PROGRAM 1

The Third General Meeting
Network of Asian River Basin Organizations (NARBO)

Time	Activity/Agenda	Acting Person	Venue	Remarks
Tuesday, Feb 19	**Arrival and Registration**			
	Participants arrive in Surakarta			
13:30 – 16:00	Secretariat Meeting (venue to be determined)			NARBO staff only
18.45 – 21.30	**Welcome Dinner**		Graha Tirta	
18:45 – 19:00	Participants transported from Sunan Hotel to Graha Tirta, Surakarta			By bus and coach
19.00 – 19.10	Welcome remarks from the **Jasa Tirta I President Director**	Ir. Tjoek Walujo Soebijanto, CES		
19.10 – 19.30	Introduction remarks from the **Regent of Wonogiri**	Drs. Begug Purnomosidi, MM		
19.30 – 20.30	Dinner (traditional music and dances accompanying: gambyong and gamelan)			
20:30 – 21:30	**Presentation & introduction to the study visit itinerary**			
20:30 – 21.00	Group 1: Managing Water Allocation and Sedimentation by **Jasa Tirta I Public Corportation**	Ir. Erwin Budoyo, M.Eng		
21.00 – 21.30	Group 2: Facilitating IWRM in Planning and Implementation by **Development Agency of Bengawan Solo**	Ir. Imam Agus Nugroho, Dip.HE		
21:30	Participants transported back to Sunan Hotel			
Wednesday Feb 20	**Study Visit**			
07:45 – 08:00	Preparation for departure			
08:00 – 09:00	Travel to Wonogiri			By bus and coach
09:00 – 10:00	Meeting with the Wonogiri Regency Administration			
	Group 1: Sedimentation Problem & Water Allocation within the Bengawan Solo R.B.			
10:00 – 10:15	Travel to confluence of Keduang River & Wonogiri Dam	Accompanied by Ir. Aunur Rofiq, CES		
10:15 – 12:00	Site visit & dialogue	Hosted by Ir Erwin Budoyo, M.Eng & Ir. Harianto	Wonogiri Dam Office	PJT I & water user association
12:30 – 13:00	Lunch break			
13:00 – 14:00	Travel to Colo Weir			By bus and coach

Time	Activity/Agenda	Acting Person	Venue	Remarks
14:00 – 14:30	Site visit at Colo Weir		Colo Weir	Explanation on site
14:30 – 15:30	Travel back to the hotel			
	Group 2: Public Participation and Bottom-Up Approaches in Water Resources Planning			
10:00 – 10:45	Travel to Gemawang Village	Accompanied by Ir. Rochadi Masyhadi, Dip.HE		By bus and coach
10:45 – 12:00	Site visit at Gemawang & dialogue with stakeholders involved in the PCM process	Hosted by Ir. Tri Rohadi, Dip.HE	Gemawang Village Office	Ir. Edhie Subagio, Dip.HE & Ir. Suwartono, Dip.WR
12:00 – 12:30	Lunch break			
12:30 – 14:00	Continue dialogue with stakeholders			
14:00 – 15:00	Travel back to the hotel			
Thursday 21 Feb	**Opening Program & IWRM Workshops**			
08:00 – 09:00	**Opening Program**		Ball Room III	
08:00 – 08:10	Opening remarks by the **NARBO Chairperson**	Dr. Ir. M. Basuki Hadimoeljono, M.Sc.		
08:10 – 08:40	Keynote presentation 1 by **Tokyo University**	Dr. Tsuneaki Yoshida		
08:40 – 09:00	Official address by the **HE Minister of Public Works**	Representative of Mr. Djoko Kirmanto, Dip.HE		
09:00 – 09:15	Coffee Break			
09.15-12.00 **Parallel Session**	**Workshop 1: Measuring the Performance of RBOs and River Basins**	Chaired: Mr. Wouter Lincklaen Arriens Facilitator: Mr. Ian Makin	Ball Room II	
	Opening remarks	Mr. Wouter Lincklaen Arriens		
	Lessons learned from the 4 pilot RBO peer reviews	Dr. Arlene Inocencio		
	Exploring ways to benchmark river basin performance	Mr. Christopher Morris		
	Facilitated discussion further development and applications	Panelists: K.W. Ivan de Silva (MASL, Sri Lanka), Tjoek Walujo Subijanto (PJT I, Indonesia), Edgardo Manda (LLDA, Philippines), Djendam Gurusinga (PJT II, Indonesia), H. Hutagalung Waldemar (PJT II, Indonesia), Sukontha Aekaraj (MONRE-Thailand), Dr. Salmah Zakaria (NAHRIM, Malaysia), Jan Yap (Consultant, World Bank, Indonesia) Dr. Arlene Inocencio (IWMI)		
	Summary and Way Forward	Mr. Wouter Lincklaen Arriens		

Time	Activity/Agenda	Acting Person	Venue	Remarks
09.15-12.00 **Parallel Session**	**Workshop 2: Managing Assets and Risks** – chaired by JWA	Chaired by Mr. Miichio Oota, Facilitated by Mr. Bambang Hargono	Ball Room III	
	Keynote: by Kyoto University, Japan	Dr. Kiyoshi Kobayashi		
	Issues and solutions related to the sustainable management of water resources infrastructure in NARBO member organizations – by JWA (Japan)	Mr. Masahiro Sugiura		
	Outline of International Center for Water Hazard and Risk Management (ICHARM) activities – by ICHARM (Japan)	Mr. Akira Terakawa		
	Outline of International Research and Training Center on Erosion and Sedimentation (IRTCES) activities – by IRTCES (China)	Ms. Zhang Yanjing		
	Community based (flood hazard) early warning system – by Jasa Tirta I Public Corporation (Indonesia)	Mr. Widyo Parwanto		
	Study on the asset management of dams focused on the reservoir sediment management – by JWA and Kyoto University (Japan)	Mr. Hiroyuki Nakajima & Dr. Tetsuya Sumi		
12:00 – 13:00	Lunch Break		Rice Crispy	
13:00 – 17:00 **Plenary Session**	**Workshop 3: Exploring New Challenges in IWRM**	Chaired: Dr. M. Basuki Hadimoeljono Facilitator: Dr. M. Amron	Ball Room III	
13:00 – 14:30	Addressing issues and challenges in water rights and water allocation/review of thematic workshop on water allocation and water rights – led by Asian Development Bank (ADB) with ADB Institute and JWA	Mr. Wouter Lincklaen Arriens		
14:30 – 15:00	Facilitating IWRM with civil society and private sector participation – by Bengawan Solo River Basin Development Agency (Indonesia)	Mr. Tri Rochadi		
15:00 – 15:15	Coffee break			
15:15 – 16:00	Restoring the health of rivers – by Asian River Restoration Network (ARRN)	Mr. Akira Wada & Mr Masafumi Ito		
16:00 – 16:25	Sharing IWRM experience from other regions – by International Network of River Basin Organizations (INBO)	Dr. Jean F. Donzier		
16:25 – 17:30	Discussion			
19:30 – 21:30	**Side event –** NARBO Indonesia Meeting		Kono Room	
Friday 22 Feb	**Third General Meeting**		Ball Room III	
07:30 – 08:00	Registration			
08:00 – 09:00	**Opening Program**			
08:00 – 08:15	Opening address – by **NARBO Chairperson**	Dr. Ir. M. Basuki Hadimoeljono, M.Sc.		
08:15 – 08.30	Remarks on Japan's support for IWRM in Asia – by **Director General of Water Resources, Ministry of Land, Infrastructure and Transportation (MLIT) Japan**	Mr. Shuhei Kazusa		
08:30 – 09:00	Keynote presentation on water and climate change – by **Director General, National Hydraulic Research**	Dr. Ir. Salmah Zakaria		

Time	Activity/Agenda	Acting Person	Venue	Remarks
	Institute of Malaysia (NAHRIM) and head of Asia Pacific Water Forum's candidate regional knowledge hub on climate change			
09:00 – 12:00	**Report on NARBO Activity 2006-2007**	Chaired by the Chairperson NARBO (Mr. M. Basuki Hadimoeljono), Vice-CP (Mr. Ivan da Silva), Secretary General (Mr. Yasutaka Hamada)		
09:00 – 09:05	Introduction by **ADBI**	Mr. Michitaro Nakai		
09:05 – 09:10	Overview – by **NARBO Secretary General**	Mr. Yasutaka Hamada		
09:10 – 09:25	Newsletter and Website – by JWA (Japan)	Mr. Akira Nishimura		
09:25 – 09:35	IWRM Training Programs – by Mahaweli Authority (Srilanka)	Mr. Elakanda Sudaharma		
09:35 – 09:50	Twinning Program – by Jasa Tirta II Public Corporation (Indonesia)	Mr. Djendam Gurusinga		
09:50 – 10:20	Coffee Break			
10:20 – 10:35	K-Water's collaboration activity in Citarum River Basin (including proposed K-Water training workshop in Taejon) – by K-Water (South Korea)	Dr. Ick Hwan Ko		
10:35 – 10:45	Thematic Workshop – by JWA and ADBI	Mr. Michitaro Nakai		
10:45 – 10:55	NARBO performance benchmark peer review – by ADB HQ	Mr. Ian Makin		
10:55 – 11:05	NARBO at the Asia Pacific Water Summit – by JWA (Japan)	Mr. Michio Oota		
11:05 – 11.10	NARBO Promotion Activity – by JWA	Mr. Shinobu Ifuji		
11:10 – 11.25	NARBO and Regional Water Knowledge Hubs – by ADB HQ	Mr. Wouter Lincklaen Arriens		
11:25 – 11:30	Report on NARBO Survey	Mr. Michitaro Nakai		
11:30 – 12:00	Plenary Discussion	NARBO Secretariat		
12:00 – 13:00	Lunch Break		Rice Crispy	
13:00 – 13:05	Introduction	Mr. Michitaro Nakai	Ball Room III	
13:05 – 13:30	**Introduction of New NARBO Members** Recognition, introduction and approval – by NARBO Secretariat	Mr. Wouter Lincklaen Arriens		
13:30 – 13:35	Overall Review on NARBO's Program 2008-2009	Mr. Yasutaka Hamada		
13:35 – 13:45	Briefing on Workplan 2008-2009	Mr. Michitaro Nakai		
13:45 – 15:20	**Briefing on New Programs (2008-2009)**			
13:45 – 13:55	Charting Progress and Facilitating Investment for IWRM (10 minutes)	Mr. Wouter Lincklaen Arriens		
13:55 – 14:05	Preparation of Guidelines for IWRM at River Basin Level (10 minutes)	Mr. Michio Oota		
14:05 – 14:15	Asian Regional Knowledge Hub on RBO Management (10 minutes)	Mr. Ari Setiadi, Ministry of Public Works (Indonesia)		
14:15 – 14:25	NARBO IWRM Training & Technical Advisory	NARBO Secretariat		

Time	Activity/Agenda	Acting Person	Venue	Remarks
	Committee (TAC) (10 minutes)			
14:25 – 14:35	Thematic Workshop on adaptation for Climate Change (10 minintes)	Indonesia NARBO		
14:35 – 15:20	Plenary Discussion (45 minutes)	NARBO Secretariat		
15:20 – 15:35	Coffee Break			
15:35 – 15:55	**NARBO Charter Revision** – by NARBO Secretariat	Chaired by: Vice-Secretary General NARBO (Mr. Michio Oota) & Mr. Wouter Lincklaen Arriens		
15:55 – 16:10	**NARBO Constitutional Body 2008-2009** Nomination and selection – by NARBO Secretariat			
16:10 – 16:20	Acceptance remarks – by incoming NARBO Chair, Vice-Chair, and Secretary General			
16:20 – 16:45	Wrap up session, plenary discussion with comments and commitments by NARBO members – led by **ADB Headquarters**	Chaired by Mr. Wouter Lincklaen Arriens		
16:45 – 16:55	Closing remarks 1 - by **NARBO Vice Chairperson**	Mr. Ivan da Silva (Srilanka)		
16:55 – 17:05	Closing remarks 2 – by **Directorate General of Water Resources, Ministry of Public Works, Indonesia**	Represented by Mr. M. Amron		
17:05 – 17.10	Photo session			
19:00 – 21:30	**Farewell Dinner**		Ball Room III	
Saturday 23 Feb	**Check out and Departure**			

Program 2: NARBO Workshop
"4th Thematic Workshop on Sustainable Management for Water Resources Infrastructures"

4th - 7th February 2008, Bangkok-Thailand

Date	I		II	III	IV
Monday, 4th February 2008 (Day 1)	**8.30 Registration of Participants** **9.00 Opening Remarks (DWR)** **9:10 Introduction of Participants** **9.20 Opening Speech (JWA)** **9.30 Introduction of 4th Thematic workshop (JWA)** **9.40 Schedule of 4th Thematic workshop**	**9:50-10:00 Tea Break**	**Report Session (1) , Action Plan** **10:00-11:00 BWDB (Bangladesh)** **11:00-12:00 IWM (Bangladesh)** **Facilitated by JWA**	**12:00-13:00 Lunch** **Report Session (2), Action Plan** **13:00- 14:00 PJT-I (Indonesia)** **14:00-15:00 MASL(Sri Lanka)** **Facilitated by BWDB/IWM**	**15:00-15:20 Tea Break** **Report Session (3) , Action Plan** **15:20- 16:20 DWR (Thailand)** **16:20-17:20 MARD&GORBO (Vietnam)** **Facilitated by PJT-I**
Resource persons	**DWR, JWA, OC**		**BWDB, IWM**	**PJT-I, MASL**	**DWR, MARD&GORBO**
Tuesday, 5th February 2008 (Day 2)	**Presetation Session** **Briefing of Field visit(OC)** **8:30-8:50 Briefing of Field Visit by OC** **8:50-9:40 Presenation "(Tentative) Sustainable Management for Water Resources Infrastructures of Japan" MLIT (Japan)** **Facilitated by JWA**	**9:40-10:00 Tea Break**	**Discussion Session 1** **10:00-11:30 Problem solution on "legal and/or institutional frame work" and "Organization" of participants country.** **Facilitated by MASL**	**11:30-13:00Lunch** **Discussion Session 2** **13:00-14:30 Problem solution on "Technical aspects for infrastructure management" of participant's country** **Facilitated by DWR**	**14:30-15:00 Tea Break** **Discussion Session 3** **14:30-16:00 Problem solution on "Social/Custum obstacles and restriction concerning implementation of Water resources management" and "Others" of Participant's Country** **Facilitated by MARD&GORBO** **16:00-16:30 Arrangement of Outcome by participants**
Resource persons	**MLIT**		**All participants**	**All participants**	**All participants**
Record			**OC of Thailand**	**OC of Thailand**	**OC of Thailand**
Wednesday, 6th February 2008 (Day 3)	**Site Visit (in Kachanaburi)**				
Resource persons	**OC of Thailand**				
Thursday, 7th February 2008 (Day 4)	**Site Visit (in Kanchanaburi)**	**Closing session**	**Movement**		
		***Closing Remarks(DWR)** ***Secretariat Announcement (JWA)**	**Go to Bangkok/ Departure of participant**		
Friday, 8th February 2008	Departure of Participants				

Program3: **1st Meeting of the NARBO Technical Advisory Committee**

I. Background

The Network of Asian River Basin Organizations (NARBO) was established in February 2004 to promote integrated water resources management (IWRM) in Asia Monsoon region at river basin level. As of February 2008, NARBO has 65 member organizations. During these four years since the establishment of NARBO, the network has organized some events including the NARBO IWRM Training to strengthen the capacity and effectiveness of river basin organizations (RBOs) in promoting IWRM and improving water governance.

At present, NARBO seeks expert advice to ensure that the quality and credibility of its annual IWRM Training Program will be at the level of a prestigious regional flagship program that will attract numerous participants who desire to join and successfully complete the program to benefit their work, and who are willing to share in the cost by paying a registration fee of $200 or more per person. NARBO can also benefit from periodic advice on the strategic direction of its activities to ensure optimal benefits to its members and a high standing among the water development community in the region. For this purpose, NARBO agreed at the 3rd NARBO General Meeting in Solo, Indonesia, to establish the Technical Advisory Committee (TAC).

The 1st TAC meeting is planned on 5 April 2008, back-to-back with a meeting of regional water knowledge hubs.

II. Date and Venue

Date: Saturday, 5 April 2008
Venue: Singapore WaterHub
80 Toh Guan Road East, Singapore, 608575
Tel: +65-68852555
Fax: +65-68852526
(http://www.pub.gov.sg/waterhub/Vtour/Contact_Us.htm)

III. Participants

Representatives from the following organizations will be invited to attend the 1st TAC meeting:

- International Centre for Water Hazard and Risk Management (Japan)
- K-Water (Korea)
- International Water Management Institute (Sri Lanka)
- National Hydraulic Research Institute of Malaysia
- Ministry of Public Works, Indonesia
- Yellow River Conservation Committee (Peoples' Republic of China)
- International Water Centre (Australia)
- World Wide Fund for Nature, People's Republic of China Programme
- International Union for Conservation of Nature, Bangladesh Country Office
- UNESCO-IHE Institute for Water Education (The Netherlands)
- Lee Kuan Yew School of Public Policy, National University of Singapore

- NARBO Chairperson
- NARBO Vice Chairperson
- NARBO Senior Advisers
- NARBO Secretariat

IV. Provisional Program

Time	Activity
Friday, 4 April	Welcome Dinner with Introduction by NARBO Chair and Secretariat
Saturday, 5 April	
08:30 - 08:45	Registration
08:45 - 09:00	Opening and Selection of TAC Chairperson
09:00 - 10:00	**Learning from Experience in IWRM Training:** Presentations from WWF, IUCN, and UNESCO-IHE (15 minutes each, followed by 5 minutes discussion)
10:00 - 10:20	Coffee Break
10:20 - 11:40	Presentations (cont'd) from IWMI, K-Water, International Water Center, and Aguajaring/CapNet
11:40 - 12:00	Plenary Discussion
12:00 - 13:00	Lunch
13:00 - 15:30	Discussion on Revamping the NARBO IWRM Training Program - Objectives, target participants, qualifications of applicants, requirements for certification, guidelines for organization of the program, venue, host organizations, program scope and detailed content, assignments and ratings, program director and trainers, financing, and frequency
15:30 - 15:45	Synthesis and Next Steps by ADB's Wouter Lincklaen Arriens
15:45 - 16:00	Closing Remarks by NARBO TAC Chairperson and NARBO Vice Chairperson

V. Contact Persons

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NARBO 2nd Thematic Workshop - Water-Related Disaster and Its Management in Asian Countries
Program 4:

Date	Sessions 08:00-8:50 I	08:50-9:40 II	09:40-10:00	10:00-10:50 III	10:50-11:40 IV	11:40-13:00	13:00-13:50 V	13:50-14:40 VI	14:40-15:00	15:00-15:50 VII	15:50-16:40 VIII
Day 0 **6 October 2008** **Resource Person or Moderator**	**Participants arrival** Mr. Roque Delas Alas / Ms. Aida Samiano							**[14:30-17:00]** **Secretariat Meeting** Host Secretariat & NARBO Secretariat Only		**[17:00-18:00]** **Introductions of participants** **Orientation on the program & field trip**	**[18:00-20:00]** **Welcome Reception (dinner)** Host Secretariat & NARBO Secretariat
Day 1 **7 October 2008**	**Opening Session** GM Edgardo C. Manda, LLDA; Mr. Wouter L. Arriens, ADB; Mr. Michio Ota, JWA; Highlights of 1st Workshop, NARBO Secretariat	**Special Lecture and discussion (1)** - Man made disaster management - Laguna de Bay Region, Philippines	**Break**	**Special Lecture and discussion (2)** - Pampanga River Basin and Allied Projects	**Special Lecture and discussion (3)** - The Role of the RBO as a Facilitator of Water-Related Disaster Management in the Rive Basin	**Lunch**	**Presentation & Discussion (1)** Presentation and discussion to share experience among member countries on disaster management - Bangladesh	**Presentation and discussion (2)** Presentation and discussion to share experience among member countries on disaster management - Indonesia	**Break**	**Presentation and discussion (3)** Presentation and discussion to share experience among member countries on disaster management - Malaysia	**Group Work (1)** Brief explanation of this work and grouping
Resource Person or Moderator	Mr. Alicia E. Bongco Philippines, Host Secretariat	GM Edgardo C. Manda, LLDA, Philippines		Engr. Arlette Guzman, DPWH, San Fernando/ Ms. Mariton Bornas, Philvocs	Dr. Neil Britton ADB		Delegate fromVietnam (& NARBO Secretariat)	Delegate from Thailand (& NARBO Secretariat)		Delegate from Sri Lanka (& NARBO Secretariat)	NARBO Secretariat & ICHARM
Day 2 **8 October 2008**	**Special Lecture and discussion (4)** - Integrated Flood Risk Management for Urbanized River Basins in Japan	**Special Lecture and discussion (5)** - Crisis Management in Japan Water Agency	**Break**	**Presentation and discussion (4)** Presentation and discussion to share experience among member countries on disaster management - Philippines	**Presentation and discussion (5)** Presentation and discussion to share experience among member countries on disaster management - Sri Lanka	**Lunch**	**Presentation and discussion (6)** Presentation and discussion to share experience among member countries on disaster management -Thailand	**Presentation and discussion (7)** Presentation and discussion to share experience among member countries on disaster management - Vietnam	**Break**	**Providing Other Topic & Group Work (2)** - Presentation of Study Visit - Further discussion on Disaster Risk Managemant by category	
Resource Person or Moderator	Mr. Akira Terakawa, ICHARM, Japan	Mr. Michio Ota, Mr. Akira Nishimura Japan Water Agency		Delegate from Malaysia (& NARBO Secretariat)	Delegate from Philippines (& NARBO Secretariat)		Delegate from Indonesia (& NARBO Secretariat)	Delegate from Bangladesh (& NARBO Secretariat)		NARBO Secretariat, ICHARM & Host Secretariat	
Day 3 **9 Oct 2008** **Resource Persons**	**Study Visit** - Pampanga River Guides and resource persons from Study Visit Organization Team, Philippines Secretariat and local institutions										
Day 4 **10 October 2008**	**Group Work (3)** Further discussion on Disaster Risk Managemant by category (continued.)		**Break**	**Group Work (4)** Further discussion on Disaster Risk Managemant by category (continued.)		**Lunch**	**Group Work (5)** Presentations on the result of Group Work		**Break**	**Concluding Session & Closing Ceremony** -Presentation of assignment for the next (last) workshop -Presentation of certificates	
Resource Person or Moderator	Host Secretariat, ICHARM & NARBO Secretariat			Host Secretariat, ICHARM & NARBO Secretariat			Host Secretariat, ICHARM & NARBO Secretariat			NARBO Secretariat & Host Secretariat	
11 Oct 2008 **Resource Person or Moderator**	Mr. Roque Delas Alas / Ms. Aida Samiano										

Updated: 23 September 2008

Program 5 : Regional Meeting on Hydro-informatics and Developing Knowledge Hub Networks

15-17 October 2008, Zhengzhou, People's Republic of China
Hosted by the Yellow River Conservancy Commission

Tentative Program

Wednesday 15 October

09:00 – 12:00 Plenary opening session with presentations by:

- Vice-Minister Hu Siyi, Ministry of Water Resources, China
- Li Guoying, Commissioner of the Yellow River Conservancy Commission
- Speakers from the Network of Asian River Basin Organizations (NARBO), Asian Development Bank, and UNESCO-IHE Institute for Water Education

12:00 – 12:30 Launch of the Center for Hydro-informatics in River Basins (CHIRB) at the Yellow River Conservancy Commission as Regional Water Knowledge Hub on Decision Support Systems for River Basin Management

12:30 – 14:30 Lunch break

14:30 – 18:00 *Track 1 for IWRM Project Managers*:
Presentations and discussion of experience in the application of hydro-informatics to introduce integrated water resources management (IWRM) in the Yellow River Basin (for water allocation, flood management, pollution control, and climate change)

Track 2 for Knowledge Hub Managers:
Facilitated meeting on improving hub business plans, developing the hub networks, and presentation and review of business plans by candidate regional water knowledge hubs

Thursday 16 October

09:00 – 12:30 *Track 1 for IWRM Project Managers*:
Presentations and discussion of experience in the application of hydro-informatics to introduce integrated water resources management (IWRM) in Asian Rivers (introducing applications in selected river basins in Asian countries)

Track 2 for Knowledge Hub Managers:
Continuation of first-day meeting

12:30 – 14:30 Lunch break

14:30 – 17:00 *Track 1 for IWRM Project Managers*:
Brief presentations by CHIRB partners on their experience and services to the knowledge network on hydro-informatics in river basins, followed by discussion on meeting client needs and expectations by CHIRB, its partners and the network on applying hydro-informatics in river basins

Track 2 for Knowledge Hub Managers:
Final session

Friday 17 October

- *Study visit* to the 3 Yellow Rivers (natural, physical, and digital), including the flood management center, water allocation and remote control center, erosion management center, hydraulic laboratory, hydrological station, diversion gates, and standardized embankments (linkages will also be explored with the topics of urban water management, water quality management, and adaptation to climate change), and the Xiaolangdi multipurpose dam project on the Yellow River.

Targeted Participants

- APWF *KnowledgeHubs* managers and staff, candidate hubs, member organizations of NARBO, government project directors and senior staff of projects introducing IWRM in river basins in Asia, APWF lead organizations and secretariat, development partners in the region, and civil society, including academe, from People's Republic of China and other countries in the region, and others to be discussed.

Meeting Secretariat

- **Yellow River Conservancy Commission**

  For meeting program and arrangements:
  Mr. SUN Yangbo
  Deputy Director, International Cooperation Division
  Department of International Cooperation, Science and Technology
  Tel: +86 371 6602 8261
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For invitation letters, visa support, and logistic arrangements:
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- **Asian Development Bank**

For meeting program and coordination with knowledge hubs:
Mr. Wouter LINCKLAEN ARRIENS
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For supplementary invitation letters to ADB-supported participants:
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Program 6: Regional Workshop on Developing Partnerships for Water and Climate Change Adaptation

Hotel Equatorial Bangi-Putrajaya, Selangor, Malaysia, 1st – 5th December 2008

Day	1-DEC	Day	2-DEC	3-DEC	4-DEC	5-DEC
Theme	OPENING PROGRAM AND HUB LAUNCH	**Theme**	CURRENT STATUS IN THE REGION	STUDY VISIT	DEVELOPING STRATEGIES AND PARTNERSHIPS	DEVELOPING ACTION PLANS FOR 2009 WITH THE KNOWLEDGE HUB
8:30 - 9:00	Registration	8:30 - 9:00	Recap of previous day	Climate Change Adaptation in the Selangor River Basin *Hosted by the RBO of the Selangor River Basin* Briefings On-site discussions regarding water supply, agriculture, aquaculture, environment, salinity intrusion, agro-tourism, and flood risk management	Recap of previous day	Recap of previous day
09:00 – 9:30	Opening Remarks by NARBO Representatives: NARBO Vice-Chair Director General of the Japan Water Agency	09:00 – 9:30	Water and Climate Change Adaptation in Australia		Briefing by Chief Facilitator on Workshop Process	Briefing by Chief Facilitator on Workshop Process
9:30 - 10:00	Presentation by FAO on Climate Change Impacts on Agriculture	9:30 - 10:00	Climate Change Adaptation for Water Resources Management in the Brantas River Basin, Indonesia		Parallel workshop sessions on 3 important topics: 1. Projections 2. Impact Assessments 3. Adaptation Strategies	Parallel workshop sessions on action plans for the 3 topics: 1. Projections 2. Impact Assessments 3. Adaptation Strategies
10:00 - 10:15	Tea break	10:00 - 10:30	Climate Change Adaptation in Laguna Lake, Philippines		Workshop sessions include brief country and basin case study presentations under each respective topic, from Bangladesh, Laos, Nepal, Pakistan, Indonesia, Sri Lanka, and others	Parallel workshop sessions for Action Plans in 2009

Day	1-DEC	Day	2-DEC	3-DEC	4-DEC	5-DEC
10:15 – 11:45	Opening and Knowledge Hub Launch Ceremony Keynote Presentation by ADB on Partnerships for Water and Climate Change Adaptation	10:30 – 10:45	Tea break		Tea break	Tea break
11:45 – 12:15	Team Japan: Japan's Policy for Climate Change Adaptation in the Water Sector	10:45 – 11:15	Climate Change Adaptation Experience by the Asia-Pacific Typhoon Committee		Workshop tasks for the day (morning and afternoon): 1. Present case studies 2. Compile client needs 3. Recognize strategies 4. Develop partnerships	Parallel workshop sessions compile expectations for products and services to be delivered by the regional knowledge hub NAHRIM and its partners
12:15 – 12:45	Water and Climate Change Experience in India (tbc)	11:15 – 11:45	Climate Change Adaptation in the Yom River, Thailand		Workshop Sessions (continued)	Parallel workshop sessions on expectations from the hub (continued)
12:45 - 14:00	Lunch	11:45 – 12:15	Presentation by ESCAP on Eco-efficient Water Infrastructure in Climate Change Adaptation		Workshop Sessions (continued)	Parallel workshop sessions on expectations from the hub (continued)
Theme	CURRENT STATUS AND ONGOING INITIATIVES	12:15 – 12:45	Water and Climate Change Adaptation in Viet Nam		Workshop Sessions (continued)	Parallel workshop sessions on expectations from the hub (continued)
14:00 – 14:30	Team Japan: JICA Support for Climate Change Adaptation in Developing Countries	12:45 - 14:00	Lunch		Lunch	Lunch

Day	1-DEC	Day	2-DEC	3-DEC	4-DEC	5-DEC
14:30- 15:00	ICIMOD Support for Climate Change Adaptation in Mountainous Areas	**Theme**	CURRENT STATUS IN THE REGION		WORKSHOP SESSIONS	CONCLUDING SESSIONS
15:00 – 15:30	Climate Change Adaptation in the Chu and Talas River Basins, Central Asia	14:00 – 14:30	Team Japan: University of Tokyo Support for Simulation of Climate Change Impact on Water Resources		Presentation on Dynamic Downscaling for Climate Change Projections	Regional Knowledge Hub NAHRIM presents partners, products and services
15:30 – 15:45	Tea break	14:30- 15:00	Team Japan: ICHARM Support for Simulation of Climate Adaptation in Flood Management		Workshop Sessions	Regional Knowledge Hub NAHRIM presents partners, products and services
15:45 – 16:15	Water and Climate Change Projections and Impact Assessments in China	15:00 – 15:30	Team Japan: JWA Support for Water and Climate Change Adaptation		Workshop Sessions	Plenary discussion on developing NAHRIM's knowledge network of clients and partners
16:15 – 16:45	Water and Climate Change Adaptation Strategies in China	15:30 – 15:45	Tea break		Tea break	Tea Break
16:45– 17:15	Plenary Discussion	15:45 – 16:15	Water and Climate Change Adaptation in Thailand: Projections and Adaptation Plan (tbc)		Workshop Sessions	Plenary discussion on developing NAHRIM's knowledge network of clients and partners
Day	**1-DEC**	16:15 – 16:45	Water and Climate Change Projections and Adaptation in Malaysia		Reporting to Plenary and Facilitated Discussion	Wrap-up Session on Strategies, Partnerships and Actions in 2009
Theme	OPENING PROGRAM AND HUB LAUNCH	16:45– 17:15	Plenary Discussion		Reporting to Plenary and Facilitated Discussion	Closing reflections by participants and organizers

Program 7 & 8:

Whole Program (5th IWRM Training & Study Meeting on IWRM including Water-Related Disaster)

Date	Training on IWRM			Study Meeting on Water-Related Disaster			Staff from JWA	
	Morning	Afternoon	Evening	Morning	Afternoon	Evening	**Ota**	**Nishimura**
Mon 16 Feb				Arrival	Arrival	Arrival	Arrival	Arrival
Tue 17 Feb	Participants Arrival	Participants Arrival	Participants Arrival	**Work** Reinforce Action Plan	**Discussion & Work** Discuss Action Plan & Interim Report	**Discussion & Work** Discuss Action Plan & Interim Report	Discussion & Work	Discussion & Work
Wed 18 Feb	**Opening Ceremony** Introductions of the training Overview of IWRM	**Lecture on IWRM** IWRM Guidelines Overview of VGTB Basin and RBO Activities	Welcome Dinner	Same as the Training	Same as the Training	Same as the Training	Secretariat	Secretariat
Thu19 Feb	**Lecture(Topics on VGTB Basin)** Environment, Coastal Issues, **Flooding,** Biodiversity and Urban Water Supply	**Lecture(Topics on VGTB Basin)** Investment programs, Agriculture, Social and economic issues, Hydro power schemes	Participant Poster Session	Same as the Training	Same as the Training **(Occational Time)** **Discussion & Work** Follow-up work on Feb 17	**Discussion & Work** Follow-up work on Feb 17	Secretariat / Discussion & Work	Secretariat / Discussion & Work
Fri 20 Feb	**Study Visit (Upper Catchment)**	**Study Visit (Upper Catchment)**	Day 1 Study Visit De-Briefing	Same as the Training	Same as the Training	**Discussion & Work** Follow-up work on Feb 17	Secretariat / Discussion & Work	Secretariat / Discussion & Work
Sat 21 Feb	**Study Visit (Lower Catchment)**	**Study Visit (Lower Catchment)**	De-Brief on Day 2	Same as the Training	Same as the Training	**Discussion & Work** Follow-up work on Feb 17	Secretariat / Discussion & Work	Secretariat / Discussion & Work
Sun 22 Feb	REST DAY	REST DAY	De-Brief on whole Study Visit	Departure	Departure	Departure	**Secretariat**	Secretariat & Departure
Mon 23 Feb	**Group work**	**Participant presentations and Lecture** Keys for Success for IWRM Lessons from Japan	Pre-dinner event				**Secretariat**	
Tue 24 Feb	**Participant Presentations** Keys for Success for IWRM	**Lecture and Discussion** Monitoring, Evaluation, Reporting and Improvement in IWRM	Individual Time to prepare final individual				**Secretariat**	
Wed 25 Feb	**Individual Presentations**	**Individual Presentations** **Workshop evaluation**	Farewell Dinner and presentation of certificates				**Secretariat**	
Thu 26 Feb	Participants Depart	Participants Depart					**Secretariat & Departure**	

VGTB= Vu Gia - Thu Bon River

The NARBO Newsletter
(Network of Asian River Basin Organizations)
http://www.narbo.jp/

Activities (TWINNING PROGRAM)

THE NARBO TWINNING PROGRAM - 2007

Mulianingsih*

The Lucky of Me

Traveling is one of my favorite activities. I have visited some European and Asian countries before and for the next holiday destination I have called some travel agents at the beginning of July 2007 to get information about Japan. I was very excited when, a few days later, I got an assignment to leave for Japan for the personnel exchangram between Japan WaterAgc
Jasa Tirta (T, Indonesian NARBO). Certainly, I felt very lucky. It would be a grat “holiday” for me: free of charge 30 days stay in Japan!!!

I arrived at Narita airport on 7th august 2007 at around 9 o’clock a.m. Along with my two colleagues and one digital camera, I started my adventure. A big billboard of Yokoso Japan (means Welcome to Japan) was the first picture I took in the airport.

On the same day in the International Affairs Division of JWA Hearter Office, we were explainedoutdule of our activities and presented to the office’s members. The warm acceptance they showed to us made me feel like at home.

The Activities

• Site visits

Out of seven river basins exist in Japan we were scheduled to visit four of them, namely Tone, Kiso, Yodo and Yoshino river basins. There are many objects to see in those areas, but due to limited time, JWA had arranged the following places to visit:

- Gunma Canal Redevelopment, Operation and Maintenance Office (Tone River System):
  Visits to canal facilities, officefcilities and Land ImprovementDistrict Office
- Numata Dam Operation and Maintenance Office (Tone River System):
  Visits to Yagisawa Dam, Naramata Dam and the Information Center of Tokyo Electric Power Company
- Research Center:
  Visit to some hydraulic models and other research facilities
- Tokuyama Dam Construction Office (Kiso River System):
  Vis*it to dam site: explanatio*n on first filling of reservoir
- Nagaragawa Estuary Barrage Operation and Maintenance Office (Kiso River System):
  Visit to the barrage site.
- Lake Biwa Operation and Maintenance Office (Yodo River System):
  Lake Biwa by boat and visit to water quality monitoring station, Seta Weir, Lake Biwa Museum and drainage facilities (sluice gates and pumping station)
- Kagawa Canal Redevelopment, Operation and Maintenance Office

Thick plantation at Naramata Reservoir Area

Information exchange between JWA and PJT

*) Hydrologist / Reservoir Operation Specialist, Jasa Tirta I Public Corporation

Topics of this issue

drainage facilities (sluice gates and pumping station)

- Kagawa Canal Redevelopment, Operation and Maintenance Office (Yoshino River System):

Visits to embankment site, canal intake site, canal rehabilitation, regulation ponds, environment protection facilities and Kagawa Canal Museum.

• Experience/ information sharing

The experience/ information sharing is conducted in the form of formal presentation (by both sides: JWA and PJT) as well as informal discussion that took place not only in a meeting room but also in the car or train that brought us from one place to another. The discussions moved from the most serious issues such as the modern IWRM in Japan, water rights, environment protection

Asakusa Temple

etc. to the simplest ones e.g. about the food we eat and other things happen in our daily life.

• Other activities

We never stop strolling except when the night came, even on Saturdays and Sundays. It was like there would be no tomorrow. The three of us had the same mission: we had to use time effectively to visit as many places as we could during our stay in Japan. We visited museums, shopping centers, public parks, temples or just walking along small streets with Japanese style houses. Souvenirs hunting were the most taking time's activity (we never been egoists: we always think about giving something to our family, colleagues and friends ……..)

What Impressed Me?

Followings are things that leave special impression on me after my 30 days roaming around Japan:

• Green forest and blue water

The beautiful scene of clean water and green trees could be seen not only on the upper areas but also at the lower part of the river basins. Naramata Dam, Yagisawa Dam, Tokuyama Dam and Nagaragawa Estuary Barrage are the examples.Those places show me how nature preservation is particularly considered in the water resources development in Japan.

The clear water of Tokuyama Dam

• Modern facilities

Most of the project sites/ offices that we visited are equipped with modern facilities (e.g. high technology monitoring and communication system/ data processor). Those facilities make it possible to do the operation and maintenance job more practically, simpler, with less effort and less staff needed.

• Good coordination between interrelated organization

Japan's (JWA's) river basin management system provides examples of the importance of good coordination between all of the related parties in the whole country (central and local government, JWA, water users). In each river system in Japan there are some different facilities (dams, water intakes, and monitoring stations) which are managed by different organizations.

With smooth coordination between those organizations and with the same mission: put **goodness for everyone** on the highest priority, the river water could be managed/ controlled (in floods, droughts as well as in normal condition) easily and effectively.

• Public relation tools

PR goals are provision of information to build mutual understanding to attract positive cooperation to support overall company's activities.

Among the PR tools that are used in Japan/ JWA, there is one that I found interesting: the use of paper fan to convey information, suggestion etc to the public: low cost and usable (especially in hot weather).

• High working-spirit of the JWAs members (9.00 a.m. - 12.00 p.m. working hours !!!!!!)

Last Words

Now I'm back to my country, to my house, to my job in PJT I. I'm happy, of course, that I meet again with my family, my colleagues and my friends, but there is one thing that I'd like to tell you all: I have one more happiness because in my age I still have the chance to see another world. Thanks to PJT I and JWA. Thanks to Anton and Nugroho for being a good company. Thanks to Anton and Nugroho for being a good company.

Activities (Thematic Workshop)

FIRST THEMATIC WORKSHOP IN ASIAN COUNTRIES ON WATER-RELATED DISASTER & ITS MANAGEMENT 25-29 November 2007

Alicia E. Bongco*

Natural disasters such as floods, droughts, landslides, volcanic eruptions, earthquakes, tsunami, typhoons, hurricanes, cyclones and other extreme weather phenomena have hit Asia in recent years. These disasters have inflicted catastrophic losses to human lives and to the economies of countries of NARBO member organizations.

The NARBO General Meeting in Indonesia last February 2006 has considered the conduct of thematic workshops as one of the important activities of NARBO. Based on the updated NARBO Action Plan of 2006-2007, NARBO carried-out the first of the series of three workshops on the theme **"Water-Related Disaster and Its Management in Asian Countries."**

The 1st thematic workshop on the aforesaid topic was held from 26 to 29 November**,** 2007 in Yogyakarta, Indonesia and participated in by 8 countries (Indonesia, Lao PDR, Malaysia, Pakistan, Philippines, Sri Lanka, Thailand and Vietnam). The goal of the workshop is to develop capacity of key organizations for water-related disaster management by (i) providing basic concepts and principles; (ii) sharing country challenges and strategies; and (iii) formulating an action plan. The River Basin of Yogyakarta, ADB, ADBI, and JWA hosted the event.

On the opening day, Dr. Neil Britton, Senior Disaster Risk Management Specialist of the ADB gave a special presentation titled "Sharing ADB's Experience in Disaster Management" while Mr. Hiroyoshi Tanaka, Water Resource Specialist discussed the Man-made Disasters in Japan. The field visits to Mt. Merapi and the famous temples devastated by volcanic eruptions were organized by the Host RBO headed by Mr. Bambang Hargono. Presentations were made in the 3rd and 4th days of the workshop.

Every participant presented a country/river basin situation on water-related disasters that happened for the last 10 years. At the end of every presentation, there were active discussions and some clarifications. There were also exchanges of experiences on how disasters are managed in the respective countries of the participants. It was worth mentioning that the participants had active discussions even beyond or outside of the classroom, which was an indication of the eagerness of each one to learn from each others experiences. Added attraction to the participants were the presentation of some actual footages of the disaster as they happened that were showed by the tri-media particularly, the television.

Current situation and issues related to environmental management, land use planning, inter-organization factors, community-based management including dam maintenance and capacity building concerns were the common concerns identified by the participants for this 1st workshop.

The workshop also included a guided field visit to the important places in Yogyakarta which was affected by major disasters. The participants were informed that the Indonesian Department of Culture and Tourism and the UNESCO and selected international experts in the field of conservation and structural engineering provide technical recommendation for the restoration works and established global partnership for the post-earthquake rehabilitation and cultural heritage. The places are as follows:

+ *Mt. Merapi - (Gunung Merapi)* - The participants visited the mountain and the Gendol Sabo Dam project which is now being implemented inorder (a) to protect and secure the inhabitants from the

Mt.Merapi -(Gunung Merapi)-

Kasongan Handycraft Center in Bantur

Session in the workshop

*) Laguna Lake Development Authority, Philippines

threat of lahar/debris flow; (b) to repair and rehabilitate the irrigation facilities damaged by lahar/debris flow; and (c) to conduct investigation, planning, design and execution of volcanic debris control facilities.

+ *Sambisari Temple* - The host organizer showed to the participants this temple which was built sometime during the end of the 9th century. Additional information provided to the participants was that the farmers in 1966, discovered the temples hidden and buried by volcanic ash and dust, 6 meters below the surface of the surrounding land. The temple, now considered one of the UNESCO World Heritage is undergoing rehabilitation to restore its original state.

+ *Kedulan Temple* - This superstructure was so amazing. The Hindu temple was discovered buried beneath deposits of mud that had flowed down the southern slopes of Mount Merapi due to volcanic activity. The work of art and crafting of the restoration of the images of goddesses on the outfacing walls of the perimeter that surrounds the central shrine is astonishing and extraordinary.

+ *Prambanam Temple* - This is the most famous and magnificent of Central Java's temples or more precisely, complex of temples. The participants witnessed the on-going rehabilitation of the temple / cultural heritage which was severely damaged.

+ *Borobudor Temple* - a majestic temple and considered one of the

Prambanan Temple

seven wonders of the world and serves as an awe-inspiring testament to the hard work, determination, and faith of its eighth and ninth century creators. It is a representation of the Buddhist concept of the universe and life of Buddha. The monument overlooks a green valley encircled by a ring of mountains.

+ *Kasongan Handycraft Centre in Bantul* - The participants also had discussion with some of the farmers and small-scale businessmen producing ceramics at the Bantul District. They shared the experiences encountered when Mt. Merapi erupted and how it impacted their livelihood, destroyed their houses and damaged the irrigation canals while the participants actively interacted with them and also exchanged some views.

The workshop clearly manifested the great cooperation of the participants in sharing their experiences on water-related disasters in each country. The first workshop identified the current situation and obstacles faced in dealing with the disaster. It is envisioned that in the 2nd workshop the sound practices and risk assessment approaches are presented and a case study of what a good (flood) risk program for the community will be developed for the 3rd workshop.

Finally, in behalf of the participants, we would like to express our appreciation to the hospitality of Serayu-Opa River Basin Office of Yogyakarta lead by Mr. Bambang Hargono and his staff members, Mr. Budi S Wignyosukarto, JWA, NARBO and ADB for support to all the participants and other concerned organizations for their support, hard work and successful conduct of the workshop.

Participants in the 1st thematic workshop

From the secretariat

The 3rd Southeast Asia Water Forum

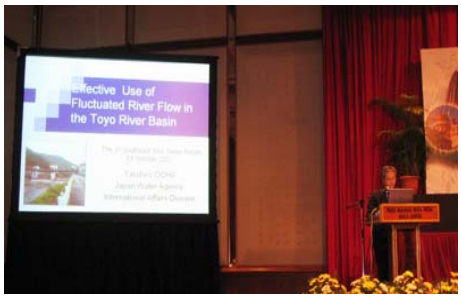
Akira Nishimura*

1.Introduction

Date: October 22-26, 2007
Venue: Putra World Trade Center (Kuala Lumpur, Malaysia)
Website: http://3rdseawf.water.gov.my/

Session chaired by Mr. Ivan de Silva

The 3rd Southeast Asia Water Forum held in Kuala Lumpur, Malaysia was successfully completed. The Organizing Committee of the Forum mainly consisted of Department of Irrigation and Drainage (DID) that is a NARBO member and Malaysia Water Partnership (MyWP).



NARBO secretariat staff (Mr. Ochii)'s presentation

2. Contribution by NARBO

NARBO secretariat invited Mr. Ivan de Silva, who is the Vice-Chairperson of NARBO as well as Director General of Mahaweli Authority of Sri Lanka, to the Forum. He chaired a session held on October 24 whose title is "Water Resources and River Basin Management Issues", and had a presentation whose subject is "Present State and Future Prospects of NARBO". Some NARBO secretariat staff also had presentations in the session.

*) NARBO secretariat (Japan Water Agency)

NARBO Website -Access log since June 2006 - December 2007-

Summary
Regarding the NARBO website, JWA was suggested at the previous NARBO secretariat meeting on June 2007, gathering statistics and determining which pages or topics on the website are popular.
The following shows some trends of visitors on NARBO website that was analyzed by a statistical processing based on daily logs (raw data).
The Figure 1 shows a change of access count to the top page of NARBO website. Recently over 1,400 visitors usually access to our website but monthly fluctuation is large.

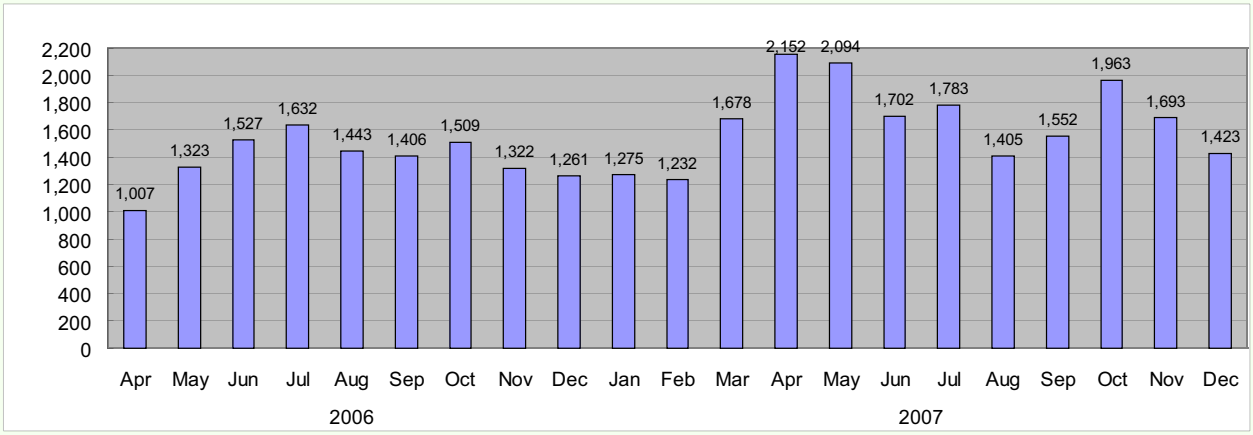


Figure 1. NARBO Website Top page Access

Procedure of Data Processing

1) There is a daily log on record which includes a domain name of visitor and the information of individual web page.
2) All of the existing web pages are classified into tentative 13 categories such as the Figure 2.
3) The daily log is converted into monthly statistic data in accordance with above 13 categories.
4) Especially, the category “Focus” is divided into 6 topics to investigate the trend in more detail.

Results

The Figure 3 shows a trend of popularity among the 13 categories. The most accessed category is the “Focus”, and the “Event” follows it next.
The Figure 4 shows a trend of popularity especially on the category “Focus”. The category of “Picture” and “Twinning Program” are very popular stably among the category “Focus”.

Please kindly give us your recommendation or opinion as regards this matter or article.

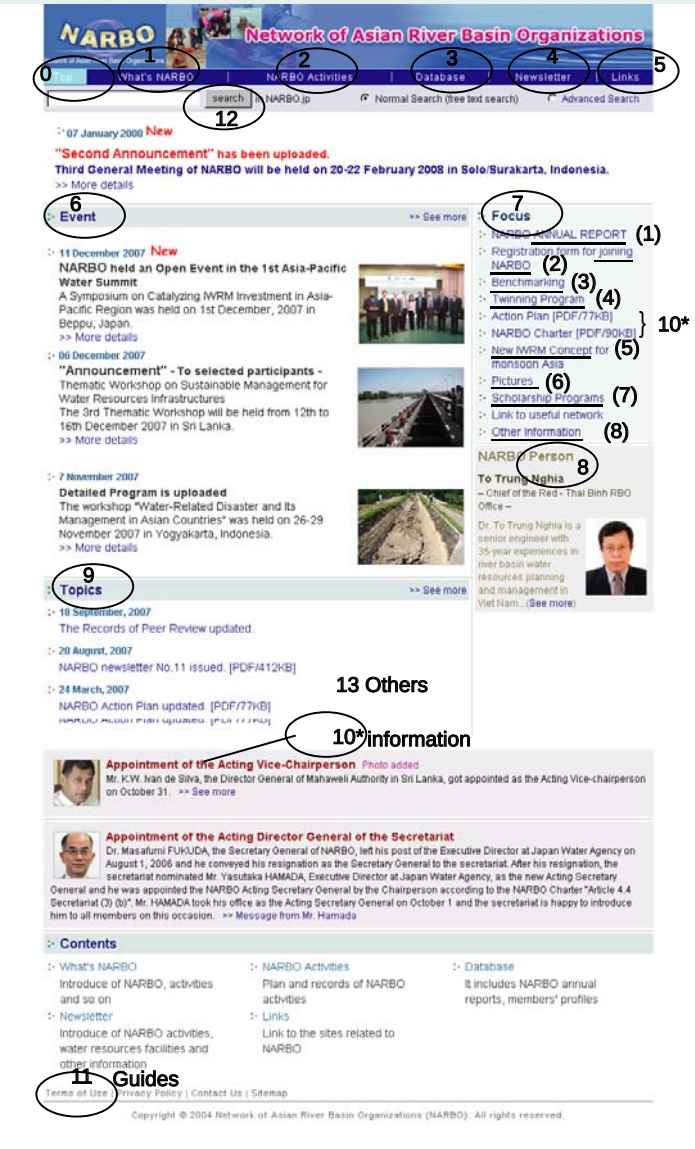


Figure 2. NARBO Web Page Category

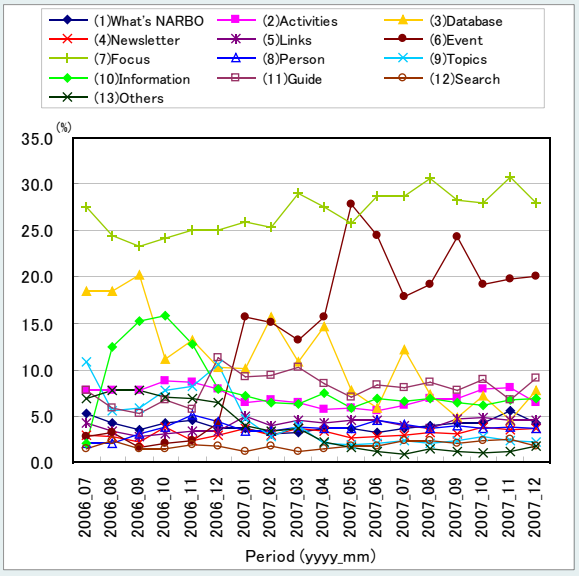


Figure 3. Website view trend categorized into 13

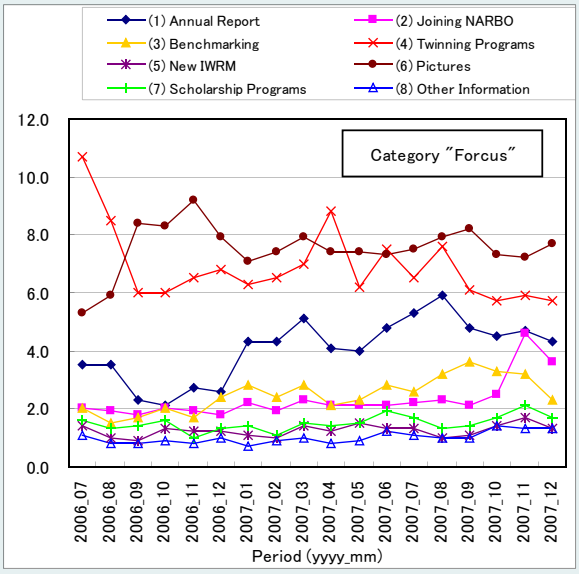


Figure 4. Website view trend on the category “Focus”

NARBO Newsletter
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http://www.narbo.jp/

Activities (GENERAL MEETING)

Report on 3rd General Meeting of NARBO

Michio Ota*

1. Date and Venue

Date: February 20-22, 2008
Venue: The Sunan Hotel Solo (Solo/SurakCentral Java Province, Indonesia)

2. Host Organization

(i) Jasa Tirta I Public Corporation; (ii) Research Center for Water Re so urces; and (iii) Indonesia NARBO Secretariat

3. Number of the Participants

Approx. one hundred people from present NARBO members and related organizations participated.

4. Program

The 1st day (February 20): Study Visit

Participants are divided into 2 groups. One group visited a reservoir and a weir in Bengawan Solo Basin and the other had a dialogue with water users and stakeholders in the Basin (see the next page for programs or potographs).

Participants

5. Main issues discussed in the General Meeting

(1) NARBO Work Plan 2008-2009

•IWRM Training, Thematic Workshop, Performance Bench-marking Activities and Twinning Program should be continued with improvement and information of the activities should be shared among members through the website and newsletter.

•New activities on IWRM will be launched on the basis of the result of Asia Pacific Water Summit.

*) Vice-Secretary General of NARBO, Japan Water Agency

Topics of this issue

Program

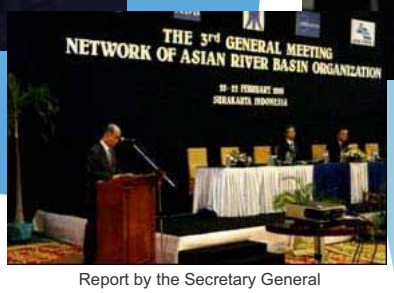
● **The 2nd day (February 21): Workshop on Integrated Water Resources Management (IWRM)**

8:00	**Opening Program** • Welcome Remarks (NARBO Chairperson) • Keynote presentation on Japan's Experiences in Water Resources Management (Prof. Tsuneaki Yoshida, University of Tokyo, Japan) • Official Address (Representative of the Minister of Public Works, Indonesia)	
9:30 12:20	**Workshop 1**: **Measuring the Performance of RBOs and River Basins** (led by ADB, IWMI) Panelist: PJT II(Indonesia), MASL(Sri Lanka), LLDA(Philippines), RRBO(Viet Nam), MONRE(Thailand), PJT I(Indonesia), NAHRIM(Malaysia), World Bank	**Workshop 2: Managing Assets and Risks** (led by JWA) Panelist: Kyoto University(Japan), ICHARM(Japan), IRTCES(China), PJT I(Indonesia)
13:10 17:00	**Workshop 3: Exploring New Challenges in IWRM** (1) Water rights and water allocation (ADB) Panelist: ADBI, PJT II(Indonesia), NWRB(Philippines), MASL(Sri Lanka), MONRE(Thailand), YRCC(China), DoWR(Orissa Sate, India) (2) Facilitating IWRM with civil society and private sector participation (Indonesian NARBO) (3) Restoring the health of rivers (ARRN) (4) Sharing IWRM experience from other regions (INBO)	

● **The 3rd day (February 22): General Meeting**

8:00 12:00	(1) Opening Program ・ Opening address (NARBO Chairperson) ・ Remarks on Japan's Support for IWRM in Asia (Mr. Shuhei Kazusa, Director General of Department of Water Resources, MLIT, Japan) ・ Keynote presentation on water and climate change (Dr. Salmah Zakaria, Director General, NAHRIM, Malaysia) (2) Report and Plenary Discussion on NARBO activity 2006 - 2007
13:10 17:10	(1) Introduction of New NARBO Members (2) Briefing and Plenary Discussion on NARBO Work Plan 2008 - 2009 (3) NARBO Charter Revision (4) NARBO Constitutional Body 2008 - 2009 (5) Wrap-up Session and Plenary Discussion (6) Closing remarks (1)NARBO Vice-Chairperson, 2)Representative of Directorate General of Water Resourc s, Ministry of Public Works, Indonesia)

Address by the Chairperson



Report by the Secretary General

Address by the Vice-Chairperson

Address by Chairperson-designate


Wonogiri Reservoir


Colo Weir


Dialogue with the Stakeholders

(2) NARBO Charter Revision

•It was decided that Secretary General may invite the Chairperson to become NARBO Senior Adviser at the completion of Chairpersons term. The senior adviser can advise the new Chairperson and Secretariat in promoting and enhancing NARBO activities.

•It was decided that the Chairperson may invite a Patron who is expected to represent and promote NARBO and its objectives and activities in the region and world, specifically to leaders, policy makers, media, and the general public.

(3) NARBO Constitutional Body 2008-2009

Chairperson: Dr. Moch Amron (new, Advisor, Ministry of Public Works, Indonesia)
Vice-Chairperson: Mr. K.W. Ivan de Silva (continued, Director General, Mahaweli Authority of Sri Lanka)
Secretary General: Mr. Yasutaka Hamada (continued, Executive Director, Japan Water Agency)

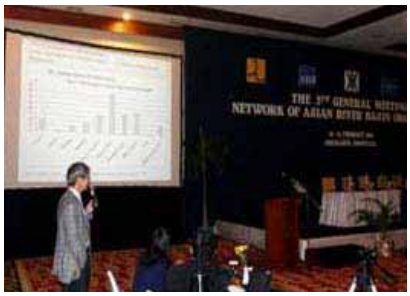
Dr. M. Basuki Hadimuljono, who has completed the term of 4 years (2 periods), has become NARBO Senior Advisor and continues to assist its activities.

(4) The situation of NARBO members

New members joined in the last 2 years are the following 9 organizations:

•Indus River System Authority (Pakistan, RBO)
•Bang Pakong Prachinburi and Tonlesab River Basin Committee (Thailand, RBO)
•Japan Water Resources Association (Japan, RKP)
•Graduate School of Management, Kyoto University (Japan, RKP)
•Japan River Restoration Network (Japan, RKP)
•National Hydraulic Research Institute of Malaysia (Malaysia, RKP)
•International WaterCentre (Australia, IRKP)
•The International Centre for Water Hazard and Risk Management (Japan, IRKP)
•The International Research and Training Center on Erosion and Sedimentation (China, IRKP)
•Following nine organizations joined NORBO in the last two years, and the total number of NARBO member becomes 65 now (RBO: 22, GOV: 17, RKP: 17, IRKP: 8, DCA: 1).

Note: (I)RKP (Inter-)Regional Knowledge Partner
DCA Development Cooperation Agency


Keynote Presentation by Prof. Yoshida

Panel Discussion in the Workshop


Workshop Room

Activities (NARBO SYMPOSIUM)

NARBO Symposium on Catalyzing IWRM investment in Asia-Pacific Region

Michitaro Nakai*

Introduction

"NARBO Symposium on Catalyzing IWRM investment in Asia-Pacific Region," held on 1 Dec. (Beppu City Social Welfare Center, Beppu City, Oita Prefecture) as the Open Event for the 1st Asia-Pacific Water Summit (1st APWS, 3-4 Dec., Beppu City, Oita Prefecture), was successfully completed. This symposium, attended by more than 100 audiences from 11 countries, was organized by Japan Water Agency, Asian Development Bank (ADB) and ADB Institute as NARBO Secretariat, in collaboration with the Ministry of Land, Infrastructure and Transport (MLIT) and the Infrastructure Development Institute of Japan.

Summary of the Symposium

Opening remarks were delivered by 2 persons; one is Dr. Basuki Hadimuljono, NARBO Chairperson, and the other is Mr. Shuhei Kazusa, Director General, Water Resources Department, Land and Water Bureau, MLIT. Followed by 2 persons delivered keynote speeches as follows;

●"Japan's Experiences in Water Resources Management and Some Implications to NARBO Members" (Keynote 1), by **Dr. Tsuneaki Yoshida**, Professor, University of Tokyo, and

●"Financing IWRM in River Basins - Challenges and Opportunities," (Keynote 2), by **Wouter Arriens**, Lead Water Specialist, ADB.

After that, panel discussion session was held, led by Dr. Tsuneaki Yoshida. In the session, 5 presentation on the situation on the problems of water resources in each country by the following speakers;

●**Mr. Md. Abdul Hye**, Executive Engineer and Chief Staff Officer (CSO), Bangladesh Water Development Board (Presentation 1),

●**Mr. Tjoek W Subijanto**, President Director of Jasa Tirta I Public Corporation, Indonesia (Presentation 2),

●**Mr. Jorge Marlang Estioko**, Chief Water resources development Officer, the National Water Resources Board, the Philippines (Presentation 3),

●**Ms. Doan Thi Tuyet Nga**, Deputy Chief of Vietnam RBO General Office's Secretariat Board, Vietnam (Presentation 4),

●**Dr. Takeyoshi Sadahiro,** Professor and council for International Affairs Division of Japan Water Agency (Presentation 5),

Presenters

Finally, plenary discussion was held, and after that, we adopted the Recommendation on the direction for the future NARBO activity on the basis of the discussion by the audiences.

Distribution to the attendants of the APWS

The adapted recommendation was also distributed for the high-level attendants of the 1st APWS. It is expected to contribute to make NARBO's presence and activities known for more people.

Session in the Workshop

*)NARBO Secretariat (Japan Water Agency)

New Member of NARBO Secretariat

Greetings and messages from new members at JWA NARBO Secretariat welcomed since this April.

Ai Isayama
Civil Engineer, Chief Editor of NARBO Newsletter

I have joined the NARBO secretariat and International Affairs Division of Japan Water Agency since April 2008. International job is my first experience, and I would like to enjoy this job and do my best.

I joined NARBO secretariat from April 2008 as an administrator. It's a pleasure for me to support the activity of NARBO. To all of the NARBO members, thank you in advance.

Junko Mizuhara
Administrator

Comparative Analysis (SEA LEVEL RISE)

SUMMARY:The Impact of Sea Level Rise on Developing Countries:

Dr. To Van Truong*

The World Bank has recently released a paper on the impact of sea level rise on 84 coastal developing countries with the aim of encouraging immediate planning for adaptation. Scientific evidence for sea level rise due to climate change is now overwhelming and continued growth of greenhouse gas emissions and associated global warming could result in sea level rise of 1 to 3 m in this century. As a worse case scenario, the unexpected rapid breakup of the Greenland and West Antarctic ice sheets might produce a 5 m rise in sea level.

Climate change will have many negative effects, including greater frequency of heat waves, increased intensity of storms, floods and droughts, rising sea levels, a more rapid spread of disease and loss of biodiversity. Sea level rise poses a particular threat to countries with heavy concentrations of population and economic activity in coastal regions.

The three primary contributing factors to sea level rise have been cited as ocean thermal expansion, glacial melt from Greenland and Antarctica (plus a smaller contribution from other ice sheets), and change in terrestrial storage. Until recently, ocean thermal expansion was expected to be the dominating factor, with a predicted 0-1 m rise during the 21st century. However, new data on rates of deglaciation in Greenland and Antarctica suggest greater significance for glacial melt anrevision of the upper-bound estimate for sea level rise this century.

The World Bank assessed the consequences of continued sea level rise for 84 developing countries across 5 regions using 6 indicators: land, population, gross domestic product, urban extent, agricultural extent and wetlands, based on existing populations, socio-economic conditions and patterns of landuse. The impacts were calculated for sea level rise scenarios ranging from 1 to 5 m.

It was found that hundreds of millions of people in the developing world are likely to be displaced by sea level rise within this century. The impacts from sea level rise are not uniformly distributed across the regions and countries of the developing world. East Asia, the Middle East and North Africa would experience the largest impacts from sea level rise. The impacts are particularly severe in a limited number of countries, including The Bahamas, Vietnam and Egypt, where the consequences are potentially catastrophic.

Vietnam would be seriously impacted by sea level rise, mostly in the Mekong and Red River Deltas. Large percentages of Vietnam's population and economic activity are located in these two river deltas. 10.8% of Vietnam's population would be impacted by a 1 m sea level rise and 35% with a 5 m rise. The impacts on Vietnam's GDP and urban extent closely follow the impact on its population. Most of Vietnam's wetlands would also be impacted by sea level rise.
For precautionary planning purposes, the World Bank paper recommends that sea level rise in the range of 1-3 m should be regarded as realistic. To date, however, there is little evidence that the international community has seriously considered the implications for population location and infrastructure planning in many developing countries.

Vietnam is experiencing considerable population growth and socio-economic development, particularly in the Mekong and Red River Delta regions. The consequences of sea level rise could be even more catastrophic on the Vietnamese people, economy and environment than predicted by the World Bank. It is, therefore, extremely important for Vietnam to begin taking action immediately.

In developing an action plan, it is important to assess the impacts of sea level rise on future populations, socio-economic conditions and patterns of landuse, rather than the current data used by the World Bank. Given the enormity of the problems facing Vietnam and the scarcity of available resources, it is important to allocate attention according to degree of threat. This requires a thorough risk assessment and identification of the most affected areas. It is important to look at prevention. Careful planning of future developments and avoidance of areas likely to be most affected may in fact, prevent problems in the future.

Further, it is necessary to begin planning for adaptation. Under the provision of the United Nations Framework Convention on Climate Change (UNFCCC), the National Adaptation Programmes of Action (NAPAs) are intended to facilitate the identification of priority activities, including adaptation to sea level rise. Vietnam needs to develop a comprehensive NAPA so that plans are in place to deal with the impacts of sea level rise. This includes planning for relocation of the affected population and identifying alternative sources of food and income if agricultural lands are lost.

*)RBO Cuu Long Office, Southern Institute for Water Resources Planning & Manegement (SIWRP),Viet Nam

From the secretariat

NARBO Secretariat Meeting in Singapore

Akira Nishimura*

1. Date: April 4, 2008
2. Venue: Singapore WaterHub
80 Toh Guan Road East, Singapore, 608575
3. Participants
Asian Development Bank (ADB): Mr. Wouter Lincklaen Arriens (Vice-Secretary General), Mr. Dennis Von Custodio
Japan Water Agency (JWA): Dr. Takeyoshi Sadahiro, Mr. Michio Ota (Vice-Secretary General), Mr. Michitaro Nakai, Mr. Akira Nishimura
Asian Development Bank institute (ADBI): Mr. Tadashige Kawasaki
Indonesian NARBO: Dr. Mochammad Amron (Chairperson), Mr. Eddy Djajadiredja, Mr. Tjoek Subijanto


NARBO Secretariat Meeting

4. Proceedings

(1) NARBO Activities in 2008

JWA suggested this year's schedule of NARBO activities and got approval. Especially, the Secretariat shared information on the following items:

1) The secretariat continues encouraging the Member Organizations to provide articles of Newsletter and to submit their annual reports.
2) As NARBO Promotion, the secretariat will consider participation in Singapore International Water Week (SIWW) on June 23-27.
3) As for IWRM Guidelines at Basin Level, the river basin management varies from basin to basin, so it is necessary for the contents of the Guideline to be considered sufficiently.
4) The way to implement questionnaire for IWRM Guidelines at Basin Level will be done on NARBO website, if possible, and the result will be introduced at World Water Week in Stockholm on August 17-23.
5) On the second day of the Week or "Asia Water Day" (August 18), NARBO will chair a session in cooperation with IWMI.
6) The Thematic workshop on Water-Related Disaster and Its Management in Asian Countries will be held in Philippines this summer.
7) As for The Thematic Workshop on Climate Change Adaptation, Indonesian NARBO will organize the contents in cooperation with National Hydraulic Research Institute of Malaysia (NAHRIM) and implement this autumn.
8) NARBO Performance Benchmarking Service
- will expand the performance benchmarking and peer review of RBOs
- will implement performance benchmarking of river basins
- will coordinate with IWMI on its role for the next phase activities and will collaborate with other organizations for synergy in approach.

9) As for Charting Progress and Facilitating Investment for IWRM, ADB is awaiting approval for funding by the Japanese government.

(2) Review of NARBO activities by Members' Feedback Survey

This survey was undertaken in preparation to the 3rd General Meeting of NARBO. Although the number of survey respondents was rather low, the respondents are generally satisfied with NARBO activities. On the other hand, the results also reflect that there is scope to improve NARBO activities. NARBO will improve them under the members' ownership.

*) NARBO secretariat (Japan Water Agency)

Network of Asian River Basin Organizations
Secretariat: International Affairs Division, Japan Water Agency (JWA)
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NARBO Newsletter — 14th Issue August 2008

Topics

Activities

Launch of the Twinning Program between MASL and JWA in April 2008

Masahiro SUGIURA*

Between Sri Lanka NARBO and Japan Water Agency (JWA), MOU and Agreement were conducted as a third case of Twinning Program on April 2008. Then, exchange of personnel on Twinning Program between Mahaweli Authority of Sri Lanka (MASL) and JWA was also agreed and signed. The Program aims at sharing information to solve problems as well as to contribute toward the best IWRM. Continuing to strive forward together and maintain and create a better relationship for the future, too.


Facility maintenance by MASL staff


Maintenance plan in Engineer's room

Dr. Sadahiro, Mr. Tanaka, Mr. Oshima, and Mr. Sugiura were dispatched to Sri Lanka from early May 2008 to late May 2008. We exchanged practical knowledge for water resources management at Head Quarter of MASL in Colombo mostly, but we also exchanged knowledge at some local offices of MASL.

We had visited many offices of water resources management in the Mahaweli River and Walawe guided by MASL staff. It seemed that MASL had been doing their water resources management well in spite of their severe budget condition and some difficult problems. Staff seemed to have good skill to maintain and repair

facilities and they know facilities condition well. Also documentation was well managed based on their rules.


Small Reservoir in Walawe area


Exchange of practical knowledge at Victoria Dam

For example, we were impressed with seeing a check list and maintenance plan of facilities on the wall of Engineer's room. Then they are managing a stock of the spare parts in storehouse well. What's an especially interesting is that they make many opportunities to hear real voice by inhabitants and stakeholders anyway ("Public Day"** system is one of those instances).

We thought that MASL would be able to take an active role in the monsoon Asia Area thorough dissemination of water resources management skill to other NARBO members.


Spare parts in storehouse

At the end of Twinning Program, we reported our activities to MASL and also presentation on Dam safety management based on the JWA experience. Hoping to continue this program, we returned to Japan with fruitful experience and good friend ship with MASL. Finally, we would like to express our sincere thanks to MASL staff.

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*) Senior Engineer, Japan Water Agency
**) The official Offices accept proposal or petition from any inhabitants to improve their living conditions.

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1st Meeting of the NARBO Technical Advisory Committee, Singapore, 5 April 2008

Dennis Von Custodio *

I. Background

The Network of Asian River Basin Organizations (NARBO) is keen to improve the quality and credibility of its annual training program on integrated water resources management (IWRM) to the level of a prestigious regional flagship program. At NARBO's 3rd General Meeting in Indonesia last February 2008, NARBO agreed to establish the Technical Advisory Committee (TAC) who will review and advise NARBO's leadership and secretariat in revamping the training program, based on experience gained by NARBO over the past four years and taking into account approaches and experiences by other training providers.

NARBO held its 1st TAC Meeting in Singapore WaterHub (http://www.pub.gov.sg/waterhub/Vtour/Contact_Us.htm) last 5 April 2008, back-to-back with the meeting of the regional water knowledge hubs. Selected experts from the regional water knowledge hubs meeting were invited to join the NARBO leadership and secretariat team. The Director General of the National Hydraulic Research Institute of Malaysia (NAHRIM) was invited to chair the meeting.

II. Findings and Recommendations

At the outset, the meeting recognized the need for capacity development in RBOs and water resources agencies in the region to implement IWRM in river basins. The meeting demonstrated (i) a keen interest to advise NARBO in improving the quality and credibility of its training program on IWRM; and (ii) the availability of valuable experiences and approaches in conducting IWRM training courses which can be useful references for NARBO.

The experts had productive discussions with the NARBO leadership and secretariat on ways in which NARBO could improve its IWRM training course, starting with the 5th course scheduled for November 2008. Specifically, the recommendations from the experts were for NARBO to

i. explore opportunities to complement face-to-face training courses with available on-line training programs, recognizing that the latter can be a convenient, efficient, practical and cost-effective means of learning;
ii. continue targeting NARBO's international face-to-face training course, including course modules on effective presentation and facilitation skills, to mid-level management professionals in RBOs;
iii. add short executive training opportunities for RBO executives;
iv. focus course content on developing and implementing inter-disciplinary solutions to IWRM challenges, with the help of case studies, team work, and role plays, and support by qualified faculty/resource persons;
v. strengthen course content on water governance;
vi. invite resource speakers with excellent communication skills and inter-disciplinary experience;
vii. maintain registration fees at $200 per person per course to stimulate partial cost recovery, recognizing that such fees could be sponsored from a variety of sources on the initiative of the participants;
viii. consider promoting and marketing its training program using the following strategies:
    - identify an influential patron or champion who will promote the program;
    - tap the services of media;
    - improve the quality of packaging the program; and
    - advertise in relevant websites through web links.
ix. consider follow-up activities for training participants.

Towards a broader framework of IWRM certification of water professionals and RBO practitioners

The experts recommended that NARBO take a broader view to support the development of certified programs of continuous learning for staff working in RBOs, from entry level to senior management, and beyond that for regional experts. In promoting continuous and certified learning paths, the experts suggested that NARBO might target four levels of certification of IWRM proficiency and competence: (i) basic entry (IWRM advocate); (ii) middle management (IWRM facilitator); (iii) senior RBO management (IWRM leader); and (iv) regional IWRM adviser (IWRM master or counselor).

The basic entry level would be targeted broadly to junior RBO staff as well as to those doing research work or interested in a particular IWRM element. NARBO could provide access to books, manuals, guidelines, links to relevant websites, online training courses, and other reference materials on IWRM. Such assistance would be available to all NARBO members for free, and NARBO might consider charging a fee to non-members.

The middle-management level would be targeted mainly to senior mid-career water professionals to enhance their expertise in water resources management for improved inputs to decision-making. NARBO assistance through training courses would be targeted to member organizations only, and participants would be charged a registration fee to help finance the costs.

The senior RBO management and regional IWRM adviser levels would be targeted to RBO leaders, for whom NARBO would provide more advanced and specialized training courses; and would charge a registration fee.

To help professionals in progressively attaining these four levels of proficiency, the experts recommended that NARBO consider to develop a credit-based process of accreditation involving both formal training (face-to-face and on-line) as well as supervised on-the-job learning opportunities, thereby offering professionals the flexibility to design their own personal development plan for IWRM proficiency. Certification could also be earned through participation in workshops, or through heavy involvement and valuable contribution to NARBO

activities.

Next Steps

The recommendations by the experts will allow NARBO's secretariat team to formulate a proposal for revamping the IWRM training course and to explore NARBO activities to help realize this broader program of continuous learning for IWRM practitioners in the region. A discussion paper will be jointly prepared by JWA, ADB and ADBI staff.

Annex I List of Participants

Dr. Mochamad Amron, Ministry of Public Works, Indonesia; and NARBO Chairperson (Indonesia)
Ivan de Silva, Mahaweli Authority of Sri Lanka; and NARBO Vice-Chairperson (Sri Lanka)
Wouter Lincklaen Arriens, Asian Development Bank; and NARBO Vice Secretary-General (The Netherlands)
Michio Ota, Japan Water Agency; and NARBO Vice Secretary-General (Japan)
Dr. Takeyoshi Sadahiro, Japan Water Agency (Japan)
Akira Terakawa, International Centre for Water Hazard and Risk Management (Japan)
Dr. Salmah Zakaria, National Hydraulic Research Institute of Malaysia
Sun Yangbo, Yellow River Conservation Committee (Peoples' Republic of China)
Mark Pascoe, International Water Centre (Australia)
Carel Keuls, UNESCO-IHE Institute for Water Education (The Netherlands)
Dr. Ed Araral, Lee Kuan Yew School of Public Policy (Singapore)
Wu Xun, Lee Kuan Yew School of Public Policy (Singapore)
Eddy Djajadiredja, Ministry of Public Works (Indonesia)
Fahmi Hidayat, Perum Jasa Tirta I (Indonesia)
Dr. Ick Hwan Ko, K-Water (Korea) - gave a presentation during the welcome dinner on 4 April (Republic of Korea)
Dr. Jeongkon Kim, K-Water (Korea) - gave a presentation during the welcome dinner on 4 April (Republic of Korea)
Dennis Von Custodio, Asian Development Bank (Philippines)
Michitaro Nakai, Japan Water Agency (Japan)
Akira Nishimura, Japan Water Agency (Japan)
Kawasaki Tadashige, ADB Institute (Japan)

*) Asian Development Bank Water Operations Advisor

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Members Initiative

FLOOD CONTROL AND PLANNING MECHANISMS

Dr. To Van Truong*

A number of different methods are available for flood planning and control. These methods can be grouped into three broad areas, namely: Structural Methods, Non-Structural Methods, and Investigative Works. Selection of the appropriate method for a particular situation depends on site specific conditions and constraints, amongst many other factors. Indeed, a meaningful knowledge of the nature, history and geography of the regional flood regime is therefore basic to effective flood mitigation and management. This document provides a general overview of some of the methods available for flood control of planning, citing some specific examples from the Mekong Delta in Viet Nam.

Structural Methods

The following are some structural methods for controlling floods:

Dams, which form a barrier across flowing water that obstructs, directs or slows down the flow, often creating a reservoir, lake or impoundments. Whilst these structures are quite costly and are often associated with negative social and environmental implications, they are quite effective in mitigating

floods. A cheaper and more environmentally friendly alternative to conventional dams are rubber dams, which comprise a rubber bag resting upon a concrete floor on a river bed. The bag is then inflated with either water or air to create a barrier. Such structures are to be utilized at Traφ Su and Tha La in the Long Xuyen Quadrangular Region of the Mekong Delta in Viet Nam.

Overflow Spillways, often located on lower reaches of rivers to divert floodwaters. The river is widened at certain points and allowed to overflow, thereby reducing stress on the main river channel.

Dike systems, which are artificial earthen walls built along the edge of a body of water to mitigate floodwaters. They are used extensively in the Mekong Delta and are positioned either upstream (to control floodwaters and reduce their impact on downstream areas) or close to the ocean to reduce tidal components of flood events, which can be significant. For example, there is a dike line located just south of the Vinh Te canal near the Viet Nam - Cambodia border in the Long Xuyen Quadrangular Region, forming a deep inundation area and protecting downstream areas from excessive overland flow. Also in the same Region, a dike system has been implemented near the coastline of the West Sea to prevent high tide waters from raising upstream river levels, which would compound flood effects. A similar system is to be utilized in the Southern Nguyen Van Tiep canal area in the Plain of Reeds. Because rice production is highly important, priority is given to building embankments in the lowest areas, in order to retain the early flood to secure the second rice crop. There is also great pressure from farmers in these low lands to build fully protected areas to enable production of a third annual crop during the flooding period.

Canals. These are artificial channels that can be used to divert floodwaters, thereby acting as floodways. Canals are used quite extensively in the Mekong Delta to help divert overland flow through controlled areas. In the Plain of Reeds, there are plans to enlarge the canal system discharging floodwaters to the Tien River, and also the Bo Bo and T Canals between the 2 Vaico Rivers. Closer to the coastline in the Plain of Reeds, there are also plans to enlarge 21 main vertical canals in the Southern Nguyen Van Tiep area, which would help distribute floodwaters to the ocean, limiting overland flow. Similarly in the Long Xuyen Quadrangular area of the Mekong Delta, there are plans to enlarge 18 main canals for draining floodwaters to the West Sea. At the West Sea coastline, there are also plans to dig 20 canals to assist in floodwater discharge.

Sluice Control. A sluice is a water channel that is controlled at its head by a gate. Operation of these gates can help control the level of floodwaters from downstream or tidal influences from downstream. For example, sluices are operated in coastal areas of the Mekong Delta to help prevent salinity intrusion, but are also beneficial for controlling the high tide component of floods. Flood protection sluices are also positioned in upstream areas of the Mekong Delta, for example along the Bassac River and Vinh Te Canal near the Viet Nam - Cambodia border.

Road Strengthening. The major flood event in 2000 was a starting point for reinforcement of the road network. The national roads have been raised to a cope with water levels equal to those experienced in the 2000 flood. Rural road still suffer flooding but improvements to the weakest sections are being carried out. The road network also constitutes an embankment network protecting the low lands against flood.

Some other structural measures are being examined as they require heavy investments and may have questionable long term impacts. For example, KOICA (from South Korea) have proposed to construct a 45km long, 40m wide canal with dikes from Sarai to Thanh Hung through the Plain Of Reeds in Viet Nam. However, great care would need to be taken in such a project, since digging such a large canal requires plenty of agricultural land. Compensation and resettlement factors are potential socioeconomic issues that would need to be addressed. Further, a huge volume of flood water drainage to the southern part of Tien Giang would cause inundation in orchard areas.

Non-Structural Methods

The following are some non-structural methods for controlling floods:

Building and Development Controls (Flood Proofing). This can often be a highly beneficial activity, aimed at minimizing property damage due to floods. In the Mekong Delta, the issue of housing located in risk areas is being tackled. Some new settlement areas have been built for these families and some are still in progress or planned. Families living in risk areas are being encouraged and supported to move to safer places.

Shifting and Changing crop pattern and schedule. Land use planning can significantly improve flood control, particularly in agricultural areas such as the Mekong Delta. Because rice production is highly important, priority is given to building embankments in the lowest areas, in order to retain the early flood to secure the second rice crop. There is also great pressure from farmers in these low lands to build fully protected areas to enable production of a third annual crop during the flooding period. Such activities can significantly alter flood patterns and should be managed carefully. There is also an increasing shift towards aqua culture production, which may reduce rice cultivation areas and increase demand for saline waters. This would alter some of the structural control measures outlined above, such as sluice and embankment control near the coastline.

Education and Awareness Programmers. Educating local residents and authorities on the nature of flooding and flood control measures is often very important, particularly in high density areas such as the Mekong Delta (over 800 inhabitants/km2 in some districts). This includes transfer of information on important structural flood control measures, such as sluice gate operation, and also advice on land use patterns, such as crop schedules and embankment building. It is important to recognize any education program as a two-way process, since local residents often have valuable information and ideas to help improve flood control.

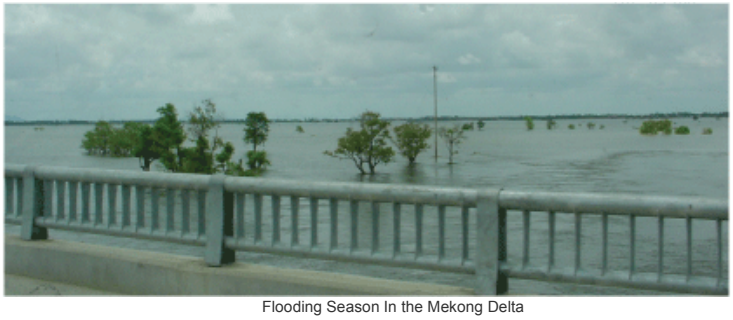
Emergency Relief. Despite the various flood control measures that can be implemented, it is inevitable that serious floods will continue to occur, placing people's lives and property at risk. It is therefore important that emergency response strategies are in place for such situations. In the Mekong Delta, some measures on dealing with emergencies have already been implemented or are under implementation.

Investigative Works

Detailed investigative works are a critical aspect of any comprehensive flood management process. This may include some of the following activities:

Numerical Modeling. Hydrological models are commonly used to simulate flood events on a large scale, and many such studies have been conducted for areas such as the Mekong Delta. Popular models include MIKE-11, SOBEK and RMA2 to name a few. Hydraulic modeling can also be utilized to more accurately simulate flows in channels and through man-made structures.

Flood Forecasting and Warning. The Flood Forecasting and River Monitoring System in the Mekong River Commission (MRC) has over the years been improved to provide timely and accurate river forecasts to its member countries in order to reduce the vulnerability of floods in the Lower Mekong Basin. During the dry season (November-May), seven-day river monitoring and low flow forecasts are conducted and updated weekly on the internet while five-day flood forecasts at 21 key stations along the Mekong mainstream during flood season (June-October) are updated on a daily basis. The MRC Forecasting System consists of three main components; data collection and transmission, forecast operation, and forecast dissemination. A variety of forecasting tools is applied for forecasting water levels and discharges: The Stream flow Synthesis and Reservoir Regulation model for the upper part of the basin, multiple regression models for the lower reach of the delta with over bank flow, an Artificial Neural Network model for both, upper and lower reaches, and MIKE-11 for flood mapping in Mekong Delta. Forecast products including water level forecast bulletin are published on the MRC website and disseminated to the National Mekong Committees, concerned line agencies, National Disaster



Flooding Season In the Mekong Delta

Management Committee and other interested parties by e-mail. This mechanism is important in flood planning, in the short, medium and long term, and methods to improve this are constantly being

evaluated.

*)RBO Cuu Long Office, Southern Institute for Water Resources Planning & Management (SIWRP),Viet Nam

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ENHANCING COOPERATION BETWEEN MEKONG RIVER COMMISSION MEMBER COUNTRIES IN ADDRESSING TRANS-BOUNDARY FLOOD AND RELATED ISSUES

HUYNH MINH NGOC, NICOLAAS BAKKER*

ABSTRACT

In the aftermath of the devastating floods of 2000, the Mekong River Commission developed a strategy and program to deal with the threat of future flood disasters in the Mekong River Basin. Its Strategy on Flood Management and Mitigation outlined the role the MRC could play in the management of flood risk in the Lower Basin and led to the formulation of a Flood Management and Mitigation Program, which was established in 2004.

In addition to establishing and enhancing the flood database, plus tools and capacity for better management and mitigation of flood problems in an integrated manner, the FMMP, through its Component 3(FMMP-C3), also contributes to the goal of enhancing effective regional cooperation. This component follows the objective 'to identify potential trans-boundary issues for negotiation, mediation and conflict prevention; and develop mediation and conflict management capacity' as set in the MRC Strategic Plan for 2006-2010.

The FMMP-C3 aims to strengthen cooperation and enhance capacity to address differences and disputes in trans-boundary flood issues by developing and achieving the following products and targets:

Common understanding and agreement on trans-boundary flood issues in the basin;

Information and reference documents related to international, regional and national 'best' practices, instruments and case studies for use in capacity building and reference in case of differences and disputes related to implementation of the Mekong Agreement;

Development and implementation of a comprehensive capacity building for the National Mekong Committees, national line agencies and MRC Secretariat staff in the field of conflict management and addressing differences and disputes related to trans-boundary flooding and related issues;

Establishment of a toolbox for facilitating and supporting the process of addressing differences and disputes. This will include administrative tools (e.g. manuals, guidelines and procedures), technical tools (numeric and/or physical models, assessment frameworks), and knowledge and information ('best' practices, cases studies, literature and instruments) .

The component will run for a period of three years from 2007-2009, with significant financial support from the Government of the Netherlands.

INTRODUCTION

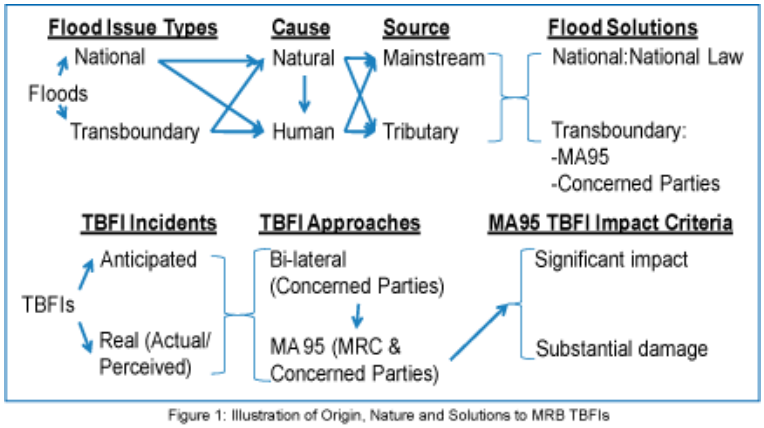

Figure 1: Illustration of Origin, Nature and Solutions to MRB TBFIs

Two of the most common trans- boundary issues that can lead to problems in international river basins are the twin menace of droughts and floods. Both can be caused by nature, including climatic changes, and/or by human induced developments or expansion of activities. In many cases an attempt by one riparian state to mitigate the harshness of nature in droughts or floods exacerbates the problems and causes harm for others

within its own boundaries and in the other riparian countries.

In recent years, the Mekong River Commission has made significant progress in developing a number of mechanisms to promote cooperation and prevent conflict among its Member States, at the same time helping them to achieve timely and amicable agreement on a range of trans-boundary issues. Coupled with its conflict prevention obligation through cooperation and mitigation of adverse impacts, the MRC's founding document, the 1995 Mekong Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin, provides for a develop mediation and conflict management capacity'

In addition to establishing and enhancing a flood database, plus tools and capacity for better management and mitigation of flood problems in an integrated manner, the FMMP, through its Component 3 (FMMP-C3), also contributes to the goal of enhancing effective regional cooperation. This component follows the objective 'to identify potential trans-boundary issues for negotiation, mediation and conflict prevention; and develop mediation and conflict management capacity' as set in the MRC Strategic Plan for 2006-2010.

TRANSBOUNDARY FLOOD ISSUES IN THE MEKONG RIVER BASIN

A common understanding on the issues and possible options for addressing trans-boundary flood issues is an important basis for exploration of any problems that may arise. The MRC Member States, with assistance and facilitation from the FMMP, have jointly identified trans-boundary flood issues (TBFIs) through a bottom-up and participatory approach. The identification of TBFIs aims to build common understanding among the Member Countries regarding transboundary flood issues in the Mekong River Basin, as well as ways through which the countries address these.

By 'transboundary' it is understood that something that happens in one country has positive or negative impacts in one or more other countries. These trans-boundary impacts are 'inter-jurisdictional'. In the case of river basins with two or more riparian states, the trans-boundary/cross-border dimension gives rise to the upstream/downstream (consecutive) or left bank/right bank (concurrent) legal relationship, depending upon the location of the national boundaries/borders.

TBFIs include both those of natural origin and those caused or aggravated human activities and/or interventions. Natural TBFIs may be identified, avoided and/or mitigated through cooperation before and after an occurrence; while floods caused or made aggravated through human activities/interventions may pose a contentious issue, difference or dispute, that needs addressing and resolving. Figure 1 was developed to illustrate the origins, nature and solutions associated with TBFIs.

Focus was given to man-made flood impacts, as these potentially cause differences and disputes between parties concerned. For this reason the MRC Member States, during the exercise to identify TBFIs, adopted the following working definition:

"Any existing or potential substantial adverse impact on the natural, economic or social environment within an area of a Riparian State resulting from a change of the water conditions during the occurrence of floods and/or during the flood season of the Mekong River system caused by a human activity, originating wholly or in part from within one or more areas of one or more other Riparian States."

The following six groups of TBFIs have been identified and agreed between the Member States (Figure 2):

In the course of TBFI identification, the member countries emphasized that technological and knowledge-related constraints appear to be most important, followed by policy, governance and institutional constraints to effectively addressing and resolving transboundary flood issues, differences and disputes (TBIDDs). The countries suggested a strategic approach for addressing transboundary flood issues:

To build on existing bilateral mechanisms supported or facilitated by the MRC Secretariat in general and Component 3 in particular;

To share experiences and lessons learnt from bilateral mechanisms, expanding them to the multilateral and regional level where appropriate; and

To strengthen multilateral mechanisms such as the Mekong Dialogue Partnership with China and Myanmar by providing suitable tools and services from the MRC Secretariat (relating to Upper Mekong Basin developments and global concerns associated with climate change).

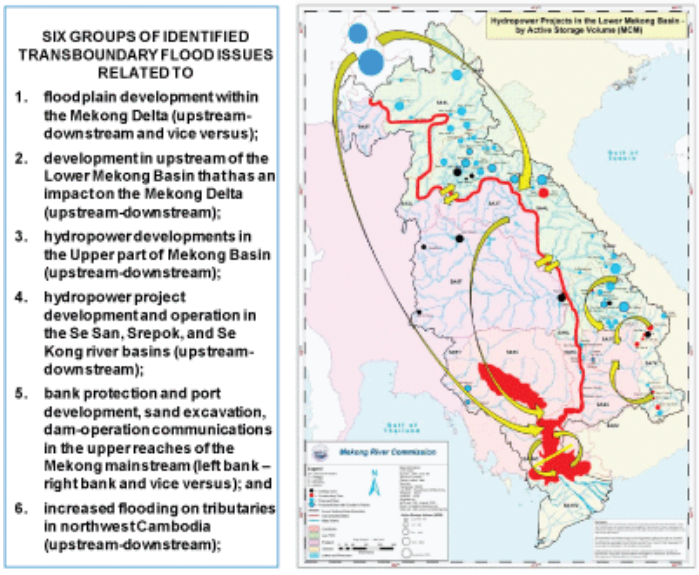

Figure 2: Six groups of regional TBFIs

MANDATE AND ROLES OF THE MRC AND MRCS AND OPTIONS FOR THE MRC MEMBER COUNTRIES IN ADDRESSING TRANSBOUNDARY FLOOD ISSUES, DIFFERENCES AND DISPUTES

Trans-boundary issues are defined as issues between two or more sovereign nations, each with its rights, interests, responsibilities and obligations, due to their status under international law. Similar impacts occur within a nation, where national laws, policies and practices are employed.

International law and the UN Charter provide a reference framework for addressing shared water resources and the rights and obligations of sovereign nations (transboundary issues). Their sources include treaties between nations; conventions proposed by the UN and regional bodies and approved/adopted and ratified by the requisite number of the respective constituency; and widely accepted international practices, often articulated in judicial decisions such as by the International Court of Justice. General international law and practice has and can be reliably applied to address contentious issues, conflict avoidance and dispute resolution through various approaches or mechanisms amongst the states of an international river basin or international watercourse, especially where a water treaty has not already been entered into by all or some of the states, or on matters not covered by the treaty.

The four MRC Member States have, in addition to general international law and practice, the 1995 Mekong Agreement, which provides a legal framework for cooperation in the development and management of the water and related resources of the Mekong River Basin. This can be used to address and resolve differences and disputes that might arise between members of the MRC.

The 1995 Agreement provides the MRC Council and Joint Committee (JC) with a clear mandate to address differences and disputes. It is likewise clear that the MRC Secretariat (MRCS) has no direct mandate or role for directly engaging in dispute resolution through negotiation, conciliation, mediation or arbitration unless it is specifically granted such authority by the Joint Committee. Figure 3 gives a brief framework on how the1995 Agreement addresses TBIDDs.

The four MRC Member Countries have two distinct options for addressing incidents perceived or understood to have been caused by the actions of another member country/ies and which to have caused a significant adverse impact or substantial damage. It or they can either pursue the matter under the provisions of the 1995 Agreement, or pursue the matter on a bi-lateral basis involving the concerned parties. The latter would be addressed on a government to government basis through the respective ministries of foreign affairs. The former would be pursued under the provisions of the 1995 Agreement. A combination of the two options may be applied as well.

COMPONENT 3 OF FMMP IN ENHANCING COOPERATION AND STRENGTHENING CAPACITY IN ADDRESSING TBFIs

The MRCS has an important role in supporting the Council, JC and the Member Countries by gathering, assessing, and analyzing data and information and by preparing report in a routine manner. It may also be specifically requested by the JC to conduct other forms of analyses, set up meetings, field trips, or to provide potential independent experts or organizations to assist in addressing development or conflict issues. Certainly the role of the MRCS is important in facilitating the enhancement of cooperation and avoidance or mitigation of

incidents that may give rise to differences and disputes.

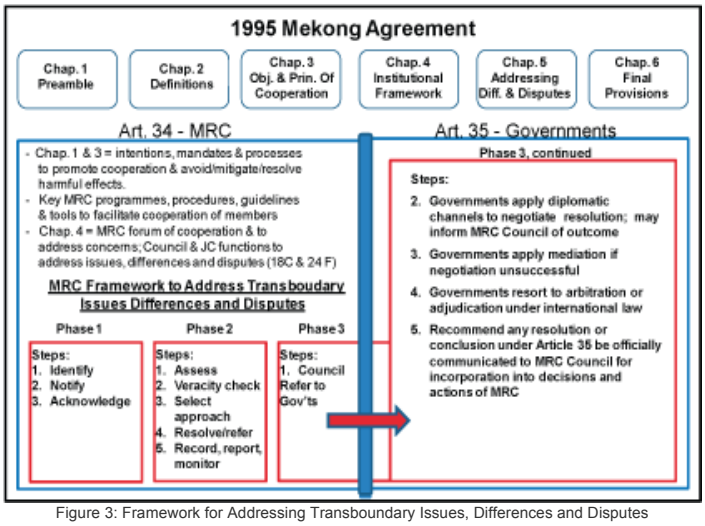

Figure 3: Framework for Addressing Transboundary Issues, Differences and Disputes

In the process of identifying the TBFIs, the member countries grouped the main constraints to better addressing issues, differences and disputes in three areas:

Knowledge-related constraints limit access to reliable information on structural development plans including standard design criteria and policies. Better access to and operation of appropriate tools would help to improve understanding of causes and effects.

Policy, governance and institutional constraints refer to differences in administrative, institutional and policy frameworks in the four Member Countries.

Inadequate financial and economic resources are another important constraint. In the Lao PDR, for example, joint studies of bank erosion require considerable funding for which budget allocation is insufficient.

The support required from MRC to the member countries is presented in two groups: Technical and administrative support.

Technical support would focus on:

Information and knowledge generation and exchange to improve factual evidence of causes, effects and impacts. This includes science-based clarification and awareness raising, information exchange, joint fact-finding missions and studies, and harmonization of policies and regulations.

Development and application of tools to reduce complexity so that causes and effects become sufficiently clear to allow effective response strategies to be identified. The suitability of tools would be demonstrated and tested within specific pilot areas and projects.

Capacity building in impact assessment to provide a framework and develop analytical capacity for interested and value-based discussions on trade-offs between beneficial and non-beneficial impacts. The underlying assumption here is trust and confidence among the parties involved.

Administrative support is needed to:

Ensure adequate stakeholder participation with senior technical and administrative representatives of line agencies, including national and provincial levels if required.

To develop and agree on processes and procedures which provide sufficient scope for factual and information-based discussions that result in agreed strategies and actions; and

Ensure progress, continuity and sustained interest in the process through awareness raising, conflict prevention, management and funding.

From the above findings, Component 3 of the FMMP was developed to strengthen cooperation and enhance the capacity of the MRC to address differences and disputes in trans-boundary flood issues. Member States suggested that Component 3 ought to include three outputs:

Information generation
Awareness raising and knowledge and skills building; and
Toolbox development

Output 1 "Information Generation" will be implemented firstly with activities on identification of trans-boundary flood issues from national and regional perspectives. The common understanding and agreement on the regionally concerned transboundary flood issues in the Mekong River Basin provide the background information and basis for all other activities of Component 3. A proper understanding of the trans-boundary flood issues will be facilitated by making available documentation, such as applicable 'best' practices, instruments and case studies relating to all suitable options for addressing differences and disputes in transboundary issues and natural resources management. Information generation will be documented and distributed to the Council and JC members, MRCS, the National Mekong Committees, relevant national line agencies and, where appropriate, to a wider audience, including resource managers, civil society organizations, regional institutes and universities . The compiled reference material will form part of the toolbox to be used by the MRC in addressing differences and disputes. The material will also serve as input for the general awareness raising, knowledge and skills building activities under Output 2.

Output 2 "Awareness Raising and Knowledge and Skills Building" will start with clarification of the MRC mandate in transboundary flood issues in addressing differences and disputes. The material developed under Output 1 will be complemented by more specific conflict management and resolution knowledge, tailored to the MRC environment. This will be used for development and implementation of activities on general awareness raising, knowledge and skills building. Implementation of pilot studies will improve the result of general awareness raising, knowledge and skills building activities and build practical knowledge, skills and mutual trust for Member States and the MRCS. Implementation of pilot studies activity will also be supported by the technical and administrative tools to be developed under Output 3.

Output 3 "Toolbox Development" aims at the development of a set of technical and administrative tools. These will be developed based on the requirements set out by relevant activities in Outputs 1 & 2. It should be noted that the establishment of the administrative tools activity strongly interacts with the implementation of pilot studies activity. The preliminary outcome of the administrative tools activity will be used as guidance for pilot studies, and lessons learnt from the pilot studies activity will help improve the established administrative tools.
A brief illustration of the Component 3 design is presented in Figure 4:

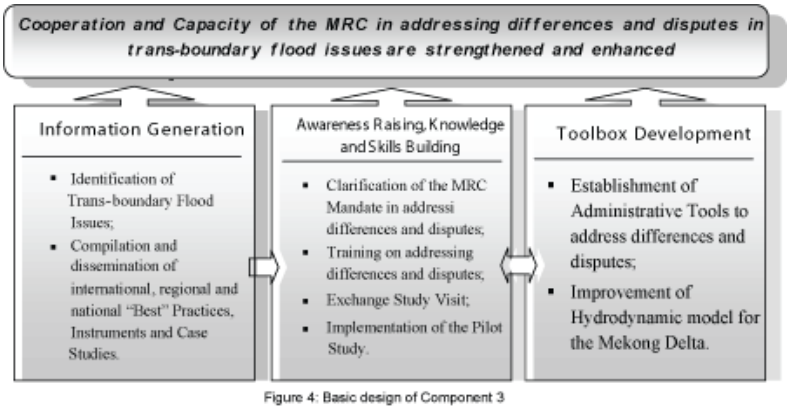

Figure 4: Basic design of Component 3

PRESENT STATUS AND FURTHER DEVELOPMENT OF COMPONENT 3

Component 3 has made good progress in 2007 and early 2008 in developing relevant MRC reference materials through the application of an intensive consultation process with Member Countries. The Component has initiated implementation of a nine-month training and capacity building program, which has the objectives of raising awareness and building knowledge and skills. The first phase of this program addresses the regional level, including the NMCs and line agencies dealing with trans-boundary issues. During Phase 1 exchange visits and training are carried out in other river basins where experience has been developed in addressing trans-boundary issues (preferably flood) issues. One of the most interesting elements of the training and capacity building program (but the most complex as well) is the implementation of one or more pilot studies. During Phase 2 of the programmer, specific focus will be placed on training and capacity building at national levels.

It is expected that the implementation of this Component will create a level playing field for participants, allowing them to work together closely and to apply a technical and practical approach. Such a joint setting will allow participants to build trust and confidence, which are conditions for the further development of the framework for addressing TBIDD. It became clear during the initial implementation period of Component 3 that each of the Member Countries is firmly committed to the scope of the component. It is therefore expected that with respect to addressing trans-boundary flood issues, Component 3 will help the Member States face the challenges of the future.

*) MRC Regional Flood Management and Mitigation Centre, Phnom Penh

Announcement

International WaterCentre Water Leader Scholarships

International Water Centre (IWC) is offering full and partial tuition scholarships for Australian citizens, permanent residents and international applicants for the Semester 1 2009 intake of the Master of Integrated Water Management Program. Applications close August 1, 2008. IWC's Masters Program aims to build capacity in water management, particularly for developing countries. The Program takes a project-centred approach, integrating coursework in water science, engineering, policy and planning, economics and community development. IWC graduates receive a degree from four of Australia's most prestigious universities: The University of Queensland, Griffith University, Monash University, and The University of Western Australia. The Program is another initiative of the IWC to improve the capacity and build the skill sets of water professionals and future leaders in water resource management in response to the water crisis, both in Australia and abroad.

For more information, visit
http://www.watercentre.org/education/masters/scholarships

Email admin@watercentre.org.

NARBO Chairperson will make a presentation at WWW2008

Dr. Ir. Moch. Amron, M. Sc, the Chairperson of NARBO will make a presentation at a session in the 2008 World Water Week in Stockholm*.
The session "River Basin Approach of IWRM; Integrated River Basin Management (IRBM) Towards the 5th World Water Forum" will be organized by UNESCO-IHP and Ministry of Land, Infrastructure, Transport and Tourism in Japan on Thursday, 21th August. He will talk about Integrated Water Resources Management (IWRM) from the viewpoint of Asia, titled "Political will and institution for River Basin Management."

* The 2008 World Water Week in Stockholm will scrutinize progress and prospects in the efforts to build a clean and healthy world. Special attention will be devoted this year to the sanitation challenge and the achievement of the Millennium Development Goal target on sanitation, where we continue to fall behind.
<<-http://www.worldwaterweek.org/worldwaterweek/purposeandscope.asp

The 2nd Thematic Workshop on Water-Related Disaster and Its Management in Asian Countries

Natural disasters (e.g. floods, droughts, landslides, volcanic eruptions, earthquakes, tsunami, typhoons, cyclones and other extreme weather phenomena) have hit monsoon Asia in recent years. These disasters have inflicted catastrophic losses to human lives and to the economies of countries which NARBO member organizations belong to.
Conducting thematic workshops has been considered at The 3rd NARBO General Meeting in Indonesia in February 2008 as one of the important activities of NARBO. Based on the updated NARBO Action Plan of 2008-2009, NARBO will carry out a series of workshops on the theme of

Thematic Workshop in Indonesia

Water-Related Disaster and Its Management in Asian Countries.
The 1st workshop was competed successfully on November 26-29, 2007 in Yogyakarta, Indonesia and the 2nd one will be held as the following statement.

Date of workshop	***October 7th –10th, 2008***
Place of workshop	***Metro Manila, Philippines***
Host Organization	***Laguna Lake Development Authority (LLDA), Philippines***

The selected participants will gather for this workshop and have lively discussions according to the following planned program.

Day 0 (October 6) Arrival at Metro Manila
Day 1 (October 7) Keynote lecture and presentation from each country representatives
Day 2 (October 8) presentation from each country representatives (Continued)
Day 3 (October 9) Site visit and related discussion
Day 4 (October 10) Group discussion and assignment for the next (last) workshop

The next (3rd; last) workshop will be held in January 2009. NARBO Secretariat expects active involvement of the participants!

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From the secretariat

NARBO SEEKS YOUR ARTICLES!

NARBO Newsletter aims to be a tool for sharing good practices, lessons learned from practice and IWRM-related activities, etc. Therefore, we highly welcome articles from you, about good practices, lessons from practice, activities relevant to IWRM. In addition, the article such as topic providing, and fresh voice, etc is also very welcomed. The articles you will contribute to NARBO Secretariat will be put in newsletters to share experience and lessons and so on.
We would appreciate it if you could inform us of your opinions, suggestions and request to NARBO newsletter and website, if any.
We are willing to enhance the information content.

Guideline for articles;
1) Article (good practice, case study, etc.): Abstract 500 words (around)
Please attach some photos and charts.
2) Column (topic providing, fresh voice, etc.): Abstract 300 words (around)

Network of Asian River Basin Organizations

Headquarters of the secretariat: International Affairs Division, Japan Water Agency (JWA)
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For comment/information/inquiry, contact narbo@water.jp Thank you for your cooperation!

NARBO Newsletter — 15th Issue December 2008

Topics	
Core Activities	2nd Thematic Workshop on Water-Related Disaster and Its Management in Asian Countries Twinning Program (1) -The 1st Staff exchange between MARD of Viet Nam and JWA
Members Initiative	Salinity Intrusion Modeling for Sungai Selangor
Related Activities	Regional Meeting on Hydro-informatics and Developing Knowledge Hub Networks Seminar "Key for Success in Implementing IWRM at River Basin Level"
From Secretariat	Work for "IWRM Guidelines at River Basin Level" Message from New Secretariat Members NARBO Activity Plan NARBO Seeks Your Articles!

Core Activities

2nd Thematic Workshop on Water-Related Disaster and Its Management in Asian Countries, Philippines, 7-10 October, 2008

Akira NISHIMURA

Conducting thematic workshops was considered at The 3rd NARBO General Meeting in Indonesia in February 2008 as one of the important activities of NARBO. Based on the updated NARBO Action Plan of 2008-2009, NARBO will carry out a series of workshops on the theme of **Water-Related Disaster and its Management in Asian Countries**, which have been continued since last year.

In addition, governments around the world have committed to take action to reduce disaster risk, and have adopted a guideline to reduce vulnerabilities to natural hazards, called **the Hyogo Framework for Action 2005-2015 (HFA)**. The HFA assists the efforts of nations and communities to become more resilient to, and cope better with the hazards that threaten their development gains. (>>See more)

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The 1st Staff exchange between MARD of Viet Nam and JWA

Masahiro SUGIURA

Between Viet Nam NARBO and Japan Water Agency (JWA), MOU and agreement were concluded on 15th March 2008. Then, the provision of exchange of personnel on Twinning Program between Ministry of Agriculture and Rural Development (MARD) of Viet Nam and JWA was also agreed and signed.

The Program aims at sharing information to solve problems as well as contributes toward an improvement of IWRM. Developing good relationship between Viet Nam NARBO and JWA is also an important objective. (>>See more)

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Members Initiative

Salinity Intrusion Modeling for Sungai Selangor

Norbaya HASHIM

ABSTRACT

Salinity intrusion into estuary of the Sungai Selangor has been carried out on a hydrodynamic numerical modeling to access the parameter that governed the amount of salt in the river. Issues such as water pollution and extraction of water from Sungai Selangor system has been said to be the cause of ?'fading fireflies.' The berembang trees on the river bank that become the fireflies?' habitat need some amount of salt for proper growth. Living at the lower reaches of Sungai Selangor, the fireflies are affected not only by the activities in their vicinity, but by activities in the entire river basin. (>>See more)

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Related Activities

Regional Meeting on Hydro-informatics and Developing Knowledge Hub Networks, China, 15-17 October, 2008

Hirohisa MIURA

NARBO Secretariat attended the Regional Meeting on Hydro-informatics and Developing Knowledge Hub Networks held in Zhengzhou, China with the representatives of many NARBO member organizations.
The purpose of this Regional Meeting was to share YRCC's experience among the participants and to demonstrate how the decision support systems can be introduced or improved in river basins. The meeting also marked the launch of the Center for Hydro-Informatics in River Basins (CHIRB) which is hosted by YRCC. (>>See more)

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Seminar "Key for Success in Implementing IWRM at River Basin Level," Japan, 11 November, 2008

koichi TAKANO

Seminar "Key for Success in implementing IWRM at River Basin Level" was held as a pre-event of 2nd Steering Committee of "Integrated Water Resources Management Guidelines at river basin level." The Guidelines here refer to the ones which the United Nations has worked on and proceeded with the formulation through UNESCO as a secretariat. Formulation of IWRM Guidelines is set as one of NARBO Action Plan activities in 2008-2009. Dr. Mochammad Amron, Chairperson of NARBO, included a Steering Committee member, made a presentation on Challenges of Brantas River Basin in the seminar. (>>See more)

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From the secretariat

Work for "IWRM Guidelines at River Basin Level"

Dr. Mochammad Amron, chairperson of NABO, nominated a member of Steering Committee (SC) for the IWRM Guidelines at River Basin Level*, has been taking part in activities in several countries.

As an SC member, Dr. Amron participated in the 1st SC held in Stockholm, Sweden in August 2008 and the 2nd SC held in Saitama, Japan in November 2008. He introduced IWRM in Brantas River Basin to the other Committee members and proposed to take the case in the Guideline. The 3rd SC will be held in Bangkok, Thailand in January 2009.

* The IWRM Guidelines at River Basin Level
UNESCO is now launching "IWRM Guidelines at River Basin Level," with a view to make them available as important relevant publication of the World Water Development Report, a flagship project of UN-Water to be launched at the 5th World Water Forum. Also, MLIT and JWA intend to contribute to the preparation of the Guideline.

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Hello! Message from New Secretariat Members

Mr. Toshiyuki
YOSHIOKA
Director of
International Affairs
Division of JWA

I was assigned as the Director of International Affairs Division of Japan Water Agency and have joined NARBO secretariat since October 2008.
I had an experience to have worked as a JICA expert to strengthen irrigators' associations in the Philippines from 2000 to 2003. I'm willing to support NARBO activities by putting my experience to good use. Thank you very much.

Mr. Hirohisa MIURA
Engineer

I have joined NARBO secretariat and become a staff member of International Affairs Division of JWA since October 2008.
It's my first time to engage in international business, and I see this as an exciting opportunity for me to work together with other colleagues and learn a number of things that are new to me.
I am looking forward to gaining diverse experience through my work, and would like to obtain as much knowledge and expertise as possible in the international field of work. Thank you.

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NARBO Activity Plan

Year	Activity Contents	Date	Venue
Feb 2009	The 3rd Thematic Workshop on Water-Related Disaster and Its Management in Asian Countries	February 2009	Kuala Lumpur, Malaysia
	The 5th IWRM Training	18-25 February 2009	Hoi An, Viet Nam
Mar 2009	NARBO will join WWF5 (The 5th World Water Forum) for NARBO Promotion	16-22 March 2009	Istanbul,Turkey

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NARBO seeks your Articles!

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Report of The 2nd Thematic Workshop on Water-Related Disaster and Its Management in Asian Countries (Philippines) (2008)

1. Background

Natural disasters (e.g. floods, droughts, landslides, volcanic eruptions, earthquakes, tsunamis, typhoons, cyclones and other extreme weather phenomena) have hit Monsoon Asia. These disasters have inflicted catastrophic losses to human lives and to the economies of countries which NARBO member organizations belong to.

Conducting thematic workshops was considered at The 3rd NARBO General Meeting in Indonesia in February 2008 as one of the important activities of NARBO. Based on the updated NARBO Action Plan of 2008-2009, NARBO will carry out a series of workshops on the theme of **Water-Related Disaster and its Management in Asian Countries**, which have been continued since last year.

In addition, governments around the world have committed to take action to reduce disaster risk, and have adopted a guideline to reduce vulnerabilities to natural hazards, called **the Hyogo Framework for Action 2005-2015 (HFA)**. The HFA assists the efforts of nations and communities to become more resilient to, and cope better with the hazards that threaten their development gains.

The HFA is the key instrument for implementing disaster risk reduction, adopted by the Member States of the United Nations. Its overarching goal is to build resilience of nations and communities to disasters, by achieving substantive reduction of disaster losses by 2015 - in lives, and in the social, economic, and environmental assets of communities and countries. The HFA offers five areas of priorities for action, guiding principles and practical means for achieving resilience against disasters for vulnerable communities in the context of sustainable development.

Group Photo

2. Outline of the Workshop

The 2nd Thematic Workshop on Water-Related Disaster and its Management in Asian Countries was held on October 7-10, 2008 in Metro Manila, the Philippines and completed successfully. This workshop was composed of special lectures, presentations by the participants and the related discussions, study visit to Pampanga River Basin, and Group Work.

(1) Lectures

The following lectures were provided during this workshop. Active discussions between lecturers and participants were followed after each lecture.

Name	Organization	Lecture Title

Mr. Edgard C. Manda	Laguna Lake Development Authority (LLDA)	Man made disaster management - Laguna de Bay Region
Ms. Ethel Manalo	Department of Public Works and Highways (DPWH), Region III	Flood management
Ms. Maria Antonia Borna	Philippine Institute of Volcanology & Seismology (PhiVolcs)	Overview of Pinatubo Lahars & related flooding in Central Luzon
Dr. Neil Britton	Asian Development Bank (ADB)	The Role of the RBO as a Facilitator of Water-Related Disaster Management in the Rive Basin
Mr. Akira Terakawa	The International Centre for Water Hazard and Risk Management (ICHARM)	Integrated Flood Risk Management for Urbanized River Basins in Japan
Mr. Michio Ota	Japan Water Agency (JWA)	Water-related Disaster Management in Japan / Japan Water Agency
Mr. Akira Nishimura	Japan Water Agency (JWA)	Coordination of water use in drought terms

(2) Presentations by the participants and the related discussions
NARBO secretariat had requested all core participants to prepare 5 kinds of materials based on the Hyogo Framework for Action 2005-2015 (HFA) and submit them to the secretariat in advance.
Every core member reported on the situation of water-related disaster and its management in each country especially in line with the prepared materials. It was shared that the climate condition and proceeding situation of disaster risk management were different from country to country.

Lecture Session

Q&A Session

(3) Study visit to Pampanga River Basin
All members who participated in this workshop had an opportunity to visit some places to learn water-related disaster and its management in Pampanga River Basin near Manila such as the buried town by lahars (volcanic mudflows) caused by the eruption of Mt. Pinatubo, the mega dyke constructed by JICA project to keep the downstream residential area away from lahar, Terminal Telemetry Station along Pampanga River and Operations Center of the Flood Forecasting Branch managed by Philippine Atmospheric, Geophysical, Astronomical and Seismology Administration (PAGASA).
Mt. Pinatubo erupted in 1991, but surprisingly it was in 1995 (4 years later) when the large lahar attacked the downstream areas around Bacolor Town. The lahar buried the town by 6-7m at the maximum, and the members were shocked to see some houses which were almost buried in the lahar. However, visiting some places and talking with the local residents in the town, we also could find that the residents have proceeded toward recovery; some have built new houses on the lahar, others have started their new lives by relocation.
Through this study visit, the participants could recognize the importance of community based disaster risk management, as seen in the proven example that repeated prior warnings against the large lahar that hit the downstream areas around Bacolor Town consequently prevented the areas from being damaged severely. That is to say, the community based disaster risk management does

affect our lives, and might have changed seriously the aftermath of this disaster to a certain extent.

Buried House by Lahar
(volcanic mudflow)

Discussion with Local People
(Bacolor Town)

Operations Center of PAGASA

(4) Group Work

The participants were divided into 2 groups; one is a group of RBOs and the other is a party of Government Organizations. The participants discussed the common challenges by each group based on the materials (the preliminary assignments) to formulate better action plans. The result of the discussion was shared by presenting in the plenary session.

The participants were requested to modify their action plans before the next (3rd) Workshop based on this work.

Group Discussion

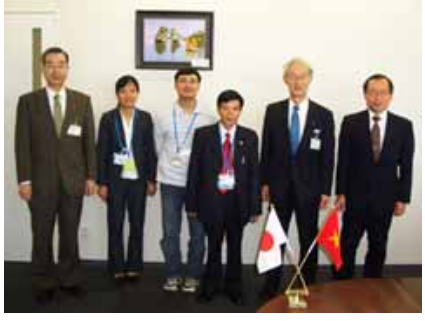
3. Acknowledgements

In appreciation of great efforts of workshop preparation by LLDA staff and active participation by all participants, without your invaluable assistance, we couldn't have completed this 2nd thematic workshop successfully. NARBO secretariat would like to express our warmest gratitude to all of you and hope that we will have closer and better mutual relationship onwards and upwards.

Twinning Program

The 1st Staff exchange between MARD of Viet Nam and JWA

Between Viet Nam NARBO and Japan Water Agency (JWA), MOU and agreement were concluded on 15th March 2008. Then, the provision of exchange of personnel on Twinning Program between Ministry of Agriculture and Rural Development (MARD) of Viet Nam and JWA was also agreed and signed.



Courtesy Call in HQ of JWA

Presentation on Water Resources Management of Viet Nam

The Program aims at sharing information to solve problems as well as contributes toward an improvement of IWRM. Developing good relationship between Viet Nam NARBO and JWA is also an important objective.

Mr. Toan, Mr. Tuan and Dr. Nga from MARD were dispatched to Japan from 17th November 2008 to 6th December 2008. They were based at the headquarters of JWA. They studied RBOs of Japan and visited two (Tone and Yodo) river basins, some O&M (for dam, canal, and lake) offices and canal construction project office.

At the end of Twinning Program, they reported results of their study at JWA. They returned to Viet Nam with fruitful experience and good friendship with JWA. We are proud of the successful launch of the first Twinning Program, and are hoping to continue encouraging this program.

Site Visit (Hitokura Dam O&M Office)

Site Visit (Gunma Canal Reconstruction Project)

>> Twinning Program TOP

Salinity Intrusion Modeling for Sungai Selangor

Norbaya HASHIM, ***Research Officer, Hydraulic Engineering Division, National Hydraulic Research Institute of Malaysia (NAHRIM)***
ABD. Jalil HASSAN, ***Senior Research Officer, Hydraulic Engineering Division, National Hydraulic Research Institute of Malaysia (NAHRIM)***

ABSTRACT

Salinity intrusion into estuary of the Sungai Selangor has been carried out on a hydrodynamic numerical modeling to access the parameter that governed the amount of salt in the river. Issues such as water pollution and extraction of water from Sungai Selangor system has been said to be the cause of 'fading fireflies'. The berembang trees on the river bank that become the fireflies' habitat need some amount of salt for proper growth. Living at the lower reaches of Sungai Selangor, the fireflies are affected not only by the activities in their vicinity, but by activities in the entire river basin. Rapid economic development in the basin and the strong demand for the water resources puts pressure on the ecosystem. This research has been carried out to investigate the effect of water extraction along Sungai Selangor towards altering the amount of salt content in the river. The hydrodynamic modeling with regards to the salt content is expected to support long term assessment that may affect the berembang trees as a result of changes in the flow from upstream because of the water abstraction activity for domestic water supply.
Keywords: Salinity intrusion; berembang trees; fireflies; hydrodynamic modeling; water extraction; estuary.

1 Introduction

Kuala Selangor has been synonymous with firefly (Pteroptyx tener) watching (see Figure 1). Just outside Kuala Selangor town is the quiet hamlet of Kampung Kuantan, site of one of the largest firefly colonies in the world. Kampung Kuantan is located 25 km from the river mouth. Tourists from near and far flock to Kampung Kuantan to take a boat trip along the Selangor River to have a closer look at what is considered to be the 'eighth' natural wonder of the world. What is special about these small insects is that they display their flashes of light synchronously while congregating in large numbers on certain trees. They particularly favour 'berembang' trees (Sonneratia caseolaris), the branches of which overhang the riverbank (Figure 2). At a glance, it would seem as if we are looking at a row of Christmas trees lighting up the night, and we cannot help but wonder how on earth such a small creature can produce such amazing light. The firefly has a close relationship with the river ecosystem at Kampung Kuantan. The ecosystem comprises the Selangor River and the different types of vegetation especially berembang trees that glow on its bank. Living at the lower reaches of Sungai Selangor, the fireflies are affected not only by activities in their vicinity, but by activities in the entire river basin. The berembang trees only thrive in weakly saline water and a continuous freshwater outflow is necessary to prevent the water at the firefly habitat from becoming too saline. However rapid economic development in the basin and the strong demand for the water resources puts pressure on the ecosystem. Changes in the river water quality as a result of pollution or the building of the dam and barrage further upstream may eventually have an impact on the survival of the snail and the riverside vegetation on which the fireflies depend. To ensure future sustainability of Sungai Selangor as a reliable source of water, protection of water source alone is not sufficient. An effective planning and control of the whole river basin is essential.In the long term, the survival of this 'eight' natural wonder of the world will be dependent on our ability to understand the ecology and habitat requirements of the firefly, and our determination to manage the river system. Integrated river basin management is an important new strategy and vital ingredient in achieving successful water resource management planning in the country.

Figure 1: Firefly (*Pteroptyx tener*)

Image: European Physical Society

Figure 2: Berembang Tree and its fruit

The objectives of this study are:

a. To develop a 1-Dimensional flow and salinity model for Sungai Selangor basin using unsteady flow.
b. To carry out hydrodynamic numerical modeling to access the parameter that governed the amount of salt in the river.
c. To investigate the effect of water extraction along Sungai Selangor towards altering the amount of salt content in the river.

2 Study Area

Selangor River Basin commands a catchment area of about 1960 sq. km, nearly a quarter of the total area of the State of Selangor. The Basin is located to the north of Kuala Lumpur City, bounded by Klang river basin in the south and Bernam River Basin in the north. The Selangor river rises in Titiwangsa range bordering the State of Pahang and flows in an approximately southwest direction, before discharging into the Straits of Malacca. The mainstream length is about 110 km. The Basin is reach with natural and ecological systems. The upper Basin provides a green and pristine upland with unique flora and fauna, while the downstream areas have a unique natural ecosystem wonder, i.e. internationally known firefly colony at Kg. Kuantan. The Basin in its natural state is still largely a rural catchment. Figure 3 showed the location of the study area.

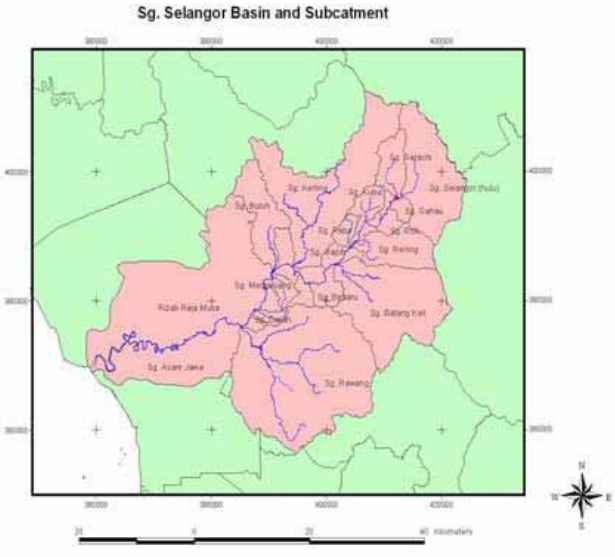


Figure 3: Location of study area

3 Methodology

This study involved field measurements, data collection and development of salinity model, which include hydraulic and salinity simulation. The salinity model shall be able to describe the present situation as well as predict future trend of salt water intrusion.
A hydrodynamic model is set up and developed in this study on the behaviour of the saline intrusion and movement in the river system. The model is calibrated by using a 1-Dimensional hydrodynamic InfoWorks RS. It deployed full St. Venant equation for shallow water which is also suitable for water quality and sediment transport modeling.
The modeling involves two phases which are developing a flow model and secondly a salinity model. The model covers from river mouth up to Rantau Panjang hydrological station. After the calibration process,

various analyses can be carried out to look at the salinity behaviour with the change of flow from upstream of the river.

3.1 Site Visit and Data Collection

Site visit was carried out a few times in order to gather information about the salinity and berembang trees. NAHRIM researchers with the help from DID Kuala Selangor staff conducted sampling of salinity at various location along the river and all location were recorded using GPS. The survey was carried out on the 23 August 2005 and 16 February 2006. It is quite fortunate that the sampling cover both low and high flow. Photo during the site visit are shown in Figure 4.

Figure 4: Photo during field work

3.2 Observation

The visual inspection indicates that the growth of the berembang trees started at about 6 km and ended at about 34 km from the river mouth. Therefore salinity sampling was carried out covering this stretch of the river.

3.3 Modeling

The hydrodynamic model is carried out to cover Sg. Selangor river system from its river mouth up to Rantau Panjang which is free from tidal effect. Total distance of the model is 57 km. The main input to the model is the flow measured at the Rantau Panjang station, tide and salinity concentration at the river mouth.

3.4 Calibration

Flow and water level calibration was carried using data taken in November 2005 and comparison was carried out with measured water level at Kg. Asahan. The flow from upstream cover both high and low flows. The most suitable Manning's coefficient 'n' value use in the calibration is 0.020. Figure 5 below shows the input data for the calibration process. Figure 6 shows the tide level at Kuala Selangor while Figure 7 shows the comparison between observed and simulated water level.

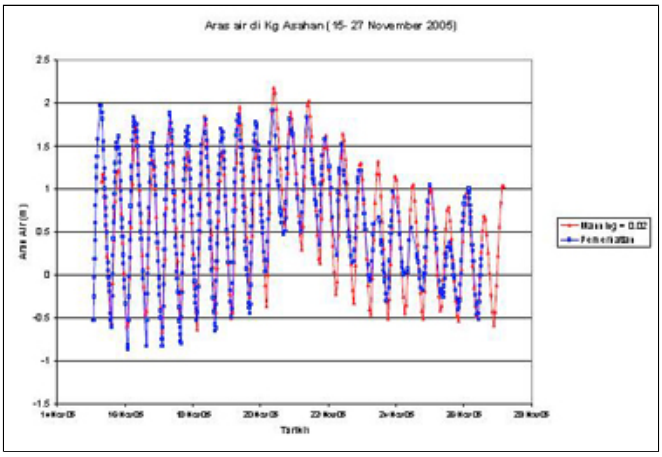


Figure 5: Inflow at Rantau Panjang Station and water level at Kg. Asahan

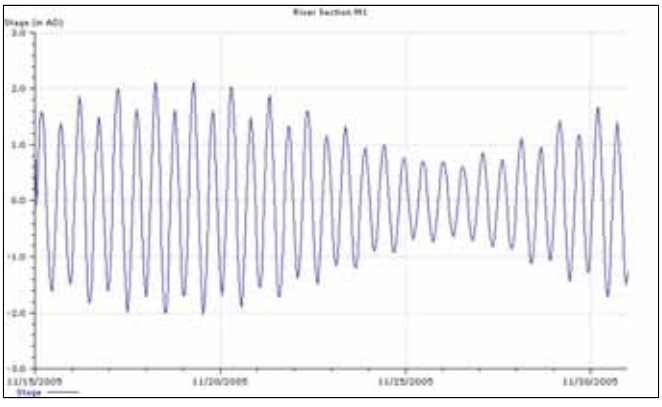


Figure 6: Tide level at Kuala Selangor

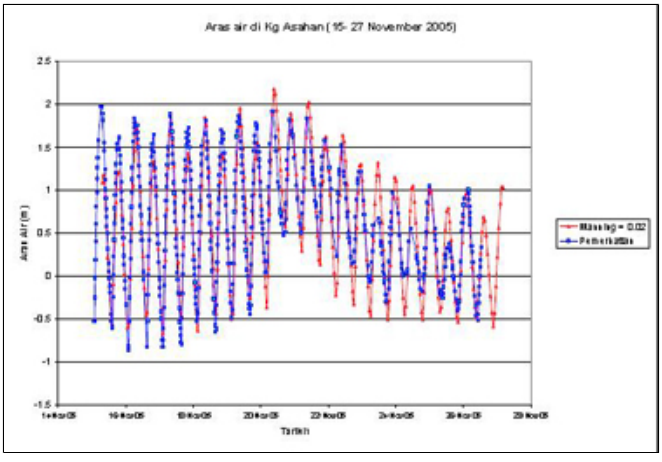


Figure 7: Comparison between observed and simulated water level

4.4 Salinity Calibration

Before the model can be use to analyse the behaviour of the salinity movement, a calibration need to be carried out. Two salinity sampling were done in August 2005 and February 2006. There are three water intakes operating at Batang Berjuntai, the SSP1, SSP2 and SSP3 which extract 950MLD, 950MLD and 800 MLD respectively. The total amount of water extracted from the river is equivalent to 30 cumecs.

The salinity calibration was carried out for the month of August 2005. This can be considering a dry month with average flow from upstream at Rantau Panjang set to 20 cumecs. Final flow after passing through the water intake is assumed at 10 cumecs. The simulated salinity results are shown in Figure 8 and Figure 9 and the comparison of results between observed and simulated salinity at Kg. Bukit Belimbing and Kg. Kuantan is shown in Table 1. Table 2 shows the salinity comparison between observed and simulated at various locations in February 2006

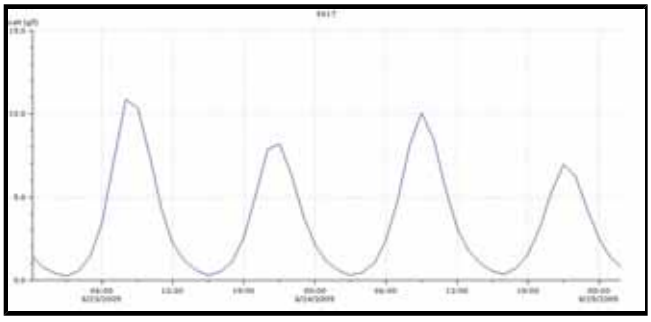


Figure 8: Salinity at Kg. Bukit Belimbing

5saltMin0.014Max1.848Simulation Plot Produced by Abd Jalil (3/15/2006 2:47:08 PM) Page 9 of 33Water Quality Sim: >selangor salinity>Water Quality Run Group>august2005>Salinity#5 (3/15/2006 2:46:24 PM)Selection List: Custom Selection

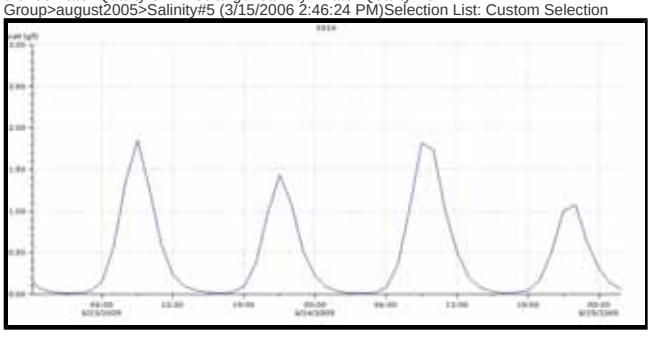


Figure 9: Salinity at Kg. Kuantan

Location	Time (hours)	Salinity (ppt) Observed	Salinity (ppt) Sim
Kg. Bukit Belimbing	9: 48 am	10	9.4
Kg. Kuantan	10:15 am	2.1	1.4

Table 1: Salinity comparison between observed and simulated in August 2005

		Salinity (ppt)	
Description	Time	Observation	Simulated
Kuala Selangor Bridge	4.20 pm	0.2	0
Bukit Belimbing	4.34 pm	0	0
Kg. Kuantan	4.45 pm	0.1	0
km 30	4.59 pm	0	0
km 33	5.09 pm	0	0
Kg. Asahan	5.15 pm	0	0
km 30	5.30 pm	0	0
Kg. Kuantan	5.39 pm	0	0
Bukit Belimbing	5.49 pm	0	0
km 14 (Kg			

Table 2: Salinity comparison between observed and simulated in February 2006

Sepakat)	5.55 pm	0.2	0.5
km 10	6.05 pm	4.7	7
km 8	6.10 pm	11.2	18
Kuala Selangor Bridge	6.30 pm	25.3	27

5 ANALYSIS

Preliminary simulation was carried out for year 2000 flow. The result is shown in Figure 10 below at Kg. Bukit Belimbing and Kg Kuantan.

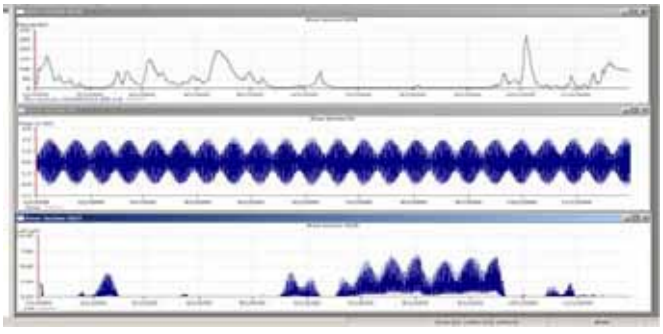


Figure 10: Top – Flow at Rantau Panjang; Middle – Tide level at river mouth; Bottom – salinity at Kg. Kuantan

The analysis shows that, salinity at Kg. Kuantan increase during low flow of the year. The salinity patterns also follow as tide reach spring tide.

One simple analysis was carried out to see the effect of water intake. The flow from upstream was reducing to 5 cumecs and comparison at various places was done. For the purpose of this paper, two scenarios were compared. From the result, it can be seen clearly that the salinity along the river increases once the flow is reduce (Fig. 11 to Fig. 14). The model was able to predict the values and extent of the salinity intrusion. It is also interesting to note that saline water does travel further upstream which was estimate to about 5km.

5saltMin1.3410.196Max13.51210.839Simulation Plot Produced by Abd Jalil (3/15/2006 3:33:25 PM) Page 2 of 38Water Quality Sim: >selangor salinity>Water Quality Run Group>august20055cumecs>Salinity#5 (3/15/2006 3:32:18 PM)Water Quality Sim: >selangor salinity>Water Quality Run Group>august2005>Salinity#5 (3/15/2006 2:46:24 PM) Selection List: Custom Selection

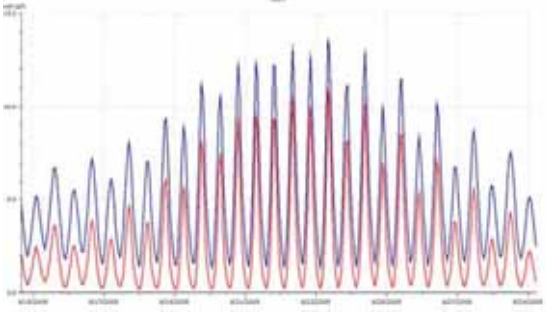


Figure 11: Comparison of salinity for different flow at kg Bkt Belimbing

Simulation Plot Produced by Abd Jalil (3/15/2006 3:33:25 PM) Page 9 of 38 Water Quality Sim: >selangor salinity>Water Quality Run Group>august20055cumecs>Salinity#5 (3/15/2006 3:32:18 PM) Water Quality Sim: >selangor salinity>Water Quality Run Group>august2005>Salinity#5 (3/15/2006 2:46:24 PM) Selection List: Custom Selection

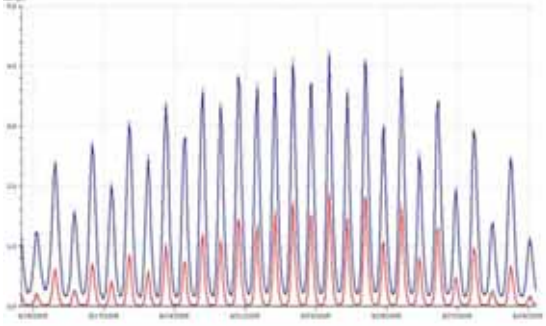


Figure 12: Comparison of salinity for different flow at Kg Kuantan

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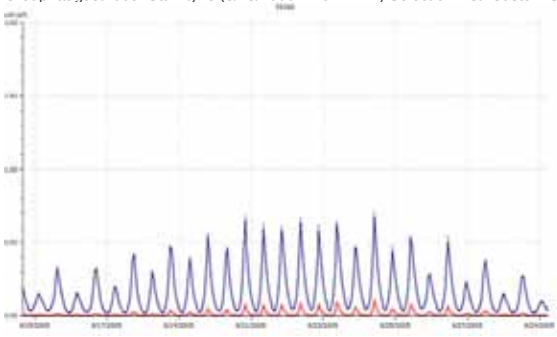

Figure 13: Comparison of salinity for different flow at Kg. Asahan

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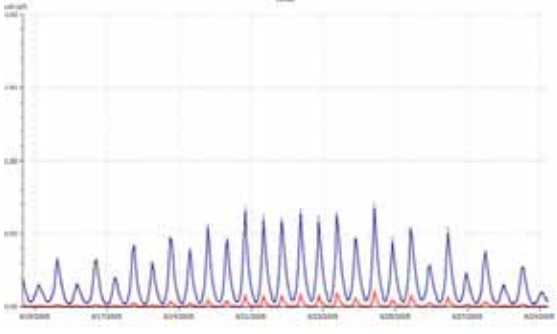

Figure 14: Comparison of salinity for different flow at km 39 from river mouth

6 CONCLUSION

This paper does not comment on the effect of salinity to the berembang tree. However the result indicates that expert in berembang tree shall be able to analyses the effect of salinity change to the tree. Therefore the hydrodynamic modeling will be useful tools in predicting the salinity change in the river which shall effect the growth of the berembang trees.

The study is still at the early stage. More data is required to enhance the modeling process. However it can be indicate that the output from the modeling will be of a great help and support to in monitoring the effect on salinity changes due to the water extraction in Sg. Selangor. The model shall also be used to predict for the long term effect on salinity to the river system.

Acknowledgments

The authors would like to thank to DID, Kuala Selangor and all River Research Centre & Water Quality & Environment Research Centre staff for their involvement in this project.

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4. Wallingford Software Ltd (2005). InfoWorks RS, Wallingford Software, UK.
5. Tyrone Parkinson (2006). Saline Intrusion Modelling, Wallingford Software. Paper presented at NAHRIM Salinity Intrusion Sg. Selangor, Workshop.

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Regional Meeting on Hydro-informatics and Developing Knowledge Hub Networks, China, 15-17 October, 2008

Date: October 15-17, 2008
Venue: Zhengzhou City, Henan Province, People's Republic of China
Host: Yellow River Conservancy Commission (YRCC), Ministry of Water Resources

NARBO Secretariat attended the Regional Meeting on Hydro-informatics and Developing Knowledge Hub Networks held in Zhengzhou, China with the representatives of many NARBO member organizations.
The purpose of this Regional Meeting was to share YRCC's experience among the participants and to demonstrate how the decision support systems can be introduced or improved in river basins. The meeting also marked the launch of the Center for Hydro-Informatics in River Basins (CHIRB) which is hosted by YRCC.

In the Plenary Session on Day 1, Opening of Asia-Pacific Water Forum (APWF) Knowledge Hubs Regional Meeting and CHIRB Launching Ceremony kicked off. In the Opening Session, some NARBO members made opening remarks.


Plenary Session

From the afternoon of Day 1 to the evening of Day 2, the participants were divided into 2 groups and had discussions respectively.
The theme of Track 1 was "Hydro-informatics and IWRM". Some representatives of NARBO member organizations as well as those of CHIRB member organizations presented their work contents and discussed how CHIRB and its partners could improve the partnership.

In this discussion, NARBO Secretariat introduced our activities to CHIRB members to refer to CHIRB activities. CHIRB members supported our activities and adopted a part of them in their own action plan.
The theme of Track 2 was "Knowledge Hub Networking". Most of the existing hubs presented their activities and business plan as a Regional Water Knowledge Hub, and the participants improved their partnership each other.
In this session, NARBO Secretariat also introduced its activities to the hub organizations and its candidates.


Group Discussion

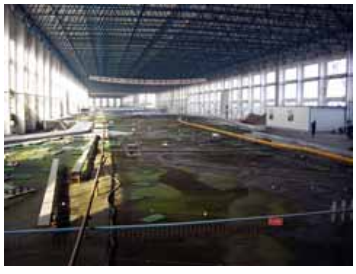

Explanation and Discussion

On Day 3 (last day), participants were invited to study visit to the Yellow River System.
The participants were introduced three kinds of Yellow River; the first one was Natural Yellow River, the second one was Digital Yellow River, and the third one was Physical Model of Yellow River. They visited all of these three kinds of Yellow River.
As the Natural Yellow River, in addition to Yellow River itself along Zhengzhou City, the participants visited standardized Embankments which have been constructed along its either bank for several hundred kilometers.

As the Digital Yellow River, the participants visited the Hydraulic Station built in 1938 and Yellow River Water Allocation and Remote Control Center where flow rates, water quality and the amount of intake are monitored in real time.
As the Physical Model of Yellow River, the participants visited the models which were reproduced to estimate the effect and impact by conducting a project in advance.
In this study visit, the participants could learn and enjoy the large-scale nature and artificial materials which this huge country China has.


Natural Yellow River


Digital Yellow River


Physical Model of Yellow River

Preliminary Report on Seminar "Key for Success in Implementing IWRM at River Basin Level"

Date: 11th November 2008
Venue: Saitama Culture Center, Saitama, Japan
Participants: approx. 160 people including resource persons
Organized by: UNESCO, Ministry of Land, Infrastructure, Transport and Tourism (MLIT, Japan) and Japan Water Agency

Seminar "Key for Success in implementing IWRM at River Basin Level" was held as a pre-event of 2nd Steering Committee of "Integrated Water Resources Management Guidelines at river basin level." The Guidelines here refer to the ones which the United Nations has worked on and proceeded with the formulation through UNESCO as a secretariat.
Formulation of IWRM Guidelines is set as one of NARBO Action Plan activities in 2008-2009. Dr. Mochammad Amron, Chairperson of NARBO, included a Steering Committee member, made a presentation on Challenges of Brantas River Basin in the seminar.

The seminar kicked off with an opening remark by Mr. Shuhei Kazusa, Director-General, Water Resources Department, Land and Water Bureau, MLIT, and he started stating with an introduction of the process the Steering Committee have had to formulate the Guidelines.
Mr. William Cosgrove, Former Vice-president of the World Bank, made a keynote speech. In his speech, he pointed out that we should look for examples including an adaptive process where we can see why and how they did work and what were the keys and successful factors. He also mentioned that IWRM would not remain static but would take evolutionary steps, and it would take time but never be brought to an end.
Part 1 of the seminar focused on "From the viewpoint of overall basin and each sector." It means that it is essential for practical IWRM to overview whole basin and to be acquainted with the mind of each sector. In this sense, Tone Canal Project was taken as a case study and panel discussion was held with experts from waterworks sector, irrigation sector, and coordinating side engaged in the project at that time. Also speech on river administration was delivered by MLIT as a good example of viewing and administrating whole river basin.
The theme of Part 2 was "Overview & Challenge of IWRM." Mr. Shahbaz Khan made a presentation titled "Importance of River Basin Approach for True Stakeholder Participation in Water Management." Three case studies were presented by guest speakers from abroad. Challenges of Brantas River Basin (Indonesia), Murray-Darling River Basin (Australia) and La Plata River Basin were presented by Mr. Mochammad Amron, Mr. Tony Jakeman and Mr. Victor Pochat respectively.

At the final stage of Part 2 of the seminar, Mr. Shinsuke Ota, Executive Vice President of JWA, gave us some explanations for an overall structural design of the Guidelines, and the user-friendly tools such as extraction of key-for success and pentagram. Besides, there was an encouraging and optimistic comment on the Guidelines from Mr. Wouter T Linklaen Arriens, Lead Water Resources Specialist, ADB.

Eventually, the seminar was summed up by Mr. Toshiki Aoyama, President of JWA, which continued working on overtime than expected, and ended successfully.

Programme

Opening Remarks

Shuhei Kazusa,
Director-General, Water Resources Department,
Land and Water Bureau, MLIT

Key Note Speech

"Key for Success in Implementing IWRM at River Basin Level"
William Cosgrove,
Former Vice-President of the World Bank,
World Water Development Report (WWDR) Content Coordinator,
World Water Assessment Programme (WWAP)

Part I: Case Study in Japan

"From the viewpoint of overall basin and each sector"
[Panel Discussion]
Breakthrough in solving "water stress" of Tokyo and its suburbs - Tone Canal Project -
Facilitator
♦ Kenzo Hiroki,
Director, Water Resources Strategy Unit, Water Resources Planning Division,
Water Resources Department, Land and Water Bureau, MLIT
Panelists
♦ Hiroshi Ugata, former Tokyo Prefecture Official
♦ Shigemaro Nishina, former Saitama Prefecture Official
♦ Tetsuya Ishii, former director of Tone Canal Control Center

[Speech on River Administration in Japan]
River Basin Management in Japan - Flood Control Measures, Water Resources Management -
Hitomi Godou
Director of River Information Office, River Bureau, MLIT

[Comment]
Tsuneaki Yoshida, Professor, University of Tokyo

Part II: Overview & Challenges of IWRM

[Presentation]
Shahbaz Khan,
Chief, Sustainable Water Resources Development and Management section, UNESCO-IHP
Importance of River Basin Approach for True Stakeholder Participation in Water Management

Mochammad Amron,
First Advisor to Minister for Development Integration,
Ministry of Public Works, Indonesia (NARBO Chairperson)
Challenge of Brantas River Basin

Tony Jakeman,
Director, Integrated Catchments Assessment and Management Centre, Australia
IRBM: The Murray-Darling Basin

Victor Pochat,
Professor, Universidad Nacional del Litoral, Argentine
Challenge of La Plata River Basin

[Wrap-Up]
Shinsuke Ota, Executive Vice President, JWA

[Comment]
Wouter T. Lincklaen Arriens
Lead Water Resources Specialist, Asian Development Bank

Closing Remarks

Toshiki Aoyama,
President, JWA

NARBO Newsletter — 16th Issue March 2009

Topics	
Core Activities	Regional Workshop on Water and Climate Change Adaptation Twinning Program (2) - Training Course Held in Japan NARBO's 5th IWRM Training: Keys for Success
Members Initiative	ADB and JWA agreed to strengthen alliance for water security in river basin
Announcement	Introduction of NARBO New Members from Viet Nam
From Secretariat	Submission deadline of Member's Annual Report 2008

Core Activities

Regional Workshop on Developing Partnerships for Water and Climate Change Adaptation (Workshop Proceedings) 1-5 December 2008 Bangi, Selangor, Malaysia

Dr. Lee Jin, Malaysia Water Partnership

S1. Background and Workshop Objectives

The Asia Pacific Water Forum (APWF) (www.apwf.org) is an independent, nonprofit, nonpartisan, and nonpolitical network formed in 2006 with a mission to promote sustainable water management by championing best practices, boosting investments, building capacity, and enhancing cooperation throughout the Asia-Pacific region.

As part of its approach to achieve its mission a number of key institutional partners of the APWF has agreed to take the lead to identify strategies and initiate actions to achieve progress under 3 Priority Themes and 5 Key Result Areas (KRAs). (>>See more)

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Twinning Program (2) - Training Course Held in Japan

Dr. Doan Thi Tuyet Nga, Department of Water Resources, MARD

We were very lucky to be selected by ***Vietnam Water Resource Department*** for a ***training course*** held in ***Japan*** in the human resource-exchange programme by NARBO Vietnam and its Japanese counterpart. Nearly one month of the training

course has led to our unexpected comparison between what Japan has done and what ***Vietnam*** has done in terms of water source management, which is undeniably different. (>>See more)

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NARBO's 5th IWRM Training: Keys for Success

Tadashige Kawasaki, ADBI

NARBO secretariat conducted the 5th IWRM Training in Hoi An, Viet Nam from 18th to 25th of February with support of the Vu Gia Thu Bon (VGTB) river basin organization, people's committee of Quang Nam province, Da Nang City, and the Department of Natural Resources and Environment. Twenty-four participants from six countries participated in this training program.
In holding this training, we consulted with the Technical Advisory Committee member about its concept, and conducted the preliminary meeting at the venue in November 2008. (>>See more)

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Members Initiative

ADB and JWA agreed to strengthen alliance for water security in river basin

Michio Ota, JWA

Mr. Haruhiko Kuroda, the President of Asian Development Bank (ADB) and Mr. Toshiki Aoyama, the President of Japan Water Agency (JWA) singed Letter of Intent (LOI) on 12 January 2009, at the ADB Headquarters in Manila, Philippines. Dr. Mochammad Amron, Chairperson of NARBO, First Advisor to Minister of Public Works, Indonesia, and Mr. K. W. Ivan de Silva, Vice Chairperson of NARBO, Director General Mahaweli Authority of Sri Lanka, witnessed the signing of the LOI, titled 'The Letter of Intent for Collaboration to Improve Water Security in River Basins through the Network of Asian River Basin Organizations (NARBO)'. (>>See more)

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Announcement

NARBO Member Organization
Map [PDF]

NARBO New RBO Members from Viet Nam

NARBO secretariat is pleased to announce (A) Ca River Basin Management Council, Vietnam and (B) Cau River Basin Planning Subcommittee, Vietnam to be new NARBO member organizations as RBOs in accordance with the NARBO Charter Article 4.1 (1)(a). (>>See more (A) (B))

NARBO Member Organization Map including new members are now available. (>>See the map)

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From the secretariat

NARBO Activity Plan

Year	Activity Contents	Date	Venue
July 2009	The 3rd Thematic Workshop on Water-Related Disaster and Its Management in Asian Countries	July 2009 (tentative)	Kuala Lumpur, Malaysia
Feb 2010	The 4th NARBO General Meeting	February 2010	TBD

Submission deadline of Member's Annual Report 2008

The final **deadline** for the submission of the NARBO member's Annual Report 2008 is March 31. Every RBO member has an obligation to submit the report according to NARBO Charter.

The Secretariat has prepared the simple form of the annual report 2008 on NARBO website. Please kindly find the format from the website and submit the annual report no later than March 31.

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Network of Asian River Basin Organizations
Headquarters of the secretariat: International Affairs Division, Japan Water Agency (JWA)
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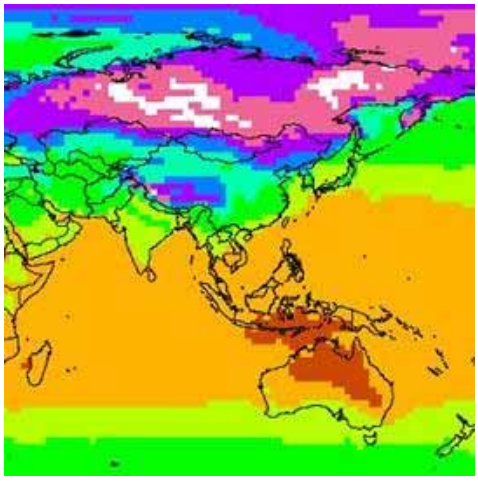
NARBO Newsletter is produced by the Narbo Secretariat to provide current information about NARBO activities to readers who are interested in IWRM issues specifically in Monsoon ASIA.
For comment/information/inquiry, please contact narbo@water.jp Thank you for your cooperation!

Regional Workshop on Developing Partnerships for Water and Climate Change Adaptation (Workshop Proceedings) 1-5 December 2008 Bangi, Selangor, Malaysia



S1. Background and Workshop Objectives

The Asia Pacific Water Forum (APWF) (www.apwf.org) is an independent, nonprofit, nonpartisan, and nonpolitical network formed in 2006 with a mission to promote sustainable water management by championing best practices, boosting investments, building capacity, and enhancing cooperation throughout the Asia-Pacific region.

As part of its approach to achieve its mission a number of key institutional partners of the APWF has agreed to take the lead to identify strategies and initiate actions to achieve progress under 3 Priority Themes and 5 Key Result Areas (KRAs). Developing knowledge and lessons is one of the KRAs and is central to the APWF approach. Thus, the APWF *"KnowledgeHubs"* (www.apwf-knowledgehubs.net) has been initiated as one of the strategies to achieve the objectives of this KRA. The *"KnowledgeHubs"* is a network of regional water knowledge hubs that was officially launched in June 2008 in Singapore. It was established through a cooperation agreement between Singapore's Public Utilities Board (www.pub.gov.sg), UNESCO-IHE Institute for Water Education (www.unesco-ihe.org), and ADB (www.adb.org).

Each regional knowledge hub shall be a center of excellence in a particular water domain and shall be committed to improving water security in the Asia-Pacific region by (a) promoting knowledge sharing, (b) developing capacities, and (c) championing feasible solutions for priority water topics among their clients, i.e. the water-related institutions in the region. Since solutions to water problems are multidisciplinary the hubs shall also collaborate to serve their clients in the region.

The National Hydraulic Research Institute of Malaysia (NAHRIM) (www.nahrim.gov.my/wkh/) has been identified by the APWF as the "Water and Climate Change Adaptation" regional knowledge hub in Southeast Asia. The hub was officially launched on 1 December 2008 in Bangi, Malaysia. In conjunction with the launch, NAHRIM and its partners, supported by ADB, has organized a 5-day workshop for its potential clients to share knowledge, identify their climate change projection and adaptation needs and also project concept proposals that can be developed and implemented in 2009.

The objectives and focus of the workshop are as follows:

Increase understanding of the impacts of climate change on water management.
Develop partnerships for better results in climate change projections, impact assessments, and adaptation strategies.
Help ADB clients formulate projects for 2009 with support of the regional knowledge hub, NAHRIM and its partners

S2. Workshop Presentations and Outputs

A total of 33 slide presentations were made during the workshop. They were organized under the following two themes:

Climate change modeling and related studies (5 presentations)
Climate change adaptation case studies (28 presentations)

The 28 climate change adaptation case studies were further grouped under the following 6 categories:

General themes (6 cases)
Case studies from Central and East Asia (3 cases)
Case studies from South Asia (4 cases)
Case studies from Mekong Region (7 cases)
Case studies from Indonesia (3 cases)
Case studies from Philippines (5 cases)

The 33 presentations can be accessed at http://www.nahrim.gov.my/wkh/seminar.html. The Workshop Proceedings is now being prepared and they will be available from NAHRIM in April or May 2009.
The participants in the workshop were divided into 6 groups. The groups were required to discuss and identify the potential climate change issues related to their respective group themes and, to prepare a list of possible strategies to address the identified issues. They were also required to develop one or more indicative project proposals for implementation in 2009 to implement some of the strategies in their prepared list of adaptation strategies. In particular, the “Climate Change Projections Group” was required to discuss the current status and issues related to climate change modeling, the needs of the region and the strategies to address those needs. A total of 34 indicative project proposals have been proposed by the workshop participants.

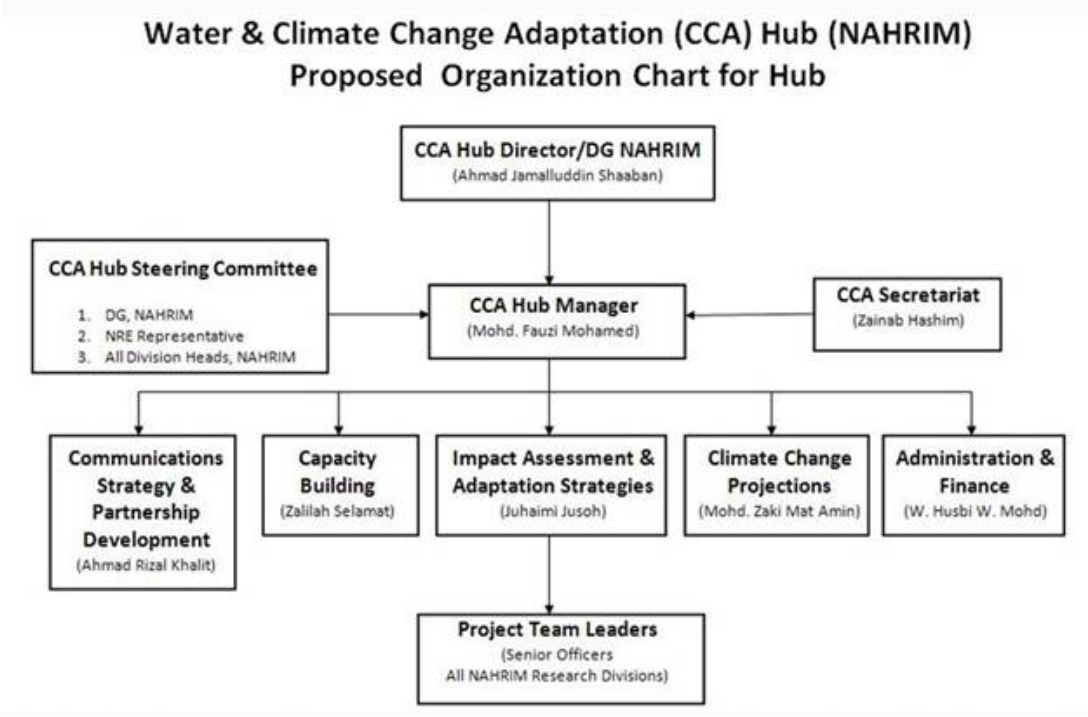
S3. The Way Forward and Plans for 2009

The workshop concluded with a plenary session where NAHRIM, as the Water and Climate Change Adaptation (WCCA) hub, highlighted its services and presented its plans to respond to the expressed needs and project proposals that have been gathered during the workshop. It also allows its workshop partners, ADB, NARBO and Team Japan, to respond to the needs expressed during the workshop. The final event in the workshop was the plenary discussion session where all workshop participants were also given an opportunity to share their learning experience during the workshop and discuss the plans for 2009 and beyond to support them in achieving the objective of adapting to climate change.
Following from the December 2008 Workshop a meeting was held at ADB’s office in Manila from 25-27 February 2009 to review the indicative project proposals from the December 2008 Workshop and to discuss the details on how NAHRIM and its partners can achieve the Hub’s objectives.
Basically, NAHRIM plans to service its clients and facilitates regional networking with its partners through 5 strategic work themes. They are:

Communications Strategy

Partnership Development
Climate Change Projections
Impact Assessment & Adaptation Strategies
Capacity Building

The figure below highlights how the Water and Climate Change Adaptation Hub, NAHRIM, is organized to serve the region. An "APWF Steering Group on Water and Climate Change" has also been formed to work with the Hub in achieving its objectives.



Organized by:

MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT, MALAYSIA

NATIONAL HYDRAULIC RESEARCH INSTITUTE OF MALAYSIA

NETWORK OF ASIAN RIVER BASIN ORGANIZATIONS

Asia Pacific Water Forum (APWF)

NETWORK OF ASIAN RIVER BASIN ORGANIZATIONS

as of December 2008

Training Course Held in Japan

Dr. Doan Thi Tuyet Nga, Department of Water Resources, MARD

We were very lucky to be selected by ***Vietnam Water Resource Department*** for a ***training course*** held in ***Japan*** in the human resource-exchange programme by NARBO Vietnam and its Japanese counterpart. Nearly one month of the training course has led to our unexpected comparison between what Japan has done and what ***Vietnam*** has done in terms of water source management, which is undeniably different. What you have done is different from what we have done in Vietnam not only in the areas of investment in projects and infrastructure but only in the awareness and implementation of water works management, restoration and maintenance. Our trip was a wonderful chance for us to re-evaluate the role of ***Water Resource Department*** - an organ in charge of reservoirs and water systems in collective management of ***water resource***.

Right after our return to Vietnam from Japan, we notified our leaders about the training course and shared what we had learned in the course in Japan. It is a lucky coincidence that the leaders of Water Resource Department have been very interested in data of reservoirs for management. In the coming years, Water Resource Department will set up a centre for reservoir management, and two of the three people who have participated in the training course will be members of the group in charge of foundation of the centre. We are looking forwards to your closer cooperation with us so that we can have more opportunities of learning your experiences in the future. Our strong impression of a beautiful and peaceful Japan, kind and hardworking ***Japanese people***, flavored and delicious ***Japanese rice*** and distinct sushi will always be on our mind.

We would like to express our special thanks to leaders of JWA and leaders and staff of Foreign Affairs Department for giving us such a wonderful chance.

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NARBO's 5th IWRM Training: Keys for Success (2009) (Viet Nam)

Outline of Training Course

NARBO secretariat conducted the 5th IWRM Training in Hoi An, Viet Nam from 18th to 25th of February with support of the Vu Gia –Thu Bon (VGTB) river basin organization, people's committee of Quang Nam province, Da Nang City, and the Department of Natural Resources and Environment. Twenty-four participants from six countries participated in this training program.

In holding this training, we consulted with the Technical Advisory Committee member about its concept, and conducted the preliminary meeting at the venue in November 2008.

The training goals are

1) to enhance the understanding the concept of IWRM,

2) to support participants with practical tools to help improve their practice of IWRM and to expand network for IWRM among participants.

This time, we used the VGTB river basin as a case study. A team led by Dr. Peter Oliver of the International Water Center based in Brisbane, Australia, particularly did a magnificent job of handling the training competently, and demonstrated the strong leadership.

This training course consisted of lectures by specialists, study visits and group work. We introduced "IWRM Guidelines" to the participants and explained the concept of IWRM by showing the "Spiral Model".

Through lectures on the VGTB river basin and study visit, participants learned what's happening in the basin and how they are coping with it.

Based on the lectures and study visits, participants explored the "Key for Success" in the VGTB river basin by group-work activities, and at last they introduced the result of group-work.

We obtained the excellent presentations which correctly reflected the result of the lecture and the study visit. Judging from the collected replies of the questionnaires filled in by the participants, we seemed to be able to satisfy their expectations.

Thus far, we can say this training was successful.

NARBO secretariat will get started for the next IWRM Training soon, and try to improve the training session so that we can offer more satisfaction to participants.

Session

Study Visit

ADB and JWA agreed to strengthen alliance for water security in river basin

Mr. Haruhiko Kuroda, the President of Asian Development Bank (ADB) and Mr. Toshiki Aoyama, the President of Japan Water Agency (JWA) singed Letter of Intent (LOI) on 12 January 2009, at the ADB Headquarters in Manila, Philippines. Dr. Mochammad Amron, Chairperson of NARBO, First Advisor to Minister of Public Works, Indonesia, and Mr. K. W. Ivan de Silva, Vice Chairperson of NARBO, Director General Mahaweli Authority of Sri Lanka, witnessed the signing of the LOI, titled 'The Letter of Intent for Collaboration to Improve Water Security in River Basins through the Network of Asian River Basin Organizations (NARBO)'. This will confirm the cooperative relationship between ADB and JWA to expand the scope of NARBO activities.

In the LOI, ADB and JWA:

1. Introduce and develop Integrated Water Resources Management (IWRM)*2) in river basins in each country
2. Work and collaborate with Center for River Basin Organizations and Management (CRBOM) in Indonesia
3. JWA supports ADB investment business
4. Strengthen the interaction with leaders and decision makers though NARBO activities

▸ See LOI (Letter of Intent)

Specific and practical ADB-JWA cooperative plan will be on a case-by-case basis decided and agreed through memorandum of agreement (MOA).
NARBO showed steady growth for 5 years since its establishment in February, 2004, along with the steady increase in the number of member organizations to 67, while ADB and JWA well cooperated as NARBO secretariat. The LOI signed this time will explore expanding and strengthening the NARBO's presence and capability.

Front row, left to right: Dr. Amron, President Kuroda, President Aoyama, Mr. K. W. Ivan de Silva

Mr. Kuroda and Mr. Aoyama