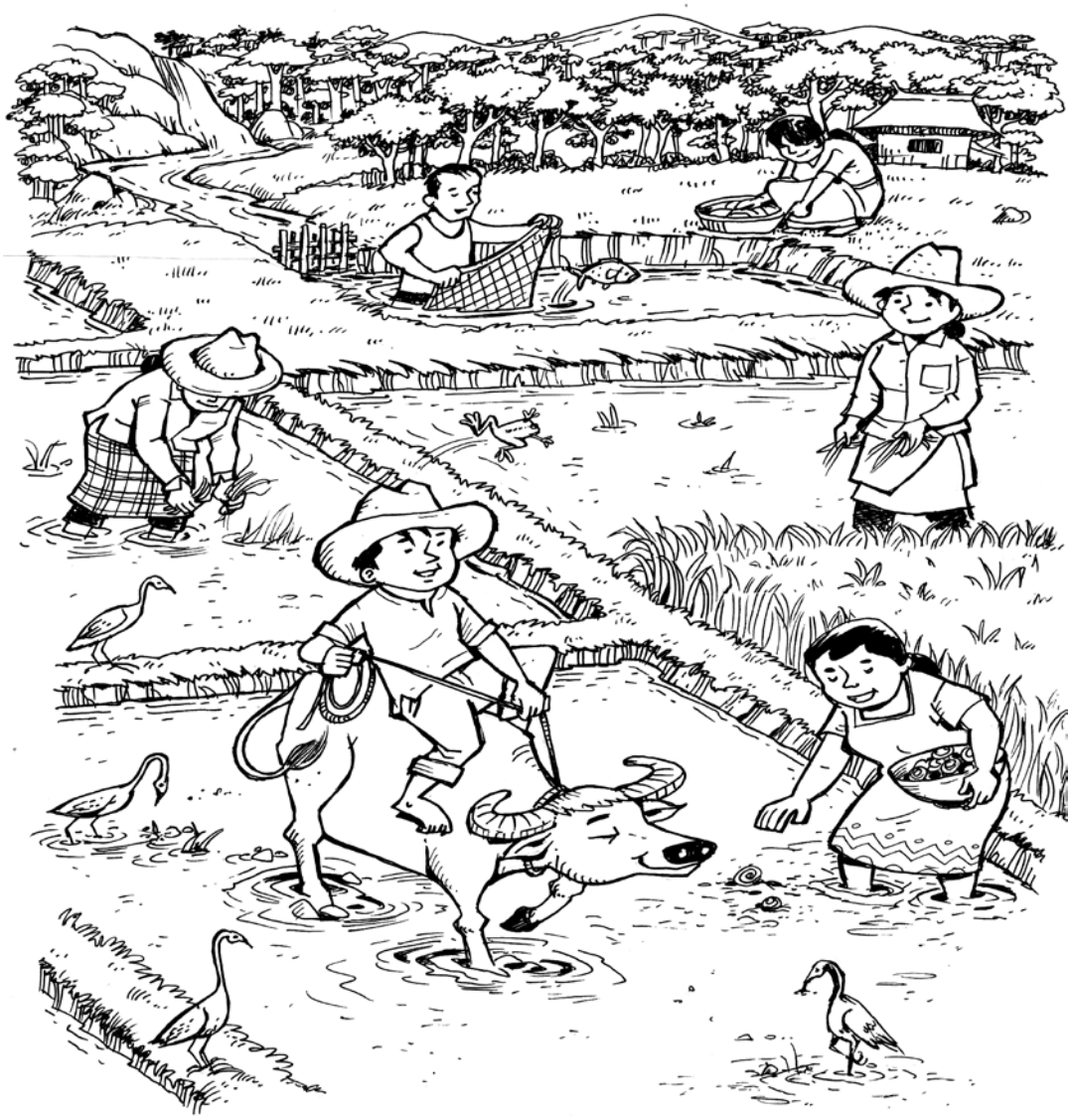
General Overview of the CPWF Phase 1 (2003-2008)



The CGIAR Challenge Program on Water and Food (CPWF) is an international, multi-disciplinary research for development program that was conceived to identify, create and support partnerships between research and development institutions to address water, food, environment challenges, and to help alleviate poverty. It emphasizes south-south and north-south cooperation and knowledge exchange. The program was successful in bringing together over

Growing more food with less water is a key challenge in the fight against poverty, hunger, and environmental degradation (CPWF 2002)

200 institutions including International Agricultural Research Centers (IARCs), Advanced Research Institutes (ARIs), National Agricultural Research and Extension Systems (NARES), Non-Government Organizations (NGOs), and International River

Basin Organizations (IRBOs) (Fig. 1). Operating across multiple levels, partnerships and knowledge sharing mechanisms were used to carry out innovative ranging from functional genomics to global change research.

At the core of the program was the goal of improving water productivity at different scales, in a way that is environmentally sustainable and socially acceptable. The approach to the improvement ofwater productivity focused on increasing food production and natural resources management. This goal interlocked with the following UN Millennium Development Goals: (1) to eradicate extreme poverty and hunger; (2) to promote gender equality and empower women; (3) to combat HIV/AIDS, malaria and other diseases; (4) to ensure environmental sustainability; and (5) to develop a global partnership for development. The program monitored its progress towards four related targets: (1) food security for all at the household level; (2) poverty alleviation through increased sustainable livelihoods in rural and peri-urban areas; (3) improved health through

The overarching goal is to contribute to the efforts by the global community to increase food production to achieve internationally adopted food security and poverty eradication targets by 2015; while simultaneously ensuring that the global diversions to agriculture are maintained at the level of the year 2000.

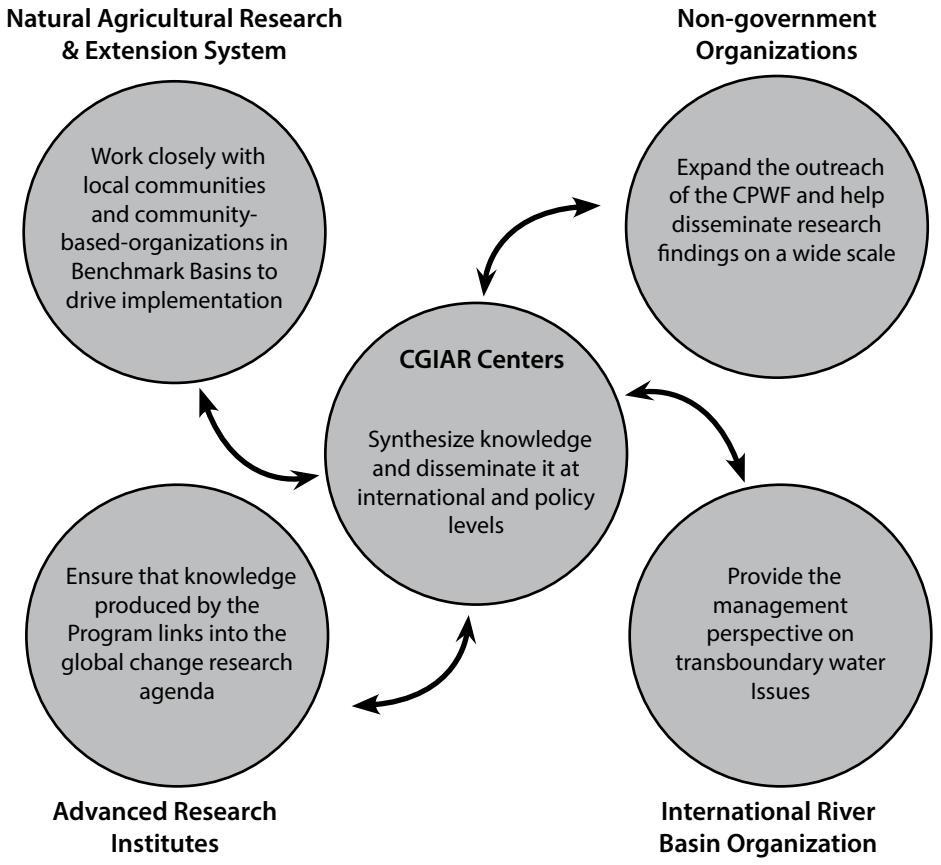


Figure 1. Roles and functions of CPWF partners

better nutrition, lower agriculture-related pollution and reduced water-related diseases; and (4) environmental security through improved water quality as well as the maintenance of water-related ecosystem services, including biodiversity.

A total of 68 research projects were implemented from 2004 to 2008 to address this goal. Projects were selected largely through an open competition. Concept notes were screened based on scientific merit (25%), quality and institutional mix of research team/ stakeholder participation (25%), strategic relevance to CPWF research agenda and priorities (20%), likely impact on beneficiaries (20%), and value for money (10%) The data on type of participating institutions show an average of five institutions per concept note of which one-third are members of the CPWF Consortium. NARES participation is above the minimum of two required. Other institutions who participated in the first open call were CGIAR Centers, Advanced Research Institutes, NGOs, consultancy companies, other international organizations and international projects. Projects were assigned to themes and basins.

Themes

Five interrelated research themes (Fig 2) provided the breadth of scope of the program:

Theme 1: Crop water productivity improvement
Enhancing food and livelihood security through a 'more crop per drop' approach.

This theme viewed water productivity through technological and managerial innovation at the farm level. It endeavored plant breeding solutions for agriculture in areas affected by abiotic

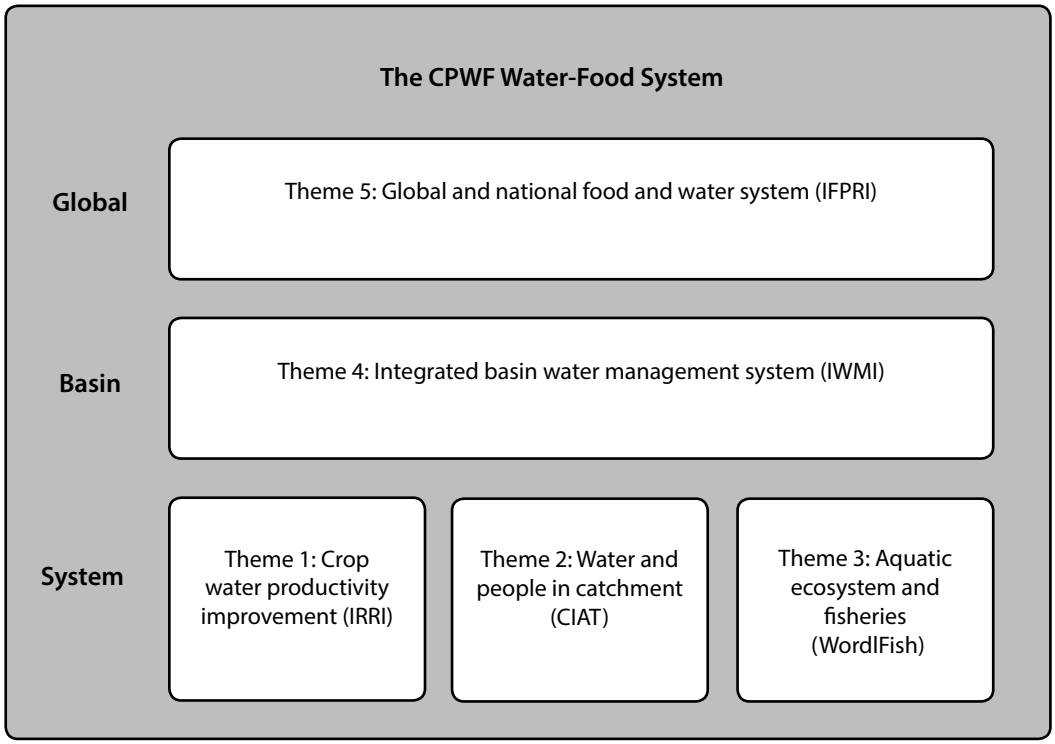


Figure 2. Roles and functions of CPWF partners

stresses. It studied integrated natural resources management and crop production at field, farm and agro-ecosystems level. Moreover, this theme promoted policy and institutional mechanisms to facilitate adoption of crop water productivity improvements.

Theme 2: Water and people in catchments
Improving water management in upper catchment areas.

This theme focused on water, poverty and risks in the upper catchments. It provided innovations in improved water management to enable people to benefit from improved management of land and water resources.

Theme 3: Aquatic ecosystems and fisheries
Protecting aquatic ecosystems and fisheries for more secure livelihoods and biodiversity.

Aquatic environments are a key source of nutrition for many of the world's poor – often, they are the sole source of protein for these communities. Research under this theme investigated environmental water requirements; carried out valuation of ecosystem goods and services; and improved the productivity of aquatic ecosystems through influencing policies, institutions and governance.

Theme 4: Integrated basin water management systems
Managing river basin in a holistic, integrated way
Increasingly, integrated water resources management (IWRM) is viewed as a promising strategy for managing water resources.

This theme identified appropriate technologies and management practices to enable integrated water resources management (IWRM). It provided innovative institutional arrangements and decision support tools and information to effectively manage water resources.

Theme 5: Global and national food and water systems
Evaluating water resources and food production in the global and national food and water system.

This theme was about water management and use at the broadest possible scale. Globalization, trade, macroeconomic, and sectoral policies have an important bearing on water, how it is used, and its productivity. It identified the kinds of investments and financing for agricultural water development and water supply that may improve or hinder water productivity improvement. It also recognized the complexity of water resources management at international levels, and formulated appropriate policy and institutional mechanisms to deal with it. In addition, it tackled the changes in the global water cycle.

Basin

The program used an integrated river basin management approach, ranging from the community and field, irrigation and farming systems, to catchment and river basin levels. The scope encompassed agriculture, fisheries, human health, environment and governance.

The research activities were implemented in nine benchmark river basins (Fig. 3) selected across Africa (Limpopo, Nile and Volta), Asia (Indo Gangetic, Karkheh, Mekong and Yellow River) and South America (Andean System of Basins and Sao Francisco). This approach ensured that regional priorities were addressed, that relevant stakeholders were involved, and that the program produce direct measurable impacts on the quality of life in poor communities.

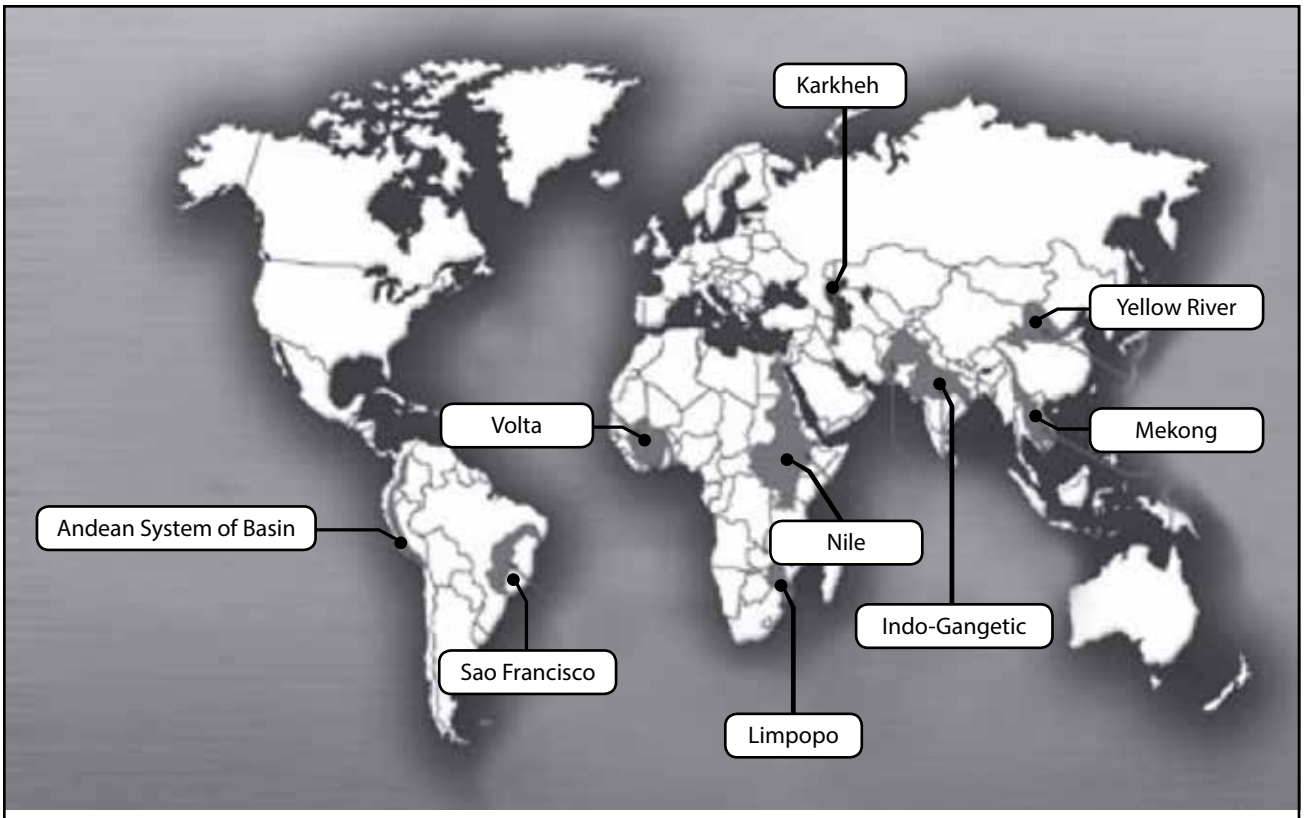


Figure 3. CPWF Benchmark Basins

The significant diversity within and between basin research and development priorities prompted CPWF to identify priority research issues for each of the benchmark basins. This was to ensure direct contribution to the thematic orientation of CPWF (Table 1).

Table 1. Concordance between Themes and Basins in Phase 1

Themes and priority areas	Methods and Approaches								
	Andes	Sao Francisco	Volta	Nile	Limpopo	Karkheh	Indo-Gangetic	Mekong	Yellow
Crop water productivity improvement (Theme 1)									
Developing water-efficient and stress-tolerant crop			■	■			■	■	■
Developing water-saving farm practices			■		■	■	■		
Quantifying needs-based water supply			■	■	■		■	■	
Developing institutional mechanisms and enhancing strategies for adoption				■	■	■	■	■	
Water and people in catchment (Theme 2)									
Examining water and poverty in upper catchments	■					■	■		
Identifying the potential for improving land and water management					■	■			
Enabling people to benefit from improved land and water management	■		■	■	■		■	■	
Generating knowledge	■		■	■	■		■	■	
Aquatic ecosystems and fisheries (Theme 3)									
Improving water productivity of aquatic ecosystems		■	■				■	■	
Valuing ecosystem goods and services	■		■	■	■		■		
Developing institutional mechanism			■	■			■	■	■
Integrated basin water management systems (Theme 4)									
Developing integrated decision support systems	■	■	■	■		■	■		
Developing innovative technologies and management strategies			■	■	■				
Developing institutional mechanism and polices	■		■	■	■		■	■	
The global and national food and water systems (Theme 5)									
Assessing the effects of globalization, trade, and macro-economic and sectoral policies			■		■				
Identifying incentives, options for investments and financing							■		
Developing transboundry water policy and institutions			■	■	■			■	
Adapting to changes in the global water cycle				■	■		■		

Small Grants Program

In 2006, the CPWF contracted 14 "small grants for impact" that operated for periods of 12 to 18 months. For a total investment of under US$1 million – less than the equivalent of a typical three to five-year CPWF research for development project in Phase 1—the small grant projects made significant contributions to: identifying water and food technology for specific end-users (thus showing the potential of CPWF research in general); understanding technology adoption better; stimulating research by NGOs; and to better linking CPWF research to the development process. The CPWF proved that call for small grant proposals are an effective way of obtaining local impact and of connecting a wide range of relevant institutions to the efforts of a network such as CPWF.

Basin Focal Projects

CPWF's integrated approach at the basin level added value to individual research project outputs, and produced knowledge about water productivity at the basin level. Basin focal projects were developed to deliver this added value to various thematic research projects. A basin focal project was carried out in each of CPWF's benchmark basin to assess water poverty and water productivity in terms of methodological developments, decision support information, and knowledge management. The basin focal projects developed a scientific framework for evaluation and outreach of interventions to evaluate their potential impact within and across basins. This strategic research at the basin level increased the innovativeness of the CPWF and helped generate international public goods.

Research Outputs

CPWF's research outputs comprise agricultural, environmental, institutional, and/or policy innovations to address the needs of the rural poor through increased water productivity. Increased basin-level water productivity contributed toward the livelihood improvement of the poor through:

- economic solutions by generating higher income for each cubic meter of water utilized;
- social solutions by creating more jobs and higher food security for each cubic meter of water used;
- environmental solutions by obtaining greater resilience of vital ecosystems for each cubic meter of water.

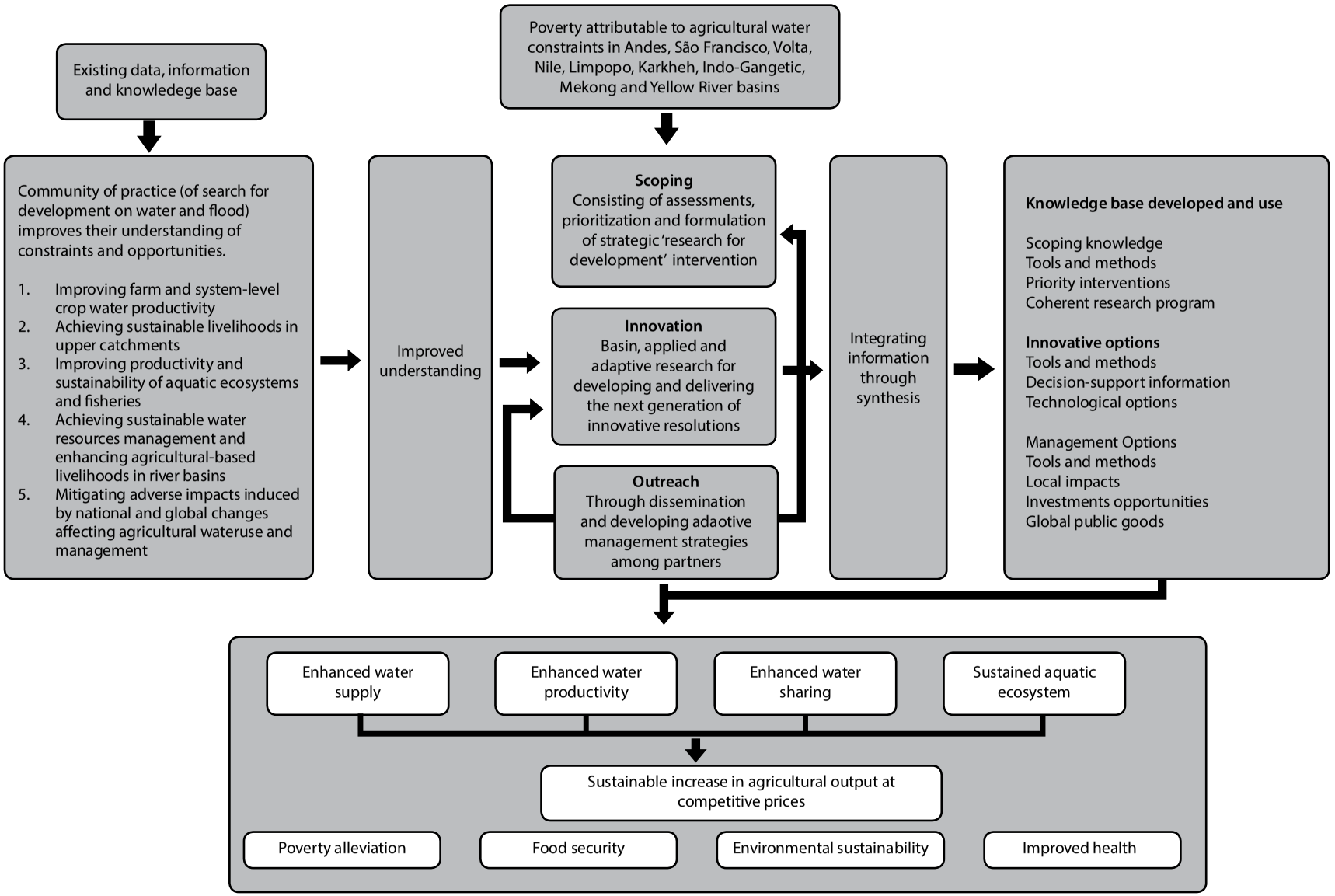
These outputs present the kind of innovation the CPWF provided (Fig. 4).

CPWF products are international public goods (IPGs). These provide information and knowledge that can be applied in several parts of the world, and that are made accessible for public use without restriction. IPGs are available free and are characterized by the fact that they are not depleted by use.

Lessons Learned

- Working with more and different partners in the CPWF has contributed to the achievement of science and outcomes that are different from the 'business as usual' research approaches. CPWF widened the geographical reach of institutions through its basin-scale perspective and approach. By "casting the net widely" and seeking innovative projects with innovative partnerships, we achieved unexpected breakthroughs,

Figure 4. Overview of CPWF process, outputs and outcomes



such as: understanding a range of water-related problems and challenges and how these relate to livelihoods and food security; understanding the performance of some water-related technical and institutional innovations; and learning about the importance of engagement with a wide range of stakeholders and partners as a means of achieving outcomes. Moreover, increased partnerships increased access of participating institutions to data, literature, technical pieces, and high quality science.

- Phase 1 also had direct application in the design of Phase 2, in that basin programs were in part built around interesting and successful phase 1 projects.

in viable partnerships between research and development institutions across scales, culture, and disciplines to address these questions on water productivity improvement.
CPWF research was defined thematically and spatially through its Themes and Benchmark Basins. It also introduced a set of basin focal projects to provide methodologies and information for the assessment of water productivity and water poverty at the basin level.

The CPWF project outputs are international public goods.

Summary

CPWF is a global program that was designed to develop research-based solutions to water and food issues, specifically in developing countries. At the core of these issues are questions on how to sustainably improve water productivity, and create positive impacts on the health and livelihood of the affected communities. The program invested

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Key References

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