

WATER FIGURES ASIA

NEWS OF IWMI'S WORK IN ASIA



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ISSUE 1 2007

TURNING RESEARCH INTO DEVELOPMENT



EDITORIAL

WATER FIGURES ASIA ISSUE 1 2007



I am writing this editorial in the last few working hours of 2006, so happy New Year to all, and welcome to the second issue of Water Figures Asia. The latter part of 2006 was a busy period for the Asia Region. In addition to implementing our activities throughout the region, it was also a time when we explored new ideas, renewed old acquaintances and, for myself, visited old haunts.

Some of the many research and capacity building activities in which we are involved are reported on in this issue, including the groundwater governance workshop that brought researchers from South Asia and China together to draw on the wealth of experience that has been developed by our team and many partners in India. We also have an article on the 'Bright Spots' project in Central Asia that works with the farm communities in the region. Some of these local partners were able to participate in the CGIAR Annual General meeting in Washington DC, where they enthused about the impact the project was making. There is also a piece on our long standing program of research in South East Asia on watershed conservation and management, which is implemented in conjunction with IRD and a number of local partners.

In September, Frank Rijsberman (our Director General) and I visited Islamabad in Pakistan. Along with Hakeem Khan, from our head of office in Lahore, we met with our partners in the Ministry of Food, Agriculture and Livestock, and the Pakistan Agriculture Research Council, and, most notably, with the Prime Minister of Pakistan. Water resources management is recognized at the highest level to be one of the major challenges facing Pakistan. The country is implementing a number of major initiatives and investments in the water sector, including domestic water supply, agriculture and industry. As with other countries in Asia, the demands from other sectors, including the environment, are placing increased demands on the agricultural sector to better manage water. But given the already well developed nature of the Indus, that is a "closing basin", the opportunities to save water will be elusive.

Over the course of the past few months I had the opportunity to participate in activities associated with NARBO (Network of Asian River Basin Organizations) peer-review benchmarking project, which we are implementing along with the Asian Development Bank and NARBO members. The peer-review training workshop, which was held in Jatiluhur in Indonesia, included senior representation from a number of river basin organizations from South East and South Asia. Despite the many differences between the RBOs, the participants were struck by the fact that they were all facing similar challenges, and that sharing experiences provided them with new ideas as to how to address them. Further details on this and the peer review workshop in Sri Lanka are provided in this newsletter.

The training workshop in Indonesia was a particularly interesting experience for me as I began my international career in



Photo Credit: Sharmi Jayawardena

this basin, the Citarum, nearly 25 years ago. The changes are dramatic, although the basin is still a major producer of rice. The vast urban developments around Jakarta, which dominate the lower reaches of the basin, and the network of highways that now crisscross the area are the most tangible. Somewhat surprisingly, the upper catchment showed significant signs of deterioration from when I was last there. Our Indonesian colleagues indicated that this damage was a result, at least in part, of the economic crisis of the late 90s when people were forced to migrate back into rural areas and try to survive off the resources that were available. Other challenges facing PJT2, the public company charged with managing this river basin, included deterioration of the water quality from domestic and small industrial discharges in the upper basin; demands from the urban areas; and the fact that Indonesian law does not allow for user fees to be collected from the agricultural sector, unlike the power, commercial, domestic and industrial users, which are the primary source of revenues for PJT2.

I trust that 2007 will be a fruitful year for you all, and that we can continue to work with you on addressing the challenges in managing water and land resources in Asia.

Peter McCornick
Asia Director
IWMI

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Cover photo: Women farmers in Punjab, India. Photo Credit Karen Villholth



Central Asian CSOs attend the AGM '06

Civil society organizations (CSOs) are key partners in the CGIAR System. The 15 CGIAR Centers and 4 Challenge Programs supported by the CGIAR work with nearly a thousand CSOs. These partnerships help shape the agenda of research for development and enhance effectiveness and impact.

CSOs are NGOs, farmer organizations, community-based organizations, advocacy groups, universities and national research institutions (NARS). Through their interactions and involvement with other stakeholders, these partners form the bridge that links research with development.

In its 2006 Annual General Meeting, the CGIAR included a Civil Society Organization (CSO)-CGIAR Forum and associated activities, as a start toward implementing its new CSO engage-

ment strategy. Avezov Tursunboy, represented the Galaba Learning Alliance that was formed to facilitate learning and sharing of knowledge necessary to develop and outscale 'bright spots' practices:

A group of farmers were invited to the initial meeting of the LA, where we had the opportunity to speak about the problems we are facing and the opportunities for collaboration. We came back home inspired and ready to communicate all the information to peer farmers, who are also quite desperate to increase their land productivity and crop yield.

Habibjon Kushiev, Professor of Biology at Gulistan State University was also chosen as a representative of a CSO working with the Bright Spots Project. The Bright Spots project,



From left to right: Janibek Kamilov, Head of WUA-Japalak (Kyrgyzstan), Ikbal Yusupova, Tursunboy Avezov, Farmer and Head of Farmers Learning Alliance (Uzbekistan) and Khabib Kushiev, Head of biology department, Gulistan State University, Uzbekistan. Photo Credit: IWMI Central Asia.

ment strategy. Three main events structured this CSO-CGIAR engagement: the Virtual Conversation, the Innovation Marketplace and the CSO-CGIAR Forum. The Virtual Conversation provided an opportunity for dialogue between CSOs and Centre representatives. The Innovation Marketplace was designed to highlight cases of innovative CSO-CGIAR collaboration and to facilitate learning from these important experiences in order to make joint efforts more effective. CGIAR Centers and CSOs were invited to send in nominations for innovative CSO-CGIAR collaboration and activities. Those CSOs chosen were sponsored to attend the Forum at the AGM and were asked to prepare posters for the Innovation Marketplace.

Participants were divided into smaller groups to present collaborative activities and engage in discussions. Representatives of three CSOs that work with IWMI-led projects in Central Asia—"Enabling farming communities in the Aral Sea basin to reverse water and land degradation by the creation of 'Bright Spots' and 'Integrated Water Resources Management (IWRM) in the Fergana Valley Project"—were invited to attend. Bright Spots show how individuals and communities have found ways to reverse natural resource degradation.

through IWMI, provided experimental materials (e.g. cuttings), facilitated experimentation, interaction and mutual learning between the scientists and the farmers, and helped outscale the results, in large part through the creation of Farmer Learning Alliances. Janibek Kamilov, a farmer and Director of the Water User Association (WUA) of Japalak also attended the AGM, representing the collaboration between a WUA in Kyrgyzstan and IWMI. Speaking of the collaboration between IWMI and the farmers in Japalak, he noted that "We had realized that there was a missing link between the rayvodkhoz (district water management organization) and us – farmers (water users).

Every farmer talked about the need for an organization to replace the kolkhoz (state farm) to distribute the main source of water for irrigation. The IWMI-IWRM project provided support in forming and strengthening appropriate institutions to handle this—the Water User Associations and Water User Groups." The idea of the "Water User Associations" was introduced by IWMI in May of 2002 to about 300 farmers as a way of joining efforts to solve water allocation issues.

Visit <http://centralasia.iwmi.org> for more information on IWMI's work in the region

Impact of land use on bed load transported by rivers in the Dong Cao Watershed, north Vietnam

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Soil erosion in highly incised watersheds of North Vietnam has negative impacts on both upstream and downstream communities. Increased sediment discharged from these catchments reflects a loss of fertile topsoil that farmers depend upon for the production of crops and fodder. In addition, increased sediment loads in streams and rivers have a direct negative impact on water quality and the longevity of water storage structures, both of which have significant economic implications.

The activities of MSEC in Vietnam are focused around the Dong Cao watershed, 60 km northeast of Hanoi. A cultivated steep watershed of approximately 50 ha has been equipped to measure and assess water and discharge and sediment loads. The cultivated slopes are between 40% to over 100%. The predominant land-use has gradually changed from cassava to tree plantation from 2000. The reasons for upland land-use change are complex. Some farmers had the opportunity to sell their land whilst others under a policy directive planted trees or have practiced improved fallows. There has been a dramatic change in the extent of cassava production in the catchment with the total area declining from 40% of the watershed area in 2001 to less than 0.5% in 2004. With this decline in area under crops, the opportunity has arisen to introduce a livestock component into the catchment. Over the past 4 years, the impact of the fodder species (*Bracharia ruziziensis*) established under a no till regime has been evaluated with respect to its ability to reduce erosion from these slopes. After five years of continuous erosion monitoring (from 2001 to 2005), the erosion rates measured in Dong Cao experimental watershed have confirmed that land clearing generates the highest soil loss amount, and that forest and fodder cover effectively eliminated erosion one year after establishment.

The annual soil loss recorded through bed load measurements have decreased from 3.6 t.ha⁻¹.yr⁻¹ prior to the establishment of fodder and/or plantation trees to 0.1-0.3 t.ha⁻¹.yr⁻¹ in 2004. The effect of land use change over time on the bed load recorded at strategically located weirs in the catchment are presented in Figure 1.

Weir 3 has always recorded the highest bed load levels, almost 12 t.ha⁻¹.yr⁻¹ was discharged from the sub-catchment in 2001. However this was reduced to approximately 1 t.ha⁻¹.yr⁻¹ from 2004. The observed decrease in 2002 is solely due to a reduction in rainfall with only 1047 mm being recorded in the catchment where the interannual average is 1500 mm. Since 2002, the bed load decrease in weir 3 is associated with a reduction in the area planted to cassava.

An important result from this study has been the decline in bed load associated with the establishment of plantation forest. Weir 1 is situated within a sub-catchment where in 2001

the land use was changed from cassava to plantation forests of *Acacia mangium* and *Venitia montana* (Figure 1). Prior to 2001, the area experienced the largest bed load (9 t.ha⁻¹.yr⁻¹) discharges. However in 2002 the bed load declined to only 2 t.ha⁻¹.yr⁻¹ and in subsequent years declined to nil, suggesting that runoff contributing to sediment discharge had ceased to occur.

In the sub-catchment that discharged into weir 4 there has been no land-use change and consist predominantly of an old fallow.

Finally, the biggest change in land use occurred in the sub-watershed 2 that is monitored by weir 2. In 2001, 70% of the area was covered by annual crops (i.e. cassava) and 30% by natural grass. In 2002, the area of cassava was divided in two and converted to fallow and forest land. From 2003 until today, cassava cultivation has been replaced by animal fodder crops that dominate 50% of the sub-catchments area. The bed load measurement has clearly shown a decrease in soil loss within the first year due to a shift in land use. In the initial establishment of grass fodder crops there was an initial increase in erosion associated with the presence of bare soil (3 t.ha⁻¹.yr⁻¹). However in subsequent years annual soil losses has declined to less than 0.2 t.ha⁻¹.yr⁻¹.

The evaluation of fodder crops as an alternative to annual crops such as cassava has stimulated an interest in improved livestock production based on the introduction of adapted pasture species by farmers from the surrounding villages. They view this approach as having a quicker and larger return on investment than the establishment of plantation forests.



Diversity of land use forms within the Dong Cao catchment in Vietnam where the MSEC project has its focus. Photo Credit Didier Orange

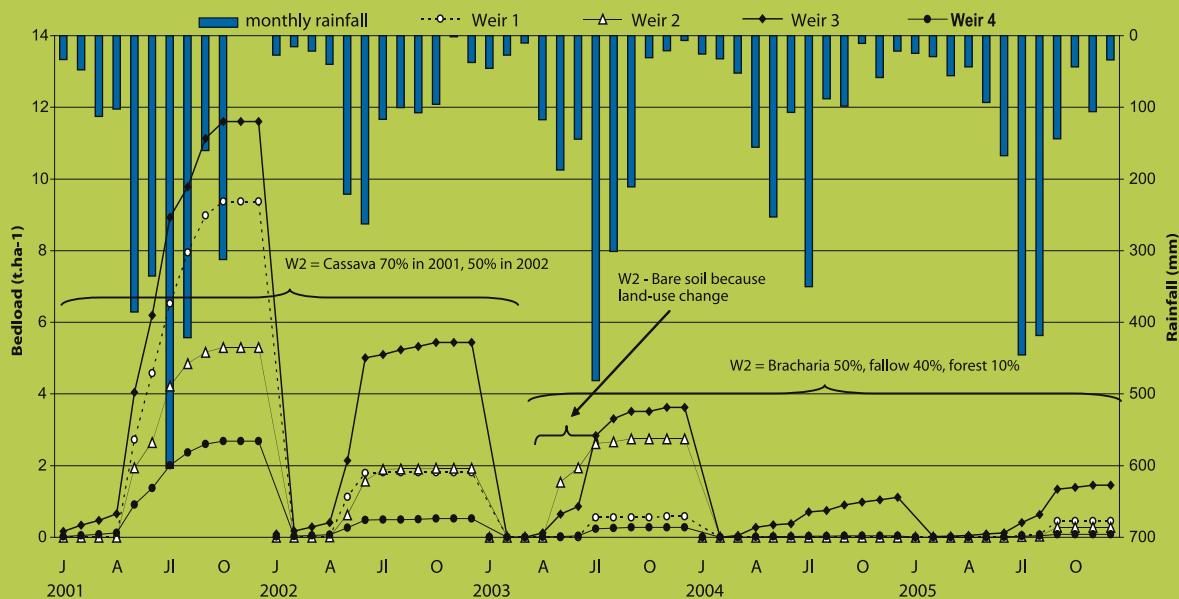


Figure 1: Annual cumulative bedload (lines) measured in Dong Cao experimental watershed (Northern Vietnam, Hoa Binh Province) for 4 sub-watersheds and monthly rainfall (columns). Outlet weir 1 for forest use, weir 2 for Bracharia plantation from 2003, weir 3 for cassava and weir 4 for old fallow (> 10 years).

FOR FURTHER READING:

MSEC-Vietnam References:

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VIETNAM'S MSEC PROGRAM

The Management of Soil Erosion Consortium (MSEC) has activities throughout Southeast Asia. The main direction of the program in Vietnam is to develop spatial hydrological and soil erosion models that would contribute to the development of an Environmental Decision Support System. These activities contribute to MSEC's activities in Thailand and Laos PDR as well as to other programs within in Vietnam. In this respect, the Vietnamese activities of the DURAS project funded by the from French Ministry of Foreign Affairs and undertaken in partnership with CIRAD-PRISE and NIAH (National Institute for Animal Husbandry) is evaluating temperate and tropical fodder species on sloping lands that would potentially fit into an integrated livestock farming system in mountainous regions of North Vietnam. In that way, the MSEC-Vietnam team focuses its research operations on sustainable watershed management on cultivated sloping lands, within three main research activities:

◊ Erosion processes in cultivated uplands and hydrological watershed modelling: The focus of the research is to improve knowledge on erosion processes on cultivated steep slopes and sediment transport in relationship to water management at the watershed level (area < 1 km²). It is led by the IRD and the NISF, in collaboration with the

IWMI, the CNRS, the University of Paris VI, the University of Hanoi and the Vietnamese Academy of Sciences.

◊ Agricultural practices and erosion control: To develop more effective and economically feasible erosion control practices. This activity assesses fodder crops (both temperate and tropical species) in order to generate knowledge on plant adaptation and soil fertility distribution in upland areas, with the involvement of farmers in three villages. The activity is led by the NISF-IWMI-IRD consortium with collaboration of PRISE-CIRAD-NIAH.

◊ Integrated watershed modelling for land-use management: The focus of this activity is to support and enhance negotiations between stakeholders (from farmers to decision-makers at the district level). This activity focuses on the driving forces for farmers' strategies and land-use practices through a socio-economic and social assessment context. Uplands and lowlands are considered together, conflicts over land and water management are highlighted. This research activity is being undertaken in collaboration with IRD-CLUWRR (from University of Newcastle, England), with support from IWMI-SEA and NISF.

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International training and research course on groundwater governance in Asia: theory and practice

KAREN VILLHOLTH AND ADITI MUKHERJI

Groundwater, it is said, will be the enduring gauge of this generation's intelligence in water and land management. Nowhere will this be put to a harder test than in the Indo-Gangetic basin (IGB) and the Yellow River basin (YRB), which between themselves use around 300 km³ of groundwater – the largest chunk of groundwater used anywhere in the world. Intensive use of groundwater and overwhelming dependence on it for livelihoods makes groundwater governance a challenge in these regions. However, rarely are the groundwater managers in these countries equipped to rise to the challenge of governing the 'colossal anarchy' spawned by groundwater use. This is because the challenge is relatively new, numbers involved are staggering (India alone has 25 million pump owning households) and the disciplinary training of groundwater managers is far too inadequate to grasp the complex realities. It is no wonder then that as of now, groundwater governance remains a pipedream in most areas of these two basins.

It is in this context that IWMI proposed a capacity building cum research project called Groundwater Governance in Asia, which was eventually funded by the CGIAR Challenge Programme on Water Food and Environment. This two-year research program (started in October 2006) was designed to engage key public groundwater agencies in IGB and YRB in a collaborative enterprise to develop a toolkit for proactive groundwater governance, and to catalyze a change program that encourages these organizations to assume a wider mandate than they have so far served. The larger goal of this CP project is to promote conditions that facilitate proactive governance of groundwater for improved productivity, equity and sustainability. There are three specific objectives of this research project. These are:

- To engage 80-100 young and senior functionaries from government, civil society, media and academia in an inter-disciplinary program of classroom teaching combined with applied policy research in groundwater governance over the course of two years (2006 and 2007).
- To develop and implement a classroom-based training program for a well-rounded, inter-disciplinary, problem-solving worldview amongst groundwater managers, researchers and media fellows.
- To complement the classroom-based training program with a cross-cutting research component whereby the junior research fellows would undertake primary fieldwork-based inter disciplinary research in several locations within the IGB and YRB, while the senior research fellows would undertake study tours to U.S.A. and Australia to acquaint themselves with groundwater governance in developed countries.

The first phase of the project was launched in October 2006 with the commencement of the five-week inter-disciplinary



Photo Credit: Karen Villholth

training school held at Roorkee, Dehradun and Ludhiana in India. While IWMI took the lead, it was supported in its endeavours by its Indian and Chinese partners—Indian Institute of Technology, Roorkee; Central Soil and Water Conservation Research and Training Institute, Dehradun; Indian Institute of Remote Sensing, Dehradun; Punjab Agricultural Institute, Ludhiana; and Chinese Centre for Agricultural Policy, Beijing. This training programme was attended by three categories of participants—Young Professional Research Fellows (YPRFs), Senior Professional Research Fellows (SPRFs) and Media Fellows (MFs). There were 22 YPRFs, 12 SPRFs and two MFs from India, China, Pakistan, Bangladesh, Nepal and Sri Lanka. Participants came from diverse disciplinary backgrounds (physical scientists and social scientists) and work experiences (government sector, private sector and NGOs). The common binding factor was that all of them are directly or indirectly engaged in the field of groundwater management.

The five-week training program in October and November 2006 was divided into five modules—resource characterization, mobilization and the environment; agricultural water use; social sciences, economics and institutions, policies and governance; scientific methods in research; and field visits. Within each module there were several lectures (around 10 to 15 or so) that looked into various aspects of groundwater governance. Over 60 trainers from around the world who are experts in their field of work delivered lectures to the participants on issues as diverse as hydrogeology, groundwater modelling, water quality and environment, the role of caste and kinship in groundwater sharing, history of groundwater development in South Asia and North China, water saving technologies in paddy cultivation, groundwater institutions and policies, conflict resolution mechanisms and politico-legal aspects of groundwater governance etc. In addition to the classroom lectures several field and exposure visits were undertaken. Two of these merit mention: the physical landscape tour and another was the socio-economic survey of groundwater institution in a Punjabi village. The high point of the course was the simulation game of a South Asian Village called the 'Naranpur Express' and later a

simplified version of it called the 'Groundwater Game' whereby the participants were taught simple economic principles using examples from the game.

YPRFs and MFs attended the first four weeks of the training programme, while the SPRFs joined then in the last week before embarking on study tours to USA and Australia. The YPRFs and the MFs, after the completion of the classroom part of the training attended a 3-day workshop which discussed the research methodology of the Cross-Cutting Research (CCR) – the practical fieldwork-based research component of the Groundwater Governance in Asia Training Programme. CCR is a 15-week programme that involves three components—five weeks of fieldwork, followed by eight weeks of data entry and analysis and a two-week report writing workshop. During the CCR phase of the project, YPRFs and the MFs would acquire field work experience in various parts of South Asia and China. In the process, they would directly apply the knowledge gained at the classroom training course on the complex realities of groundwater governance in Asia. The fieldwork phase of the CCR is already underway with participants working in eight dif-

ferent sites within South Asia and China. All YPRF's, MF's and SPRF's at the end of the 15-week research phase will write comprehensive group reports, individual theme papers and media articles covering various issues pertaining to groundwater governance in their study regions. Six major outputs are envisaged from this project:

1. Capacity building of SPRFs, YPRFs and MFs through extensive fieldwork activity in IGB, YRB and USA and Australia.
2. Comprehensive group reports (10) on groundwater issues based on fieldwork conducted by the YPRFs and SPRFs
3. Media coverage articles or documentary films by the Media Fellows (2 documentary films and 4-6 media articles).
4. Individual theme papers by YPRFs and SPRFs
5. Two synthesis books derived from the analysis of cross-cutting issues across the regions and villages investigated.
6. Policy briefs (8-10) developed as recommendations for actions for decision makers based on the comprehensive reports and synthesis book.

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Benchmarking performance of river basin organizations through a peer review process

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BACKGROUND

River basin organizations are a central component of the most recent evolution of the institutional framework that defines how water is managed at the river basin or strategic level, referred to as water governance. The forms and functions of river basin management organizations are changing in most countries, especially in Southeast Asia. In some cases, integrated management of river basins is replacing sector based management. In many cases, new water laws and regulations are being developed and implemented. Government agencies are devolving activities to new organizations to ensure the active participation of stakeholders from multiple sectors. In this changing environment these new organizations are developing their own processes to deliver the mandate they have been given to implement the new water governance structures. Thus, introducing performance management to encourage these new institutions to adopt continual performance improvement as a core management strategy is timely.

The Network of Asian River Basin Organizations (NARBO) was established following the third World Water Forum in Kyoto in 2003. In February 2004, a NARBO Charter, which identified "advocacy, raising awareness,

and exchange of information and good practices on IWRM" as an important role of the network, was adopted. The Framework for NARBO Action Plans (2004-2005) identifies Performance Benchmarking as one of the priority activities for the new network. The network is supporting the expansion of river basin organizations (RBOs) and integrated water resources management (IWRM) principles in the region. This goal leads to the need for systematic methods to identify best practices in basin management and service delivery by newly formed and well established organizations alike.

The NARBO supported RBO performance benchmarking initiative is designed to provide a flexible framework of performance indicators and a supporting system to enable participating organizations to implement benchmarking and peer review among comparable organizations to achieve high performance in organizations responsible for management of river basins. Figure 1 (on the following page) shows the balanced score card framework followed for the RBO performance benchmarking (Makin, Parks, Arriens 2004).

Benchmarking is primarily about change. People and organizations that embark on benchmarking have identified a need to improve one or more aspects of their

organization's performance. Benchmarking requires the organization to: (1) understand the organization's own processes; (2) analyze processes applied by other organizations undertaking similar functions; (3) compare the other organizations' performance with their own; and (4) implement steps to close any gap in critical performance indicators.

Each river basin organization has characteristics that distinguish it from the others. However, there are sufficient similarities in physical basin characteristics and the operational responsibilities of the RBOs to make comparison of performance a useful methodology to identify best practices and to promote sharing of experiences. The guidelines and an operational system for performance benchmarking for use by NARBO members has been developed, beginning with scoping and consultation workshops in late 2004. The Benchmarking Initiative was launched at the 2nd Southeast Asia Water Forum in September 2005 followed by a network-wide workshop at the NARBO General Meeting in February 2006. The features of this system include: (a) a characterization of the participating organizations to enable the RBOs to select other organizations with similar characteristics and performance aspirations for comparison; (b) a range of indicators that measure the performance of common critical performance factors; and (c) allowing participating RBOs to initially use the system to establish internal benchmarks.

WHERE IS THE INITIATIVE AT THE MOMENT?

At the February 2006 workshop, it was agreed to proceed with piloting the proposed performance benchmarking tool. Guidelines (see <http://narbo.iwmi.org>) have been developed for the pilot implementation of Performance Benchmarking in eleven (11) RBOs. In late 2006, performance (self-assessment) reports for Jasa Tirta II Public Corporation and Mahaweli Authority

The Four Perspectives of Performance Management for Non-Profit Organizations

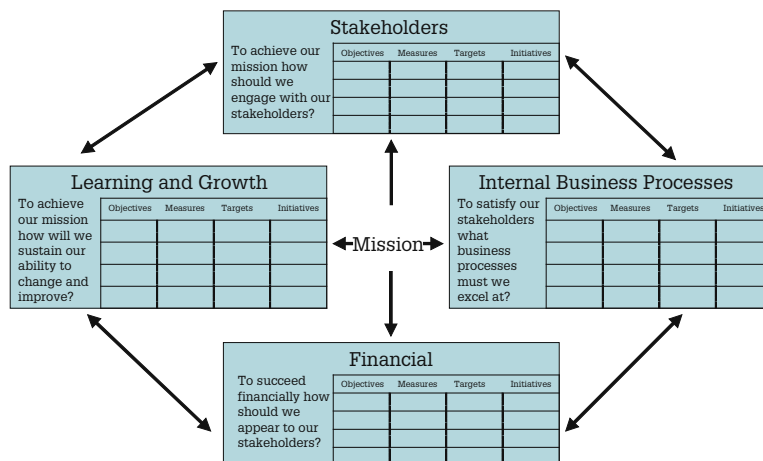


Figure.1: A balanced score card framework for RBO performance benchmarking (Makin, Parks, Arriens 2004)

of Sri Lanka were peer reviewed and the peer review reports are now being finalized. The internal processes that the reviewed organizations had to go through are also included in the reports. Just before the peer reviews, a training and peer reviewer certification was conducted in Indonesia in October-November 2006. This activity produced the first batch of 15 RBO peer reviewers to comprise a pool of reviewers available to conduct peer reviews within NARBO.

While still in its pilot stage, this ADB funded project that IWMI is carrying out is building capacity in measuring performance and conducting peer reviews at NARBO through its member RBOs. After all, a better measured performance means enhanced capacity to better manage the RBO towards achieving its goals.

For further information visit <http://narbo.iwmi.org> or email Arlene Innocencio, a.innocencio@cgiar.org



Photo Credit: NARBO

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