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Mission reference
2006 C3 T16 M1

Date: June 8th 2006

Mission report

Expert Name and Function

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Note: Dr Ruth Gamboa University of the Philippines Mindanao and Cristy Gallano, CRS Philippines also participated in the cross visit activities and were funded by the International Centre for Water and other sources.

Wording of missions: *In short, objective or content of mission*

The overall impact of the first mission from Davao River Basin to the Murrumbidgee River Basin was to deepen the bilateral relationship and enhance the knowledge of the Davao participants in the methods of IWRM implemented in the Murrumbidgee. Both partners are lead actors in the Australia- Asian Region of the HELP UNESCO Network of River Basins. During the Mission the HELP philosophy and framework was used to provide guidance for analysis of how hydrological sciences are being integrated with users and environmental demands among stakeholders in the Murrumbidgee River Basin. The report seeks to highlight learnings which will be practical for the user communities (farmers, women, local technical officers and local policy makers) in the Davao River Basin.

Much of the mission took place in the field visiting local stakeholders and looking direct at there users and management techniques for water resources. The participative research methodologies and tools developed in the Murrumbidgee are generic and the mission looked at investigating adaptable and appropriate Water Management tools for low tech scenarios in the Davao. Experiences and approaches were reviewed to enhance water management techniques in the Philippines. As an interim result a proposal being developed by CRS will integrate the learning's gained.

Under the leadership of Professor of Hydrology Shahbaz Khan, International Centre for Water, the Davao Mission participated in the Wealth from Water Festival which included the announcement of an important initiative for urban water management, planning meetings of UNESCO delegates from the region, a public debate on sustainable water management as well as education and extension programs for senior high school students.

Finally Dr Ruth Gamboa, University of the Philippines Mindanao, researched the concept of how to develop in partnership with Murrumbidgee Stakeholders a formal curriculum on natural resource management that can be offered initially at the University of the Philippines.

1. CONTEXT

Place, location: *Country visited, Basin Organization concerned, other information about location*

Murrumbidgee River Basin, NSW Australia.

Hosted at the: International Centre for WATER (ICW), Charles Sturt University, Wagga Wagga, NSW.

Mission duration:

Mission Dates; May 10th – May 24th plus four days travel.

2. OBJECTIVES

Initial objectives	Results	Results indicator <i>explain with some details how far the results have been achieved if compared to initial objectives</i>
<p>1 <i>To gain exposure on application of agricultural water management tools, such as the SWAGMAN series.</i></p>	<p>ACHIEVED exposure to Water management tools from Basin to individual crop levels, and gained critical understanding of the purpose and functioning of the systems at their various levels.</p>	<p>Exposure to a range of water management tools has been fully achieved with experience gained in 8 water management tools. Number and types of tools exposed to are: Basin Wide Irrigation Systems (1), Weirs (1), Farm Irrigation Systems (3), Small scale water and nutrient management systems (2) & Farm Models (1).</p> <p>Water Management tools at the Basin level including the large scale infrastructure and weirs (Results #1&2) and considered currently not appropriate to the Davao River Basin with the extreme variations in topography, high rainfall levels such a huge infrastructural investment would be not necessary, nor feasible for environmental and social-economic factors. Small scale irrigation system at sub watershed or farm level is deemed likely to be of greater benefit (Results #3&4).</p> <p>The Farm Irrigation systems will be shared with both agro-business farms, such as banana and pineapple plantations, and small scale farmers looking at producing high valued crops such as temperate vegetable in the high elevation areas of the Davao River Basin. The Second system</p>

			<p>reported under Result #4 is adapted from small farmer in the upper reaches of the Davao River. The staff of ICW are looking at improving the science in managing the water allocation and nutrient distribution through the system. The learnings will be shared and tested in the Philippines (once funds have been sourced).</p> <p>SWAGMAN (Result #5) is a systems approach to water management which requires detailed and extensive data in four key components; crop types, Soil types, Ground water Levels & Climatic conditions. Without the extensive data input, however, the accuracy of the model is reduced. Hence, other linear models (or simplified version of SWAGMAN) maybe more appropriate in the Philippines until data on, crops, soils, groundwater and climatic conditions are available through improved monitor systems. The improvement of hydrologic, climatic and soils monitoring should thus be the priority for Davao while slowly introducing the methods and benefits of a systems approach to crop management.</p> <p>A concept paper to collate the learning's and adapted them for appropriate integration in to the Davao river basin will look at the use of efficient water and crop technologies to increase farm productivity and profitability. With indicators such as; farmers adopting smart agricultural water management technologies and, farmer diversifying their crop portfolios in accordance with systems approaches.</p>
<p>2</p>	<p><i><u>To compare experiences with technical people and communities who are involved in multi sectoral teams engaging in addressing issues related to watershed management.</u></i></p>	<p>GAINED experiences in processes and techniques in addressing issues and managing integrated water resources in the Murrumbidgee through Meetings, public debates, forums, workshops and field site visits</p>	<p>1. Thru the Wagga Wagga Water Smart reference panel meeting looking at the strategic direction for HELP initiatives in Wagga wagga exposed to a good example of desire a structural make up for steering IWRM to ensure decision making clout while retaining small group scale flexibility. The example including high level Political representation (3), a Management Group (7-10pax) & Secrtiaty (MOU signed with general direction at this level) with Technical groups as per sector.</p> <p>2. Attended Meeting with MIA covering an introduction to the MIA its scope, functions roles</p>

			<p>and responsibilities. Also conducted farm Visits near Griffith where various water management tools for irrigation were being used. The roles and structure of MIA provides learning in how to consider the sale of water resource other than drinking water. The area of water allocation and pricing is one of the priority focuses for the stakeholders of the Davao HELP Network and will be critical to ensure appropriate management of groundwater and changing for environmental services to maintain water quality and quantity.</p> <p>Lesson learnt will input into the aforementioned concept paper will consider how stakeholders can develop their capacity to sustainable manage the Davao River Basins. Where Community members and stakeholders share knowledge, builds capacity and transfer technology that leads to better management of water resources. And Agro-ecological zones are linked with the existing terrain analysis to guide water and land management policy.</p>
<p>3</p>	<p><u>To develop a concept proposal on a formal curriculum on natural resource management that can be offered initially at the University of the Philippines in Mindanao (and later as a consortium among the local universities) as a joint undertaking between the said university and Charles Sturt University</u></p>	<p>Conducted discussions on what topics, which clients, and which partners could be included in the curricular proposal.</p>	<p>Identified two sessions which will serve as catalyst and venue for soliciting relevant formal curricular needs of Davao City and the neighboring provinces.</p> <p>The first session will be an inter-agency planning workshop among heads of offices in the city and Region XI. Output will be an outline of doable measures specific to land-water issues in the city and region. Target date: August 2006</p> <p>The second session will be a two-week summer course for environmental officers. Output will be specific and practical skills in addressing current land-water issues in the region. Target date: April 2007</p> <p>From the two sessions, CSU and UP Min will craft a possible joint graduate program on NRM. Target date: after session II.</p>

3. ACTIVITIES DEVELOPED during the mission

Activity 1	Topic: <i>Water and Crop user end tools</i>
<p>Exposure visits from upstream to downstream assessing pressures, users, institutions and methods of IWRM in the Murrumbidgee River Basin <i>(Exchange of experience or practice, increasing of knowledge and learning, Development of methodology, Training...)</i></p>	<p>Exposure to Water management tools from Basin to individual crop levels, and outline the purpose and functioning of the systems at their various levels.</p> <p>1. Basin Wide Irrigation Systems Large scale infrastructure for managing and controlling water levels for the Murray and Murrumbidgee Basins for multiply uses. The system sustains and controls water for an agro industry worth 3\$ billion AUS, and hydroelectric power generation as well as other users for biodiversity, inland fisheries, tourism recreation etc. (photos 1-3) 2. Weirs – As the basin wide irrigation system approaches the farm level a series of weirs are used to regulate and monitor distribution of irrigation water to agriculture. (photo 4) 3. Farm Irrigation Systems: different types of Irrigation systems including flood, sprinkler and drip. (power systems). Acquired an understanding of the institutional arrangement for management of water quantity and quality from source, to storage, distribution for environmental flows and irrigated lands for agro production (photos 5-9) 4. Small scale water and nutrient management systems Two simple systems for maximizing water and nutrient use with minimal environmental footprint were developed at the ICW (photos 10-12). One is looking a ways at recycling water, through different crops which are increasingly resistant to salt and other leached minerals, the second system is adopted from upland farms in the Davao Basin. 5. SWAGMAN is a series of models to educate, propose and assess options and make the linkage between climate, irrigation, crops, salinity, groundwater and economics being consistent and persistent by building on past information, understanding, data bases and achievements.</p> <p>Topic: How Irrigation authority manages water with users Murrumbidgee Irrigation Authority MIA has the responsibility to effectively manage project leader and environmental officers provided overview on move from lower pressure flood irrigation to high pressure drip irrigation with grant incentives from MIA and state governments. Increased energy costs but reduction up by up to 30% on water. This can be sold or use to irrigate new lands.</p> <p>Visited local farmers (Mr. Ingret) orange farm – currently using flood irrigation. Labour is a major issues often dependant on transient migrant pickers. Low pesticides use was reported with use of copper and sun oil to management pests (Photos 1-3).</p> <p>Second farmer salt of the earth’ 80 acres of oranges, Switched to drips systems about 97. Only about one hour labour is required to check lines for leaks or blockages, before the flood systems required 3-4 hours of hard manual labour. Water before irrigation is stored in a pond allowing settlements to settle reducing the risk or chances blockages of the small drip pipes. The energy use has increased and with it the costs for the energy but this is of set by the water efficiency savings, nutrient efficiencies and better crop productions rates. (photos 4-6)</p> <p>The Farmers reflected how ‘farmers are always vulnerable, to markets, demands, policy environment and how Orange price were as good a generation ago.’ This statement rings true to the Philippines experiences. But still he saw his orange grove development is seen as a long term investment 10 years plus. At the farm level the water saving with the switch to high</p>

	power systems is cost and environmentally attractive, at a catchment level while the water savings are great the increased energy usage and associated environmental impacts and not fully calculated. Such irrigation system would be attractive to the plantations of the Davao. The overriding consideration locally is that of ground water extractions and lack of ground water balance understood or calculated.
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Activity 2	Topic:
<p>Participation in the water innovation festival & in the HELP UNESCO IHP planning meeting for Asia Pacific Region.</p>	<p>1. Attended Wagga Wagga Water Smart reference panel meeting to look at the strategic direction for HELP initiatives in Wagga wagga. The meeting agreed on establishing a steering committee of three personal for set the strategic direction that ICWater would at as the sectary to push the initiative forward. Learning's, although simple would do no harm to share and reiterate the approach with Philippine stakeholders (highlighted under tips)</p> <p>2. Participated in the final day of the CRC Future Irrigation forums. Presentation from PHD students on the topics of; IWRM and looking at the appreciative method for development a process for implementation at the community level and Processes for reporting on TBL and assessing how (if) the reporting process can lead to great sustainability. This second thesis would produce very interesting learning's for learning organization working in the development field and would value add to PME processes and the benefits of reporting other then satisfying donor needs.</p> <p>After lunch visited the CSIRO Griffith site. Soil nutrient pesticide monitoring conducted, along with development of agriculture equips. One such is a rotavators to over ride the need for burning of rice residues, developed by John Blackwell. Organizational restructuring is pulling the researchers away form the regional sites into Canberra. A core staff will remain but will conduct no more farm trails or research. MIA will hire the building and also potential open it up to rent to other private irrigation industry/consultant. This seems to moving away from the stakeholders, and key water users, but reflects the changing roles of central government bodies with the state bodies. The positive aspect is the potential for cooperation among local payers can prove opportunities for invigoration of activities at the site.</p> <p>3. UNESCO Meeting</p> <p>A key activity coordinating the direction for HELP in the Australia – Asia Region included presentations of HELP framework and achievements to date (Dr Khan) updates from Pakistan land and water, Davao River Basins HELP Network and achievements (D Hearne) New Zealand experience in community participation and updates from the south pacific islands. Followed by direction and roles setting for the RCU, incoming HELP Project leader, further integration with the major research institution of Australia included CSIRO and the CFC Future Irrigation Project. This approved will enable the RCU to attach greater funding to support the regions HELP river basins. The 2007 HELP South Africa Symposium was reviewed with the research focus areas and topic for presentation reviewed and process, invitation and content of the symposium commented upon.</p>

Dr Khan, Mr Zahir and Mr Declan Hearne took part in TV interviews and met with the mayor to help promote the wealth for water initiative, the UNESCO HELP project and the water smart initiative of Wagga Wagga City Council.

Additional activities providing insights into the working and layers of institutions and actors involved in IWRM included; Public Debate, Interviews and meetings. The public debates included topics and speakers covering; Water and population; Water and irrigation and the future direction of the Northern Territories; followed by public debate with questions led by university students. The launching of Water SMART initiative of Wagga Wagga City Council in partnership with water stakeholders including CSU had speaker including City Mayor, Dr Khan, a State senator and representatives from the business sectors.

4. LESSON LEARNT during the mission

(What could be shared with other partners and/or introduced in guidelines, as far as IWRM is concerted)

- **About methodology:**

Need to ensure that the HELP Davao remains 'Grassroots Driven'

While the HELP initiative was conceptualised at the highest level of UNESCO IHP program the vision was to open hydrology to the end users, to listen to those who live with the constraints of poor water management in their every day lives and react to their needs. The Davao model for HELP in an exemplary example where the end user are driving the issues which need to be research by the water scientist and subsequently enacted upon by policy's makers in order to enable the stakeholders collectively to better management their water resources.

The framework of HELP is a excellent model for changing the paradigm for water research and management towards a more integrated and holistic approach, it constantly empathises how issues must come from the community up, and the mangers, researchers, and policy makers must react to these issues if greater efficiency in use and management of water resource are to be achieved.

- **About Practice:**

Restructuring of institutional arrangement is endless and occurs reflecting changing needs of society

A cynical view of the constant restructuring of organisations maybe perturb that it merely creates the illusion of progress while avoiding address the key reason for failures to produce positive change and sustainable impacts. Facts is it a reality in both developing and developed countries as needs and driving pressures change the methods for addressing the current set of issues evolve and with it the organizational and institutional structures must change.

The potential of sharing skills and knowledge as a tool to enhance cooperation and effectiveness and strengthen linkages and networks with upstream communities of DRBs Neighbouring LGUs, Gov Agencies,

The Davao Model is proving itself as a working model for promoting good governance thru better understanding of science and water issues. While it would be early to try to expand the network

geographically (due to financial capabilities) it is important to share the experiences with neighbouring political entities who share our water resources.

5. DISSEMINATION (opportunities and difficulties)

In what measure these learnt lessons are applicable to:

- **The basin Organization the expert belongs to:**

Learning that restructuring of institutional arrangement is endless. Davao River Basin stakeholders should learn to work with positive elements the current informal institutional (or voluntary) arrangements

While we have been pushing for the formal establishment of the HELP Network in Davao the exact role and need for this formalisation is not clear to all participating stakeholders. (looking for formalization for an illusion of progress: to report to donors? Or is truly to create local ownership of the process). While Davao HELP is functioning as a voluntary network we should maximise this freedom to truly establish our direction scope and purpose before we impose structures and bureaucracy on our shoulders.

- **National IWRM practice:**

Sharing to strengthen linkages and networks with upstream communities of DRBs Neighbouring LGUs, Gov Agencies,

The Davao model is an excellent example of stakeholders coming together to address their issues on a voluntary approach. While the government agencies have mandates to manage water resources, they had no mandate requiring them to join the HELP Network. It was additional work load for all involved. All stakeholders have actively and enthusiastically participated in the HELP Network in full knowledge that there were no funds available, but participated because of the clear understanding and belief in the benefits from the sharing of knowledge and technical capacity's through the HELP Network.

This provides an opportunity to encourage and inspire other resource poor watersheds to start working in collaboration with long term vision being addressed in step by step systematic process in accordance with available resources and capacities. Critically looking at how the HELP Davao network has collaborated among the various stakeholders and organised themselves in a more attractive position for strategic projects.

- **Regional experience:**

Experiences from different climatic regions (Davao Philippines average rainfall: 2000mm/yr & Murrumbidgee 350mm/yr) can be useful and adapted when systems approaches to IWRM are being adopted. The critical aspects are that local monitoring data of climatic and environmental variables must be available. Davao must now seeking to improve its capabilities to monitor variables (e.g. climate, groundwater's, soils etc) to learn from technologies developed in different regions.

- **Worldwide:**

Strengthening links and Networks within the larger HELP international Community. Many other HELP Stakeholders from Australia, Pakistan, New Zealand all expressed interests and desires to visit the Davao River Basins to get a better understanding of how the Davao Model has engaged such support from a wide diversity of stakeholders in such a short period time and with such limited funds.

The opportunity to conduct such international cross visits for the developing countries river basins are rare but the potential for positive exchanges and learnings which will lead to improved impact on the for the users and supporting environments are immense.

6. IDENTIFIED TIPS

Identified tips which could be useful for colleagues

For participatory involvement in planning meetings - *A skilled facilitator is critical to steer the Strategic thinking of the group and maintain clear focus on the bigger issues/picture (details will follow much later once funding has become available).*

- *Be Concise and non confrontational in approach from/to each group (short and to the point with each issue)*
- *Time management – 40 mins was all it took for the whole meeting of the Wagga Wagga Water Smart reference panel!*

Assessment of Water Management/ Issues - *try to think issues thru in analytical and systematic approach. Breaking each issue into Components or sectors (e.g. planning/ farmers) with appropriate & measurable indicators (e.g. Seasonal Averages/ Vol of water per crop) to asses the issues and impacts.*

7. PERSONAL COMMENTS

What does the missionary think about his mission?

The success of each mission is largely dependent on the willingness of the host to demonstrate and enable interactions with local stakeholders/ users and the willingness of the Missionary to be open to the different approaches adopted. If both parties are willing even if the sites visited are not 'best practices' the opportunities for learning and positive benefits are substantial. In this case the host was excellent, with exposures across all components of IWRM, from users, to policy's and processes to physical characteristics and technologies addressing social, economic and environmental. The mission was informative and inspirational with motivated and enthusiastic participants demonstrating how good science can be used to influence land and water uses and management.

8. CONTACTS

Principal local contacts met

Name	Occupation	E-mail	Phone number
Dr Shababz Khan	Prof Hydrology, CSU	Shahbaz.Khan@csiro.au	+612 69332927
Prof Jehangir Khan Sial	Dean Faculty of Agri, Engineer & Technology, Uni of Agri Faisalabad, Pakistan	Sialjk@yahoo.com	+92 41 9200194
James Foley	Research Assistant, CSU/CSIRO	jfoley@csu.edu.au	+612 69332927
Bart Challacombe	Environmental Officer, MIA	challacombe@mirrigation.com.au	++ 02 6962 0200

9. BIBLIOGRAPHY

Main documents, manuals or supports used during the mission which could be useful for colleagues

Name	Description / Notice
Living Murray Environmental Management Plan (2005) Murray Darling Basin Commission	Environmental Watering Plan Overview
HELP Primer (2005)	Overview of the HELP initiative, global network and links between hydrology & needs of society
Irrigation in Perspective (2005) CSIRO	Overview of irrigation in the Murrumbidgee and Murray part of the Water for a Healthy Country series.

Websites		
Name	Description/ Notice	Address
HELP UNESCO	HELP is a joint UNESCO/WMO programme which is designed to establish a global network of catchments to improve the links between hydrology and the needs of Society	www.unesco.com/water/lhp/help
CSIRO	This is the home page of CSIRO Land and Water which is Australia's premier research laboratory for advanced studies of environmental systems	www.clw.csiro.au
CSU ICW	Charles Sturt University site of the International Centre for WATER (Water, Agriculture technologies and environmental Research)	http://news.csu.edu.au/director/latestnews/environment.cfm
CRS	Providing emergency relief and long term development activities in over 94 countries around the world, head offices of Catholic Relief Services. See Philippine Country profiles	www.crs.org

N.B. Extensive high quality photo documentation of site and field visits, meetings, landscapes, rivers and flora and fauna of the Murrumbidgee Basin are available upon request.

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2006 C T M

Date: June 8th 2006

Financial report

Expert Name: Declan Joseph Hearne
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Date of arrival	Date of departure	Number of days	days cost (€)	travel cost (€)	Total
May 10th	May 24th	15th	966.56	1025	1992.96

Name and address of the Basin Organisation :
To: Declan Hearne Bank's name: Bank of Philippines Islands (BPI) Bank's address: BPI, Main Davao, CM Recto, Davao Philippines Account number: 2086 329718 (Saving account) Bank Code: 208 IBAN code: SWIFT BIC CODE: <i>BOPIPHMM</i>

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