



CGIAR Challenge Program on
WATER & FOOD
Andes • Ganges • Limpopo • Mekong • Nile • Volta

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Ecosystems

2011 Annual Report

CGIAR Challenge Program on Water and Food

Working together for impact



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Acknowledgements

CGIAR Challenge Program on Water and Food (CPWF) 2011 Annual Report

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CGIAR Challenge Program on Water and Food (CPWF)

The Challenge Program on Water and Food was launched in 2002 as one of the reform initiatives of the CGIAR, the Consultative Group on International Agriculture Research. CPWF aims to increase the resilience of social and ecological systems through better water management for food production (crops, fisheries and livestock). CPWF does this through an innovative research and development approach that brings together a broad range of scientists, development specialists, policy makers and communities, in six river basins, to address the challenges of food security, poverty and water scarcity.

Hosted by: IWMI (The International Water Management Institute), and a partner of the CGIAR Research Program on Water, Land and Ecosystems.

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Working together for impact: CPWF key messages

With population expected to top nine billion by 2050, and global agriculture production required to double its present yields, the ecosystems on which we depend upon are being pushed to a tipping point. While there is much to be concerned about, there are opportunities for meeting the challenge of being able to sustainably intensify production while at the same time managing different ecosystems for a range of purposes. But what will it take to get us there?

Over the last ten years, the CPWF has developed a unique research for development approach (R4D) that is finding ways to develop technical solutions linked also to policy and institutional changes. At the heart of this approach is the focus on addressing well-defined development challenges in clearly delineated

geographical areas, such as a river basin, and seeing them defined in relation to vulnerable groups such as poor women in rural areas.

This allows us to draw on subject-matter research from multiple topics and disciplines. Typically, problem-solving research also integrates policy, processes, institutional and technical innovations, across linked scales, giving real importance to the science but also to the dynamic and inclusive way in which research is communicated. Another innovative aspect is the use of a 'theory of change' approach to link research to developmental outcomes and impact.

This approach requires a diversity of partnerships working together at multiple scales. Partnerships also ensure research results are relevant

and used by the actors who both inform them and need them.

The theme for this year's annual report "working together for impact" was chosen because we believe that halfway through its second phase, the CGIAR Challenge Program on Water and Food (CPWF) is moving toward a viable model of outcome-based research-for-development.

Almost a decade of such development driven research has brought us to strongly reconsider some common ideas, which is reflected in our key messages.

The over-arching message recognizes the major premise of CPWF: it is not scarcity of water in many instances but the use and management of water that is hampering sustainable use, particularly for the rural poor.

Overall message

Despite challenges in many river basins, overall the planet has enough water to meet the full range of peoples' and ecosystems' needs for the foreseeable future, but equity will only be achieved through judicious and creative management.

Message 1

Sustainable intensification of smallholder farm systems can often be attained by taking advantage of scarce dry season water to access high value market chains.

Message 2

To achieve equitable sharing of the full range of benefits from water resources, policies should be promoted that encourage collaborative behavior, dialogue and sharing of benefits and risks.

Message 3

New institutional arrangements are necessary across sectors and national boundaries that foster equitable and sustained development, improve resource governance, and support productive and resilient technical solutions.

Message 4

The CPWF research-for-development strategy identifies and promotes the policy, institutional and technological innovations required in developing countries for people to improve water productivity and ecosystem services in an equitable and sustainable manner.

The 2011 Annual Report describes the achievements in each of the six rivers basins and how they are each responding to a well-defined development challenge. Stories and highlights from the basins elaborate on the messages.

Development through sustainable intensification lies at the heart of what CPWF and its partners aim to do. Intensification means an increased number of crops per year per unit area, or greater diversity of enterprises within crop livestock systems. Such intensification is "sustainable" when resources are conserved and ecosystem services maintained even as productivity increases.

We have found that opportunities for sustainable intensification are surprisingly numerous when communities have suitable access to water and other inputs as well as to markets for their food products. Conservation agriculture, rainwater storage, livestock husbandry and other technologies will only be used if farmers see a significant social

and/or economic benefit. Likewise, in order to ensure farmers can adapt to numerous challenges facing farming (notably increased climate variability), diversification is just as important as productivity. We have found numerous instances where the opportunities to improve livelihoods are in livestock and fisheries and not necessarily uniquely in crop production.

Successful sustainable intensification must link technical innovations to market and institutional innovations. CPWF research has shown that, while globally there is enough water to sustain human development and environmental needs, water-related conflicts will continue if we do not manage our resources well. A radical reform of how water is managed and used is necessary. This includes reform of the institutions that govern water resources both at the national and transboundary levels.

For the most part, there is a complete fragmentation of how water is managed amongst different actors, and even countries, where the water

needs of different sectors—agriculture, industry, environment, mining—are considered separately, rather than as interrelated and interdependent.

Institutions must also become more attuned to the water needs and related rights of various actors in various sectors, paying specific attention to frequently marginalized groups and the poorest communities. Responsive policies will take advantage of the range of benefits coming from river basins, rather than focusing on singular sectors such as hydropower, irrigation or industry.

These messages will continue to be refined and will evolve as we learn more by working together with partners on the pressing and emerging challenges in our different basins.

Message from the Director

For CPWF, 2011 was a year of fundamental change. However, despite major revisions both in governance structures and our future direction, we still focused on our primary objective of addressing the challenges laid out in our Basin Development Challenges (BDCs) and collaborating for greater impact.

This past year solidified our conceptions of how a global research-for-development program should work. CPWF operates on the belief that the sum is greater than its parts and a program-based approach actively connects different elements. Likewise, we have demonstrated the value of focusing on specific impact-oriented challenges in each basin rather than only on broad themes. Such an approach has made our research more relevant to, and ensured more buy-in from, local partners.

The state of our basins

After almost two years of establishing funding and partnerships, CPWF is now operating research-for-development programs in six river basins: the Andes system of basins, Ganges, Limpopo, Mekong, Nile and Volta. As CPWF enters a period of change and transition, I remain confident in our ability to deliver on our primary objectives - the BDCs that have been crafted in each of these six river basins.

Started in 2010, the Andes, Mekong and Nile programs made excellent progress in 2011. All three established high-level partnerships with different stakeholders, a necessary effort that will help ensure our research is embedded within development processes and capitalized on by intended beneficiaries.



In the Andes, further progress has been made towards grounding the concept of benefit sharing mechanisms (BSMs) in development practice to guarantee wider impacts. Our progress was confirmed when the Ministry of Environment and Natural Resources of the Government of Peru requested CPWF support in designing BSMs.

The Mekong BDC's approach to opening up dialogue in the region's hydropower debate has not gone unnoticed. In 2011, AusAid granted the Mekong BDC with more than AUS\$5 million to expand efforts to establish relationships and build trust among different hydropower stakeholders. In addition it signed numerous Memorandum of

Understanding with government agencies throughout the region to facilitate work and ensure research is aligned to their needs.

The Nile BDC also worked on relationship building through its multi-level innovation platforms. Their research progressed rapidly this year, with a ground breaking study to learn from past rainwater management (RWM) initiatives in Ethiopia. The BDC also established itself at the local and national level through different platforms.

This year also marked the inception of CPWF's Basin Development Challenges in the Ganges, Limpopo and Volta Basins. All three basins have begun the process of initiating research and building partnerships. Initial research in the Ganges is revealing that the "real possibility" of increasing cropping intensity and diversification in coastal communities rests on having adequate development funds to revamp the water management practices of existing polders.

In the Limpopo, establishment of innovation platforms (IPs) has begun

at sites in Zimbabwe and South Africa. These IPs are designed to strengthen agricultural value chains in rural areas where market-related failures contribute significantly to poverty and food insecurity.

In a world of increasing insecurity and complexity, one thing we cannot forget is that the key to enabling change lies with peoples' emotions: their fears and hopes.

Thus it is essential to consider not just knowledge and skills but attitudes and behaviors when seeking and defining solutions.

The Volta BDC's efforts have concentrated on learning from the past on issues of agricultural water management and rain-fed systems. From this starting point, the Volta projects will move beyond understanding policies and processes of integrated rainwater management to actually supporting these particular management initiatives through participatory approaches.

Establishing a program level perspective

This year, we transitioned our efforts from getting the basin programs off the ground to adding value at program level.

Our 3rd International Forum on Water and Food (IFWF3), held in November, brought together almost 300 people from 38 countries. The event evoked frequent debates about what exactly research-for-development means, where the boundary between research and development lies, the vital interface between our work and policy, and the important role that effective communications can play. For me, IFWF3 demonstrated the robustness of the CPWF research approach.

CPWF research was also showcased globally. A major media campaign, based on the findings from our Basin Focal Projects, promoted CPWF's message that the issue is not water-scarcity at the global level, but rather how water is used and managed. Going against the dominant belief about water scarcity, our research gained global promise as it provided a platform for



productive discussions on opportunities for improved water management. A senior European Union negotiator picked up on these findings and used them in the EU's Rio+20 messages. This helped us enter into the Water, Food and Energy Nexus discussions. We also showcased our African Rainwater Management strategies at the United Nations Framework Convention on Climate Change in Durban, where we emphasized the value of rainwater

management as an emerging climate-smart technology.

Finally, a knowledge management initiative has been undertaken to transform CPWF science into formats and styles that are appropriate for next users such as donor investors, development planners and practitioners, policy makers, and teachers and students. These outputs are being produced in partnership with IFAD, a major development player CPWF has continuously engaged with from the outset of our program.

What the future holds

In August 2011, the two Boards of the International Water Management Institute (IWMI) and CPWF officially merged. Since then, CPWF has worked towards integration into the CGIAR Research Program on Water, Land and Ecosystems (WLE), of which IWMI acts as the lead institution.

With the merger of the Boards, the progressive participation of CPWF senior management into the IWMI and WLE management structures, and

CPWF involvement in the changes to IWMI support and administration services as per the recommendations of the 2011 external review, a significant part of the governance and management integration is now behind us. With WLE approved at the end of 2011, we now remain focused on our common development challenges in basins, and on our research and innovation activities.

Finally, I would like to thank everyone in the CPWF family, from secretariat to project level, for all their hard work over the past year and for committing themselves to the people and communities for whom CPWF was created.

Alain Vidal
Director, CPWF



CPWF basins



Basins overview: Lessons and insights

In 2011, all six CPWF Basin Development Challenge (BDC) Research Programs were up and running. Each BDC Research Program consists of four to five inter-linked projects. Taken together, these projects form an integrated approach for tackling the BDC in question. Project selection and design are shaped to fit the local conditions of the basin and the development challenges being faced.

This year a number of new insights were gained from all the basins focused around the following themes:

- Building social capital and trust with partners
- Learning from the past
- Diversification, variability and niche markets
- Multi-stakeholder platforms

Alliance and trust building

All of the research programs spent much of their first year building alliances and gaining trust with stakeholders in order to ensure research was geared toward local priorities and there was buy-in from development stakeholders.

Nowhere was this better exemplified than in the Mekong. Hydropower is a contentious and highly politicized issue. As a relative newcomer to the debate, many of the Mekong projects reported their biggest accomplishments for the year was gaining the trust of development actors. In one Mekong project, there was tremendous reticence of local officials to engage. Through interacting with the project team, local officials reported they became more aware of the potential use of water for many other purposes,

not only upstream but downstream of the reservoir, and for increasing the range of beneficiaries. Prior to the project, many of the local authorities were not aware of the need for coordinating multiple water user sectors to optimize the value of water, as their mind was fixed on single-sector development planning. They typically did not consider that hydropower reservoirs can be used for purposes other than electricity generation.

Learning from the past

A central aspect of the initial work in many of the BDCs was to take stock of the past and identify constraints in current systems. In the Nile, a policy study looking at rainwater management strategies over the past 20 years was carried out. In the Volta, a major output from this year has been the results of the lessons learning

study carried out on agricultural water management (AGM) interventions in the basin over the last 50 years. Emerging results show three main 'success stories' of AGM interventions: soil-water conservation structures (e.g., zai, half moon, etc.), small reservoirs, and use of small pumps. Several factors were identified including sensitivity to culture and gender, and participation, that cause some projects to succeed and others to fail even in similar environments.

Similarly, the Ganges project on water governance carried out studies on polder governance and management in selected polders of Bangladesh. Deferred maintenance is the key hurdle to long term sustainability of projects. When an intervention ends, so does maintenance, with the result that the physical condition of the

infrastructure deteriorates not long after formal completion of the project. In addition, it was found that polders now serve more kinds of purposes than they were originally designed for, and concurrently, informal structures and institutions have emerged, often replacing and sometimes complementing formal institutions.

Diversification and niche markets

CPWF has found that best opportunities for smallholder intensification are focused on appreciating the need for diversification and market incentives, rather than focusing solely on productivity.

Many of the projects have found the best efforts at livelihood improvement happen in the dry season. We have found numerous examples where improved water availability and market access has enabled farmers to commence or expand high value dry season crop production. For example, one project in the Ganges River Basin has demonstrated the value of diversification and improving rice yields in the wet seasons as well as off-

season opportunities for commercial crops such as sunflowers, which can be planted for oil. In the Limpopo, it has been found that the pathway out of poverty might be better focused on fodder production for goats than on high value, water intensive crops. In the Andes, a project is working to improve dairy farming production in Colombia.

Multi-stakeholder Platforms (MSPs)

In every basin, different types of platforms are being tested to bring people together around different issues. This takes us one-step beyond pure research and into the realm of acting as a convener of interests. It has been found these platforms can be important drivers of change at all levels (local, national, and regional).

In the Andes, local conversatorios are being used to bring together stakeholders to discuss how benefits can be shared. Conversatorios provide a facilitation framework through which stakeholders can come together to define the key water issues leading to

conflict in the basin and then discuss and define a list of benefit-sharing mechanisms that are politically and socially acceptable.



In the Limpopo, Nile, and Volta, local innovation platforms are being used to bring stakeholders together to improve agriculture production. Building on years of experience of ICRISAT funded by the EU, in Gwanda district, a diverse and active innovation platform has created a strong local market for goats, helping raise the value of one goat from US\$10 to \$60. The innovation platform has engendered a virtuous cycle, in which farmers' self-esteem and confidence has improved and a more biodiverse and productive farming system has emerged. And

the system is more resilient than before; the rainwater that falls on the improved production systems is now adding value to the system and water is also saved by the sharp reduction in goat mortality.

In the Mekong, innovative tools are being used to bring together different stakeholder interest in the polarized debate around hydropower. One way this has been done is through using the Hydropower Sustainability Assessment Protocol (HSAP), an internationally recognized tool to assess hydropower projects. The tool has been used in China and the experiences from China were shared with partners in Lao PDR.



Benefit sharing mechanisms and hydrological monitoring

The Andes Basin Development Challenge
Equitable benefit sharing mechanisms to increase water productivity and reduce water-related conflict.

making it one of the most diverse BDCs within the CPWF.

Issues of land management, water availability and resource competition are critical in the Andes region, exacerbated by social inequalities between poorer, rural upstream communities and downstream urban and business consumers. The area is also a biodiversity hotspot. Although the region is classified as industrial, the continued ubiquity of low-productivity smallholder farming means that rural poverty rates remain high.

Ranging from Colombia, across Ecuador and Perú, to Bolivia, the tropical Andes region encompasses one of the world's longest mountain ranges comprising an array of ecosystems from arid plateaus to lush mountain valleys. It is within this complex environment that the Andes Basin Development Challenge grapples with issues of land and water management in ten small river basins,

Water-related conflicts emerge as hydropower, mining and agribusiness interests compete for water with upstream users. There is also a recognized relationship between upstream land and water management, and the quality and quantity of water downstream, though it can be of a different nature. Reducing water-related conflict is central to the Andes BDC to find equitable benefit sharing mechanisms to increase water productivity.

The extreme diversity of landscape, climate, altitude, water availability, vegetation and upstream-downstream relationship creates both a challenge and an opportunity for the Andes BDC. On the one hand, a specific approach is required in each basin to suit both environmental conditions and groups of stakeholders, which differ between basins. On the other, the broad range

What are Benefit Sharing Mechanisms?
Benefit sharing mechanisms (BSMs) are strategies to share the benefits resulting from the development of the water resources in order to satisfy the needs of the concerned populations. CPWF views BSMs as an institutional innovation, whereby water-related benefits are shared between different groups for mutually agreed upon ends and purposes. BSMs are not just a technical tool, but rather a social, economic and cultural instrument that can facilitate the creation of agreements which support sustainable development in river basins.

Andes Projects

AN1 Designing and implementing benefit sharing mechanisms

AN2 Assessing and anticipating the consequences of introducing benefit sharing mechanisms

AN3 Benefit sharing to improve water productivity and reduce water related conflicts

AN4 Coordination and multi-stakeholder platforms

of experiences and context found within the Andes region produces lessons that can contribute to our understanding of many scenarios in other regions in the world.

The four projects of the Andes BDC bring together a range of tools and methodologies to help stakeholders and planners make more equitable decisions



on water and land use. SWAT (Soil and Water Assessment Tool), WEAP (Water Evaluation and Planning System), AguAAndes (Negotiation Support System) and MHEA (Hydrological Monitoring of Andean Ecosystems), each contribute in their own way with information that supports the design of benefit sharing mechanisms.

But as the Andes BDC team learned in 2010, science alone cannot bring about change. Dialogue with stakeholders, and direct communication with planners and decision makers, is essential if research activities are to influence development.

Multi-stakeholder platforms, such as the Conversatorio de Acción Ciudadana (citizen action dialogue) in Colombia's Coello-Combeima basin, have played an important role in this process, engaging stakeholders in the design of benefit sharing mechanisms. Likewise, CONDESAN has established a number of fora (electronic and face-to-face) aimed at policy and researchers such as the Encuentro CONDESAN and Andean Dialogue.

Activities and achievements

In 2011, the Andes BDC has focused on applying tools and methodologies, developed in 2010, to establish conservation areas, carry out hydrological modeling and monitoring (SWAT in Cañete and Fuquene, WEAP and AguAAndes in Santa, Coello-Combeima and El Alto), conduct economic evaluations (contingent valuation, production function, travel costs, all applied in Cañete), identify alternative uses of land systems in Fuquene, support negotiations between actors in Coello-Combeima through a CAC (WWF citizens' action dialogue), and to analyze the network of stakeholders in Cañete, Santa and El Alto.

Building on eight years of intervention in the Andes, the BDC has consolidated a conceptual framework for benefit sharing mechanisms (BSM) for hydrological ecosystem services (HES) that will contribute to emerging BSM initiatives around the world. The framework is currently being applied to support the design of an HES-BSM program in five basins in the



Department of Caldas, Colombia. In the same line the BDC is supporting the Ecosystem Services Incubator, an initiative of the NGO Forest Trends and the Katoomba Group network, funded by the Swiss Agency for Development and Cooperation (SDC) and administered by Forest Trends, which provides integrated support to a portfolio of ecosystem services in Latin America, Asia and Africa. CONDESAN will contribute its vast experience and knowledge on BSM as well as technical expertise.

In March 2011, the ABDC met with the Peruvian Ministry of Environment (MINAM) to discuss progress of Peruvian BSM projects. In Peru, the work of the ABDC focuses on research for the design of a Pilot Payment for Environmental Services (PES) scheme for hydrological resources in the Cañete River Basin. BSMs in the Andes context include the development of incentives for upstream communities to improve water management, resulting in more abundant supplies of clean water for

use by downstream communities. Incentives can include payment in cash or investment capital. In Peru's Cañete basin, the design process of a PES system includes the participation of public and private companies and civil society. The meeting reinforced the Ministry's commitment to the work of CPWF-Andes, which was clearly articulated in a subsequent press release by Fernando Leon, Director General of MINAM's Evaluation, Assessment and Funding of Natural Heritage.

"The MINAM, with the support of partner institutions has been conducting environmental assessments of water resources and the identification of suppliers and purchasers of the environmental services, in order to propose a participatory scheme of PES for the Cañete River Basin. This will ensure the conservation of those ecosystems in good condition, rehabilitate those that have been degraded and provide incentives for the adoption of sustainable production practices, thus enhancing the economy of the entire basin," he said.

Research highlights

Conservation Agriculture: Improving sustainable intensification

When farmland in the Fuquene watershed was incorporated into a new nature reserve, land use restrictions threatened to push farmers off the land, banning them from the park outright. When conflicts began to emerge, Andes project 2 saw a need to modify research projects to address the critical issues that farmers faced in the new park, and to help diffuse further conflict in the region. The project team are now working with farmers and local conservation authorities to adapt farming practices to meet the demands of the nature reserve. The project is providing technical assistance to assess the impact of conservation agriculture techniques in experimental plots. The research evaluates the impacts of cropping on soil, nitrates and phosphate losses, soil properties and crop productivity. The results should help define practices that might be allowed in the reserve.



Water Evaluation and Planning System (WEAP)

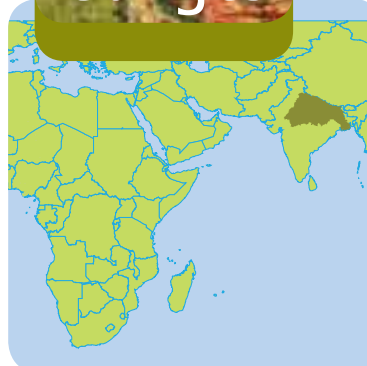
King's College London, the Stockholm Environment Institute, CIAT and the National University of Colombo are building WEAP models that can trace the allocation of water between different uses in different places in a watershed. The way in which we are building these models is embedded in a decision-making process where

people bring their own values to the conversation by which the modeling experiment is designed, management strategies are selected, and performance metrics are evaluated. By following this process, actors are bringing their implicit and informal understanding of the benefits that are associated with current allocation and their understanding of the way in which benefit allocation could be

improved. The outcome is that models are used to support negotiation over different strategies. This way, we are testing a bottom-up approach to benefit sharing in which people bring their own sense of values and benefits to the conversation, and that by actively engaging in designing the problem and participating in the negotiation, they are implicitly arriving at a benefit-sharing solution.



Ganges



Polders, people and rice

Ganges Basin Development Challenge

To reduce poverty and strengthen livelihood resilience through improved water governance and management in coastal areas of the Ganges Basin.

a focused approach. For this reason, the Ganges BDC concentrates on the brackish water coastal zone of the basin, an area of increased water and soil salinity, exposed to tidal surges and vulnerability to severe coastal storms. This region supports 40 million people, 60% of whom are poor.

The challenge in the coastal zone is to manage fresh water within the polders so that it can be used to finish off the monsoon crop and also a dry season crop, even when the polder is seasonally surrounded by brackish water. Thus,

Achieving impact through research for development in a river basin of such immense size and population requires

within the polder, it is important to keep separate those areas where farmers want to keep out brackish water so they can use stored fresh water for rice and other crops versus other areas where farmers want to let in brackish water for shrimp farming

Salt-water intrusion in coastal lowlands has undermined rice production—a staple crop critical to food security—yet it supports shrimp farming activities, causing tensions within the farming community.

The Ganges BDC has set itself the goal of improving coastal livelihood resilience through better use and management of the delta's brackish water resources. Water governance and the intensification and diversification of production systems are the key mechanisms by which the Ganges BDC hopes to achieve this aim.



Community engagement is an essential component of the work of the GBDC. Although the Government of Bangladesh has made substantial investments in the construction of polders, there has been only nominal investment in their maintenance. Careful negotiation is required to address the conflicting interests amongst water users in polder communities as farmers take water management into their own hands by constructing informal structures to meet their individual needs.

Ganges Projects

- G1 Resource profiles, extrapolation domains and land-use plans
- G2 Resilient, intensified and diversified agriculture and aquaculture systems
- G3 Water governance and community-based management
- G4 Assessment of the impact of anticipated external drivers of change on water resources in the coastal zone
- G5 Coordination and enabling change



The GBDC builds on decades of research, including numerous CPWF projects undertaken in the initial five years of operations in the aquatic production systems of Bangladesh, that have produced a suite of technologies suitable for out-scaling.

Activities and achievements

The Ganges BDC was officially launched with two workshops convened in Dhaka in June and October 2011. The workshops brought together key members of the public and private sector, with an interesting range of perspectives, along with team members from across the GBDC program. Representatives from the World Bank,

FAO, BARC, BRAC and the Ministries of Water, Agriculture, and Fisheries and Livestock attended the meetings.

The Ganges BDC, because of its geographic focus, is well placed to have significant influence in major development projects in Bangladesh such as the USAID funded CSISA program, the IRRI implemented STRASSA program, the GOB GAFSP program (World Bank), and the PRICE program.

The opportunity to talk about how our partners and stakeholders understood the individual project research plans, as well as the inter-dependencies, limitations and opportunities of the

program all helped to build a team approach to addressing the development challenge, and an understanding of the GBDC by the wider community.

Since its launch in 2011, creating a secure foundation on which to build future research has been a priority for the Ganges BDC. Understanding land use, environmental conditions and the existing state of community management of water infrastructure has been critical to the work of the GBDC. One of the basin's major achievements in 2011 is the publication, by the project team led by IRRI addressing land use mapping, of seasonal rice maps—the first of their kind in Bangladesh. The findings have challenged long-held assumptions of where and when rice is produced. The issue of 'deferred maintenance' has also arisen as a critical hurdle to overcome in achieving long-term adoption and sustainability of new insights that the GBDC will produce.

Research highlights

Putting rice on the map

Rice is a staple crop for the people of Bangladesh, so it came as something

of a surprise to researchers that there had been no rice suitability mapping done in Bangladesh. But all that has changed; thanks to the G1 project, seasonal rice maps were published for the first time in 2011, giving researchers and agriculturalists an understanding of which areas are the most appropriate places for planting rice and in what periods and seasons. The maps detail the complexity of the cropping systems in Bangladesh and also the rapid changes that are taking place in the coastal zone.

Monitoring the salinity of river water and the soil for inclusion on the rice maps has also provided critical information for rice and shrimp/prawn cultivation or fish aquaculture. In the past 12 months, the G1 project set up salinity monitoring stations around the selected polders and conducted regular monitoring to better understand the salinity fluctuations in the water and soil. The scientists have proven that they can intensify the land use; using these results they can then see which areas are similar to these polders and then map the areas that can be intensified in the future.

"There are methodologies and techniques available to suppress the salinity in the soil and make it cultivable. These are still preliminary findings derived from one set of solid data on fallow land, but we hope to generate more data on cultivated land," said deputy project leader To Phuc Tuong. "The second part of the monitoring is to help develop a strategy for particular polders, so that later on we have the means to help people develop a detailed cropping system and a detailed land-use map. The science is in common use in other parts of the world, but to date it hasn't been applied in Bangladesh," he concluded.



Salinity tolerant rice increasing coastal production

The rice maps have already proved their worth, helping project G2 identify the most appropriate locations to demonstrate the benefits of salinity-tolerant rice varieties. Rice, as the main component in peoples' diet, is fundamental for food security; if

they can't grow rice they have to buy it. Currently there's a deficit in rice production in the coastal region, as farmers have reduced rice cropping because of the risk of low yields.

The experiments showed that high and stable productivity of the double cropping system can be achieved, leading to total cropping system yields of more than 8 t/ha compared with typical farmers' yields of about 2.5 t/ha from their single monsoon (aman) crop.

Polder governance

The G3 project is looking at community involvement in management of water resources and asking questions such as: under what conditions does community

management work best, what are the constraints that they face, and what kinds of policies and institutions are needed to foster community management.

A key finding is that community involvement is now a mainstream paradigm in Bangladesh, so no one really questions this as a policy. The challenge however is sustaining community involvement after completion of government or donor-supported projects. Aditi Mukherji, the project leader, explained: "What keeps coming back is the lack of sustainability of community participation. A donor-funded project comes in bringing training for communities. It does a good job, but after a few years we see a rapid decline in adoption of the new practices by those communities and a rapid decline in the infrastructure. This is a 'project syndrome' that we're seeing."

Finding ways to improve the conditions in rural Bangladesh in the future is of high importance. The plan is to get away from this identified 'project syndrome' that plagues many development efforts

"We have shown local farmers that our rice varieties perform much better than theirs, and when they grew them they got instant results last season in all polders. Other farmers visited to take a look and they want to get seeds of some of those varieties to cultivate these varieties next year." Liz Humphreys, G2 project leader.

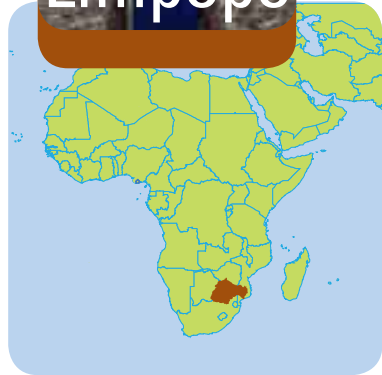
around the world and is certainly rampant in development hotspots like Bangladesh.

"The crucial issue is this problem of deferred maintenance. The G3 project intends to identify incentives to keep up the maintenance on the infrastructure, and then align the incentives to continued infrastructure maintenance," Aditi said. "There is now a total buy-in, with community involvement. No one is resisting it anymore but the actual modalities vary, and that is where G3 can come up with practical recommendations," she concluded.



Limpopo

Diversification, variability and poverty



Farming in the Limpopo Basin is a risky enterprise. Most agriculture is rainfed, but the basin is water scarce, characterized by low and unpredictable rainfall. Variability can be high: between seasons, within seasons, and spatially across the basin. Most water in areas of high productivity is already used for agriculture. Prolonged dry spells interspersed with periods of high rainfall and uncontrolled flooding make

Limpopo Basin Development Challenge

Improve integrated management of rainwater to benefit smallholder productivity and livelihoods and reduce livelihood risk.

rainfed farming difficult in many areas. Making the most of available water resources in the basin is a priority for development.

Fourteen million people live within the basin. At least half of them live in rural areas of Botswana, Mozambique, Zimbabwe and South Africa. Chronic poverty is widespread—especially in rural areas.

The limited water resources in the basin are under heavy pressure. Rich in mineral resources, the basin supports

large-scale mining that competes with agriculture for a share of the water resources.

Making the best use of available water is critical to the development of agriculture in the basin. Problems of access to supply are exacerbated by low investment in small-scale water infrastructure and there is a need to optimize use of rainwater. Unproductive use of water during normal rainfall seasons is considered the most pressing development challenge, and one that the Limpopo BDC aims to address.

The Limpopo BDC, unique within the CPWF in its coverage of an entire river basin, recognizes that a single technological solution will not address the many challenges and diverse conditions facing agriculture development in the region. The suite

of projects within the Limpopo Basin program attempts to identify what works, where and why, with the aim of improving small-water infrastructure to support multiple uses.

Activities and achievements

The Limpopo BDC was officially launched in April 2011 in Polokwane, South Africa. Hosted by the Limpopo Provincial Department of Agriculture, the meeting brought together key stakeholders from communities, government, research, extension and the private sector. LBDC project teams presented their intended goals and approaches—for input and feedback. The meeting represented the first of many opportunities to bring together researchers, next users and ultimate end users of LBDC research outputs.

Consultation and dialogue lie at the heart of the Limpopo BDC. In 2011, the

Limpopo Projects

L1 Targeting and scaling out: what works where, when and why?

L2 Small-scale infrastructure: how does small scale infrastructure support smallholders and how can their benefits be maximized in a sustainable manner?

L3 Farm systems and risk management: which combinations of activities and management regimes (including market focus) support economic activities?

L4 Water governance: which water governance regimes and strategies best serve the needs of the rural poor?

L5 Learning for innovation and adaptive management: how can research be made more relevant to next users, end users and decision makers?

Limpopo Basin team has been actively pursuing its vision to develop the LBDC into a viable regional network. It has become the Limpopo R4D Consortium, bringing together everybody from donors to the regional economic communities SADC and COMESA, from farmers unions to NGOs, to FAO and the United Nations. In 2011, the LBDC held inception and reflection events, participated in numerous international forums, organized farmer field days and farmer exchanges, and invested

heavily in research capacity building in the region.

Under the umbrella of the Coordination and Change L5 project, network institutions FANRPAN, WaterNet and Global Water Partnership (GWP) have the capacity to reach all corners of the basin and beyond. Working closely with the four research projects within

“Our research feeds directly into CAADP processes, helping agricultural ministers prioritize the most appropriate actions and interventions for investment.”
Amy Sullivan, Limpopo Basin Leader.

the basin, L5 supports innovation or dialogue platforms in all four countries of the basin, from the community level to the ministerial level. The result is research that is robust and demand driven, with end-users given an opportunity to propose research of most relevance to their needs—a unique approach within the region.

Consultation and dialogue with decision makers and influential



stakeholders from across sectors and scales helps the LBDC to design, conduct, monitor and assess quality science in the basin. Provincial agriculture departments are very interested in recent research outputs,

“The challenge facing the L5 team is to relate and link local level initiatives, processes and results to relevant national, international basin (such as the Limpopo), sub-regional (SADC) and Pan-African contexts. The purpose of embracing this challenge is to demonstrate the benefits of the CPWF not only on the ground but also to policy and practice, beyond one local case to national and basin levels.”
Ruth Beukmann, GWP.

including basin-wide poverty profiles, assessments of small water

infrastructure and models that propose where and why technologies fail or succeed.

In 2011, innovation platforms have been focused at the community level,

with local people making important contributions to research priorities

and the development of models. "Computer-based simulation modeling is never available to the farmer," says Patricia Masikati, L3 project leader. Posing what-if questions illustrates the effectiveness of interventions or combinations of interventions in certain conditions. Further simulations using farmers' input and management options (input potential, labor for weeding etc.) are then used to define specific crop production options to be tested in the following season, for example.

The process allows farmers to determine the impact of their decisions, evaluate new options and define realistic production and management options tailored to their particular circumstances. In turn, scientists learn more about the farmers' decision-making process, input and managerial potentials as well as knowledge gaps.

Models to understand the likely success of various agriculture interventions have generated a lot of interest in the region. From provincial extension workers to national and regional level policy makers, the

models provide an opportunity for effective ex-ante planning.

Modelers have been looking at a range of aspects around interventions such as conservation agriculture: at maps and case studies of CA; looking at data sets from satellite imagery about field improvement or biomass production improvement, soil health, reduced erosion. How much labor does it take, and whose labor does it take? What time of year does it take labor? Does it take it at the same time of year when everything else needs also requires labor? Generating multiple data layers shows not only where an intervention can work technically, but also whether there are market linkages to sell produce or to buy inputs, if there is labor available, and if maize, for example, is a socially or culturally acceptable crop to produce.

Research highlights

Demand for fodder crops drives research in Zimbabwe

Fodder shortages, especially during the dry season, is a major cause of high mortality and low livestock productivity



in smallholder farming systems in the semi-arid tropics of Zimbabwe. Yet currently less than 3% of farmers grow fodder crops. It is a problem that project L3 has been working to resolve using on-farm experiments to demonstrate to farmers the importance of growing fodder crops.

In 2011, using Innovation Platforms, Participatory Modeling Exercises and demonstration plots, the L3 project team has witnessed a remarkable change in farmers' attitudes towards

growing fodder for feeding livestock. Farmers who used to say "How can I grow food for my animals when I do not have enough to feed myself and family?" are now saying, "In the next season I will devote even half of my cropland to grow fodder crops."

Farmers said that, "if we are going to grow feed we want to harvest quantities which can be fed to livestock." Given this direct request of farmers, L3 is going to increase on-farm experimental areas from less



than 100m² plots to approximately 4000m² per farmer for the coming cropping season.

Rainwater harvesting: Getting buy-in at the grassroots

Grassroots community engagement has generated high levels of interest in rainwater harvesting techniques in South Africa and Zimbabwe, where project L2 is working to improve the operation and maintenance of Small Water Infrastructure (SWI), such as boreholes, wells, windmills and small



dams. Activities in 2011 have focused on the development of an inventory and database of SWIs across the basin. Community engagement in diagnosing the limitations and failures of small water infrastructure has formed an integral part of the process.

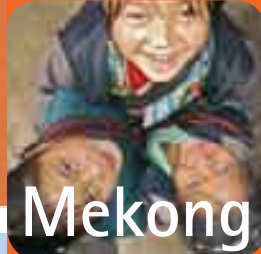
Researchers in L2 have long studied and promoted rainwater harvesting techniques in South Africa, and are using this opportunity to scale out the technologies into the Limpopo Basin. Investigating the biophysical

parameters that affect rainwater harvesting created an important opportunity to enhance understanding and get buy-in from stakeholders.

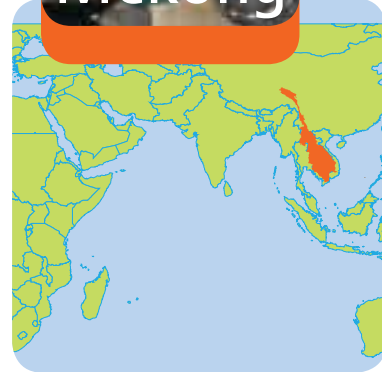
When the teams started field inspections and soil sampling they involved farmers and extension officers, who learned by doing and assisted in the fieldwork. This hands-on involvement made the extension workers and participating farmers appreciate the variations in soil characteristics in their area (depth,

"Provincial Departments of Agriculture were extremely interested in the model because they're going to want to use this, even in their own districts. Everyone from district level extension officers, to national level policy makers and decision makers wants to see where these technologies might be best targeted." Amy Sullivan, Limpopo Basin Leader.

gravel/stone fractions, color at various depths and the way these are determined). Rationale and techniques were shared through demonstrations and trials in farmers' fields, which served as local demonstration sites for local farmers and community members.



A vote in favour of process and dialogue



The Mekong River is a great river not only because of its length, flow quantity or biodiversity, but because of the civilizations that rose and fell around it, the cultures it has inspired, the economies it sustains and the millions of livelihoods it provides for.

Throughout history, the river has been a source of change and development. Amongst many initiatives up and down its length, the development of

Mekong Basin Development Challenge

To reduce poverty and foster development by optimizing the use of water in reservoirs.

Hydropower is the most significant of these changes. Hydropower will feed the region's growing electricity demands and provide revenues to spawn other developments, contributing to improved economic growth and lives. But hydropower comes with costs such as the degradation of ecosystems and decline in wild capture fisheries.

As a result, the Mekong's hydropower development has provoked passionate, polarized debates. Working from a position of neutrality, CPWF-Mekong cooperates with diverse stakeholder groups to implement research

into maximizing the benefits from hydropower, while mitigating its negative impacts.

The Mekong Basin program comprises eight innovative projects designed to address the BDC's overarching goal "reducing poverty and fostering development by optimizing the use of water in reservoirs."

These projects have been engaged in groundbreaking research to improve reservoir management for the benefit of all resource users. They explore the additional use values that can be obtained from reservoirs and dam operations at the individual dam site (MK1); they explore the value of these additional uses (MK2); they investigate the ways in which new opportunities presented by cascades of dams can yield greater benefits at the catchment scale (MK3); they have identified

the ways in which contemporary institutional designs have limited benefits from hydropower development at the basin scale, and are proposing new institutional architectures to remedy this (MK4); they have forged dialogues that enable contentious topics and perspectives to be debated openly (MK5); they have formed these dialogues around innovative protocols that evaluate and enhance hydropower sustainability (MK6); they have focused on capacity building through an avant-garde fellowships program (MK7); and they have explored points of leverage around which changes to hydropower decision-making can be improved (MK8).

In the Mekong, the CPWF focuses on scale. At the most local of scales, it works around three hydropower facilities: the Theun Hinboun Expansion Project (THXP) in Lao PDR; the Lower Sesan 2 in Cambodia; and the Yali

Mekong Projects

- MK1 Optimizing WSI management for livelihoods
- MK2 Water valuation
- MK3 Land and water management in catchments with cascades of dams
- MK4 Water governance
- MK5 Coordination and multi-stakeholder platforms

Falls Dam in Vietnam (MK1 and MK2). At intermediate scales, it works on catchments: the Nam Theun-Kading in Laos and the Sesan between Cambodia and Vietnam (MK3). And, finally, it works at the basin scale (MKs 4-8).

Activities and achievements 'Mono' or 'multi'? Unique approaches to stakeholder platforms

Effective coordination and dialogue between a diversity of actors is central to our goal of promoting sustainable hydropower in the region. Working with our partners, we created a space for dialogue that has become the cornerstone of our work in the Mekong BDC. We continued to strengthen relationships, building trust amongst a diverse group of stakeholders.

Our innovative "mono stakeholder platforms" have yielded excellent results. Essentially a precursor to multi-stakeholder platforms, the mono-SPs bring people together in groups who speak the same professional 'language', from finance to engineering to activism. They provide a well-mediated, 'safe' space for open dialogue, free from polarized debate.

Now that relationships within the mono-SPs have been firmly established, stakeholders are ready to step into a multi-stakeholder environment to debate and explore the issues emerging from the research.

One example of this is the work with the International Hydropower Association (IHA), initiated in 2011 to develop the Hydropower Sustainability Assessment Protocols (HSAP) under MK6 (a network lead by the Mekong Program on Water, Environment and Resilience). We provided critical input into the development of HSAP, a global initiative to improve the sustainability of hydropower. Drawing on the knowledge and expertise we



have amassed through our work in the region, we were able to feed directly into the design and planning of the IHA's planning and protocol design. And working together with Chinese partners, we have persuaded two major Chinese dams to trial the HSAP.

The different mono-SPs were brought together in the first annual Mekong Forum on Water, Energy and Food, held in December with a generous grant from the Australian Government through AusAid. The success of the Forum exceeded even our expectations, attracting 189 delegates from government, research institutions, NGOs and industry. Notable discussions pointed out the need to



use suitable tools to ensure sustainable development, to encourage multiple uses of water resources, to regulate development wisely, and, not least, to seek transparency and accountability in the decision-making that guides the development in the region.

The Second Annual Mekong Forum on Water, Energy and Food is planned for November 2012, to be held in Hanoi, Vietnam with support from AusAid.

A vote in favor of process

The Mekong BDC demonstrated its relevance by finally securing a large grant from the Government of Australia when AusAid awarded the CPWF Mekong AUS\$5.5 million



complementary funding to focus on stakeholder engagement, capacity building and further collaborative research. In 2010, we approached AusAid with a proposal for research on how decisions are made on hydropower in the Mekong, to identify leverage points that could help bring about change. Process matters to AusAid, remarked Alex Marks, Second Secretary for International Development Cooperation at the Australian Embassy in Laos. For AusAid, it was important to see that we focused on partnerships, collaboration and understanding and the way that we monitor ourselves: the changes in knowledge, attitude and skills both in ourselves and others.

We are grateful for AusAid support as the CPWF “steps into the stream” to bring about change in the knowledge, attitude and skills that lead to impact.

A home for dialogue

Naga House, the home of CPWF-Mekong in the heart of Vientiane and the physical embodiment of the open dialogue we promote, continues to provide a hub for researchers, development professionals, government agency personnel and water resource managers to meet, think and work in an open and neutral environment. In 2011, CSIRO/Australia joined the Naga House as it recognized the strategic importance of the CPWF and the office.

Alternative ways to disseminate knowledge

An important part of MK5's work has been to synthesize what is known about dams and their development in the Mekong. On the one hand, this has involved the synthesis of known impacts of Mekong hydropower into a series of 'State of Knowledge' papers. On the other, it has involved the development of Wikipedia pages that describe the Mekong River Basin, its society and economics, and hydropower development. The pages summarize what is known about each and every one of the dams that have been commissioned, under-construction and planned in the basin and research-based evaluations of their individual and accumulated impacts. It is estimated that 326 million people use Wikipedia in any given month. In each case, CPWF-Mekong focuses on quality, carefully following Wikipedia's own guidelines on referencing and evidence. Each page provides links to all the literature and research on which the article is based. By contributing to Wikipedia, the CPWF influences the Mekong hydropower discussion at a global scale, introducing new knowledge, and signaling areas for concern and optimism by generating balanced, evidence-based articles to this online resource.

Research highlights

Building trust

The Mekong BDC has worked hard to build trust and partnerships in the region. Almost all projects mentioned that the initial focus on building relations has paid off in partners at different levels better appreciating the potential of the research that CPWF is carrying out. MK1, a consortium lead by IWMI and the National Agriculture and Forestry Research Institute of Laos, is just one of the projects to successfully validate that focus.

Although the project initially met with opposition and skepticism, the project has sought to open minds. In Laos, many district staff believe that dams are controlled by higher levels and that they have no say. But MK1's work on Agro-ecosystem Analysis has shown that district staff can have a voice in how irrigation and water flows are managed.

In Vietnam, the team has built trust and gained access to Yali Falls dam, Vietnam's second largest dam, and its associated communities. Meetings

and one-on-one dialogues, brokered by research partners at the Soils and Fertilizer Research Institute, Vietnam (SFRI) have opened the door to continued dialogue with local authorities. The team has gained access to data and communities, laying the foundations for cooperation between key stakeholders, and effective implementation of research activities.

Maps and models supporting dialogue and science

Modeling and mapping tools are proving popular with decision-makers and water planners in Laos, where GIS maps and models are helping researchers and reservoir operators visualize the likely impacts of dam construction, and the options available to mitigate them. MK3 (a consortium lead by Dr Peter John Meynell of the International Centre for Environmental Management) researchers are conducting a GIS analysis of all three project sites in Laos, Cambodia and Vietnam. Using time-series satellite imagery and digital elevation data from the Nam Gnouang reservoir in Laos, they have mapped current land

use and areas of seasonal flooding along the margins of the reservoir. GIS was also used to evaluate community access to the water body for fisheries and aquaculture. When incorporated into the Decision Support System for reservoir management, the results will inform reservoir operation to accommodate local community needs.

Dollars and sense

The kinds of additional benefits (beyond just electricity alone) that hydropower may yield are many. What if dams were operated in ways to benefit downstream agriculture with no loss to generating potentials? What if the draw-down zone could be used to plant crops? What if communities had access rights to aquatic resources in reservoirs? Many of these questions are addressed by MK1. But MK2 (a consortium lead by Dr Yumiko Kura at WorldFish) is looking to value these in cash terms, so that they have greater meaning and relevance to distant central governments and policy-makers. Early results show that the potential added benefits of hydropower might not be large at regional or



national scales, but the relative value of these benefits is immense to small, resource-dependent communities, and can make real changes to household incomes at very low scales.

The capacity to influence

A key challenge persistently faced by the CPWF has been how to influence changes in particular directions. There are few more promising ways of doing this than capacity building. Rather than pursuing conventional capacity building strategies (such as Masters' degrees, or PhDs), the CPWF looked for short-duration initiatives that would not take beneficiaries away from their usual work. It decided to invest in a successful existing initiative: a



fellowships program run by M-POWER that provided small grants for targeted research implemented over the course of a year. Uniquely, it drew on M-POWER's networks, so that every fellow is 'mentored' by one or more regional, experienced, professionals who guide each candidate through the processes of proposal development, fieldwork and analysis. From this emerged MK7, led on behalf of M-POWER by Professor Babette Resurreccion at the Asian Institute of Technology. Four calls have so far been issued, yielding tremendous research density for CPWF-Mekong, and almost 40 fellows from around the region.



Managing landscapes and rainwater



At 6700km long, the Nile is the world's longest river. Around 160 million people live within its catchment, which spans 10 countries.

The basin of this vast and ancient river is often divided into three principal branches; the White Nile, the Atbara and the Blue Nile, or Abay river. Recognizing the immense scope and diversity of the challenges faced by the

Nile Basin Development Challenge
To strengthen rural livelihoods and their resilience through a landscape approach to rainwater management.

inhabitants of the Nile Basin, the Nile Basin Development Challenge focuses its efforts on the Blue Nile Basin; an approach in keeping with the CPWF principle of 'working on well-defined problems in specific areas'.

The Blue Nile, which rises near Lake Tana in northwestern Ethiopia, has suffered environmental degradation, leading to a downward spiral of poverty and food insecurity within Ethiopia and downstream in neighboring Sudan.

The Ethiopian highlands support 90% of the country's population. It's an area

dominated by low input-low output rainfed agriculture and mixed crop livestock farming systems. In the less populated lowland areas, pastoral and agro-pastoral areas are vulnerable to the droughts and famine that have struck the country repeatedly in recent decades. Twelve million people in Ethiopia are food insecure. According to the AfDB, agriculture represents almost half of the country's GDP and 90% of its exports, and accounts for 75-85% of the labor force.

More than two thirds of the country's rain falls on the highlands, but it is extremely erratic both spatially and temporally. Dry spells are frequent and catastrophic.

Building on a legacy of investment by Ethiopia and its development partners in rainwater and land management—higher than in any

other country in Africa—the Nile BDC is taking a landscape approach to rainwater management, cutting across hydrological boundaries and taking social, institutional and economic factors into account.

Rainwater Management Systems provide a holistic approach that encompasses soil and water conservation, sustainable land management, rainwater harvesting, conservation farming and micro irrigation management of water for crops, livestock, agroforestry and fish productivity.

Activities and achievements

The five projects operating under the umbrella of the Nile BDC have made great progress in areas of hydrological modeling, communications and innovation platforms. The latter have been instrumental in helping both

Nile Projects

- N1 Learning from the past
- N2 Developing integrated rainwater management strategies
- N3 Targeting and scaling out of rainwater management innovations
- N4 Assessing and anticipating the consequences of innovation in rainwater management systems
- N5 Coordination and change

the project teams and stakeholders in coming together to identify basin challenges and potential solutions.

The Nile BDC continues to bring people together for dialogue and knowledge sharing. In September 2011, the NBDC co-organized 'Water 2011', alongside Mekelle University and six Belgian universities. The conference, which was held in Mekelle, Tigray, attracted 250 delegates from 18 countries. The conference provided an opportunity to present information gathered over 15 years of work, as part of a massive program to halt land degradation in Ethiopia's northeastern region—an area devastated by famine in the 1980s. The NBDC is recognized as a major player in this process.

The NBDC team also took the opportunity to promote 'Rainwater management for climate smart agriculture', organizing an event on the topic at the December 2011 meeting of the UN Framework Convention on Climate Change, COP17. Together with the Volta and Limpopo Basins, the NBDC presented case studies of water management strategies from different parts of Africa.

Innovation Platforms

Innovation Platforms are mechanisms to help bring about technological and institutional innovation in a more effective and participatory manner. They are being used extensively, in one form or another, in the Andes, Limpopo, Mekong, Nile and Volta.

The experiences of the Nile BDC team members in 2011 have led them to embrace the concept of innovation platforms. Initially favoring demonstration sites, the Nile BDC researchers found that innovation platforms have generated important insights that would otherwise not have been available to the team. For



As Nile Basin Leader Tilahun Amede points out: "We wanted to show that climate change adaptation is about water management. Climate change is about too much water or too little. Too much water - disaster. Too little water - drought. So our intention was to bring in evidence that can be used at landscape scales for managing water better, both in terms of too much water and too little."

example, the issue of unrestricted grazing was identified as a critical issue at Fogera. At Diga, stakeholders highlighted problems with termites at the site, previously unknown to the NBDC team but of critical importance to the community. The team will continue to use innovation platforms to create research entry points and to build trust and capacity amongst stakeholders.

Ethiopia has been engaged in land and water management research for thirty years, but scientists in national and regional institutions have had few opportunities to share experiences





and identify research gaps. Knowledge sharing has traditionally come from the top-down, largely intended to convey government policy.

The first national meeting held by the Nile BDC aimed to address this problem. Held in Addis Ababa in April 2011, the meeting brought together more than 80 delegates from 55 political, governmental and research organizations and

institutes, as well as NGO/CBOs, private sector representatives and donors.

This new national platform has received widespread support, not least from the Ministry of Agriculture. The meeting became a catalyst for new platforms, initiated by regional research centers. A steering committee was established to manage and maintain the national platform.

A second meeting has already been held at ILRI, Addis Ababa in December 2011, where 5 new thematic working groups were established focusing on: community empowerment; land and water management; research, policy and practice; resilient ecosystems; and technological innovation. These new groups will be lead by national partners.

Communication continues to be a priority for the Nile BDC. Activities in 2010 saw the creation of online tools for knowledge sharing, such as wiki and yammer, but more work remained to ensure effective communication both between researchers, and amongst stakeholders, and a broader audience of donors and investors.

At the forefront of these new communication initiatives was the use of participatory video. The addition of Dr Beth Cullen to the team brought a new perspective and video expertise that the Nile BDC was able to put to use with the assistance of a Learning2Innovate grant from the CPWF. The video was intended to



give voice to the voiceless; those inadvertently excluded from even local level consultations. The results provided new information for even seasoned researchers. Farmers said they had three main concerns: livestock, soil conservation and water stress. They also commented that they like the government program to help with soil and water conservation, but not during planting time. "It was very powerful," said Nile BL Tilahun Amede.



Research highlights
Participants as observers: monitoring hydrology

Developing an effective rainwater management strategy demands a sound knowledge of hydrological processes, but high quality hydro-meteorological data is often lacking in sub-Saharan Africa. With the successful creation of hydro-meteorological networks at each of the study sites, project N2 is changing the status quo by generating high temporal resolution and high quality primary data, in a participatory way.

Monitoring instrumentation has been installed at the Jeldu, Diga and Fogera research sites. At each location, the instrumentation monitors a full range of meteorological variables, as well as



stream flows, soil moisture profiles, groundwater levels and rainfall. The participation of local people in the creation of the networks has been central to the sustainability of the project. During the reconnaissance phase of the project, advice on locations for instruments was sought from community members and local officials. The project has since employed and trained local people as "observers" to make daily and twice-daily readings.

If you have a technology, where do you go with it? That's the question that the N3 project is trying to answer with a new set of tools and strategies to help planners and decisions makers. In 2011, the N3 team alongside community participants collected all the physical, biophysical and climate data that they needed to create a detailed, but user-friendly new model. Maps showing where each rainwater management practice is likely to be feasible are



already complete. Together with the team's new "happy strategies" game, designed to get planners talking about the pros and cons of introducing technologies, the team is helping planners make the right choices at the right time, for the right place.



Volta

Ensuring due diligence



High water scarcity and resource variability characterize the Volta Basin, where rainfed agricultural systems dominate and the effective management of rainwater and small reservoirs is crucial to livelihoods. Although rainfall can be high—in southern parts of the basin annual precipitation can reach 2000mm—evaporation is also high, and only a small proportion of rainfall is available as river flow.

Volta Basin Development Challenge

Strengthen integrated management of rainwater and small reservoirs so that they can be used equitably and for multiple purposes.

Inland, rainfall becomes increasingly erratic and results in making growing seasons shorter. The risk of crop loss is high, making life even more challenging for the basin's farmers, who are amongst the poorest in the world.

Farmers need access to a reliable water source. In the Volta Basin, locally maintained small reservoirs that require no recurrent energy supply are a sustainable option.

The Volta River runs through the West African countries of Burkina Faso,

Ghana, Togo, Benin, Mali and Cote d'Ivoire before draining into the Gulf of Guinea. The major share of the river basin lies in Burkina Faso and Ghana, where the Volta BDC is focusing its research efforts.

The goal of the Volta BDC is to "strengthen integrated management of rainwater and small reservoirs so they can be used equitably and for multiple purposes", a goal that builds on the work of the Phase One Small Reservoirs Project.

The program of work in the Volta Basin encompasses five interlinked projects that explore the institutional and technical aspects of small reservoir development and maintenance. The program also has strong links to the Nile and Limpopo Basins in its work on Rainwater Management Systems.

Activities and achievements

In 2011, the Volta Basin Team Program focused on establishing a firm base of knowledge and communication platforms to support research efforts. Sites were selected in the two main sub-basins of the Volta River (the Black and White Volta) in Ghana and Burkina Faso, with extrapolation domains covering the whole Volta Basin. After site selection, the year was dedicated to: literature reviews, the establishment of many multi-stakeholder consultative platforms for exchange and learning, and to the assessment of biophysical, social and economic conditions in the basin.

The Volta Basin Development Challenge got formally underway on May 30 in Accra, Ghana, with an inception workshop attended by 50 delegates, including researchers and representatives from government

Volta Projects

- V1 Targeting and scaling out;
- V2 Management of rainwater for crop-livestock and agroecosystems
- V3 Management of small reservoirs
- V4 Governance of rainwater and small reservoirs
- V5 Coordination and enabling change

agencies. The VBDC was presided over by Kwasi Agyei Tabi, Director for Research, Statistics and Information Management at the Ministry for Environment, Science and Technology, Ghana. The workshop aimed to ensure basin-wide coherence and project integration in the pursuit of the VBDC goals. Participants reached a common understanding of what each project (V1 to V5) is doing and how they are making progress towards the program goals despite a number of challenges on the ground. These challenges include ensuring data quality from on-going research, embracing fully a research-for-development approach, and taking into account various stakeholders expectations, which are exacerbated by the socio-cultural and institutional differences in the basin. The use of 'storylines' to define

a narrative for research needs in the basin emerged from the workshop, with project teams collaborating to develop a unified vision for the VBDC. The importance of linkages between the work of Volta, Limpopo and Nile Basins was also highlighted.

Research highlights

No more 'business as usual'

Despite significant government investment, farmers have been reluctant to adopt rainwater management strategies in the countries of the Volta Basin. Innovation platforms are proving to be one option that could change that trend.

"We cannot just bring the technologies from the shelf to the farmers without considering their preferences and access to markets," say researchers from project V2 who have learned from experience the benefits of IPs as a means of communication and consultation with a diverse group of stakeholders.

Farmers (both male and female), traders, livestock keepers, input



Learning from the past

Small water pumps are one of the success stories in the Volta Basin when it comes to agricultural water management, according to the historically-minded members of the V1 team. Looking back over 50 years of agricultural interventions, researchers found that three interventions have had some success: soil water conservation structures, small reservoirs and small pumps. The uptake of small pumps has been rapid and spontaneous, and has led to real changes in income.

The study recommended that farmers be more involved in the management of rainwater infrastructure. To make this possible, capacity building is needed, and funds made available by integrating maintenance costs into project budgets—an omission that has led to the failure of interventions in the past.

suppliers, technical agents, researchers and NGOs involved in rural credit were amongst the participants at the basin's first inception meetings, held in both Burkina Faso and Ghana, and convened with the assistance of the Netherlands Development Organization (SNV).

Initially skeptical about the need for innovation platforms, project researchers were struck by the contributions of participants at the BDC's first IP meetings in June 2011. According to one researcher, the suggestions offered by meeting participants were specific, well thought out and market oriented; they went beyond the preoccupation with productivity that is often the primary concern of biophysical scientists. For example, participants commented on the need for improvement in post-harvest management in crop-livestock systems.

Action research initiated by the project is now informed by the outcomes of the IP meetings, which in turn drives on-farm experimentation. It is a process that fosters local ownership

of the research and its outcomes and should help to ensure that the benefits of the project live on long after the Volta BDC has ended.

Innovation platforms have been instrumental across the program to help researchers refine research questions and identify issues of critical importance to stakeholders. For project V4, the first IP meeting in northern Ghana in October 2011 was the catalyst for change. The meeting revealed that the project is operating in two very different contexts. In Ghana, biophysical processes are a key driver of resource management. In Burkina Faso, the focus is how the Local Water Committee, an innovative mechanism for Integrated Water Resource Management, can be made operational.

Project V3, focusing on small reservoir management, has developed a better understanding of the interaction between agricultural intensification and aquatic ecosystems in Burkina Faso, and they've expanded their research program. The proliferation of aquatic weeds is literally suffocating the life



out of the Boura reservoir, and the livelihoods of the people who depend upon it. Researchers have taken on this new challenge to help alleviate a major problem for the communities living around the reservoir by beginning an ecological assessment of the reservoir. They hope to find ways to stop the spread of weeds and to help the reservoir breathe again.

Making the most of opportunities to learn from one another and to share knowledge is part of the ethos of the CPWF. Fostering inter-project and

cross-basin linkages is an essential part of the learning process, ensuring that the whole really is more than the sum of its parts. The Volta Basin is doing just that with its use of 'storylines', an inter-project study identifying common research threads that link VBDC projects. Building a 'story' to describe how change might happen in the basin can act as a kind of decision support tool for policy makers. It also helps the team to communicate their message to a general audience.

What's the story? Narratives of change in the Volta Basin

There is a lot of research effort that has gone into helping various Volta Basin communities with their livelihood needs. These projects will be more needed in the future as the pressures of climate change, fluctuating food prices and water scarcity continue to pose significant impacts in these areas.

To date, however, documenting the most common storylines in order to translate them into viable interventions for the region is something that has been quite challenging. That's where the Storylines and Scenarios project comes in. The idea is something that various VBDC members (covering all the 5 Volta Projects) thought of and shared with the various CPWF project leaders about their research and the challenge of linking this work together to maximize its impact on the communities concerned.

A practical example of a 'storyline':

"Increase in population within the basin is placing increasing pressure on limited natural resources that are in turn degrading water quantity and quality. Supplemental irrigation promises increased returns from fisheries in reservoirs and out-of-season vegetable production. The modest rise in incomes allows various farmers to experiment with more resource conserving agricultural practices such as soil and water conservation that reduce pressure on resources, partly counteracting the effect of rising populations. Other secondary benefits ensue from these practices and enhance environmental security through reduced degradation and depletion of water resources as well as increasing food security at household, community and regional levels".



Program level activities: Adding value to basin work

As seen in previous sections, linking research to innovation processes is done primarily at the local and regional level by our basin development research programs.

The global team also seeks to influence different actors and processes at a range of levels. It is comprised of the following functional teams:

1. Management
2. Research
3. Knowledge Management
4. Corporate Services

The role of the CPWF program team has evolved with the changing context that the program is operating in. The previous two years focused on establishing and identifying funding for the basin level programs. As basin programs are now up and running, 2011 saw the program team shift gears to focus on how it can add value as

a global program and link basin-level lessons to global concerns.

This was done in three ways:

1. Adding value to the basin work by supporting local innovation and cross-basin learning and exchange;
2. Capitalizing on Phase 1 experiences through a scientific meta-synthesis of results and repackaging of lessons for other target audiences; and
3. Using our messages to influence global debates on water, poverty and ecosystems.

In addition, a major highlight of the year was the organization of the 3rd International Forum on Water and Food (IFWF3) in Tshwane, South Africa in collaboration with IWMI and FANRPAN. More than 300 participants from over 40 countries representing all the basins participated in the event

which highlighted the CPWF R4D approach in the basins and some of the key themes each basin is working on (see following IFWF section for more information).

Adding value to basin work

A major thrust in 2011 was to initiate a range of activities to facilitate cross-basin learning and exchange and add value to basin work. This was done through:

1. Establishment of Topic Working Groups
2. Research Into Use Grants
3. Innovation Funds

Topic Working Groups (TWGs)

Topic Working Groups are communities of practice that address specific, well-defined challenges in relation to water and food that are cutting across basins. They aim to facilitate cross-basin learning and research, and help

build capacity of basin teams through sharing of experiences and mentoring. The year 2011 saw the inception of four TWGs.

The Learning to Innovate (L2i) TWG was launched in January 2011. This TWG is a community of people at the very core of the CPWF who are working in research-for-development projects to design and implement knowledge management (KM) processes that help make our research more relevant to would-be users. The group has been very active throughout 2011. A few highlights of its activities are the launch of the CPWF Innovation Fund and establishment of the L2i Steering Committee on which, amongst others, the Basin Leaders are represented. This group has held regular virtual meetings during the year. L2i has also established an interactive Learning to Innovate Google website as its virtual

hub. This hub serves as a helpdesk to answer practical questions about the implementation of CPWF KM practices such as monitoring and provides a group space and central repository for discussion and sharing of 'learning to innovate' experiences.

The Resilience TWG was launched with a workshop in March 2011, during the Resilience 2011 conference in Tempe, Arizona. This TWG, led by the Stockholm Resilience Center, aims to help improve people and projects that 'do' resilience, and bridges across basins by comparing and synthesizing lessons learned. The TWG has two sub-thematic groups. One of these focuses on indicators for resilience in agro-ecosystems. It aims to develop and compare system 'protocols' and approaches to assess them. The other group focuses on evaluation of innovations.

The Global Drivers of Change TWG contributes global vision and breadth of understanding on how external drivers pose challenges but also potential opportunities to basin development pathways. The TWG was

introduced to the CPWF community in September 2011 with a workshop in Chiang Mai, Thailand focused on future scenario analysis. Scenario analysis offers a foresight methodology to explore a range of possible future scenarios and gain insight into what the basins might look like at some defined time in the future.

The Spatial Analysis & Modelling (SAM) TWG held its first meeting in Addis Ababa, Ethiopia in November 2011. This TWG appeals to many, as demonstrated by well over forty participants attending the meeting. SAM focuses on uncertainty and landscape dynamics, linking biophysical and socio-economic variables in the modeling. It aims to support the community of practice, sharing data, methods and ideas, and comparing across basins.

CPWF Research into Use Grants

In order to find out how we can ensure our research is scaled out, widely adopted and scaled up into policy frameworks we developed and launched our new Research into Use (RiU) program in 2011. Based on

results and outcomes of Phase 1 we invited previous project leaders and their institutions to submit proposals to follow-up relevant research done

during Phase 1 that just needed a little further support to have wider impact. Five research innovations (see box below) were selected.

RiU Selected Innovations

- Quesungual Slash and Mulch Agroforestry System (QSMAS): RiU will scale up and out an eco-efficient production system to improve resilience and food security in the Lempa River Basin in El Salvador.
- Companion Modeling: RiU brings together stakeholders from downstream, upstream, and managers of dams into a Companion Modelling approach at a sub-basin scale, and implements "institutional up-scaling" towards land and water institutions.
- Floodplain Fisheries and Aquaculture in Bangladesh and India: RiU will incorporate lessons from Bangladesh on community initiatives to enhance productivity of water, land and fish in floodplains based on "Integrated Floodplain Management" and disseminate evidence-based policy recommendations on how best we can use and manage these resources.
- Uptake of integrated termite management for rehabilitation of degraded rangeland in Eastern Africa: RiU will bring together technical solutions for integrated termite management (ITM) with ongoing research work on innovation approaches in the context of the Nile Basin Development Challenge (NBDC) projects in Ethiopia.
- Enhancing uptake and socio-economic benefits of shallow groundwater irrigation in the White Volta Basin: RiU will explore the potential for greater use of groundwater irrigation in the basin.



Innovation Fund

As projects in basins are implemented, opportunities or new ideas arise. The Innovation Fund was established in 2011 to spur innovation and catalyze change in CPWF research for development projects by building capacity and supporting emerging and unanticipated opportunity. The Fund announced its first round awardees in August 2011. Eight projects of less than one year duration were awarded grants totaling more than US\$165,000 in five of the six basins that CPWF works in: Ganges, Limpopo, Mekong, Nile and Volta.

The grants and the corresponding funds awarded for 2011 were:

- Mainstreaming gender in the CPWF: Benchmarking and addressing immediate needs
- Development of a web-based decision support system for agricultural water management of small reservoirs and small water infrastructure in the Limpopo Basin
- Volta storylines and scenarios: A mouthpiece for interventions to enhance livelihoods

- The wheels of innovation: Local challenge funds for rainwater management interventions
- Participatory video: A novel mechanism for sharing community perceptions with decision makers
- Building provincial capacity to understand the water demand implications of socio-economic development plans in Central Vietnam
- Sharing lessons on hydropower development processes and stakeholder engagement between Cambodia and Laos
- Implementing community level water management in coastal Bangladesh

Capitalizing on Phase 1 experiences CPWF Meta-Synthesis

The Meta-Synthesis (MS) aims to pull together major findings and lessons from CPWF Phase 1 projects, placing them in the context of the principle messages from Basin Focal Projects and the Comprehensive Assessment, and linking them with the new program of work in Phase 2. A book is expected to be finalized by 2013 and will be an

important contribution to the CGIAR Research Program on Water, Land and Ecosystems (WLE) Program.

The heart of the book is to explore a paradox - that water is simultaneously abundant and scarce pretty much everywhere. There is a lot you can do about this but relevant innovations have their subtleties and are difficult to do well. This year a first meeting of key authors was held to discuss the initial draft outline and potential authors. In addition, time was spent synthesizing project information and pulling together evidence for the book.

Phase 1 Repackaging exercise

Much effort was spent in 2011 in marshalling and organizing the wealth of knowledge and research findings generated from the CPWF Phase 1 projects by developing a range of complementary knowledge products aimed at reaching out to multiple audiences. Each product was specifically designed with different audiences in mind and repackaged using evidence based materials. These materials were developed in



the light of prototypes that can be produced in Phase 2 as well as in WLE. The objective was to ensure the utilization of our research on different levels, ranging from enhancing policy influence of research outputs to extensionists finding suitable products to take and communicate to farmers.

The resource package includes:

- **Key message posters** - Emphasizes research derived core messages and statements with a nicely illustrated

picture. These will be targeted to policy makers, development administrators and educators and clearly define the key messages of CPWF.

- **Outcome stories** - Specific lessons and changes as a result of the research. The target audience would be trainers, journalists, policy makers and planners.
- **Sourcebook** - Made up of best practices, research methods and tools. Targets trainers, development professionals and researchers.
- **Briefing notes** - Based on the



core messages and synthesized across projects, focused on both the methodological as well as technical issues. Targets academics, policy makers, planners and development administrators.

An innovative aspect of this exercise was that stakeholder inputs were solicited throughout the process. Actual products were exhibited during IFWF3 in South Africa where useful comments were obtained.

Basin partners and project leaders were invited to a workshop where a thorough and rigorous review of the products was carried out. Knowledge brokers were also consulted to explore methods of how best to further repackage the material for dissemination in their respective basins, countries and cultures. These workshops proved very useful. Many iterations and revisions were done before the products were finalized.

A key lesson learnt was to involve the project leaders very early on in the project not only in getting them to focus on these end products but also mandating the first drafts to be written by them, thereby minimizing reference to secondary material, which tend to dilute substance and content.

Influencing the global debate on water and food

Increased understanding of and engagement with CPWF in international fora and corresponding key global policy and development debates has emerged as a priority. CPWF is committed to ensuring quality,

credible information targeted in a strategic and constructive fashion – and maintaining the appropriate balance between scientific research and its communication.

In 2011, CPWF was active in global policy engagement. The director was involved in World Water Forum discussions as well as the Bonn Conference on Water-Energy-Food Nexus in November 2011. In addition, CPWF supported partners to organize a session on rainwater management as a climate smart technology at the COP-17 negotiations in Durban, South Africa. The rainwater management best practices were focused on experiences from Ethiopia, South Africa and Ghana. This was CPWF's first time at a major international event and partners were able to present their work.

In addition, CPWF in collaboration with IWMI and UNEP launched a report on "An Ecosystem Services Approach to Water and Food Security". This included working with IWMI to develop a media release and opinion pieces. An op-ed by the CPWF director was published in the

Jeune Afrique and a major piece was published in Le Monde which discussed CPWF's work.

The most significant impact was from the media campaign centered around findings from the Phase 1 Basin Research Focal Project. The Basin Focal Project, published in two special issues of the International Water Journal, was an exhaustive study looking at the interlinkages of water, food and poverty in those 10 basins.

"The most surprising finding is that despite all of the pressures facing our basins today, there are relatively straightforward opportunities to satisfy our development needs and alleviate poverty for millions of people without exhausting our most precious natural resource," said Dr. Simon Cook, Director of the Water, Land and Ecosystems program and leader of the Basin Focal Project.

The counter-intuitive message resonated globally as it was a more positive message on water and water management than the usual alarmist messages centered around scarcity. The



campaign received widespread coverage in local and regional media with 14 wire stories (Reuters, AFP etc.), four radio broadcasts and 25 original online stories, and was picked up in hundreds of online pieces in multiple languages.

The positive messages about water development, by attracting the attention of EU negotiators, were channelled into the EU's Rio+20 messages. This proved a helpful step for CPWF to enter into the Water, Food and Energy Nexus discussions.

Moreover, CPWF showcased the African Rainwater Management strategies at the United Nations Framework Convention on Climate Change in Durban, and emphasized the value of rainwater management as an emerging climate-smart technology.

The resulting messages from the book have formed the basis for CPWF's main messages and the Water, Land and Ecosystems program.

IFWF3: Insights into research for development



Shortly before the 3rd International Forum on Water and Food (IFWF3) convened in Tshwane, South Africa during November 2011 demographers at the United Nations announced that the world population had surpassed seven billion. Shortly after the IFWF3, world leaders gathered in Durban,

South Africa for COP17 to focus on climate change challenges. These events underscored the relevance, and urgency, of the issues that CGIAR Challenge Program on Water and Food CPWF and its partners are addressing.

The IFWF3 was organized and facilitated by CPWF and co-hosted by the International Water Management Institute (IWMI) and the Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN).

The IFWF3 is not a conventional research meeting where the focus is on presentations and methodologies. Rather, it brought together a diverse range of actors to share lessons across the river basins that CPWF works in (Andes system of basins, Ganges, Limpopo, Mekong, Nile and Volta), explore how basin teams are addressing

different challenges and look at the global implications of the research that is taking place.

Almost 300 participants representing some 38 countries attended, including: researchers from the natural and social sciences, research managers, investors, NGOs, leaders of agricultural and water management organizations, policy makers and decision-makers, as well as journalists and social media reporters. Women (80 participants) and young researcher professionals had a stronger presence than ever before, and because the event was held in Africa, policy makers and decision-makers from the Limpopo, Volta and Nile Basins were well represented.

The IFWF3 highlighted the need to link technical options to institutional change. This could include intensifying

"Rainwater management strategies have the potential to lift many parts of Africa out of poverty. However, they need to be linked to market incentives. It was one thing to talk about landscape management and conservation but it has to have tangible outcomes for local farmers." Tilahun Amede, CPWF Nile Basin Leader.



and diversifying farm systems with markets and infrastructure development and ensuring that policies are responding to local realities. Likewise, CPWF is taking innovative approaches to spatial analysis and modeling that are demonstrating valuable insights for understanding processes and the consequences of change.

The Forum also highlighted the need to develop and communicate solid evidence in generating the desired impacts on household livelihoods and food security.

Some of the key insights included:

- Agricultural research-for-development must actively engage with and inform the policy arena. Policy makers need the evidence, insights and honest brokerage that the research-for-development community offers.
- Addressing gender imbalances is critical to address inequities and ensure research takes into account a diversity of perspectives. The issue is not that gender should



"Social scientists and biophysical scientists do not always speak a common 'language', that there's a power dimension to it and that perhaps the biophysical scientists feel that natural science is the hard-core science and the social science secondary. There is not always a facilitator to manage these different disciplines. So to address this, we considered a matching method where the different disciplines work independently but there's an interface at which they integrate the different types of results. Another suggestion was tracking together, where scientists from the different disciplines meet at regular intervals and go into the field together."
Sonali Senaratna Sellamuttu, IWMI and Mekong Project Leader.



- be included because it is mandated but that having a gender perspective will ensure the research CPWF carries out is more relevant and robust.
- Key partners in the process of research-for-development must be involved from the outset, not only to make the research more effective, but also to broaden development impacts across society.



- Benefit sharing is a political process that involves bringing different stakeholders together to share water resources and their benefits in different ways. Such an approach combines scientific understanding of ecosystems and socio-political realities such as traditional use, rights-based approaches and governance issues.
- Social, economic, political and cultural forces should always

- be considered during research-for-development projects.
- Multi-stakeholder platforms can be an effective mechanism for delivering research into development. However, they are resource intensive, need to be maintained, can be personality-driven and depend on mutual trust facilitated by a neutral respected broker.
- It is imperative to make research outcomes and evidence visible,

- accessible and available.
- In all activities, it is vital to integrate communication-for-development within research-for-development.

The IFWF3 was documented in an innovative way using social media, live blogging and micro-blogging. The results can be found at the Forum website. A Forum synthesis report was distributed in May 2012.

The voice of young researcher professionals

A feature of the IFWF3 was in providing formal space to young professionals. They had their own sessions during the opening and final day plenaries and created their own program and agenda to get the most out of the Forum sessions. This was a lively demonstration of the value CPWF places on young professionals and the future pay-off from investing in their active participation in research-for-development.

During the panel discussion, everyone agreed that young professionals are

more present 'in the field' and make a sizable contribution to implementation research. They are open-minded and this enables them to better address a range of social and cultural challenges in the field including local traditions or different age and gender groups. In addition, they are comfortable with social networking and know how to use online tools. Thus, they are a crucial aspect of the R4D approach and need to be mentored and supported. It was agreed that CPWF will further support the establishment of a network so that young professionals within each of the basins has its own space for debate, consultation and mentorship.

The young professionals' event was a significant step towards ensuring continuity of knowledge sharing and fostering learning among emerging professionals.

Activities in 2011

Events Key

- CPWF Program level event
- CPWF Basin level event
- Event in which CPWF project and/or partners participated

January

- Basin Leaders Meeting (18-20), Vientiane, Laos



- Ganges Proposal Development Workshop (24-27), Dhaka, Bangladesh. Details about workshop preparation and outputs are available at <https://sites.google.com/site/cpwfbdceoi/ganges-proposal-development-workshop>

February

- CPWF-IFAD Workshop on Mainstreaming Innovation (2-3), Rome, Italy
- 1st Repackaging Phase 1 Materials (8-10), Kuala Lumpur, Malaysia
- Limpopo: L1-L4 Workshop (25-28), Pretoria, South Africa

March

- M-POWER Annual Meeting (7-8), Chiang Mai, Thailand
- Mekong Reflection Workshop and related events (9-11), Chiang Mai, Thailand

- Resilience Topic Working Group: Launching at the Resilience Conference (13-16), Arizona, USA
- Field trip for Andes projects embedded within the Reflection Meetings (18-28)

- Volta Project Leaders Meeting (28-1-Apr), Ouagadougou, Burkina Faso

April

- CPWF Advisory Committee Meeting (28), Paris, France
- CPWF Board Meeting (29), Paris, France

May

- Nile Science Workshop (4-6), Addis Ababa, Ethiopia. A presentation on 'Science and Reflection Workshop' is at <http://www.slideshare.net/ILRI/reflections-on-the-nile-bdc-science-and-reflection-workshop>

- Limpopo BDC Reflection and Launch (9-12), Tshwane, South Africa



- Communications and Information Meeting (10-14), Tshwane, South Africa. Information about preparation for the meeting <https://sites.google.com/a/cpwf.info/l2i/events/basin-communication-meeting>



- Ganges Field Trip (25-31), Bangladesh

- Volta Inception Workshop (30-1 June), Accra, Ghana. The final report with some meta data is available at <http://cgspace.cgiar.org/handle/10568/3922>

June

- Ganges Inception Workshop (1-2), Dhaka, Bangladesh

- 1st Meeting of Meta-synthesis Editorial Committee (2-4), Paris, France

- Peer assist for Andes, Mekong and Nile (7-8), Lauret, France

- 2nd meeting of Repackaging Phase 1 Materials (21-24), Bangkok, Thailand

August

- Forum Papers Review Meeting (1-2), Montpellier, France
- Knowledge Management Group Strategy Meeting (13-14), Colombo, Sri Lanka



- Science Paper Writeshop (29-31), Stockholm, Sweden

September

- Metasynthesis Meeting (7-9), Bangkok, Thailand
- Global Drivers Topic Working Group Meeting (12-14), Chiang Mai, Thailand

- MT Meeting (15-16), Bangkok, Thailand

- Limpopo Basin Policy Communication Workshop (13-16), Johannesburg, South Africa

October

- Phase 1 Repackaging Review Workshop (4-7), Bangkok, Thailand
- Mekong (MK3) field visit (8-14)
- Mekong Science Workshop (17-19), Vientiane, Laos
- Research into Use Inception and Review Workshop (25-27), Bangkok, Thailand

- Ganges Inception Workshop (30-31), Dhaka, Bangladesh

November

- Modeling – GIS Topic Working Group Meeting (7-11), Addis Ababa, Ethiopia

- 3rd International Forum on Water and Food, IFWF3 (14-17), Tshwane, South Africa



- CRP Ganges Event (20-23), Dhaka, Bangladesh

December

- COP17 (3), Durban, South Africa
- Mekong Hydropower Forum (8-10), Phnom Penh, Cambodia

Governance and management

CPWF governance and management structures continue to evolve to meet the changing context we work within.

CPWF governance

In August 2011, the two Boards of the International Water Management Institute (IWMI) and CPWF officially merged. Since then, CPWF has worked towards integration into the CGIAR Research Program on Water, Land and Ecosystems (WLE), of which IWMI acts as the lead institution.

What does this mean in practice? All CPWF Phase 2 projects will run their full course and the CPWF Management Team will continue to manage them until the CPWF concludes its work at the end of 2013. New initiatives will be jointly planned under Water, Land and Ecosystems program. Funding to maintain existing CPWF projects has

been sought as CGIAR continuity funds for 2011 and as part of WLE from 2012.

CPWF is a full partner of CRP5 WLE and will continue to operate as such until early 2014. This means CPWF will be implementing all agreed activities until early 2014 and retain its management structure, with the progressive participation of CPWF senior management into the IWMI and WLE management structures. At a strategic level, CPWF will continue to work closely as an experimental program, sharing experiences on regionally based problem-solving research for development, with IWMI and other WLE partners and streamlining systems and procedures for when WLE comes on-line in 2012. An indication of this has been the merging of many of the CPWF administrative and financial functions

within the IWMI structure, where appropriate, directly within CRP5 WLE.

Changes in the CPWF Management Team

As a first step in fostering greater cross-participation in IWMI and CPWF Management Teams, Tim Williams, IWMI Director for Africa, joined the CPWF Management Team in 2011 and Alain Vidal, CPWF Director, joined the IWMI Management Team. The CPWF Management Team has also evolved, with a reduced size in 2011. Pamela George, CPWF Program Manager and one of the longest serving staff of CPWF (since 2004), left in July. There was also a reduced science role with the departure of Sophie Nguyen Khoa, the CPWF Associate Research Director who left in March 2011.

The role of the Management Team

also shifted. There was a new focus on developing added value at the global level with initiatives such as the Topic Working Groups, Metasynthesis of Phase 1 and communication and knowledge management activities. In addition, new initiatives were started, such as a focus on Gender and Young Professionals which was highlighted at IFWF3.

Funding

In mid-2011 there was a cash-flow crisis due to late payments from a transitioning CGIAR and from EC/IFAD, hampering full implementation of the program. This obliged us to delay disbursements to most of our projects by around six months and impacted disbursements throughout the year and even into 2012.

In terms of funding, CPWF was strong in 2011 in terms of ensuring all its

basin programs were funded and underway.

The EC agreed to co-finance the Volta BDC and linkages were made to the CGIAR Research Program on Agriculture and Aquatic Systems to support the Ganges BDC.

There were also a number of new grants which were awarded based on CPWF work. A grant from IFAD on 'Mainstreaming marketable innovations' was being negotiated (to be officially got underway in 2012). A new Research Into Use Grant Scheme for Phase 1 projects which showed promise was initiated. In addition, the Mekong BDC received a more than AUS\$5 million grant for its work on hydropower research. It also received a grant of SEK1.5 million (around US\$225,000) from Sida to produce a film on Mekong Hydropower and the resulting dialogues around it.

Financial statement

Annexes: List of publications

This image shows a page from a document containing a list of publications. The text is mostly illegible due to blurring, but it appears to be a table with multiple columns. A purple circular stamp is visible at the bottom left of the page.

This image shows another page from a document, similar to the first, with a list of publications. It also features a purple circular stamp at the bottom left. The text is mostly illegible.

CPWF has placed all its research outputs in its new repository that holds more than 2,000 records from work produced within CPWF.

Go to: <http://results.waterandfood.org>

CPWF Working Paper Series

Woolley, J. and Douthwaite, B. 2011. **Improving the resilience of agricultural systems through research partnership: A review of evidence from CPWF projects.** CPWF Impact Assessment Series 10. Colombo, Sri Lanka: CGIAR Challenge Program for Water and Food. 42pp.

McDonald, B. 2011. **Managing water and land at the interface between fresh and saline environments – an impact evaluation.** Colombo, Sri Lanka: CGIAR Challenge Program for Water and Food (CPWF). (CPWF Impact Assessment Series 07). 56pp.

Córdoba, D. and White, D. 2011. **Citizen participation in managing water: Do Conversatorios generate collective action?** CPWF Impact Assessment Working Paper 6. Colombo, Sri Lanka: CGIAR Challenge Program on Water and Food.

Woolley, J. 2011. **Strengthening CPWF project evaluations. Review of the CPWF small grants initiative.** CPWF Impact Assessment Working Paper 9. Colombo, Sri Lanka: CGIAR Challenge Program for Water and Food.

Templeton, D. and Bayot, R. 2011. **An impact assessment of the 'Developing a System of Temperate and Tropical Aerobic Rice (STAR) in Asia' project.** Impact Assessment Paper 5. Colombo, Sri Lanka: CGIAR Challenge Program on Water and Food.

Mayne, J. 2011. **Assessing research-**

for-development impact. Impact Assessment Series 8. Colombo, Sri Lanka: CGIAR Challenge Program for Water and Food.

Mainuddin, M., Kirby, M. and Y. Chen. 2011. **Fishery productivity and its contribution to overall agricultural production in the Lower Mekong River Basin.** CPWF Research for Development Series 03. Colombo, Sri Lanka: CGIAR Challenge Program for Water and Food (CPWF). 48pp.

Journal articles

Suhardiman, D., Giordano, M. and Molle, F. 2012. **Scalar Disconnect: The Logic of transboundary water governance in the Mekong.** Society & Natural Resources. Society and Natural Resources, 25:6, 572-586.

Johnston, R. and Kummu, M. 2011. **Water resource models in the**

Mekong Basin: A review. Water Resources Management 26 (2), January 2012. pp 429-455.

Haque, A.B.M, Kisser L. E. and Dey M. M. 2011. **Institutional arrangements in seasonal floodplain management under community-based aquaculture in Bangladesh.** Asian Journal of Agriculture and Development 8(1).



Joffre, O. and Sheriff, N. 2011. Conditions for collective action: **Understanding factors supporting and constraining community-based fish culture in Bangladesh, Cambodia and Vietnam.** WorldFish Center Studies and Reviews 2011-21. Penang, Malaysia: The WorldFish Center. 43p.

Haque, A.B.M.M, Dey, M.M. and Visser L. E. 2011. **Impacts of community-based fish culture in seasonal floodplains on income, food security and employment in Bangladesh,** Journal of Food Security.

McCartney, M. and Guillaume, L. 2011. **Review of water resource and reservoir planning models for use in the Mekong.** Report of the IWMI-CPWF Mekong (MK1) Project on Optimizing Reservoir Management for Livelihoods. International Water Management Institute (IWMI). Vientiane, Laos: CGIAR Challenge Program for Water and Food (CPWF). 24p. <http://publications.iwmi.org/pdf/H044652.pdf>.

Water, Food and Poverty in River Basins, Part 2: Cross-Basin Analysis and Synthesis. 2011. Water International 36 (1).

1. **Water, food and poverty: Global- and basin-scale analysis** by Simon Cook; Myles Fisher; Tassilo Tiemann; Alain Vidal.

2. **Water availability and use across the Challenge Program on Water and Food (CPWF) basins** by Mark Mulligan; L.L. Saenz Cruz; J. Pena-Arancibia; B. Pandey; Gil Mahé; Myles Fisher.

3. **Producing more food with less water in a changing world: Assessment of water productivity in 10 major river basins** by Xueliang Cai; David Molden; Mohammed Mainuddin; Bharat Sharma; Mobin-ud-Din Ahmad; Poolad Karimi.

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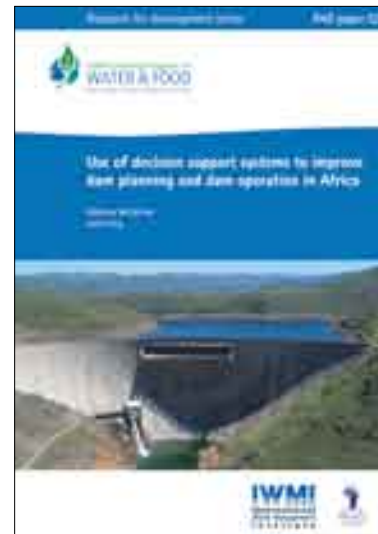
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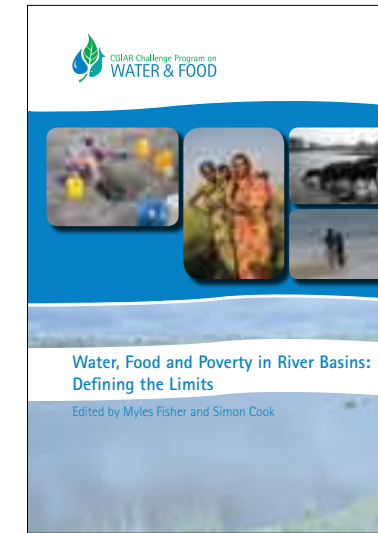
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Acronyms

ABDC	Andes Basin Development Challenge	LBDC	Limpopo Basin Development Challenge
ACCP	African Climate Change Programme	LIMCOM	Limpopo Water Course Commission
AFSC	American Friends Service Committee	MBDC	Mekong Basin Development Challenge
ANBO	African Network of Basin Organizations	M-POWER	Mekong Program on Water, Environment and Resilience
AusAID	Australian Government Overseas Aid Program	M&E	Monitoring and Evaluation
BDC	Basin Development Challenge	MRC	Mekong River Commission
BSMs	Benefit Sharing Mechanisms	MSC	Most Significant Change
CG	Consultative Group	MSPs	Multi-Stakeholder Platforms
CGIAR	Consultative Group on International Agricultural Research	NARIs	National Agriculture Research Institutes
CIM	Communication and Information Management	NBDC	Nile Basin Development Challenge
COMESA	Common Market for Eastern and Southern Africa	NSLM	National Sustainable Land Management
CPWF	Challenge Program on Water and Food	NTFP	Non-timber Forest Product
CRP	Consortium Research Program	NWRM	National Platform on Rainwater Management
CRPs	CGIAR Research Programs	ODI	Overseas Development Institute
CRS	Catholic Relief Service	OLM	Outcome Logic Model
CSIRO	Commonwealth Scientific and Industrial Research Organization	PRICE	Poverty Reduction by Increasing the Competitiveness of Enterprises
CSISA	Cereal Systems Initiative for South Asia	RIU	Research into Use
EIAs	Environmental Impact Assessments	RMS	Rainwater Management Systems
EOI	Expression of Interest	RT	Research Team
FANRPAN	Food, Agriculture and Natural Resources Policy Analysis Network	RWM	Rainwater Management
GBDC	Ganges Basin Development Challenge	SAC	Science Advisory Committee
GEI	Global Environment Institute	SADC	Southern African Development Community
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit	SDC	Swiss Agency for Development Cooperation
GMS	Greater Mekong Sub-region	SEI	Stockholm Environment Institute
GRISP	Global Rice Science Partnership	SIA s	Social Impact Assessments
GWP	Global Water Partnership	SLM	Sloping Land Strategies
HBS	Heinrich Böll Stiftung	SRC	Stockholm Resilience Centre
HSP	Hydropower Sustainability Protocol	SRP	Strategic Research Portfolio
IFPRI	International Food Policy Research Institute	STRASA	Stress Tolerant Rice for Africa and South Asia
IFWF3	3rd International Forum on Water and Food	TOC	Theories of change
IHA	International Hydropower Association	TWGs	Topic Working Groups
ILRI	International Livestock Research Institute	UNESCO-IHE	UNESCO-International Institute for Hydraulic and Environmental Engineering
IRD	Institut de Recherche pour le Développement	USAID	United States Agency for International Development
ISDA	Innovation and Sustainable Development in Agriculture and Food	VBDC	Volta Basin Development Challenge
IUCN	International Union for Conservation of Nature	VBRP	Volta Basin Research Program
IWMI	International Water Management Institute	WB	World Bank
IWR	Institute of Water Resources Planning	WCD	World Commission on Dams
KM	Knowledge Management	WLE	CGIAR Research Program on Water, Land and Ecosystems
LBC	Limpopo Basin Commission	WWF	World Wildlife Fund

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- CPWF Board merged with IWMI Board August 2011

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About CPWF

The Challenge Program on Water and Food was launched in 2002 as a reform initiative of the CGIAR, the Consultative Group on International Agricultural Research. CPWF aims to increase the resilience of social and ecological systems through better water management for food production (crops, fisheries and livestock). CPWF does this through an innovative research and development approach that brings together a broad range of scientists, development specialists, policy makers and communities to address the challenges of food security, poverty and water scarcity. CPWF is currently working in six river basins globally: Andes, Ganges, Limpopo, Mekong, Nile and Volta.

The CPWF is part of the CGIAR Research Program on Water, Land and Ecosystems. This new program combines the resources of 14 CGIAR centers and numerous partners to provide an integrated approach to natural resource management (NRM) research, and to the delivery of its outputs. The program focuses on the three critical issues of water scarcity, land degradation and ecosystem services, as well as sustainable natural resource management. It will also make substantial contributions to improved food security, poverty alleviation and improved natural resource management.

Learn more about CPWF: www.waterandfood.org

