is formed by Dr Tachikawa as coordinator with three contributors: Dr Shinoda (Gifu Univ.), Dr Kazama (Tohoku Univ.) and Dr Tachikawa (Kyoto Univ.) for the rivers, respectively.

1.1.3 Decisions regarding contribution to/participation in IHP-VI

Decisions were made to contribute to:

- 1 The implementation of Asian Pacific FRIEND (Flow Regimes from International Experimental Network Datasets) and HELP (Hydrology for Environment, Life and policy)
- 2 Publication of the Catalogue of Rivers for Southeast Asia and the Pacific, Vol. 5
- 3 IHP International Training Course

1.2 Activities at national level in the framework of the IHP

- 1.2.1 National/local scientific and technical meetings
1 The Committee members attended various technical sessions at the Third World Water Forum (WWF3), Kyoto, 16-23 March 2003; The General Assembly of the International Union of Geodesy and Geophysics (IUGG2003), Sapporo, 30 June-11 July 2003; and the International Conference on Managing Water Resources under Climatic Extremes and natural Disasters (FIJI-2003), Sigatoka, Fiji, 27-28 October 2003. UNESCO-IHP Exhibition booths were open at WWF3 and IUGG2003.
- 1.2.2 Participation in IHP Steering Committees/Working Groups
Japan participated in the establishment of the Regional Steering Committee (RSC) for Southeast Asia and the Pacific in 1993. Since then at least a couple of National Committee members have attended and participated actively in all of the annual meetings of the RSC. The Chairman of the Japanese National Committee for the IHP, Prof Takeuchi, had served as the Chairman of the Technical Sub-Committee (TSC) for Asian-Pacific FRIEND in the framework of the RSC, while Prof Takara is playing a role of the Secretary of the RSC.
- 1.2.3 Research/applied projects supported or sponsored
The MEXT granted a Grant-in-Aid for Scientific Research to Prof. Ikebuchi, Kyoto University, for 2001-2003, and to Prof. Takeuchi, Yamanashi University, for 2002-2003. Another fund (Special Coordination Fund for Promoting Science and Technology) for coordination of international meetings on monitoring, forecasting and mitigation of water-related disasters was allocated by the MEXT to Prof. Takara, Kyoto University, for 2002-2004.
- 1.2.4 Collaboration with other national and international organizations and/or programmes
The Japanese IHP National Committee has closely collaborated with :
1. The Liaison Committee on Hydrological Science, Science Council of Japan.
 2. The GAME Sub-Committee of the Special Committee on WCRP, Science Council of Japan.
 3. The national government and its branches relating to hydrology and water resources administration.
 4. Nagoya University and other universities and research institutes.
 5. The Chairman of the National Committee, Prof. Takeuchi, is currently the President of International Association of Hydrological Sciences (IAHS) and information exchange is done time to time between IAHS and IHP.
- 1.2.5 Other initiatives
None

1.3 Educational and training courses

- 1.3.1 Contribution to IHP courses
1. Master of Science degree on atmospheric and hydrospheric science :
The Graduate School of Science of Nagoya University accepts students from Asia and the Pacific region for the Graduate School of Environmental Studies, with the financial support from the Ministry of Education, Culture, Sports, Science and Technology(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 for IHP.

The 12th Training Course on « Precipitation and water resources » was carried out by the HyARC), Nagoya University, Nagoya and Graduate School of Engineering (Department of Global Environment Engineering and Department of Civil Engineering Systems) and Disaster Prevention Research Institute (DPRI), Kyoto University, Kyoto, Japan. on 23 February - 8 March 2003. The course included a series of lectures in English, practice sessions and technical tours to in-situ observation sites, national offices and facilities concerned with precipitation and water resources. The convenors were Prof. Hiroshi Uyeda (HyARC) and Prof. Eiichi Nakakita (Kyoto University). This IHP course focused on understanding mechanism and prediction of heavy rainfall and flood runoff including river basin management. The topic on draught in senses of phenomena and management was included as a typical topic of water resources.

The course received 13 participants (female: 5, male: 8) from 11 countries : Cambodia, Indonesia, Vietnam, New Zealand, Thailand, Malaysia, Egypt, Bolivia, Bangladesh, Nepal, Laos. Seven were recommended and supported by UNESCO. Three were self-supported. Other three were IHP Special Course students in the Graduate School of Environmental Studies, Nagoya University.

Participants approach, skill and reactions were as follows:

The participants were diligent and enthusiastic. They were frank and showed only little hesitation to put questions. In many practices included computer simulation. Participants' computer operation technique was limited to MS Windows level. They were not familiar to the UNIX system. So, they needed some problems to run model programs. On the other hand, they show good progress in interpretation and evaluation of the model results based on the lectures. Some of the program codes were distributed to the participants to bring back to their home countries. Though the term of the course was as short as two weeks, the participants had a good touch to the latest sciences and state-of-art technique for the river managements.

- 1.3.2 Organization of specific courses
None.
- 1.3.3 Participation in IHP courses
None.

1.4 Publications

1. « Asian Pacific FRIEND Report for Phase 1 (1997-2001) », IHP-V Technical Documents in Hydrology No. 9, UNESCO Jakarta Office, (Eds.) K. Takeuchi and Z. Xu, 2002 (with CD-ROM).
2. « Managing Water Resources under Climatic Extremes and Natural Disasters », IHP-VI Technical Documents in Hydrology No. 2, UNESCO Jakarta Office, (Eds.) K. Takara and T. Kojima, 2003 (with CD-ROM).
3. « IHP », Newsletter on IHP activities of Japan, No.16, to be published in November 2002 (in Japanese).
4. The Text book for the 12th Training Course (to be published).

1.5 Participation in international scientific meetings

- 1.5.1 Meetings hosted by the country
On 19-20 March 2003 at WWF3, the Japan National Committee hosted a Science and Technology Panel session coordinated by UNESCO, inviting Prof. Victor Pochat (IHP-IGC Chairperson), Dr. Cedo Maksimovic (London), Dr. R. Howard (London), Mr. Salih (UNESCO), Mr. Vincent Leogardo (UNESCO). On 16-22 March 2003 and 7-11 July 2003, the Committee displayed its IHP related activities including the RSC meetings, the Asian Pacific FRIEND, and Catalogue of Rivers at exhibition booths in the WWF3 and IUGG2003 conferences, respectively. The IHP-Japan home page was also displayed on a computer system, while AP FRIEND Report, the RSC Tenth Anniversary CD-ROM, Catalogue of Rivers Vol.4 and CD-ROM and Vol. 3 CD-ROM. Training Course textbooks and some other UNESCO leaflets are also distributed to the visitors.
- 1.5.2 Participation in meetings abroad
(to be reported)

1.6 Other activities at regional level

- 1.6.1 Institutional relations/co-operation
None
- 1.6.2 Completed and ongoing scientific projects
Translation of UNESCO/WMO « International Glossary of Hydrology, 2nd Edition » into Japanese can be seen on a web page of Gunma University (c/o Prof. Kobatake).

2. FUTURE ACTIVITIES

2.1 Activities foreseen until December 2004

The Japanese IHP National Committee plans:

1. To organize a Special Lecture Session at Tranomon Pastral in Tokyo, 13 November 2003, inviting Dr. Andras Szollosi-Nagy, Director, Division of Water Science, UNESCO. Also presented are IHP activities, concept of UNESCO Centre to be established in Tsukuba, Japan and IAHS-PUB.
2. To implement The thirteenth IHP Training Course on "Effects of pollutants on atmospheric environment", 7-20 March 2004, Nagoya and Tokyo.
3. Activities related to IHP-VI, as well as IHP-VI's Cross-Cutting Programme Components: FRIEND and HELP.

2.2 Activities planned for 2004-2005

1. Participation in RSC activities including Asian Pacific FRIEND and the Catalogue of Rivers.
2. Nagoya University IHP Training Courses, 2004 and 2005. (Note : 2004 Training Course may be implemented at HTC Kuala Lumpur, Malaysia.)
3. Implementation of projects related to IHP-VI Focal Areas.
4. Actions to support to Preparation for UNESCO Centre to be established in Tskubaa, Japan in 2005.
5. Research on HELP basins.
6. Collaboration with UNESCO-MAB activities.

2.3 Activities envisaged in the long term

1. Participation in IHP-VI (2002-2007) projects and RSC activities.
2. Nagoya University IHP Training Courses.
3. Information dissemination through a web page of the National Committee.

3. MEMBERS OF THE COMMITTEE

Chairman:	TAKEUCHI, Kuniyoshi*	Professor	Yamanashi University
Members:	FUKUSHIMA, Yoshihiro	Professor	Res. Institute for Humanity and Nature, MEXT
	HADA, Shigeki	Professor	Deputy Director, Research Institute for Higher Education, Kobe University
	IKEBUCHI, Shuichi	Professor, Director	Water Resources Research Center, DPRI, Kyoto University
	MASUKURA, Katsushige	Head	River Research Division, National Institute for Land Infrastructure Management, MLIT
	MATSUI, Saburo	Professor	Graduate School of Global Environment Research, Kyoto University
	MUSHIAKE, Katsumi	Professor	IIS, University of Tokyo
	NAKAMURA, Kenji	Professor, Director	Hydrospheric Atmospheric Research Center, Nagoya University
	NAKAYAMA, Mikiyasu	Professor	Tokyo University of Agriculture and Technology
	SUEMATSU, Yasuharu*	Director	National Institute of Informatics, MEXT
	TAKARA, Kaoru	Professor	DPRI, Kyoto University
	TANAKA, Tadashi	Professor	University of Tsukuba
	YOSHIKAWA, Hiroyuki*	President	Science Council of Japan

(Note: * indicates the member of National Commission of UNESCO.)

**NATIONAL REPORT ON IHP RELATED ACTIVITIES
IN
REPUBLIC OF KOREA**

October, 2003

Korean National Committee
for
The International Hydrological Programme
Republic of Korea

1. ACTIVITIES UNDERTAKEN IN THE PERIOD JUNE 2000-OCTOBER 2003

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 6year 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) and the sixth phase of IHP project(2002~2007) 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, and education and training in hydrology and water resources.

In the beginning of the New Millennium, 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 Construction and Transportation.

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-V activities

During the fifth phase(1996~2001) of IHP, the Korean National Committee for the IHP paid its efforts to achieve the objectives set by UNESCO for this phase of IHP and the following projects have been executed in Korean river basins and in the field of hydrology and water resources in Korea.

- (1) Global hydrological and geochemical processes
- (2) Ecohydrological processes in the surficial environment
- (3) Groundwater resources at risk
- (4) Strategies for water resources management in emergency and conflicting situations
- (5) Integrated water resource management in arid and semi-arid zones
- (6) Humid tropics hydrology and water management
- (7) Integrated urban water management
- (8) Transfer of knowledge, information and technology(KIT)

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

Table-1 IHP National Events in IHP-V

Projects/Activities	Brief Description	IHP-? Subprogram	Location and Duration	Supporting Body	Gov. Input	Output
1. 1996 IHP Representative Basin Studies	<ul style="list-style-type: none"> • Management of surface and groundwater in urban environment • Degradation and aggradation in reservoirs • Risk analysis and decision making structure for water resources management and operating during drought • Collection and fundamental analysis of hydrologic data in the Representative basins • Preparation of River Catalogue - Vol. 3 		Korean rivers and 1 years	MOCT	Major Government input	Report and Papers
2. 1997 IHP Representative Basin Studies	<ul style="list-style-type: none"> • Application of hydrologic analysis methods using regional data • Monitoring system of groundwater quality • Exceedence probability estimation for drought and flood analysis • Collection and fundamental analysis of hydrologic data in the Representative basins • Preparation of River Catalogue - Vol. 4 		Korean rivers and 1 year	MOCT	Major Government input	Report and Papers
3. 1998 IHP Representative Basin Studies	<ul style="list-style-type: none"> • Frequency prediction of flood and drought occurrence in Korean peninsula by global environment change • Water resources assessment and management policy by global climate change • Estimation method and applicability analysis of sediment runoff • Collection and fundamental analysis of hydrologic data in the Representative basins • Preparation of River Catalogue - Vol. 5 		Korean rivers and 1 year	MOCT	Major Government input	Report and Papers

4. 1999 IHP Representative Basin Studies	<ul style="list-style-type: none"> • El Nino/La Nina effect analysis on flood and drought in Korean peninsular • Analysis of urban stormwater flow network • School education programme of water resources • Collection and fundamental analysis of hydrologic data in the Representative basins • Preparation of River Catalogue - Vol. 6 		Korean rivers and 1 year	MOCT	Major Government input	Report and Papers
5. 2000 IHP Representative Basin Studies	<ul style="list-style-type: none"> • El Nino/La Nina Phenomenon and its • Relationship with Water resources in Korea • Hydrological measurement systems in Korea • Flash flood characteristics and counter measures in small river basins • River ecological effects by hydraulic structures • Public awareness and its promotion • Water resources • Collection and fundamental analysis of • Hydrologic data in the Representative basins • Preparation of River Catalogue - Vol. 7 		Korean rivers and 1 Year	MOCT	Major Government input	Report and Papers

<p>6. 2001 IHP Representative Basin Studies</p>	<ul style="list-style-type: none"> • Development of Seasonal-type Tank model by parameter improvement • Survey and studies of river bed variation and natural eco-life patterns in downstream area of dams • Improvement of hydrological techniques for water resources management in river basin • Increasing techniques of maintenance flow in urban rivers • Loop-type stage-discharge relationship by hydraulic channel routing • Development of Mutual Information System algorithm of precipitation and SOI • Collection and fundamental analysis of hydrologic data in the Representative basins • Preparation of River Catalogue - Vol. 8 		<p>Korean rivers and 1 Year</p>	<p>MOCT</p>	<p>Major Government input</p>	<p>Report and Papers</p>
<p>7. Asian/Pacific FRIEND Studies</p>	<ul style="list-style-type: none"> • Preparation of River Catalogue data • Basic hydrologic analysis in AP FRIEND river basins 	<p>H - 5.1 Project 1.1</p>	<p>Korean rivers</p>	<p>MOCT</p>		<p>Report and Papers</p>
<p>8. Special program on the low-flow management in consideration of water quality improvement and changing environment in river systems</p>	<ul style="list-style-type: none"> • Low-flow management system simulation • River water quality variation • Changing climate and runoff conditions 	<p>Theme 1, 2 and 5</p>	<p>Korean river</p>	<p>MOCT MOE</p>		<p>Report and Papers</p>

9. Evaluation and assessment of surface water and groundwater resources under the conditions of humid tropic and volcanic island	<ul style="list-style-type: none"> • Surface water resources and runoff modelling • Groundwater movement processes • Groundwater resources assessment 	Theme 3 and 6	Korean urban areas	MOCT MOE		Report and Papers
10. Integrated urban water Management	<ul style="list-style-type: none"> • Global change of hydrological processes • modelling • Its influence studies on water resources management 	Theme 1 and 4	Korean rivers and S.E.Asian & the Pacific rivers	MOCT MOA MOE		Report and Papers
11. Water resources management during extreme flood and drought	<ul style="list-style-type: none"> • Extreme flood and drought modelling • Water resources management techniques during extreme hydrologic periods 	Theme 1, 4 and 5	Korean rivers	MOCT MOA		Report and Papers
12. Change of global hydrological processes and its influences on water resources management	<ul style="list-style-type: none"> • Global change of hydrological processes modelling • Its influences studies on water resources management 	Theme 1 and 4	Korean rivers and S.E.Asian & the Pacific rivers	MOCT MOA MOE		Report and Papers
13. Special program of regional Cooperation		Theme 8		MOCT		

MOCT : Ministry of Construction and Transportation

MOE : Ministry of Environment

MOA : Ministry of Agriculture

KWRA : Korea Water Resources Association

1.1.2 Decisions regarding contribution to/participation in IHP-VI

In the beginning of the sixth phase of IHP (2002~2007), the Korean National Committee for the IHP prepared the potential contribution and research programme of IHP-VI phase as given in Table-2 to achieve the objectives set by UNESCO for this phase of IHP.

As the 2002~2003 research programme of IHP-VI, the following research projects have been completed in Korean river basins;

- Development of internet-based publication system of hydrologic and water quality data
- Analysis of runoff influence by the change of agricultural land use
- Comprehensive evaluation of IHP-V phase activities in Korea
- IHP representative river basin studies - - - continuation of hydrologic data collection and analyses
- Preparation of River Catalogue Vol. 9

Table-2 Potential Contribution and Research Programme of IHP-VI Phase

Theme	Title	Potential Contribution and Research Activities	Executing Milestone						Remark
			2002	2003	2004	2005	2006	2007	
Theme 1	Global Changes and Water Resources								
Focal Area 1.1	Global estimation of resources : water supply and water quality	<ul style="list-style-type: none"> · Low-flow management in consideration of water quality improvement and changing environment in river systems · Developing environmentally sound – sustainable development and management strategies of water resources · Development of water archive and contribution of Korean hydrological data and water quality data to global and regional studies · Comparative global and regional analyses of water resources · Developing national water quality management strategies 							
Focal Area 1.2	Global estimation of water withdrawals and consumption	<ul style="list-style-type: none"> · Comprehensive studies of alternative means to save and conserve water resources for future demand · Evaluation of national water use and demand · Evaluation of groundwater resources and developing suitable management strategies for their withdrawals and consumption 							
Focal Area 1.3	Integrated assessment of water resources in the context of global land based activities	<ul style="list-style-type: none"> · Integrated studies of water resources changes due to man-made activities · Comprehensive analyses of climate change and its effect to water resources · Assessment of water resources due to land use change 							

	and climate change								
Theme 2	Integrated Watershed and Aquifer Dynamics	·							
Focal Area 2.1	Extreme events in land and water resources management	<ul style="list-style-type: none"> Hydrological studies of extreme events in Korean river basins Developing the best flood warning systems and the use of radar-based rainfall information Evaluation of national drought characteristics and their alternative measures Water resources management during extreme flood and drought 							
Focal Area 2.2	International River Basins and Aquifers	<ul style="list-style-type: none"> Developing strategies of international river basin management 							
Focal Area 2.3	Endorheic Basins	·							
Focal Area 2.4	Methodologies for integrated river basin management	<ul style="list-style-type: none"> Development of integrated river basin management systems in Korean river basins Integrated urban water management Assessment of surface water and groundwater resources in watershed and aquifers 							
Theme 3	Land Habitat Hydrology								
Focal Area 3.1	Drylands								
Focal Area 3.2	Wetlands								
Focal Area 3.3	Mountains	<ul style="list-style-type: none"> Studies of hydrological processes in mountain watershed Flash flood and runoff characteristics in mountain hillslope basins 							
Focal Area 3.4	Small islands and coastal zones	<ul style="list-style-type: none"> Studies of hydrology and water management in small islands and coastal zones Assessment of groundwater resources in small and volcanic islands Studies of water supply and alternate water resource systems in small islands and coastal zones 							
Focal Area 3.5	Urban areas and rural Settlements	<ul style="list-style-type: none"> Development of stormwater management model in urban areas Studies of change of urban rivers to environmentally sound – natural rivers 							

		<ul style="list-style-type: none"> • Studies of decreasing methods of urban runoff • Assessment of urban stormwater quality systems 							
Theme 4	Water and Society	•							
Focal Area 4.1	Water, civilization and ethics	<ul style="list-style-type: none"> • Studies of relationship of water with culture and civilization in Korean river basins - - - characteristics of water culture 							
Focal Area 4.2	Value of water	<ul style="list-style-type: none"> • Assessment of water price for effective consumption • Studies of water consumptive habit in the society 							
Focal Area 4.3	Water conflicts – prevention and resolution	<ul style="list-style-type: none"> • Evaluation of water conflict problems in Korean river basins : case studies 							
Focal Area 4.4	Human security in water – related disasters and degrading environments	<ul style="list-style-type: none"> • Review and assessment of prevention activities in water related disasters • Studies of environmental impacts by water – related disasters 							
Focal Area 4.5	Public awareness raising on water interactions	<ul style="list-style-type: none"> • Development of public awareness and participation programs in water resources project • Studies of public awareness in water resources 							
Theme 5	Water Education and Training	•							
Focal Area 5.1	Teaching techniques and material development	<ul style="list-style-type: none"> • Evaluation and development of teaching and training techniques in water – related education • Development of internet-based teaching materials for water resources education 							
Focal Area 5.2	Continuing education and training for selected target groups	<ul style="list-style-type: none"> • Development of continuing education and training programs for practicing hydrologists and water – related engineers 							
Focal Area 5.3	Crossing the digital divide	<ul style="list-style-type: none"> • Development of the internet program of water education & information 							
Focal Area 5.4	Institutional development and networking for WET	<ul style="list-style-type: none"> • Access to hydrological and water resources educational expertise within Korea 							

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 the Korea Water Resources Association, Korean Society of Civil Engineers, ICOLD Korean National Committee, IWRA Korea Geographic Committee, Korea Water Resources Corporation, and other water-related organizations in Korea. In those meetings, national/local hydrologic issues and water resources problems were dealt with special solution measures and their results were published in the form of scientific or technical reports and papers.

1.2.2 Participation in IHP Steering Committees/Working Groups

Republic of Korea was one of most active member countries in IHP Regional Steering Committee's activities for Southeast Asia and the Pacific. Republic of Korean delegates actively participated in the IHP Regional Steering Committee and Working Group meetings held in the period of 2000~2003. As Chairman of Working Group 3 (WG3) of the Asian Pacific FRIEND project, one delegate (Professor Soontak Lee) organized and sponsored a WG3 report preparation meeting and an International Symposium in February, 2002 at Yeungnam University, Taegu, Republic of Korea.

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 2000~2003 are listed in Table-1 and in the section 1.1.3. Some other research or applied projects were also supported or sponsored by the Government and other water-related organizations such as Korea Water Resources Corporation during this period.

The following projects have been and are being implemented for the Asian Pacific FRIEND in the three representative river basins chosen as the Korean Asian Pacific FRIEND basins(Pyungchang-gang, Wichun, Bochungchun river basins).

(1) Hydrological data base (Asian Pacific Water Archive)

to create a common hydrological data base for the region by bringing together existing data sets from individual member countries.

- Collecting hydrological data from river basins of the Catalogues of Rivers as the first step and then from the river basins for Asian Pacific FRIEND.
- Compiling all catchment characteristics including hydrological data from related river basins.

(2) Floods

to analyze the flood data to develop design procedures in the region.

- Evaluating characteristic regional patterns in flood regimes.
- Reviewing flooding frequency analysis and rainfall/runoff analysis methods of flood estimation.

(3) Low flows

to analyze the low flow data to develop for estimating a range of low flow and water resources throughout the region.

- Investigation of the characteristics of low flow regimes from the data base for the estimation of dry season flows.
- Developing appropriate standard analysis techniques to account for the observed variability of flow regimes in the region.
- Regional modelling of low flows physically based and conceptual modelling, studies to multi-variate low flow studies at the regional and Asian scale.

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; Korea Water Resources Association; Korean Society of Civil Engineers; Korean Society of Agricultural Engineers; Korean Meteorological Society; ICOLD Korean National Committee; IWRA Korean Geographic Committee; Korea Institute of Construction Technology; 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 the Korean Water Resources Association. In these specific courses, special topics are dealt with practical application in river basins.

1.4 Publications

The Korean National Committee for the IHP is publishing IHP Annual Research Report and the Catalogue of Rivers in Korea in December 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.

1.5 Participation in international scientific meetings

1.5.1 Meetings hosted by the country

The following IHP meetings were hosted and organized by the IHP-KNC and Yeungnam University.

- Asian Pacific FRIEND Working Group 3 Meeting
- International Symposium on Drought Problems and Alternate Water Resources

Both meetings were held at the Yeungnam University, Taegu, Republic of Korea on February 20-24, 2002.

1.5.2 Participation in meetings abroad

The Korean National Committee for the IHP actively participated in 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 foreseen until December 2003, planned for 2004-2005 and envisaged in the long term

From the beginning of 2002, IHP-KNC prepared concrete national plan for the sixth 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.

**11th RSC IHP UNESCO MEETING
FOR SOUTHEAST ASIA and the PACIFIC
The Outrigger Hotel, Sigatoka, Fiji**

(30 October 2003 - 31 October 2003)

COUNTRY REPORT

OF

MALAYSIAN NATIONAL COMMITTEE FOR IHP

(OCTOBER 2002 – SEPTEMBER 2003)

BY

DATUK IR. HAJI KEIZRUL BIN ABDULLAH

CHAIRMAN

MALAYSIAN NATIONAL COMMITTEE FOR IHP

**COUNTRY REPORT 2003 OF
MALAYSIAN NATIONAL COMMITTEE FOR IHP**

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1. ACTIVITIES UNDERTAKEN IN THE PERIOD OCTOBER 2002 – OCTOBER 2003

The Malaysian National Committee for IHP was formed in 1975, and comprises 27 governmental agencies and institutions of Higher Learning as listed in Appendix A.

1.1 Meetings of the IHP National Committee

a) The EXCO meetings were held as follows:-

Year 2002 - in Kuala Lumpur - 28 November

Year 2003 - in Ipoh - 25 February
in Kuala Lumpur - 13 June

b) The 33rd Annual General Meeting was held at Awana Golf Resort in Genting Highland on 27 September 2003.

1.1.1 Decisions regarding the composition of the IHP National Committee

Based on the revised operating procedure, the IHP National Committee consists of 8 Executive Committee (EXCO) Members, of which 4 are permanent and the other 4 are elected during the Annual General Meeting for a two (2) years term. The Chairman and Secretary of the committee remained unchanged namely Datuk Ir. Hj. Keizrul Abdullah, the Director General of Department of Irrigation and Drainage Malaysia (DID) and Ir. Chong Sun Fatt (from May to date) from DID respectively. The Secretariat is provided by the DID.

Presently the elected EXCO members are:-

1. The Universiti Sains Malaysia, (USM)
2. Forest Research Institute of Malaysia (FRIM)
3. Malaysian Institute for Nuclear Technology (MINT)
4. Department of Environment (DOE)

The permanent EXCO members are:-

1. Department of Irrigation and Drainage Malaysia (DID)
2. Malaysian Meteorological Service (MMS)
3. Department of Minerals and Geosciences (DMG)
4. Malaysian National Commission for UNESCO (MNCU)

MIHP plans its activities through its Executive Committee, and these activities are carried out by the three standing committees and their working groups. The three standing committees are:

- (a) Committee on Research (JKP) under the chairmanship of Humid Tropics Center, Kuala Lumpur HTCKL.

- (b) Committee on Education, Training and Public Information (JKPLPA), headed by the Universiti Teknologi Malaysia (UTM).
- (c) Committee on Standardization of Hydrological Practices (JKPAH), under the chairmanship of DID.

The Chairmen of these standing committees report their activities in the quarterly EXCO meeting.

1.1.2 Status of IHP-V and IHP VI activities

MIHP through its Standing Committee on Research has initiated a 2-day Workshop Session among the experts from various government departments, universities and research institution to discuss future research in line with the proposed plan of IHP VI UNESCO (2002 – 2007).

MIHP has identified several proposed research projects to be undertaken by the respective lead agency (see Table1).

1.1.3 Decisions regarding contribution to/participation in IHP-VI

MIHP co-organised the International Conference on Urban Hydrology for the 21st Century (ICUH 2002) and Conference on Comparative Regional Hydrology Mission for UNESCO IHP phase VI, 14-16th October 2002, Kuala Lumpur.

1.2 Activities at national level in the framework of the IHP

1.2.1 National/local scientific and technical meetings

Several scientific and technical meetings were organized in association with the Malaysian Hydrological Society, Water Resources Division, Institute of Engineer Malaysia (IEM), International Commission on Irrigation & Drainage (ICID), Malaysian National Committee on Irrigation & Drainage (MANCID).

1.2.2 Participation in Regional IHP Steering Committee

MIHP organised the 10th RSC Meeting for IHP UNESCO for South East Asia and the Pacific in Port Dickson from 17 – 18 October 2002 in collaboration The International Conference on Urban Hydrology for the 21st. Century (ICUH 2002). All participants of RSC meeting attended the ICUH 2002 from 14 – 16 October 2002.

A special session namely the IHP UNESCO Session catering for RSC paper presenters with theme “Comparative Regional Hydrology Missions for UNESCO IHP Phase VI” was incorporated into ICUH 2002 as parallel session.

1.2.3 Research projects sponsored

See Table 2 and Table 3.

1.2.4 Collaboration with other national and international organizations/programmes

Dr. Mohd. Tadza b. Abdul Rahman of Malaysian Institute for Nuclear Technology Research (MINT) has been nominated as the expert by the MIHP. He acts as focal point for the UNESCO – IAEA Joint International Isotopes in Hydrology Programme (JIHP).

The Chairman and Secretary of the MIHP are in frequent contact with the Regional Hydrological Advisor to the President of the WMO Regional Association. This contact enables coordination of activities under the aegis of IHP and the WMO OHP in Malaysia to be executed successfully.

1.2.5 Other initiatives

MIHP organised activities including workshops, seminars and basic course in Hydrology at National Level. In addition MIHP organized the 2003 World Water Day Celebration in collaboration with government agencies, NGOs and private sectors. The activities carried out included launching by Honorable Minister of Public Work, the national seminar, the national exhibition, drawing and coloring contest, articles and feature writings in the electronic and mass media (see Table 4).

1.3 Educational and training courses

About 170 school talks on hydrology and environment were organised with participation of 13,000 secondary students.

1.3.1 Contribution to IHP courses

None

1.3.2 Organisation of specific courses

None

1.3.3 Participation in IHP courses / seminars

Mr. Asnor Muizan bin Dato' Ishak from DID attended The 12th IHP Training Course on Precipitation and Water Resources in Nagoya Japan from 23 February – 8 March 2003.

1.4 Publications

The MIHP received copies of the following publications from UNESCO Jakarta and HTC.

1. The Report on Sg. Kelantan and Sg. Chalok for River Catalogue Vol. 4.
2. The 1st. Asian Pacific FRIEND Workshop (20 – 23 March 1998) : Data Archive and Scientific Method for Comparative Hydrology & Water Resources – Kuala Lumpur

- Malaysia. The Proceedings was edited by Dr. Mohd. Nor and Mr. Zulkifle and becomes the IHP – V – Technical document in Hydrology No. 1 (1999) UNESCO Jakarta Office.
3. The International Workshop on Flood Forecasting for Tropical Region, Kuala Lumpur, Malaysia. (14 – 17 June 1999). The proceedings was edited by Dr. Mohd. Nor and Mr. Shahar becomes the IHP Technical Document in Hydrology No. 5 (2000) UNESCO Jakarta Office.
 4. Lecture notes, a country paper and a case study presented at the Computer Aided Workshop on Ground Water Contamination, Kuala Lumpur, Malaysia.

1.5 Participation in international scientific meetings

1.5.1 Meetings hosted by the country

The 10th RSC Meeting at Port Dickson, Negeri Sembilan and Conference on Comparative Regional Hydrology Mission for UNESCO IHP phase VI incorporated into ICUH in Kuala Lumpur.

1.5.2 Participation in meetings abroad

Malaysia was represented at the Regional Steering Committee Meeting and Scientific Conference Report on World Water Forum in Japan to UNESCO.

1.6 Other activities at a regional level

Application for a participation programme grant 2004-2005 for the Eco–Hydrology Expedition has been forwarded to the Malaysian National Commission for UNESCO.

1.6.1 Institutional relations/co-operation

The MIHP Chairman who attended the 15th IGC Meeting in UNESCO Paris on 17 – 22 June 2002 is a member of the ad hoc Committee on IHP Governance.

1.6.2 Completed and on-going scientific projects

Refer to Table 2.

2. FUTURE ACTIVITIES

2.1 Activities planned for 2004 and beyond

Future activities are expected to depend very much on decisions reached by the RSC MEETING. However, the “Eco-Hydrology Expedition” for Regional Student is planned to be held 2004.

Other proposed activities are listed in Table 5.

2.2 Activities envisaged in the long term

Being planned.

Lao P.D.R Country Report

1. Introduction

In the recent year, Lao PDR has gained some achievements in water resources management, especially the approval of water and water resources law, which opened a new phase of management, protection, exploitation and utilization of water resources at the central level to the provincial level. The goal of Lao Government is to reduce the poverty and to preserve sustainable water and water resources and to ensure quantity and quality of water for people's living requirements, promotion agriculture, forestry, developing the natural social-economic and ensuring environment.

2. Hydro-meteorological activities undertaken in the period November 2002 – October 2003:

2.1 Data collection and processing

- Continuation of hydrological data collection for MRC
- Continuation of hydro- climatic data collection for Nam Theun 2 hydro-power project
- Installation of 15 new hydrological stations
- Carried out minimum flow measurement in 65 rivers in the whole country
- Data processing by using two software models such as CLICOM for meteorological and HYMOS for hydrological analysis
- Updating of rating curves of some rivers for 2002, especially for major tributaries of the Mekong

2.2 Activities related to flood forecasting

2.2.1 Flood forecasting along Mekong river

- Data information exchange on water level and rainfall was operated from May 2003
- Issuing 24 – 48 hours (1 – 2 days) of water level forecast for 6 major provinces, located along Mekong river including Vientiane Capital
- Data information exchange on flood forecasting with MRCS was started from early June until October

2.2.2 Inflow forecast to Nam Ngum Reservoir

- Issuing inflow forecast to the reservoir for 3 Months ahead (July-September), based on rainfall-runoff relationship to guarantee the sufficient water for electric generation
- Issuing weekly inflow forecast to serve the reservoir operation and its temporal distribution to avoid or minimize property losses at the downstream of the reservoir

3. Meeting and workshops

3.1 National level

- One representative participated in “ Consultation Workshops on Establishing Lao Water Partnership” 29/8/03, supported by SEATAC

- One representative participated in “ Consultation Workshops on Data Information Exchange” 22/10/2003 in Vientiane, Organized by LNMC

3.2 International level

- One representative participated in “ Rural Flood Risk Management Workshops” 27-31/01/2003 in Philippine, supported by ADPC
- One representative participated in “ Precipitation and Water Resources Training” 23/02-8/03/2003 in Japan, supported by UNESCO
- One representative participated in “Hydro-Meteorological Data Management Training” 26/01-21/02/2003 in Israel
- One representative participated in “ Climate Change Symposium” 31/03-9/04/2003 in China, supported by WMO
- One representative participated in “ Hydrological Network Training” 31/03-9/04/2003 in Cambodia, supported by MRC
- One representative participated in “ Eco-Hydrology Workshops” 21-26/07/2003 in Indonesia, supported by UNESCO
- Two representatives participated in “ TC Workshops” 22-26/09/2003 in China Supported by WMO
- One representative participated in “ Preparation and Maintenance of Hydrological Archives” 13-17/10/2003 in Malaysia, supported by UNESCO
- Two representatives participated in “ Marine Science and Technology Workshops” 20-25/10/2003 in China, supported by WMO

4. Publication

- Publishing of Climatological Bulletin for 2002
- Publishing of Hydrological Year book for 2002

5. Activities planned for 2004

- Improvement of hydro-meteorological network and data collection and processing
- Updating of flood forecasting and flood warning system

6. Activities envisaged in the long term

- Implementing of Nam Ngum basin, water sector development project
- Contribution of 3 rivers for Catalogue of rivers if a financial assistance is considered

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COUNTRY REPORT

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BY

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The Chairman and Secretary of the MIHP are in frequent contact with the Regional Hydrological Advisor to the President of the WMO Regional Association. This contact enables coordination of activities under the aegis of IHP and the WMO OHP in Malaysia to be executed successfully.

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1.3.2 Organisation of specific courses

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Refer to Table 2.

2. FUTURE ACTIVITIES

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Other proposed activities are listed in Table 5.

2.2 Activities envisaged in the long term

Being planned.

Table 1: Proposed research projects to be carried out under IHP phase VI

Theme / Focal Area	Title	Agencies
Theme 2	Integrated Watershed Dynamics	
Focal Area 2.1	a) Establishment of Landside Hazard Assessment Map Expressway and Cameron Highlands	UiTM,MINT,KUiTTHO,JPS JMG
	b) Runoff Generation of Processes and Time of Concentration Forested and Agricultural Experimental Catchment	UTM,MINT,USM,FRIM,JMG
Focal Area 2.2	a) Determination of Event Mean Concentration (EMC) Values Of Suspended Sediments and Nutrients Urban Discharge Monitoring at Stations of Sg. Kerayong And Taman Mayang WP. Kuala Lumpur	UiTM, MINT,,KUiTTHO,DID, MMS,UPM
Focal Area 2.3	a) Establishment of a Rainfall Erosivity Profile along North-South Expressway	UiTM,MINT,KUiTTHO,DID, MMS,UPM
Theme 3	Regional Perspective	
Focal Area 3.1	a) Development of Temporal Pattern for Urban Areas and PMP Derivation for Peninsular Malaysia	HTC,MMS
Focal Area 3.2	a) Heat Island Effects in Urban Areas and Correlation with Rainfall Runoff Pattern	MINT,USM,UiTM
	b) Detailed Hydrological Balance Study of Paya Indah	HTC,DID,UTM,FRIM, MINT,MMS,JMG
Focal Area 3.5	a) Effects of Logging on the Muda/ Pedu Reservoir Phase II	DID,UPM,MINT,UTM, MADA,DOAKedah, UKMLestari,JPnk,JMG,DOA,FRI M
Focal Area 3.7	a) Development of runoff characteristics to validate Manual Saliran Mesra Alam (MASMA)	USM,DID,MINT,KUiTTHO HTC
	b) Development of Urban Stormwater Management Model (SWMM) and GIS for Decision Support System	USM,JPS
	c) Performance Indicator of Stormwater Gross Pollutant Trap for Urban Drainage System	JPS,USM,UTM,HTC

Table 2: Malaysian IHP Research Activities Under IHP Phase V

* No .	Title	Status	Agencies Involved	Completion Date	Funding Agency
1 (6.1/6.2)	Effects of Logging on the Muda/Pedu Reservoirs.	Study in progress and scheduled to be completed in Dec. 2005. Interim report has been prepared. Modified logging activity in basin will be completed this year.	DID/UPM/UTM/JPSM/MINT/MADA/ FRIM/LESTARI/UKM/JPNK/DOA	Dec. 2005	DID and MADA
2 (6.2)	Highlands Hydrology Study phase 2.	Received RM 146 000 in 2001. Applying for additional allocation under the 8 th . Malaysian Plan (2001 – 2005)	UTM/ITM/UPM/DID/JBA/ TNB/JAS/MINT/JKR/FRIM	Sept. 2003	IRPA
3	Research on Urban Hydrology Kerayong Catchment	Data Processing and Analysis	HTC/DID/USM/UiTM	Dec. 2004	DID

* - Numbers in bracket refers to IHP-V theme and project number

Table 3 : Asian Pacific FRIEND research project

No .	Title	Status	Agencies Involved	Compl. Date	Funding Agency
1	Establishment and Dissemination of Water Archive started 1997	2 more river basins are included ie. Muda River & River Pari.	DID	2005	M'sian Govt.
2	Assessment and modification of available hydrological computer models to suit local conditions and possible applications for the region.	Study on going	HTC / USM	2005	M'sian Govt.
3	Assessing the performance of a topographic-based model, TOPMODEL, in simulating runoff response in tropic regions, in particular for basin in Malaysia.	Calibration of Model in progress	DID	2005	M'sian Govt.

Table 4. Activities Carried Out by Malaysian IHP for 2002/2003
(from October 2002 - October 2003)

Item	Activity	Period and Venue	Lead Agency
1	RSC Meeting		
i.	International Conference on Comparative Regional Hydrology Mission for IHP Phase VI of UNESCO.	14 – 16 Oct. 2002 Kuala Lumpur	MIHP/HTC/DID/ UNESCO
ii.	Technical Visit to Malacca for RSC delegates and conference participants.	17 October 2002 Malacca	MIHP
iii.	Regional Steering Committee Meeting.	18 October 2002 Port Dockson, Negeri Sembilan	MIHP
iv.	Technical Visit to Putrajaya for RSC Delegates.	19 October 2002	MIHP
2	World Water Day 2003		
i.	Launching by Hon. Minister of Public Work Malaysia.	6 April 2003	MIHP
ii.	National Exhibition.	5 – 6 April 2003	WIAP
iii.	Drawing and Coloring Contest.	6 April 2003	MOE
iv.	Publicity.	During the World Water Day Celebration	Radio & TV Malaysia, local newspapers and bulletin
v.	Open Day of Water Treatment Plant.	21 March 2003 – 12 April 2003	PWD/LAP
vi.	Quiz on Radio Malaysia	22 March 2003 – 3 May 2003 (weekly)	MIHP Members
3	Talks to Secondary school students on Hydrology and Environment Issues.	Through out the year	MIHP Members

Table 5: Future Activities by Malaysian IHP for 2004 - 2005**A) Research**

Item	Activity	Period and Venue	Proposed Lead Agency	Funding Agency
1	Small Island Hydrology Phase III.	2002 - 2005 Tioman Island Pahang	UTM	Government of Malaysia
2	Effects of Logging on the Muda/ Pedu Reservoirs Phase II.	2002 – 2005 Sg. Weng, Kedah	DID	Government of Malaysia

B) Seminar/Conference/Workshop

Item	Activity	Period and Venue	Proposed Lead Agency	Funding Agency
1	Intensive Course in Hydrology and Water Resources Engineering.	February 2004 UTM Skudai	UTM/MIHP	Government of M' sia
2	World Water Day 2003.	March 2004	MIHP	Government of M' sia
3	Talks on Hydrology to Schools.	Through out the year 2004	MIHP	Government of M' sia
4	Seminars and Workshops on MIHP research projects.	Through out the year 2004 Kuala Lumpur	HTC/DID	Government of M' sia

CURRENT MEMBERS OF THE MIHP

1.	DID ^{*1} -	Department of Irrigation and Drainage Malaysia (Secretariat)
2.	DOA -	Department of Agriculture
3.	DOE ^{*2} -	Department of Environment
4.	DOF -	Department of Forestry
5.	EPU -	Economic Planning Unit
6.	FELDA -	Federal Land Development Authority
7.	FRIM ^{*2} -	Forest Research Institute of Malaysia
8.	DMG ^{*1} -	Department of Minerals and Geosciences
9.	MACRES -	Malaysian Center for Remote Sensing
10.	MMS ^{*1} -	Malaysian Meteorological Service
11.	MNCU ^{*1} -	Malaysian National Commission for UNESCO
12.	MOA -	Ministry of Agriculture
13.	MOE -	Ministry of Education
14.	MOF -	Ministry of Finance
15.	MOH -	Ministry of Health
16.	MINT ^{*2} -	Malaysian Institute of Nuclear Technology
17.	PWD -	Public Works Department
18.	TNB -	Tenaga Nasional Berhad
19.	UKM -	Universiti Kebangsaan Malaysia
20.	UM -	University of Malaya
21.	UPM -	Universiti Putra Malaysia
22.	USM ^{*2} -	Universiti Sains Malaysia
23.	UTM -	Universiti Teknologi Malaysia
24.	KUiTTHO -	Kolej Universiti Technology Tun Hussein Onn
25.	UiTM -	Universiti Teknologi MARA
26.	NAHRIM	National Hydraulics Research Institute of Malaysia
27.	HTC -	The Regional Humid Tropics Hydrology Water Resources Center for Southeast Asia and the Pacific

Note: ^{*1} - Permanent EXCO Member

^{*2} - Elected EXCO Member

NATIONAL REPORT OF NEW ZEALAND

1. ACTIVITIES UNDERTAKEN IN THE PERIOD OCTOBER 2002 – SEPTEMBER 2003

1.1 Meetings of the IHP National Committee

1.1.1 Decisions regarding the composition of the IHP National Committee

Dr R P Ibbitt and Mr R J Curry continued as Chairman and Secretary respectively on the IHP National Committee.

1.1.2 Status of IHP-V activities

Projects:

- WG 1.1 (Information on New Zealand's Freshwaters: Water Resources Archive);
- WG 2.7 (Water Fluxes and Pathways in River Basins); and
- WG 2.8 (Linked Precipitation Runoff Modelling System for Mountainous Catchments)
(refer IHP-V Technical Documents in Hydrology No.2 UNESCO Jakarta Office 1999 for details)
continue to be funded.

While WG 1.1 is an on-going long-term project, projects WG 2.7 and 2.8 have undergone name changes to reflect changes in research direction and the way research projects are now organized in New Zealand. As part of this process the funding for WG 2.7 was extended for 1 year, i.e., to the end of June 2003, while the funding for WG 2.8 was extended for a further 2 years. Project WG 2.7 was "re-bid" to the funding agency in early 2003 as part of a larger package of stream ecology and hydrology research. There has been some re-distribution of funds between programme components and the implications for on-going hydrological research are currently being worked out. Meanwhile a proposal for new work under WG 2.8 has been prepared and submitted to the funding agency as the first step in the re-bidding process.

1.1.3 Decisions regarding contribution to/participation in IHP-V

Some components of the New Zealand hydrological research programme are aligned with IHP-V themes in eco-hydrology and sustainable water management. It should be noted that the bulk of hydrological research in New Zealand is funded through the Foundation for Research Science and Technology (FRST), whose mandate is to fund research that is in the national interest. All proposals submitted to the Foundation must therefore 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.

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 organized by the Ministry for the Environment under the aegis of its National Agenda for Sustainable Water Management).

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 Curry attended the 10th RSC meeting held in Kuala Lumpur and attended the Technical Steering Committee meeting associated with the 10th RSC meeting.

1.2.3 Research/applied projects supported or sponsored

None

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

The Chairman and Secretary of the National Committee are in frequent contact with the Regional Hydrological Advisor to the President of the WMO Regional Association V, and with the Hydrological Adviser to New Zealand's Permanent Representative to the WMO. This contact enables coordination of activities under the aegis of IHP and the WMO OHP in New Zealand.

A National report was provided for the 15th Session of the IHP Inter-Governmental Meeting held in Paris in 17-22 June 2002.

There have been a number of national initiatives associated with the International Year of Freshwater in order to raise awareness of the importance of protecting and managing freshwater.

- The United Nations Association of New Zealand (UNANZ) mark each year by holding a speech contest on the topic of the year. This year the topic was "Freshwater – A Human Right and Responsibility" and National Institute of Water and Atmospheric Research (NIWA) provided a Chief Adjudicator for the finals of their 2003 Speech Awards for Secondary School students.
- The New Zealand Hydrological Society has approved the support of a large and colourful poster series on freshwater aimed at schools and at the general public. The posters show a pictorial expression of the hydrological cycle, the spatial distribution New Zealand's rainfall and water resources, and a pictorial expression of the conflicts over use of the water resource. Each poster includes a number of interesting questions (with answers) and facts designed to encourage the viewer to think about freshwater availability issues in New Zealand.
- The Royal Society of New Zealand organised the New Zealand wide sampling of streams by school groups to determine stream health. NIWA is providing assistance to schools through making staff available to comment on the results.
- The Royal Society of New Zealand, UNESCO (Wellington) and NIWA are combining to organize Fresh Water New Zealand - a major conference on fresh water in New Zealand: tensions and conflicts, supply, demand and quality, Details are available at <http://www.rsnz.govt.nz/>.
- NZ sent a delegation to the 3rd World Forum on Water in Kyoto on 16-23 March 2003.

1.2.5 Other initiatives

Work on the Hydrology for the Environment, Life and Policy (HELP) basin at Motueka continues this basin will be New Zealand's contribution to the next volume of the Catalogue of Rivers. Details of the Motueka HELP project are available at <http://icm.landcareresearch.co.nz/>.

The National Centre for Water Resources (NCWR) has published the second and third issues of a quarterly circular entitled "Water Resources Update". 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. Plans are to publish three issues of Water Resources Update per annum.

1.3 Educational and training courses

1.3.1 Contribution to IHP courses

- NIWA ran a UNESCO funded course on the “Preparation and Maintenance of Hydrological Data Archives” for SE Asian participants in Kuala Lumpur between 13-17 October 2003.

1.3.2 Organisation of specific courses

Courses and workshops are generally organized in New Zealand to 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.

The NZHS hosted a Workshop entitled – “Use it or Lose it” – promoting innovative use of environmental data in Whangarei in March 2002. This was well attended by Regional Council and NIWA staff and included presentations on pre-processing of near real time data, presenting current meter calibrations, collecting and disseminating data, web site presentations and electronic processing of data requests.

Courses were provided by NIWA for regional council and NIWA staff on:

- Environmental data logging
- Optimising hydrological data quality
- Use of hand-held and continuous water quality sensors
- Hydrological statistics

Preparations are underway for the first of a three-year, 4-week, NZAID funded course on Hydrology for SW Pacific participants to be held in Nadi, Fiji in April 2004. The first year is to be attended by surface water field hydrologists, the second by field hydro-geologists, and the third by both hydrologists and hydro-geologists. Preparation work, by NIWA in collaboration with SOPAC, is being done on developing a syllabus and presentation suited to Pacific Island country needs. This involves the use of appropriate exercises designed to assist the learning process and ensure participants retain a set of worked examples for future reference.

1.3.3 Participation in IHP courses

New Zealand sent a participant to the Twelfth IHP Training Course on Precipitation and Water Resources, held in Nagoya and Kyoto, Japan, 23 February to 8 March 2003.

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:

- A description of the modelling of surface water runoff at Mahurangi, as part of the “MARVEX” research project. A paper including new methods for estimating surface runoff more reliably was submitted to the Journal of Hydrology (Amsterdam). The study found that a mismatch in measurements scales between digital elevation data and soil hydraulic conductivity causes poor hydrological model estimates of near-surface water table elevation. Until now, the standard method for improving these estimates has been to adjust the value of hydraulic conductivity. A new method was developed to correct for this mismatch, and it was successfully tested against field observations of the spatial extent of soil saturation at the ground surface. The results will allow future applications of NIWA’s Topnet hydrological model to proceed more rapidly, as less model calibration is now required while the models are being developed.
- An improved model for predicting average annual low flow in ungauged catchments has been developed. The current version of the model is far more accurate than previous prediction methods, but requires knowledge of river flow recession characteristics. Progress on estimating river flow recession behaviour

in ungauged catchments has been made, and a wide range of catchment attributes have been extracted from the River Environment Classification (REC) for use as predictors of streamflow behaviour.

- An extensive analysis of river water quality in New Zealand has been completed by NIWA for New Zealand's Ministry for the Environment. The analysis used the REC as a basis for grouping data gathered from regional councils across the country. The report is entitled "Nation-wide and regional state and trends in river water quality, 1996-2002" and the key conclusions were:
 - water quality state is generally good in mountain and hill fed rivers within undeveloped catchments
 - low elevation and pastoral rivers throughout the country are degraded or at risk of degradation
 - most urban rivers are degraded
 - temporal trends in water quality at all spatial scales are small – the magnitude of most trends being less than 1% of the median value per annum. These observations suggest that marked differences in water quality among river classes represent stable conditions, and that recent changes in land use practices have had relatively small effects on water quality.

1.5 Participation in international scientific meetings

1.5.1 Meetings hosted by the country

The annual conference of the New Zealand Hydrological Society, "All the Easy Water is Gone", was held from the 3-6 December 2002 in Blenheim, New Zealand.

1.5.2 Participation in meetings abroad

New Zealand was represented at the RSC meeting and scientific conference held in Kuala Lumpur, Malaysia, 14-18 October 2002 by Dr Ibbitt and Mr Curry.

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 assistance.

In-country technical assistance and training has been provided through the New Zealand Government's Overseas Development Assistance (NZ Aid) funding to Cook Islands, Samoa and Vanuatu.

The NZ Aid, SOPAC & SPREP funded a monthly bulletin entitled "The Island Climate Update", giving an overview of the present climate in tropical South Pacific Islands and a forward outlook, that continues to be published and is circulated widely throughout the South Pacific. Issues #25 - October 2002 to #36 September 2003 were published during the year.

NIWA's National Centre for Water Resources (NCWR), has published three Water Resources Updates since its inception and intends to publish these at four monthly intervals.

NIWA has had an NZ Aid proposal "Development of a Stream Health Monitoring Kit; Education leading to action" approved. This proposal will develop a stream health assessment kit, similar to SHMAK, for use by schools and community groups in Fiji. It will be done in conjunction with staff and students of the Fijian Institute of Technology, and run over a period of 2 years. The final outcome will be a mixture of scientific reports summarizing the state of Fijian freshwaters and the pressures they are facing, as well as the development of a kit to measure stream health. This will enable villagers to monitor the effects of land use

activities and seek to develop ways to mitigate any adverse effects of unsustainable industrial and land use practices.

1.6.2 Completed and ongoing scientific projects

New Zealand's contribution to the next Catalogue of Rivers has been completed. This contribution, which was compiled by Landcare describes New Zealand's HELP basin, the Motueka.

2. FUTURE ACTIVITIES

2.1 Activities foreseen until December 2003

Dr Ibbitt and Guy Halliburton visited the Mekong River Commission (MRC) in October 2002 to update the preparation of the Mekong Yearbook. Originally the Yearbook was an initiative of the New Zealand Government and was funded on an annual basis. Following review of the appropriateness of providing the data in printed form only, a new procedure has to be introduced that will write the data to a CD-Rom for distribution. Dr Ibbitt will make a follow up visit to the MRC in late October 2003.

2.2 Activities planned for 2004

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. A significant proportion of this activity will be in areas that are included within the IHP, but is 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.

Further training courses for regional council and NIWA staff will be provided as follows:

- Hydrological data collection
- General environmental data logging
- Hydrological statistics

These courses are also open to overseas participants, with proposed attendance by a Cook Islands water supply technician.

2.2 Activities envisaged in the long term

None at this stage.

NATIONAL REPORT OF PAPUA NEW GUINEA INTERNATIONAL HYDROLOGICAL PROGRAMME

1. IHP ACTIVITIES AND RELATED ACTIVITIES UNDERTAKEN NOVEMBER 2002 - OCTOBER 2003

1.1 IHP National Committee and Secretariat

The Department of Environment and Conservation (DEC) is mandated under the Water Resources Act, 1982; to be responsible for the country's hydrological activities and water resources management. Within the Department; the Water Resources Management Branch (WRMB), is the implementing agency. The Unit is also the Secretariat of the National Committee.

Mr. Michael Kirrwa Wau was appointed as the new Chairman of the Committee. Other representatives on the National Committee include appointed representatives from National Weather Service, National Commission for UNESCO, Department of Mining Geological Surveys, Department of Agriculture and Livestock; and the University of Papua New Guinea.

Currently the Secretariat is liaising with all Agencies composing the National Committee to review their membership, and also appoint new members to the Committee.

1.2 Activities at National Level in the Framework of IHP

1.2.1 Participation at the 10th RSC meeting and the ICUH 2002

Mr. Gregory Lenga from the Secretariat attended the ICUH Workshop and the 10th RSC Meeting, in Kuala Lumpur and Malacca, which was held from 14th October – 18th October 2002. A report on his participation was submitted to UNESCO - Jakarta office, who provided funding for the trip.

1.2.2 3rd World Water Forum in Kyoto Japan, March 2003

The PNG IHP National Committee Chairman, Mr. Michael Wau, was a member of the PNG Ministerial Delegation. Also in attendance at the forum was our acting First Assistant Secretary, Ms Kay Kalim, who was involved with the South Pacific Regional Delegation to bring forward to the Forum, the Pacific-Caribbean Joint Programme for Action on Water and Climate. PNG forwarded 5 Action Plans. Out of the five, one of the Actions is for Water Quality and Hydrological Data Collection. The objective is to establish a comprehensive data base for the country. To date now, PNG has ongoing work programs to collect data both within the government and the private sector. However the recurrent national government annual budget allocation is insufficient to undertake the task. The country requires donor funding and technical assistance at the government level to effectively undertake this task country wide.

1.2.3 UNESCO-IHP Grant Expenditure Report (Period July 2002- August 2003)

The PNG IHP National Committee received a grant of PGK 45,000.00 in 2000 from UNESCO to organise and host a workshop on Steep Slope Management in PNG. However,

due to increased costs in goods and services in the country, the grant was insufficient to successfully host the workshop. The grant money was then allocated for use in IHP- related activities in the country. The first tranche of PGK 30,000.00 was received in September 2001 and the balance was left with UNESCO -PNG National Commission for release to PNG IHP National Committee when required.

A report on expenditure of PGK 30,000.00 covering the said period was submitted to the PNG National Commission for UNESCO in August 2003. We anticipate to receive the remaining funds (PGK 15,000.00) held by Commission.

1.2.4 River Catalogue Contribution

Laloki River has been nominated for inclusion in the River Catalogue Vol. V. The layout format was received from Professor Takara and a working group is been formed within DEC to work on the catalogue. Funding is required to enable field investigations, as such, some of the remaining funds referred to in 2.3 will be used for this purpose.

1.2.5 Maintenance of Office Facilities

Funds from IHP Participatory Grant were used to maintain the inter-net service and office facilities, such as printer consumables and stationarie s. Our inter-net service was disrupted when we lost the telephone line in August due to non-payment telephone accounts by the department. However a temporary arrangement has been done to continue receiving e-mails to our e-mail address. To avoid such problems in future, an independent line will be organised in the near future when funds are sourced.

1.2.6 Total Run off Value Calculation for PNG

A working committee has been set up to re-calculated the Total Run off Value for PNG. The current value is extremely high when comparing with other tropical equatorial country from the region. The activity was put on hold due lack of funding required for purchasing data sets from our National Weather Service. Rainfall data which DEC holds is not representative of the country.

1.3 Other hydrological and water related activities undertaken from November 2002 - October 2003.

1.3.1 Road access monitoring stations

DEC continues to maintain six (6) road access stations with funding assistance from IHP Participatory Grant. One of these stations will soon be upgraded with new Star-data logger acquired from NIWA, New Zealand. This upgrading is in anticipation for this site to take on telemetry using land hire or radio method.

1.3.2 Preliminary hydrological and water resources investigations into the Managalas area of the Northern Province.

The DEC was invited by Environment Melanesia, an NGO Community Environment Project organization to carry a field investigation to undertake stream flow gauging and general water resources assessments of the area. These investigations were to identify potential for mini hydroelectricity scheme and water supply for the local villages. This data will also add to building on our database for the country.

1.3.3 New Environment Act 2000

We also inform the IHP RSC that DEC has reviewed its three main environment legislations and merged them to form the new environment act called "*Environment Act 2000*". One of the three pieces of legislations merged was the Water Resource Act of 1982.

The new Act was passed by Parliament in November 2000 but its instruments are still being worked on and the Act will be ready for implementation by February 2004.

These instruments will also provide the policies and regulations necessary for the government to develop and implement the national hydrological and water resources data collection, monitoring, and management.

1.3.4 World Environment Day, 5th June, 2003

Many organizations in PNG celebrated the World Environment Day. Most schools, around the country observed the day with their own planned activities. The theme for this year's WED was "WATER - Two Billion People are Dying for it".

In National Capital District, DEC with other water related agencies celebrated the occasion at our National Museum premises. The celebrations were marked by speeches by prominent people, including the Japanese Ambassador to PNG. There were also concert and choir presentations by cultural groups and school children.

Other activities included distributions of tree seedlings to schools. An exhibition room was staged within the Museum for educational displays by DEC and the other water related agencies for the general public and school children. The exhibition was staged for a week.

As 2003 is also the UN declared International Year of Freshwater, DEC with those water agencies present made presentations to the general public, and school children visiting the displays, on issues of wise use of water, water conservation and water pollution control.

The exhibition also provided an opportunity for the National Committee to do educational awareness on other water related activities in the country and the region. The displays included information on the role of DEC's responsibilities and activities undertaken in hydrological data collection, display of equipment used and the Data Logging System. The River Catalogues hard copies and CD ROMS were also displayed.

During the days leading up to 5th June, DEC officers went out to schools around the city and did some awareness. Further awareness was done on our National Radio Community Hour Program. The Government of Japan provided the funding assistance for the celebrations.

1.3.5 Extended invitation for Lihir Mining Limited to Present Paper at conference in Fiji.

In our attempts to increase participation from the private sector in the country the National Committee extended the Conference invitation to Lihir Mining Limited to present a paper on its drought management measures to keep the mine operational during the El Nino in 1997-1998. They did accept the invitation and were prepared to meet their own cost to send a participant to the conference; however, due to pressing issues at the mine they have withdrawn. The National Committee however, is encouraging the private sector to be involved in IHP Activities in the future, and collaboration efforts to work on partnership basis for hydrological water quality data collection, and water resources assessment under such arrangements is being embarked on.

1.3.6 Educational and Training courses

Mr. Walimu Apaka, our Database Manager will be attending the workshop on preparation and maintenance of hydrological archives in Kuala Lumpur, Malaysia, later this year. Dr. R. Ibbitt of NIWA, New Zealand is organising our participation.

Mr. John Ari, one of our field hydrographers is also scheduled to attend a month long hydrological technicians training programme in Fiji in early 2004. We understand the training is being organised by SOPAC, and NIWA in collaboration with UNESCO and WMO.

2. FUTURE ACTIVITIES

DEC will continue to part take in regional activities including the AP-Friend projects. Some of these include:

- (i) Compile materials for the River Catalogue Volume V (Laloki River)
- (ii) Completion of "Sepik River Flood Propagation Mode I"
- (iii) Participation in IHP-VI phase.

Other programs and activities which are ongoing and also planned for next year onwards are:

- (i) Complete the Run off calculation for PNG
- (ii) Attend the next 12th RSC Meeting
- (iii) Continue to be research partners with AP-Friend
- (iv) Maintain road access stations and upgrade one station to take on telemetry
- (v) Drought Monitoring and assessment
- (vi) Review the IHP National Committee
- (vii) Organise a seminar on hydrological activities in PNG, to establish implementation plans and strategies to improve on and develop hydrological water quality data collection, monitoring and management policy for the country.

3. CONCLUSION

Despite PNG 's financial constraints, it needs to promote its water-related experiences to other members of the IHP RSC for their guidance, assistance and leadership. We believe that expanding the membership of the national committee will certainly capture other experiences from other hydrological practitioners and water resources management agencies in country. There is a dire need for technical assistance and donor funding to executive some of the major programs and initiatives now being initiated for the country. New technology and manpower training are also fundamental as we face the challenges of tomorrow.

**11th IHP REGIONAL STEERING COMMITTEE MEETING
FOR
SOUTH EAST ASIA AND THE PACIFIC
SIGATOKA, FIJI
(27 October – 1 November 2003)**

NATIONAL REPORT OF THE PHILIPPINES

by

**Leonardo Q. Liongson
Director, National Hydraulic Research Center
University of the Philippines
and
Member, Philippine National Committee for IHP**

1.0 Introduction

The members of the Philippine National Committee for the IHP belong to the following institutions:

Bureau of Soils and Water Management (BSWM), Department of Agriculture (DA)

Department of Public Works and Highways (DPWH)

Environmental Management Bureau (EMB), Department of the Environment and Natural Resources (DENR)

Laguna Lake Development Authority (LLDA)

Local Water Utilities Administration (LWUA)

Metropolitan Waterworks and Sewerage System (MWSS)

Mines and Geoscience Bureau (MGB), Department of the Environment and Natural Resources (DENR)

National Economic 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)

2.0 Activities of the Water Resources Sector in the Philippines

This brief section provides an enumeration of the recent activities of the water resources sector in the Philippines during the period 2002-2003 as well as previous activities in 2001-2002 were not included in the Philippine National Report submitted last year in 2002. These were incidental yet official activities of Philippine institutions and stakeholders in the water sector who are the members of the PNC-IHP and potential long-term partners in future projects of the National Committee and the IHP-RSC.

2.1 International and Regional Activities (2002-2003)

South East Asia Regional Dialogue on Water Governance, 28-29 November 2002, Bangkok, Thailand, organized by the Global Water Partnership-Southeast Asia Technical Advisory Committee (GWP-SEATAC).

Regional Forum on Capacity Building for IWRM in South East Asia., 10-14 December 2002, Kuala Lumpur, Malaysia, organized by the Global Water Partnership-Southeast Asia Technical Advisory Committee (GWP-SEATAC).

Special Meeting on Flood Forecasting and Warning for Tropical Regions., 13-14 January 2003, Langkawi Malaysia, organized by the Humid Tropics Centre - Kuala Lumpur, Malaysia.

First International Conference on Hydrology and Water Resources in the Asia-Pacific region (APHW 2003), March 13-15, 2003, Kyoto, Japan, organized by the Asia Pacific Association of Hydrology and Water Resources (APHW).

Third World Water Forum (WWF3), March 16-23, 2003, Kyoto, Japan, organized by the World Water Council.

Fourth Regional Symposium on Infrastructure Development in Civil Engineering (RSID4), April 3-5, 2003, Kasetsart University-TIT-UP, Bangkok, Thailand, organized by . Kasetsart University, Tokyo Institute of Technology and University of the Philippines.

Regional Workshop on Catastrophic Flood Risk Assessment, 28-30 July 2003, Bangkok Thailand, organized by the United Nations University (UNU) and the UN Centre for Regional Development (UNCRD).

Symposium on Environmental Issues Related to Infrastructure Development, 8-9 August 2003, Makati City, Philippines, organized by the Japan Society for the Promotion of

Science, Philippine Department Science and Technology, Tokyo Institute of Technology and University of the Philippines.

2.2 National Activities (2002-2003)

National Consultation on the 2001-2004 Medium-Term Philippine Development Plan (MTPDP) 2001-2004, Water Resources Section, 15 November 2002, Pasig City, Philippines, organized by the Philippines National Economic and Development Authority (NEDA) and Philippine Water Partnership (PWP).

Water and Fish Summit, 30 January 2003, Los Baños, Laguna, Philippines, organized by the Philippine Council for Marine and Aquatic Research and Development (PCAMRD).

Annual Meeting of the Philippine Water Partnership - World Water Day, 26 March 2003, Pasig City, Philippines.

Ongoing and completed projects of the Philippine Water Partnership in 2003:

Dialogue on basic policies on water resources development and management in the Philippines (with special reference to water for food and the environment), 2003, Philippines, supported by the International Water Management Institute (IWMI).

Workshop with Champion River Basin Organizations (RBOs), coordinated with the *Stakeholder Consultation for the World Bank–assisted River Basin and Watershed Management Program (RBMP)*, February 2003, Philippines, supported by GWP-SEATAC.

Special Workshop for National Water Resources Board (NWRB) on Economic Regulation of the Philippine Water Industry (Getting the Right Legislation), 2 July 2003, NIA bldg. EDSA, Quezon City, Philippines, organized by the project principals of *ADB TA No. 3703-PHI: Capacity Building for the regulatory office of the Metropolitan Waterworks and Sewerage System*.

2.3 Ongoing and completed studies and R&D projects (2001-2003)

Member institutions of the Philippine National Committee have undertaken studies and R&D projects in the field of hydrology and water resources during the period 2001-2003, including some with foreign technical assistance and aided by consultants. Some notable activities are as follows:

Department of Public Works and Highways (DPWH), National Hydraulic Research Center and CTI Engineering Co. Ltd. (2002-2003). *Study on the Supplemental Polder Dikes for the Metro Manila Flood Control Project – West of Mangahan Floodway*, Manila, Philippines (completed).

Laguna Lake Development Authority (LLDA) and Delft Hydraulics (2001-2003). *Sustainable Development of the Laguna de Bay Environment*, Pasig City, Philippines (completed).

Metropolitan Waterworks and Sewerage System (MWSS) and National Hydraulic Research Center (2003). *Study of the Effects of the Proposed MWSS Housing Project on the La Mesa Watershed and Reservoir*, Quezon City, Philippines, August-December (ongoing).

- Metropolitan Waterworks and Sewerage System (MWSS) and National Hydraulic Research Center (2001). *The Study of the Effects of Payatas Dumpsite to the La Mesa Reservoir*, Quezon City, Philippines (completed).
- Metropolitan Waterworks and Sewerage System – Regulatory Office (MWSS-RO) and National Hydraulic Research Center (2001-2002). *Flow Instrumentation Audit and Water Balance Study of the MWSS Head Works System*, Quezon City, Philippines (completed).
- National Hydraulic Research Center (2002). *Policy Research Paper on the Proposed Water Resources Policy of the Philippines*, commissioned by the Philippine National Academy of Science and Technology (NAST) (completed).
- National Water Resources Board (2001-2003). *Establishment of the National Water Information Network (NWIN)*, completed and accessible in the NWRB server with URL: [http:// www.nwin.nwr.gov.ph](http://www.nwin.nwr.gov.ph).
- National Water Resources Board (2001). *Improvement of National Water Data Collection Network - Stramflow Monitoring*, Final Report submitted by the consultant (DDCD Engineering Corporation), Philippines, December.
- National Water Resources Board (2001). *Improvement of National Water Data Collection Network for Water Quality Monitoring*. Final Report submitted by the consultants (Madecor Group & IDP Consultant), Philippines, December.
- National Water Resources Board (2002). *Improvement of National Water Data Collection Network for Groundwater Monitoring*. Final Report submitted by the consultants (Woodward-Clyde & Intermerc Consultants), Philippines, February.
- National Water Resources Board (2003). *The Study on the Water Resources Development for Metro Manila in the Republic of the Philippines*, Final Report submitted by the consultants (Nippon Koei Co. Ltd. & NJS Consultants), Philippines, March.

3.0 Participation in IHP Activities

The members of the Philippine National Committee are interested in continuing participation in the following RSC-IHP activities:

3.1 Catalogue of Rivers for Southeast Asia and the Pacific

For Volume V, the Philippines is contributing one chapter on the biggest lake-river basin of the country, the *Pasig-Marikina River and Laguna de Bay (Ilog Pasig-Marikina at Lawa ng Laguna de Bay)*, which is situated in the Metro-Manila region and the adjoining provinces of Rizal, Laguna, Batangas and Cavite. Maps (in GIS files) for watershed boundaries, river network, river profiles, land use, geology, etc. have been prepared. Digital files of time series data for rainfall, and streamflow are also ready, including their presentation graphics. The details shall be submitted in digital files and hardcopies during the 11th IHP-RSC meeting in Fiji.

3.2 AP-FRIEND

The Philippines intends to contribute in 2003 to the Asian Pacific Water Archive of AP-FRIEND the hydrologic and water-quality data of the Pasig-Marikina River and Laguna de Bay Basin. Also contemplated in the near term is the possible contribution of the results of Philippine researches on water balance studies, rainfall-runoff models, and statistical and stochastic models, undertaken in recent years.

3.3 The Sixth Phase of IHP (IHP VI)

The Philippines is interested to participate in and contribute to the activities covered by the IHP-VI Focal Area 4.4: Human Security in water-related disasters and degrading environments as well as other possible focal areas..

3.4 IHP Workshops, training courses and symposia

The Philippine National Committee wishes to express regrets and apology to the Indonesian National Committee for not being able to send participants to the 2nd Training Workshop on Ecohydrology: Integrating ecohydrology and phytotechnology held on July 21-26, 2003 in Cibinong – Bogor, Indonesia. The reason having been given is the non-availability of the qualified nominees who would be free and available during the period of the workshop.

The Philippines has nominated one participant from the NWRB-NWIN project staff to the UNESCO-NIWA water data archiving course to be held in Kuala Lumpur, on 13-17 October 2003.

3.5 Other related activities

The Philippine National Committee has received in 2003 several volumes in multiple copies of IHP publications and reports from the UNESCO Jakarta office.

This member of the Philippine National Committee also accomplished and submitted the questionnaire for the external evaluation of the Fifth Phase of the UNESCO IHP V: “Hydrology and Water Resources Development in a Vulnerable Environment”.

4.0 Concluding Remarks

The Philippine National Committee for IHP expresses its thanks and gratitude to the IHP-RSC and the UNESCO Jakarta Office for their continuing support to the Philippines to participate in the IHP activities in the region.

National Report on IHP Related Activities Thailand

1. Activities undertaken in the period of October 2002 - September 2003

1.1) Meetings of the IHP National Committee

1.1.1) Decisions regarding the composition of the IHP National Committee

As a result of bureaucratic reform in October 2002, the work on hydrology in Thailand is performed by Department of Water Resources, Ministry of Natural Resources and Environment which has mandate in water resources management. Thailand National Committee for the IHP (TNC-IHP) will soon be established and will consist of 22 members from concerning agencies representatives and experts. The Director-General of the Department of Water Resources will be the chairman of TNC-IHP.

The mailing addresses are as follows :

C/O Thailand National Committee for the IHP
Department of Water Resources (DWR)
Ministry of Natural Resources and Environment
49 Rama VI Soi 30, Phayathai
Bangkok 10400 THAILAND
Tel., Fax : +66 2241 1019, 243 2214
Email : saekaraj@hotmail.com, sukontha_a@monre.go.th

1.1.2) Status of IHP-VI activities

Implementation of 14 Rivers Basin Committees to promote integrated water resources management in a river basin context with participation from localities is carried on.

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

1.2.1) National / local scientific and technical meeting

-

1.2.2) Participation in IHP Steering Committee / Working Group

The representatives from TNC-IHP attended the 10th Regional Steering Committee Meeting for the IHP in Southeast Asia and the Pacific and Conference on Urban Hydrology for 21st Century (ICUH 2002) on 14-18 October 2002 in Kuala Lumpur, Malaysia. Dr.Tawatchai Tingsanchali presented paper on Comparison of Combined Deterministic and Stochastic Models for Daily Flood Forecasting for Thailand.

1.2.3 Research / applied projects supported or sponsored

-

1.2.4) Collaboration with other national and international organisations /

programmes

As a result of bureaucratic reform since October 2003, the work on hydrology in Thailand is performed by Department of Water Resources (DWR). The work under this category therefore performed in the name of DWR.

a) Thailand has participated in the World Water Assessment Programme (WWAP) in 2001 and the Chao Phraya river basin is selected as a case study. Director-General of Department of Water Resources, Ministry of Natural Resources and Environment has joined the launching of the first World Water Development Report (WWDR) in the 3rd World Water Forum on 22 March 2003 in Kyoto, Japan.

b) Organised, in collaboration with WWAP, the Brainstorming Seminar on Work Plan for Water Assessment Programme in the Chao Phraya river basin, Stage 2 on 20 February 2003 in Bangkok and several Consultation Meetings to proceed Water Assessment Programme in the Ping river basin. The Department of Water Resources selected two sub-basins of the Ping river basin for field test of the development of indicators and the report will come out at the end of 2003.

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

There were no specific course but regular courses were arranged by the department.

1.3.3) Participation in IHP courses

TNC - IHP sent one representative to attend 12th IHP Training Courses on Precipitation and Water Resources on 23 February – 8 March 2003 in Nagoya and Kyoto, Japan.

1.4 Publications

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1.5 Participation in international scientific meetings

1.5.1 Meetings hosted by the country

Thailand in collaboration with Southeast Asia Technical Advisory Committee for Global Water Partnership (GWP-SEATAC) held a Regional Dialogue on Water Governance in Bangkok, Thailand during 28-29 November 2002.

1.5.2 Participation in meetings abroad

a) One representative from Thailand attended the 6th Co-ordination Committee Meeting for The Regional Humid, Tropics Hydrology and Water Resources Center for Southeast Asia and the Pacific (HTC Kuala Lumpur) on 17 October 2002 in Malaysia.

b) More than ten representatives from Thailand attended the 3rd World Water Forum on 16-23 March 2003 in Kyoto, Shiga and Osaka, Japan.

c) Nine representatives from Thailand attended Ministerial Conference on the 3rd World Water Forum on 22-23 March 2003 in Kyoto, Japan.

d) Two representatives from Thailand attended the 6th International River Management Symposium on Urban Rivers : Balancing the expectations on 2-5 September 2003 in Brisbane, Australia.

e) One representative from Thailand attended the 6th Water Information Summit 2003 on 9-12 September 2003 in the Netherlands.

f) One representative from Thailand attended Conference Monitoring Tailor-Made IV on Information to Support Sustainable Water Management : From local to global levels on 15-18 September 2003 in the Netherlands.

1.6 Other activities at regional level

1.6.1 Institutional relations / co-operation

TNC - IHP has remained close coordination and contacts with UNESCO Jakarta Office in many activities.

1.6.2 Completed and ongoing scientific projects

Regional study on development of effective water management is the project that Thailand's case studies are developed along with other countries in Asia, which are China Indonesia Nepal Philippines and Sri Lanka. It aims to assess water management in each country and recommend good practices. At present it is completed.

2. Future Activities

2.1 Activities foreseen until December 2004

- a) Strengthening cooperation with other countries in Mekong Subregion
- b) Host the First Southeast Asia Water Forum during 17-21 November 2003 in Chiang Mai, Thailand.

2.2 Activities planned for 2005 - 2006

- a) Continuation of collaboration with RSC for Asia and the Pacific
 - b) Continuation of involvement in Asian Pacific FRIEND
 - c) Enhancing activities contributed to IHP-VI
 - d) Dialogue on Water, Food and Environment in the Bang Pakong River Basin
 - e) Expanding water assessment in the Chao Phraya River Basin
-

NATIONAL REPORT ON IHP RELATED ACTIVITIES

I. ACTIVITIES UNDERTAKEN IN THE PERIOD AUGUST 2002 - OCTOBER 2003

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. Bui Van Duc and the Secretary General, Dr. Tran Thuc.

With the inclusion of the former Hydro-meteorological Service of Viet Nam and the Institute of Meteorology and Hydrology into the newly formed Ministry of Natural Resources and Environment, the VNNC IHP is going to be reorganized to fit the new structure.

1.1.2 Status of IHP-VI activities

Prepare for the participation/contribution to IHP-VI activities

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). There have been no meetings specifically under the aegis of the IHP. The Secretary General and the Chairman of the IHP National Committee meet regularly to discuss IHP matters.

1.2.2 Participation in IHP Steering Committees/Working groups

Viet Nam participated in the establishment of the Regional Steering Committee for Asia-Pacific. The members of the Viet Nam National Committee for the IHP have attended and participated actively in almost all of the annual meetings of the Regional Steering Committee.

1.2.3 Research/applied projects supported or sponsored

- Development of a Flood Forecast and Warning for the Red River, Research study funded by the Ministry of Natural Resources and Environment, Viet Nam.
- Application of NWSRF for Flood Computations and Forecast for the Red River System, Research study funded by the Vietnamese Government (Under the framework of the bilateral cooperation program between Ministry of Natural Resources and Environment, Viet Nam and the National Weather Service of the United State of America).

1.2.4 Collaboration with other national and international organizations/programs

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.

Members/representatives of Vietnam NCIHP participated and contributed to many national councils such as:

- Head of National Working Group I on Modeling for the Water Utilization Program of the Mekong River Commission.
- Member of the Steering Committee for preparing National Plan for Environmental Monitoring Network up to 2010.
- Member of the Steering Committee of Water Resource Management Program of Viet Nam.
- Member of Committee for Environmental Impact Assessment of various development projects.

1.2.5 Other initiatives

- Together with Indonesia and Malaysia prepare proposal on "Assessment of Flood Forecasting and Warning for the Humid tropics Region" to submit to APN for funding.
- Together with the United Nation University and other countries prepare proposal on "Catastrophic Flood Risk Assessment in the Asia Pacific Region" to search for possible funding.

1.3 Education and training courses

1.3.1 Contribution to IHP courses

None.

1.3.2 Organization of specific courses

None.

1.3.3 Participation in IHP courses

Several Vietnamese have participated in IHP courses and workshops during the reporting period, including:

- Workshop on "Integrating Ecohydrology and Phytotechnology into Workplans of Government, Private, and Multinational companies" Cibiong - Bogor, Indonesia, 21 - 26 July 2003.

1.4 Publications

- Thuc, T. 2003, "Flood Forecast and Inundation Computations", paper presented at International Workshop on 'Catastrophic Flood Risk Assessment in the Asia Pacific Region', July 2003, Bangkok.
- Thuc, T. and Duc B. V. 2002, "Hydraulic Computation of an Assumed Failure of Hoa Binh Dam", Proceeding, "International Conference on Comparative Regional Hydrology and Mission for IHP phase VI of UNESCO. Kula Lumpur, Malaysia.
- Thuc, T. 2003, "Flood and Flood Forecast in Viet Nam" paper presented at International Workshop on "Flood Forecasting and Warning for Tropical Regions", January 2003, Langkawi, Malaysia.
- Thuc, T. 2003, "Scientific Basis in Establishing Flood Warning Levels for the Thu Bon River System", Hydrometeorological Journal, Ha Noi, Viet Nam.

1.5 Participation in international scientific meetings

- Attending and presenting papers at the International Conference on "International Conference on Comparative Regional Hydrology and Mission for IHP phase VI of UNESCO in Conjunction with International Conference on Urban Hydrology For 21st. Century.
- Attending the 10th Regional Steering Committee Meeting for Southeast Asia and the Pacific.
- Attending and presenting paper at the International Workshop on 'Catastrophic Flood Risk Assessment in the Asia Pacific Region', July 2003, Bangkok,
- Attending and presenting paper at the meeting of Flood Forecasting and Warning for Tropical Regions", January 2003, Langkawi, Malaysia.

1.6 Other activities at a regional level

1.6.1 Institutional relations/co-operation

None

1.6.2 Completed and ongoing scientific projects

None under the aegis of IHP-VI

II. FUTURE ACTIVITIES

2.1 Activities planned for 2003-2004

- Attending meeting of IHP Regional Steering Committee for Southeast Asia and the Pacific, Fiji, 2003.
- Participating in regional and national activities of IHP.
- Contribution to the River Catalogue Volume V and data archive.

2.2 Activities envisaged in the long term

Unknown at this time.

INTERNATIONAL HYDROLOGICAL PROGRAMME

11th IHP Regional Steering Committee meeting for Southeast Asia and Pacific

Pacific Island Countries

Introduction

The Pacific Island Countries (PIC) Cook Islands, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Palau, Papua New Guinea, Samoa, Tokelau, Tonga, Tuvalu, Vanuatu, Federated States of Micronesia and the Solomon Islands are members of UNESCO. Only Papua New Guinea, the largest developing island nation, has a national UNESCO IHP Committee and is represented in the IHP Regional Steering Committee for Southeast Asia and the Pacific.

An opportunity was provided for Pacific island country delegates to get engaged in the RSC meeting and related symposia in Christchurch (2000) and Hanoi (2001). In Christchurch a side meeting with PIC delegates was organized that resulted in a report titled: Pacific Focal Group Priority Issues in Water Resources. In Hanoi the region was represented by delegates from Fiji and Vanuatu and briefed the RSC meeting on IHP and related activities in the Pacific.

RSC membership for the Pacific

At the meeting in Christchurch it was pointed out that membership of RSC was guaranteed for nations in the region that had a IHP National Committee. Because of the limited number of water resource specialists in small island nations, this effectively excludes the Pacific sub-region from RSC membership. It was agreed that a Pacific Focal Group for Water Resources would be set up that would be facilitated by SOPAC and UNESCO Apia Office. We are grateful that the IHP National Committee gave recognition to the Pacific region by asking SOPAC to co-organise the 11th RSC meeting in Fiji with participation from the Pacific Island Countries water resources specialists.

IHP UNESCO Projects in the Pacific

The Christchurch report mentioned above identified water resources projects based on earlier UNESCO and SOPAC meetings held in 1994 and 1997. Highest priority was assigned to projects on catchments and communities, groundwater recharge and groundwater pollution by sanitation. An additional ENSO workshop in September 1999 had identified drought assessment in the Pacific as an additional priority.

The UNESCO/SOPAC research projects on groundwater recharge and pollution that were carried out in Kiribati and Tonga resulted in several IHP publications that have been distributed throughout the region. Follow-up action on these projects is taken by a project funded by ACIAR and more information can be found below. Funding from UNESCO in 2002 enabled the start of the Catchment and Communities project in Vanuatu executed by the Directorate of Geology, Mines and Water Resources (DGMWR) in collaboration with NIWA (New Zealand) and SOPAC. The catchments in Vanuatu are now projected to become one of the basins within UNESCO's Hydrology for the Environment Life and Policy project (HELP).

Relevant other activities in the Pacific

Hydrology Training

During a WMO Experts Meeting in Nadi, Fiji (October 1999) the exchange of climate information and capacity building through hydrology training were identified as high priorities for small island countries in the Pacific. Thanks to a partnership arrangement between WMO, UNESCO, SOPAC and NIWA with a financial contribution from NZAID these priorities are now being addressed through the NIWA Island Climate Update (ICU) and a Hydrology Training Programme. The ICU publication is already being distributed throughout the Pacific region and next year a start will be made with the 1st set of lectures on surface water for volcanic and bigger limestone island countries. The 2nd set of lectures expected to be held towards the end of next year will involve, besides a follow-up on surface water, groundwater topics for coral atolls and raised limestone islands.

Pacific Regional Action Plan on Sustainable Water Management

Leading to the World Summit for Sustainable Development (August 2002) and the World Water Forum (March 2003) an ADB/SOPAC-led regional consultation on Water in Small Island Countries was held in Sigatoka, Fiji. The consultation led to a Regional Action Plan and Ministerial Declaration that was signed by 16 Pacific island countries. The meeting identified key messages for six themes viz. Water Resources Management, Island Vulnerability, Awareness, Technology, Institutional Arrangements and Finance. As most relevant to UNESCO's International Hydrological Programme we can mention:

Theme 1: WATER RESOURCES MANAGEMENT

Key Message 1: Strengthen the capacity of small island countries to conduct water resources assessment and monitoring as a key component of sustainable water resources management.

Key Message 2: Implement strategies to utilise appropriate methods and technologies for water supply and sanitation systems and approaches for rural and peri-urban communities in small islands.

Key Message 3: Implement strategies to improve the management of water resources, and surface and groundwater catchments (watersheds) for the benefit of all sectors including local communities, development interests and the environment.

Theme 2: ISLAND VULNERABILITY

Key Message 1: There is a need for capacity development to enhance the application of climate information to cope with climate variability and change.

Key Message 2: Change the paradigm for dealing with Island Vulnerability from disaster response to hazard assessment and risk management, particularly in Integrated Water Resource Management.

Delegates at the consultation called upon UNESCO-IHP to take a number of specific actions within the context of these key themes.

Pacific Water Type II Initiative

The Pacific Regional Action Plan has been incorporated in a partnership arrangement under the so-called Type II initiatives submitted by the Pacific Island Countries to the Commission for Sustainable Development (CSD) in Johannesburg during the World Summit for Sustainable Development (WSSD) in August 2002. The Type II mechanism is now used by donor, international and regional organisations to help implement actions in the Pacific region towards achieving the United Nations Millennium Development Goals, and the WSSD target to halve the proportion of people without access to safe and affordable drinking water and basic sanitation by 2015. The partnership aims to assist in implementing the actions identified by the consultation on national and regional levels.

Pacific Dialogue on Water and Climate

The “Dialogue on Water & Climate” was very much welcomed as a specific vehicle to address climate related issues during the regional consultation in the Pacific and to facilitate linkages with other Small Island Countries that faced similar challenges such as in the Caribbean.

The two regions are collaborating as part of the global Dialogue on Water and Climate (DWC) initiative, which works “to improve the capacity in water resources management to cope with the impacts of increasing variability of the world's climate, by establishing a platform through which policymakers and water resources managers have better access to, and make better use of, information generated by climatologists and meteorologists.”

The dialogue promoted action at international, regional, and national, policy and project levels through:

- enhancing public awareness;
- exchanging views and experiences;
- developing political commitment to achieve improved policies, institutional frameworks and approaches; and
- building capacity to cope with climate change and variability.

The outcomes of the Pacific and Caribbean Dialogues on Water & Climate are described in the Synthesis reports from both regions. An Executive Summary and the Caribbean-Pacific Joint Programme for Action (JPfA) were presented by representatives from both regions at the 3rd World Water Forum in Kyoto. The JPfA included 23 Actions related to Research, Public Education, Awareness and Outreach, Policy and Institutional Development, and Education and Training.

The Dialogue on Water and Climate and contribution towards the Regional Action Plan will be continued in the Pacific through:

- The Pacific region hosting the UNESCO International Hydrological Programme Regional Steering Committee meeting for Southeast Asia and the Pacific in collaboration with SOPAC.
- UNESCO/SOPAC organising an associated two-day symposium on “Managing Water Resources under Climatic Extremes and Natural Disasters”.

- Exchange of climate information and capacity building through the NIWA Island Climate Update and a Hydrology Training programme that was identified as high priority for small island countries in the Pacific at WMO Experts Meeting in Nadi, Fiji (October 1999). Both projects are made possible through the partnership arrangement between WMO, UNESCO, SOPAC and NIWA with a financial contribution from NZAID.
- CEHI and SOPAC collaborate towards the implementation of the Joint Programme for Action and provide input into the preparations for Barbados +10. Both organisations will invite each other for relevant meetings and share information on water and climate as agreed upon by Memorandum of Understanding signed at the World Water Forum.

World Meteorological Organisation (WMO)

The Pacific HYCOS Project proposal developed by WMO in 2001 has received support from the WMO Tropical Cyclone Committee (TCC), Pacific Region Global Climate Observing System (PI-GCOS), several Pacific Island Country National Hydrological Services, SOPAC and received a high recommendation as one of the priority Actions identified by the regional consultation meeting. Efforts are underway to discuss funding opportunities with interested donor agencies and prepare submission through the Global Environmental Facility (GEF) mechanism.

The Pacific HYCOS also features prominently as a component of PI-GCOS for the Terrestrial Observing System. It will compliment the observation network of the regional climate observing system. The PI-GCOS implementation plan has been prepared and a project officer to be based at the South Pacific Regional Environment Program office in Apia, Samoa has been recruited.

WMO plans to organise a workshop on groundwater management for the small island countries. The workshop will be conducted in English for three days and will involve ten (10) participants from selected states. The participants will present country papers on the status of groundwater in their country or case studies from their country. Dates of the workshop are to be announced.

ESCAP and WMO sub-regional office (Apia) have an MOU in place for cooperation in water resources activities. An ESCAP/SOPAC Regional Workshop on Strategic Planning and Management of Water Resources Development (2002) provided advocacy and capacity building workshop on cross-sectoral approaches to water management and policy development. ESCAP National Water Consultation (2002-2004) aims at Integrated Water Resources Management. Support is earmarked for Fiji for development of an integrated cross-sectoral (resources, supply/disposal, irrigation and drainage) national water policy and formation of a national water committee in 2002. Possibly two other countries will receive such support.

Australian Bureau of Meteorology (BOM)

A project is currently underway titled: Enhanced Application of Climate Predictions in Pacific Island Countries in order to meet the general goals of improving weather and climate services and products. A project proposal has been developed for AusAID funding. The proposals outlines procedures for developing a climate prediction capacity in participating countries, and in particular, providing a framework for incorporating climate prediction information into planning across a broad range of agencies and industries. The scheme will be based upon the seasonal climate prediction system of the Australian Bureau of Meteorology, which has successfully issued climate predictions for some years.

NIWA Activities with PIC's

- Provided a trainer for a further NZAID funded training mission to Cook Islands as part of a 5-year Rarotonga Hydrological Network & Technical Training Assistance Programme.
- Provided a trainer for a follow-up NZAID funded Hydrological Network and Technical Assistance training mission to Samoa.
- Provided trainers for the UNESCO funded course on Data Archive Management held at the HTC in Kuala Lumpur and attended by SE Asia countries and Papua New Guinea.
- Preparation of the first year of a NZAID funded 3-year 4-week, surface and groundwater hydrology training course in collaboration with SOPAC. This course is aimed at training technical staff from all PIC's with the first 4-week course scheduled for April 2004.
- Provided ongoing collaboration with Vanuatu DGMWR staff on the UNESCO funded Catchment & Communities Project with the supply of appropriate hydrometric instruments and equipment, and preparation for a technical training mission in November 2003.
- Preparation for a NZAID funded joint project with the Fiji Institute of Technology and the NGO "Live & Learn" entitled Development of a Stream Health Monitoring Kit : Education - leading to action". The objectives of this project is to adapt the Stream Health Monitoring Assessment Kit (SHMAK) developed for temperate streams in New Zealand, for use in tropical stream in Fiji. This requires selection of resident (in Fiji) invertebrate and periphyton indicators of degrees of stream health and numerically calibrate these to obtain an overall assessment of stream health. The FIT & Live & Learn component relates to community education on the causes of changes in stream health and empowering the local people to take appropriate action to protect their water resources. Once validation has been achieved for Fiji it is envisaged that applicability to other PIC's will require very limited testing, and that the SHMAK technique has potential for widespread application in rivers and streams throughout the tropical zones.
- Provision of hydrological equipment for the survey and establishing of semi-portable river level recording stations in Papua New Guinea.
- Provided support to Solomon Islands with the re-establishment of their Hydrological Archive following loss of their National Archive during a burglary.
- Continued production of the monthly "Island Climate Update" publication describing the current climate situation as it effect PIC's and forecasting weather phenomena and tropical cyclones based on ENSO, sea surface temperature and global circulation models. Issues # 25-36 were published during the year.

SOPAC

A European Union funded project is currently being carried out by SOPAC called 'Reducing Vulnerability of Pacific ACP States through Island Systems Management'. The goal of the

Project is to reduce vulnerability by the development of an integrated planning and management system within three key focal areas in the island system:

- Hazard mitigation and risk assessment
- Aggregates for construction
- Water resources supply and sanitation.

Following a multi-stakeholder approach the objective is to strengthen integrated development and decision making in Pacific ACP States by provision of timely and accurate data, building capacity in the use of GIS data sets and modern ITC techniques as well as the development of policies and development strategies in the three focal areas. The project initially focus on eight Pacific States under the EDF8 funding: Fiji, Kiribati, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu, while, most probably, next year the project will be extended to further six Pacific States under the EDF9 funding: Cook Islands, Federated States of Micronesia, Marshal Islands, Nauru, Niue and Palau.

ACIAR

Follow-up is provided to the UNESCO/SOPAC research projects in Kiribati and Tonga through a 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.

CROPPRO

The Universities of USP Samoa, Leuven in Belgium and Wageningen and Delft in The Netherlands are collaborating with government counterparts in Fiji, Samoa and Tonga on a research project named CROPPRO. The project is European Commission funded and focuses on sustainable agricultural use and management of natural (water/soil) resources in the Pacific region, aiming at reducing soil erosion processes (mountainous islands) and pollution of underlying groundwater reservoirs (uplifted coral islands).

United States-Australia-New Zealand Tri-lateral Climate Action Partnership Programme

In July 2003 the US and NZ governments signed a climate accord which committed both governments to improve collaboration between their climate information and adaptation agencies, particularly in the fields of climate forecasting. This agreement complements two existing agreements between Australia-US and Australia-NZ.

The initial benefit of the partnership is improved data and forecasting prediction sharing between NIWA, PEAC/NOAA and IRI. This initial step goes a long way to creating a Pacific Climate Information and Prediction System (CLIPS). Formalisation of this pan-Pacific arrangement into a WMO style CLIPS, is now being pursued by the WMO representatives in NIWA and the NWS/NOAA.

A planning meeting for the Climate Action Partnership Programme (CAP) was held in Hawaii in June 2003. It was attended by representatives from NIWA, PEAC/NOAA, East-West Centre, IRI, NWS/NOAA, SPREP and SOPAC. It was agreed that the focus of the programme for its first year or so would be to develop climate forecasting application tools, as well as improved data collection and sharing. Under lobbying from SOPAC, it was agreed that the initial focal area for the application tools would be water resources management.

It had been expected that representatives from East-West Centre/PEAC and NIWA might target the UNESCO IHP RSC and Symposium to explore appropriate climate forecasting application tools with the Pacific water resources managers. The two climate forecasting applications initially considered for possible follow-up were rainfall forecasting with regards to ENSO related drought and cyclone related flooding.

ANNEX 7

**MINUTES OF THE 9th MEETING OF THE
TECHNICAL SUB-COMMITTEE FOR
THE ASIA-PACIFIC FRIEND PROJECT (APF-TSC)**

**ASIAN PACIFIC FRIEND
9th TECHNICAL SUB-COMMITTEE MEETING**

Outrigger Hotel
Sigatoka, Fiji, 28 October 2003

Minutes

Participating Sub-committee Member or Observer	Country
Trevor Daniell	Australia (Chairman)
Ross James	Australia (Rapporteur)
Van-Thanh Van Nguyen	Canada
A. W. Jayawardena	China
Heng Liu	China
Xiaoyuan Zhu	China
Zongxue Xu	China
Rishi Raj	Fiji
Dwikorita Karnawati	Indonesia
P. E. Hehanussa	Indonesia
Kaoru Takara	Japan
Y. Tachikawa	Japan
Soontak Lee	Republic of Korea
Mohammed Nor	Malaysia
Bob Curry	New Zealand
Richard Ibbitt	New Zealand
G. Q. Tabios	Philippines
Leonardo Q. Liongson	Philippines
Marc Overmars	SOPAC, Fiji
Giuseppe Arduino	UNESCO Jakarta
Alan Gustard	United Kingdom
Bui Van Duc	Vietnam
Tran Thuc	Vietnam

1. Welcome

The Chairman of the Technical Sub-committee (TSC), Mr Daniell opened the meeting at 6:00 pm and welcomed all participants. Mr Daniell informed the meeting that he would like to complete the meeting by 8:pm and requested that participants focus on the primary purpose of the meeting which was to advance the AP FRIEND Phase 2 plan.

2. Election of Rapporteur

Mr Ross James was elected as Rapporteur for the meeting.

3. Confirmation of agenda

The draft agenda was accepted (Attachment 1 – at the end of this document).

4. Report from TSC Chairman

The Chairman briefly outlined the status of the action items from the 8th meeting of the TSC held in Kuala Lumpur, Malaysia, 15 October 2002.

1. *Copy of Catalogue of Rivers Vol 1 for Nile FRIEND* Status unknown
2. *Summary paragraph about WG5 for Phase 1 report*

3. *Complete WG5 report for Phase 1 report*
4. *Publish the Phase 1 report* The AP FRIEND Phase 1 Report has been Published as IHP-V Technical Document in Hydrology No 9 Regional Steering Committee for Southeast Asia and the Pacific UNESCO Jakarta Office 2002
5. *Draft Phase 2 Plan questionnaire for discussion at RSC 10 meeting* Completed
6. *Complete the Phase 2 Plan* The Plan has not been completed and the primary objective of this meeting is to make progress on the Plan.

5. Questionnaire responses from countries

Questionnaire responses were received from Vietnam, Malaysia, Laos, Japan and New Zealand. Copies of the questionnaire were made available during the meeting with responses from the remaining countries requested before the completion of the RSC meeting on Friday. Subsequently responses were received from Indonesia, Republic of Korea and Philippines.

6. Discussion of APFRIEND Phase 2 Plan

The Chairman opened the discussion by proposing that the themes of high flows and low flows (including drought) be continued from Phase 1 to Phase 2. The Chairman further proposed that activities within these themes initially be focused on rainfall. Specifically:

- What rainfall data are available in countries?
- How accessible is the data for research within each country?
- How accessible is the data for research outside the country?
- Availability and origin of design rainfall guidelines/standards in countries.
- Investigate development of regionally consistent rainfall design techniques and guidelines.

This work on rainfall would then logically lead on to work on high and low flow analyses.

The subsequent discussion agreed that rainfall was an essential input to high flow, low flow and drought analysis and highlighted that:

- Rainfall analysis was a priority in many countries.
- There was broad agreement it would be more valuable to focus on rainfall analyses to reduce fragmentation of effort.
- Design rainfall analyses are known by a range of names such as IFD, DDF and IDF
- Mr Nguyen has been requested by WMO collect details of rainfall intensity frequency duration techniques used around the world and this work would assist with this task.

The Pacific islands have a detailed plan of actions and a strategy for their implementation already developed. It was felt that the much of the Pacific action plan would integrate with the high flow and low flow activities. Many of the other countries in the RSC also include small islands. There needs to be discussion to include an appropriate small island theme which cuts across the whole region.

The issue of funding was of considerable interest to the meeting as the lack of funding was a significant problem in Phase 1. Mr Arduino identified the UNESCO Participation Programme as a potential source of funds. He summarised the process of submitting PP proposals through country National Commissions and stated that funds of about US\$40K could be available for projects in each country. Mr Arduino advised that developed countries could also seek PP funds and that projects that involved or were supported by a number of countries were considered more favourably.

ACTION: Countries to consider preparing project proposals relevant to the Phase 2 work areas for funding under the Participation Programme.

Mr Gustard described the activities of European FRIEND and the support that was provided within the European Union. He emphasised that the countries need to support the Chairman if progress is to be made and funding secured. European FRIEND tried many sources of funding and there was a need to be constructive in securing sources of funds.

Mr Gustard agreed that DDA/IFD/IDF was an important issue to be addressed. He recounted how different points of view between UK and France regarding DDA were readily resolved when the countries actually got together to discuss the issues.

Some potential sources of EU funding for AP FRIEND activities were described by Mr Gustard as follows:

- Framework 6 The EU's Framework Program for Research and Technological Development. (http://europa.eu.int/comm/research/fp6/index_en.html). Specifically the component for flood and drought funding of Framework 6 is relevant. Countries outside of Europe can link with EU countries in projects and so draw on funds for related activities.
- Twinning of basins EU and other river basins are twinned for research purposes with APF researchers participating in projects and thus being eligible for EU funding. Possibilities include twinning islands in the Mediterranean with islands in the Pacific or twinning major basins in Europe with major basins in RSC countries. Another possibility for twinning was in the area of integrated urban water management where an EU city could be twinned with an Asian city.

EU funding bids were usually in the order of €10M and the bids take considerable effort to prepare.

The issue of including climate change was raised by Mr Xu. The Chairman agreed that climate change was very important, particularly for the Pacific island countries, and it will need to be considered when preparing the work program

7. Development of activities to be completed before the next RSC meeting

Based on the discussion and the Chairman's summary the following action is proposed to progress the Phase 2 Plan.

- Questionnaire – finalize and evaluate
- Country input
 - Based on a template to be distributed and will cover
 - Availability of data both within and between the countries
 - Source organisations for data
 - Design standards/guidelines and analysis techniques used by countries
- Prepare draft plan of actions By email and based on country input.
- Develop a detailed work plan For identified actions in each area of activity. This should be done at a workshop. If there are funding issues then this may have to be completed entirely by email.
- Source funding Explore funding options such as
 - UNESCO PP grants
 - European Union Framework 6
 - Internal country funding

ACTION: To complete the AP FRIEND Phase 2 Plan for implementation following the 2004 RSC Meeting.

Mr Gustard informed the meeting that European FRIEND was about to publish a book on droughts and low flows. He said that funds were available to enable European FRIEND people to travel to Asia to run workshops on the techniques in the book and also to learn from AP FRIEND researchers. European FRIEND is also considering holding a meeting at AIT during 2005.

ACTION: AP FRIEND to prepare a proposal to participate with European FRIEND in a Drought and Low flow activity in the region during 2005(?).

The Chairman identified the need for a champion for each theme area. He indicated that he would take on the area that the other “volunteer” did not want. Some meeting participants identified Mr Takara would be a good champion following his work in Phase 1. It was acknowledged that both Mr Takara and Mr Daniell were very busy people and others were encouraged to consider being a theme leader or to assist.

8. APF Water Archive

Not discussed due to insufficient time.

9. Preparation for Global FRIEND Report

Not discussed due to insufficient time.

10. Other matters

Not discussed due to insufficient time.

11. Closure

The Chairman closed the meeting at 8:00pm.

12. Action Items

ACTION ITEMS	BY WHOM
1. Countries to consider preparing project proposals relevant to the Phase 2 work areas for funding under the Participation Programme	All countries
2. Progress Research Plan as per list of actions	Mr Daniell
3. AP FRIEND to prepare a proposal to participate with European FRIEND in a Drought and Low flow activity in the region during 2005(?).	Mr Daniell

Attachment 1

**Asian Pacific FRIEND
9th Technical Sub-committee Meeting
27 October 2003**

Agenda

1. Opening
2. Election of Rapporteur
3. Confirmation of Agenda
4. Report from TSC Chairman
5. Questionnaire responses from countries
6. Discussion on AP FRIEND Phase 2
7. Development of Program of Activities to be completed before next Regional Steering Committee Meeting
8. AP FRIEND Water Archive
9. Preparation for the Global FRIEND Report
10. Other matters
11. Closure

ANNEX 8

PROGRESS OF THE CATALOGUE OF RIVERS, VOLUME V

Rivers Catalogued in Vols. I to V

The following 94 rivers are compiled in the four volumes of the Catalogue of Rivers in Southeast Asia and the Pacific. Volume 5 is now under edition process.

Country	Vol. I (1995)	Vol. II (1997)	Vol. III (2000)	Vol. IV (2002)	Vol. V (2004)
Australia	Burdekin River Pioneer River	Todd River East Finniss River	Torrens River Scott Creek		Snow River
Cambodia	Prek Thnot	Stung Chinit			
China	Bei-jiang Jin-jiang Jiyun-He	Gan-jiang Taizi-he Ou-jiang	Bailong-jiang You-jiang Huang-he	Fen-he Hongshui-he Jialing-jiang Luan-he	Rongjiang River
Indonesia	Citarum Bengawan Solo Kali Brantas	Sungai Asahan Citanduy Kali Progo	Cimanuk Kali Serayu	Kali Tuntang Jeneberang River	River Ciliwung River Cisadane
Japan	Yoshino-gawa Ara-kawa Mogami-gawa	Chikugo-gawa Fuji-kawa Ishikari-gawa	Shimanto-gawa Shonai-gawa Watarase-gawa	Shinano-gawa Tone-gawa Yodo-gawa	Nagara-gawa Natori-gawa Yasu-gawa
Korea (Rep. of)	Pyungchang-gang Geumho-gang Miho-chun	Soyang-gang Nam-gang Gap-chun	Nam Han-gang Hwang-gang Geum-gang	Seomjin-gang Milyang-gang Sapkyo-chun	Banbyeon-chun
Lao PDR		Nam Khane Nam Ngum Sedone	Nam Theun/Cading Nam Sebangfay Nam Sebanghieng	Nam Ou Nam Suang Nam Sekong	Nam Ngiep Nam Sane Nam Song
Malaysia	Rajang Batang	Sungai Johor		Kelantan River Chalok Rive	Pahang River
New Zealand	Buller River	Motu River Hutt River	Taieri River	Mahurangi River	Motueka River
Papua New Guinea		Ramu Wara	Purari Wara	Sepik Wara	Laloki
Philippines	Ilog Magat Ilog Pampanga	Ilog Itaas ng Agno			Pasig-Marikina-Laguna de Bay Basin
Thailand	Mae Nam Ping Mae Nam Mae Klong	Mae Nam Nan	Mae Nam Yom Mae Nam Wang	Prachinburi River Bang Pakong River Tonle Sap River East Coast Gulf River	Chao Praya Sakae Krang Pa Sak Tha Chin
Vietnam	Song Ky Cung Song Thu Bon Song Ba Song Srepok			Cau River Tra Khuc River	2 rivers
Number of Rivers	25	24	20	25	21

ANNEX 9

ESTABLISHMENT OF A UNESCO CENTRE IN JAPAN FOR WATER HAZARD AND RISK MANAGEMENT

Resolution RSCXI-1

Establishment of a UNESCO Centre for Water-related Hazards and Risk Management located in Japan

The Regional Steering Committee (RSC) for Southeast Asia and the Pacific of UNESCO-IHP

Noting

- 1) the growing impacts on human life and socio-economic systems due to intensifying and increasing water-related hazards,
- 2) the future aggravation of extreme events caused by hydro-meteorological variability and climate change, damaging on low land area and small islands in particular, and
- 3) the needs of Southeast Asia and the Pacific regions in this field.

Recalling

- 1) the recognition of necessity to develop programmes for mitigating the effects of extreme water-related events as described in the Plan of Implementation at the World Summit on Sustainable Development, 2002,
- 2) the announcement of intention to establish a UNESCO Centre for this field at the 3rd World Water Forum, 2003,
- 3) the statement of the continuing efforts to establish the Centre at the 32nd UNESCO General Conference held in Paris, October 2003, which was warmly welcomed by the General Conference, and
- 4) the strong support from the region at the 11th RSC meeting held in Sigatoka, Fiji, October 2003.

Emphasizing

that the adequate risk management for water-related hazards is a key factor for sustainable human and socio-economic development and in particular for poverty alleviation.

Welcoming

the offer of the Public Works Research Institute (PWRI) of Japan to host a new global Centre for Water-related Hazards and Risk Management, under the auspices of UNESCO, in collaboration with other organizations concerned, which will a) conduct scientific research, b) undertake professional training and capacity building especially for practitioners, and c) create information networks; for mitigating water-related hazards.

Requests

the UNESCO-IHP Bureau to endorse the plan and the IHP Secretariat to assist preparing the documentation to be submitted to the governing bodies of UNESCO towards the establishment of the Centre.

Invites

all the UNESCO-IHP National Committees and their partner organizations to actively support this initiative.

ANNEX 10

**ESTABLISHMENT OF A CENTRE FOR ECOHYDROLOGY, CIBINONG,
INDONESIA**

RESOLUTION RSC XI-2

Establishment of Regional Centre for Ecohydrology in Indonesia

The Regional Steering Committee (RSC) for Southeast Asia and the Pacific UNESCO-IHP

Noting

1. the growing impacts of changes to the ecosystem due to rapid population growth and uncontrolled land use changes, deforestation, that have greatly affected the dynamics of hydrologic cycle
2. the increasing intensity and frequency of extreme events caused by changes in the ecosystem
3. the greater stress to gain short-term economic benefits that neglect sustainable development goals
4. the limited knowledge on the role and importance of the ecosystems in the hydrologic cycle

Recalling

1. the recognition and necessity to develop programmes for maintaining sustainable water resources as described in the Johannesburg WWSD meeting, 2002
2. the message from the 3^d World Water Forum in Kyoto, Japan, to transform activities from vision to action
3. the physical changes in the region induced by rapid development, without concern to the environment
4. to share basic and applied research results and their implementation, as a follow-up of the experience acquired in water resources management in the region.

Emphasizing that adequate ecosystem management and its hydrological component is a key factor to sustainable socio-economic development

Welcoming the offer of the Indonesian Institute of Sciences to host a Regional Centre for Ecohydrology under the auspices of UNESCO, in collaboration with other organizations concerned, which will a) conduct scientific research, b) professional training and capacity building, and c) creating information network for ecohydrology and related activities

Request the UNESCO-IHP Bureau to endorse the plan and the IHP Secretariat to assist preparing the documentation to be submitted to the governing bodies of UNESCO toward establishment of the Centre.

Invites all the UNESCO-IHP National Committees and their partner organizations to actively support this initiative

ANNEX 11

TECHNICAL PROPOSALS FROM THE RSC SEAP, 2004-2005

**DRAFT PROPOSALS from THE IHP REGIONAL STEERING COMMITTEE FOR
SOUTHEAST ASIA AND THE PACIFIC
(Based on discussions at the 11th Session of RSC-SEAP,
Sigatoka, Fiji, 30-31 October 2003)**

Proposals for 2004-2005

1. Common Projects

- (1) RSC Meetings and related small meetings
 - Annual RSC Meetings inviting two delegates from the member countries
 - Preparation/Coordination Meetings for various RSC matters such as new membership, budgets and publications
 - Costs for publications (such as a number of Volumes of IHP-VI Technical Documents in Hydrology, UNESCO Jakarta 2004-2005)
- (2) IHP Training Courses
 - 14th (2004) and 15th (2005) Courses (14th may be implemented in KL)
- (3) Asian Pacific FRIEND Phase 2 (2002-2007)
 - Third Asian Pacific FRIEND Workshop (in the first half of 2004)
 - Note: 1st: March 1998 (Malaysia, Indonesia)
 - 2nd: March 1999 (Vietnam)
 - Technical Subcommittee (TSC) meetings (at least once every year)
- (4) Catalogue of Rivers, Vol. 6 (to be published early part of 2006)
 - Funding for preparation of manuscripts to countries of need such as Laos, PNG, North Korea, and other new comers (Pacific island countries, Myanmar, Mongolia, etc.)
 - Editorial Meeting (in the first half of 2005)
 - Publication in book and CD forms (in the second half of 2005)

2. Recommended Proposals

- (1) Setting experimental (demo) sites for ecohydrology
 - Towards establishment of Ecohydrology Center in Indonesia
 - Strong collaboration with UNESCO-MAB and with local stakeholders
- (2) Flood hazard and risk management
 - Towards establishment of UNESCO Center in Tsukuba, Japan
 - Flood forecasting and warning systems for the humid tropics region

- Strong collaboration with flood-prone areas under IHP-VI Focal Areas 2.1 and 4.4
- (3) Water for human need – water conflict solution
- A Participation Programme through National Committees (Commissions) in the region
- (4) Groundwater and Water Resources in River basins and Small Islands
- Contribution to IHP-VI Theme 4: Water and Society
- (5) HELP Projects
- Contribution to CCPC: HELP
- (6) Comparative Study of the Water Law and Policy in Southeast Asian Countries
- (7) International Sediment (and Landslide) Initiatives
- Strong collaboration with the International Consortium on Landslides (ICL) handling International Programme on Landslides (IPL), which is supported by UNESCO
 - UNESCO/KU/ICL UNITWIN Network programme ‘Landslide Risk Management for the Society and the Environment’ (KU: Kyoto Univ.)
 - Chinese IRTCES is encouraged to keep contacting with ICL, IPL, RCL etc., for promoting the initiative

3. Centre Activities:

- (1) Regional Humid Tropics Hydrology and Water Resources Centre for Southeast Asia and the Pacific (HTC), KL, Malaysia
- 5 Collaborative Actions by ad-hoc team – from mapping to action, 2004-2005
 - 2nd phase AP FRIEND Workshop/Water Archive Training
- (2) International Training and Research Centre for Hydrology, Water Resources and Environment (ITRCHWE), Nanjing, China
- 12-month M.Sc. level training course on water resources sustainable development will be continued in the future including 2004-2005.
- (3) UNESCO Centre for Water Hazard and Risk Management (Provisional name)
- Preparation and consensus building for its establishment and focal areas
- (4) Regional centre for ecohydrology
- Preparation and consensus building for its establishment

ANNEX 12

**MINUTES OF THE MEETING OF THE COORDINATION COMMITTEE OF THE
REGIONAL HUMID TROPICS HYDROLOGY AND WATER RESOURCES
CENTRE FOR SOUTHEAST ASIA AND THE PACIFIC (HTC)**

SEVENTH COORDINATION COMMITTEE MEETING OF THE REGIONAL HUMID TROPICS HYDROLOGY AND WATER RESOURCES CENTRE FOR SOUTHEAST ASIA AND THE PACIFIC

**Outrigger Hotel
Sigatoka, Fiji, 28 October 2003**

Minutes

1. Opening by the Chairperson

The Chairman Mr Keizrul Abdullah opened the meeting at 05:55 pm and welcomed all the participants as shown in the Table below:

Table 1: List of Participants for the 7th CC Meeting

NAME	COUNTRY	E-MAIL
Keizrul Abdullah (Chairman)	Malaysia	keizrul@did.moa.my
Mohd Nor bin Mohd Desa (Secretary)	Director HTC, Malaysia	drmohnor@did.moa.my
Ross James	Australia	r.james@bom.gov.au
Van-Thanh Van Nguyen	Canada	van.tv.nguyen@mcgill.ca
Liu Heng	China	hliu@china.com
Zhu Xiaoyuan	China	xyzhu@mwr.gov.cn
Zongxue Xu	China	zongxuexu@vip.sina.com
Rishi Raj	Fiji	rishi@connect.com.fj
A.W Jayawardena	Hong Kong	hrecjaw@hkucc.hku.hk
P. E. Hehanussa	Indonesia	phnussa@indosat.net.id
Akira Kawamura	Japan	kawamura@civil.kynshu-uac.jp
Kaoru Takara	Japan	takara@mbox.kudpc.kyoto-u.ac.jp
Kuniyoshi Takeuchi	Japan	takeuchi@yamanashi.ac.jp
So Kazama	Japan	kazama@kaigan.civil.tohoku.ac.jp
Tetsuya Ikeda	Japan	t-ikeda@pwri.go.jp
Yasuto Tachikawa	Japan	tachikawa@mbox.kudpc.kyoto-u.ac.jp
Richard Ibbitt	New Zealand	r.ibbitt@niwa.co.nz
Guillermo Tabios III	Philippines	gtabios@up.edu.ph
Leonardo Q. Liongson	Philippines	lql@engg.upd.edu.ph
Soontak Lee	Republic of Korea	leest@yu.ac.kr
Marc Overmars	SOPAC, Fiji	marc@sopac.org
Chen Shick Pei	Thailand	spchen@ccop.or.th
Giuseppe Arduino	UNESCO Jakarta	g.arduino@unesco.org
Somphanh Vithaya	Lao PDR	dmhvte@laotel.com
Bui Van Duc	Vietnam	ducbv@fpt.vn
Tran Thuc	Vietnam	thuc@netnam.org.vn

2. Election of Rapporteur

Mr James was elected as Rapporteur for the meeting.

3. Report of the 6th Coordination Committee meeting

Mr Takeuchi advised that his name had been spelt incorrectly in the minutes of the meeting.

The Chairman reviewed the minutes of the 6th meeting held in Kuala Lumpur, Malaysia on 17 October 2002. It was noted that the meeting finished at 10:05 am and not 10:05 pm as shown in the minutes. The status of action arising from that meeting is as follows:

Clearer link to newsletter and text version of the newsletter

Mr Mohd Nor reported that the newsletter is accessible from the HTC home page at URL <http://htc.moa.my/htc/htcb/htckl.html>. The text only content of the newsletter is available for download as a pdf file.

Prepare a training workshop proposal (trends and changes in hydrological data)

A training course titled Operation and maintenance of hydrological archives was run at the HTC 14-17 October 2003. It was sponsored by UNESCO Jakarta and the Malaysian Government. The course was conducted by Mr Ibbitt and Mr McKerchar from NIWA.

HTC to promote IHP in dealings with GWP-SEATAC.

Mr Mohd Nor advised that the IHP had been promoted when opportunities arose.

Send relevant documents for the Web Document Archive to the HTC.

Mr Mohd Nor informed the meeting that some documents had been received but that more documents were required. He also referred the meeting to Appendix 6 of the meeting material that detailed the range of data currently held in the Water Archive. Mr James informed the meeting that the document archive software had been installed on the HTC server and briefly described its capabilities.

4. Report by the Director of HTC

The Director's report was included as Section 4 in the booklet of meeting material distributed at the start of the meeting. The following are items that generated discussion during the meeting.

2.4 First International Conference on Hydrology and Water Resources in Asia Pacific Region, Kyoto, Japan, 12-24 Mar 2003

The conference was organised by the Asia Pacific Association of Hydrology and Water Resources (APHW) and Mr Mohd Nor attended with the support of MEXT. Mr Takara summarised the objectives and outcomes of the conference referring to the report at Appendix 2 of the meeting notes.

2.7 Preparation and Maintenance of Hydrological Archives Training Course

This course was held at the HTC 14-17 October 2003 and involved participants from 10 countries. Mr Ibbitt, who presented part of the course, briefly described its objectives and advised the meeting that he believed they had been achieved.

3.4 Post graduate Hydrology Training Course of Nagoya University, Japan

The post graduate course has been running for more than 10 years and been very successful. Material prepared for each course is published as a text book. The course usually has less than 10 participants with participation being managed by the UNESCO Jakarta Office. It is now proposed to assess the value and impact of the courses run so far and to try and open future courses to a wider audience. It is planned that the evaluation be undertaken through a workshop involving the participants of previous courses. The workshop will be held at the HTC during 2004. A questionnaire seeking initial input from the previous course participants has been distributed. Mr Takara informed the meeting that the next Nagoya is scheduled for March 2004.

Action: The dates of the workshop at the HTC need to be fixed.

6.0 Finance and Human Resource

6.1 Operation and Maintenance

Discussion of the Financial Summary for 2003 in Directors Report (Table 1) highlighted a number of errors in both source of funds and amount of funding and the need for clarification about what some of the other fund amounts refer to. From the discussion it was evident that a more detailed and descriptive financial summary is desirable.

Action: Provide more detailed and descriptive financial summaries.

Other activities

Mr Mohd Nor provided additional information to the meeting about;

- the preparation of the CD-ROM of the history of the RSC prepared for the 10th Anniversary of the RSC, and
- the preparation of the proposal for a project titled “Assessment of Flood Forecasting and Warning Systems for the Humid Tropics” submitted for funding by APN (Appendix 5 of the meeting material).

The HTC was commended by Mr Takeuchi for taking the initiative in preparing the APN proposal.

5. Future direction of HTC Kuala Lumpur

Mr Mohd Nor said that in the coming year the Centre plans to make use of its ISO 9001:2000 certification to encourage and progress collaborative projects. He saw increasing activities in association with GWP and that the Centre would continue to plan and run workshops.

Mr Arduino believes that the HTC had now established itself in the region and that every effort should be made to use it as a focal point for training; to make use of its strengths. Mr Ibbitt also commended the Centre on the quality of the service provided during the recent training course he was involved with.

Mr Hehanussa pointed out that a centre for Ecohydrology was established in Indonesia in 2001. This prompted Mr Takeuchi to:

- remind the meeting that there were a number of specialised centres established in the region and that diversity was desirable,
- inform the meeting that the IAHS PUB initiative has a capacity building component and requested that the HTC be ready to contribute to this, in the region and
- inform the meeting that Japan plans to establish an Institute of Water Disasters and Risk Management.

6. Other matters

The HTC Director, Mr Mohd Nor commented that the Centre is keen to receive proposals for projects from member countries and would also like to receive feedback on activities undertaken.

7. Closure of the meeting

The Chairman thanked the Director for an excellent effort during the year and thanked the meeting participants for their input. The meeting was closed at 7:00 pm.

8. Action Items

Action	By whom
1. Fix the dates of the workshop to assess the Nagoya series of courses.	Mohd Nor
2. Provide a more detailed and descriptive financial summaries	Mohd Nor