

# STRATEGIC PLAN

2009-2013



Water for a food-secure world

## IWMI Offices in Africa & Asia



### IWMI's Vision

Water for a food-secure world

### IWMI's Mission

To improve the management of land and water resources for food, livelihoods and the environment

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## Executive Summary

**If you think water management isn't critical to coping with population increases, poverty and the world food crisis,**

**think again...**

The dramatic rise in food prices during 2008 has hit the world's poor particularly hard. One of the underlying causes of this crisis has been water scarcity triggered by competing and increasing demand, together with the effects of climate change. We believe that if nothing is done to tackle water scarcity, food crises and price volatility will become commonplace in the future.

This Strategic Plan shows how science and technology backed by socioeconomics can provide solutions to future water shortages and food crises. According to the recent Comprehensive Assessment of Water Management in Agriculture, we will not be able to feed the world's population in 50 years' time unless we change the way we manage water. The first recommendation from the Assessment is that we should "think differently about water". IWMI's new strategy aims to do just that.

Four simple elements form the basis of IWMI's plan and new organizational structure:

1. Provision of knowledge concerning how much water is available and how it is currently used
2. The identification of ways in which water can be used more productively in both irrigated and rainfed agriculture
3. The identification and mitigation of risks to human health, food production and the environment from land degradation and associated declining water quality, and wastewater reuse.
4. The identification of policy, institutional, regulatory and social options, that facilitate better management, sharing and productive use of water resources.

This Strategic Plan builds on IWMI's previous plan (2004–2008), an external review of IWMI (2007) and the conclusions of the Comprehensive Assessment of Water Management in Agriculture (an international exercise involving 700 scientists, published in 2007). The plan stresses those problems that donors, stakeholders and partners consider the most pressing. Over 100 people from across the development spectrum, including key donors, partners and academics, provided comments.

There are, of course, many other pressing issues surrounding water resources management that are relevant to poverty alleviation, particularly in the drinking water supply and sanitation area. However, our mandate as a center of the CGIAR places a firm focus on agricultural water management and related food-production systems. That said, we do view these in the context of competing demands for water and from an integrated water resources management perspective.

To attain the strategic goals identified in the plan, IWMI stresses partnerships to deliver scientific outputs and impact. This is crucial if we are to achieve the kind of scaling up required to assist the almost one billion undernourished people around the world. IWMI aims to do this through new arrangements with existing country donors, emerging philanthropic donors, non-governmental organizations, and government agencies. We also recognize that we will need to increase our efforts to help governments and water managers implement the necessary policy and governance reforms.

While the challenges are immense, IWMI is now well prepared from a people and financial perspective to lead the way and establish internationally applicable scientific methods – together with the associated policy options and regulatory standards – to deliver water for a food-secure world.

Finally, we note that given the Change Management Process underway across the CGIAR, we may need to amend this plan within the next 12 months to take account of potential new programmatic approaches. IWMI believes, however, that having the plan in place and being aware of the CGIAR's strategic objectives, is an ideal basis from which to approach any potential changes.

**Colin Chartres**  
Director General

**Nobumasa Hatcho**  
Chairman-IWMI Board of Governors

## Development of this Plan

While IWMI's previous Strategic Plan has served us well, changes in the causes of water scarcity, the world food situation, and our internal capacity and that of our partners and stakeholders, have necessitated significant refocusing of our work. Many of these changes have been described in the Comprehensive Assessment of Water Management in Agriculture to which IWMI was a major contributor. Consequently, we have revised our key directions and structure to reflect the outcomes of a process initially based on an in-house analysis of key water issues confronting agriculture and food production over the next few decades. We then discussed the concepts and ideas raised with about 100 stakeholders, partners, independent scientists, and water managers, and incorporated many of their valuable suggestions.

The plan sets out the areas that IWMI intends to focus on over the next 5 years. We do not intend to cover every area broadly, but will instead focus our efforts on specific niches that we will develop in more detail with our funders and partners. To this end, our new Themes are developing the key global and regional approaches required under the guise of Theme 'business' plans, the detail of which will be reflected in rolling medium term plans. Through the implementation of this Strategic Plan, IWMI aims to provide global leadership focused on key development challenges to the provision of water of sufficient quantity and quality for agriculture and food production in an environmentally sustainable manner. Our Vision and Mission reflect these goals.



## Background

Water scarcity is fast becoming a critical issue for many countries in the developed and developing world. Recent events have seen the emergence of a world food crisis, with many foodstuffs rising in price by over 40% in less than 12 months. Over the last three years, food prices have doubled. This has had a profound effect on the poor living on \$1 per day or less.

Several factors are driving the current food crisis, including rising demand, increasing biofuels production, regional impacts of drought, and changes in economic and trade policy in some countries.

If we look into the future, not only population growth (from currently about 6.5 billion to 8.5–9.0 billion in 2050), but also other factors including dietary changes that demand more water-thirsty products, urbanization, increasing biofuel development, and hydropower production will all lead to further pressure on water resources and the environment. Similarly, increasing pressure to meet the Millennium Development Goal targets for water supply and sanitation for the poor will compete for scarce financial resources in the water sector. At the same time, land degradation and water quality decline will be serious constraints to food-production systems. There is also marked uncertainty about what the impacts of climate change will be on both water resources and food production.

Even before the current food crisis, the IWMI-led Comprehensive Assessment of Water Management in Agriculture<sup>1</sup> concluded that we will only have enough food to eat in the future if we are much smarter about the way we manage our land and water resources, in order to be more productive. Given that 70–80% of extracted water supplies are used in agriculture, competition for this increasingly scarce resource will be an issue for years to come in many countries. While we are almost certain to overcome the current food crisis, in IWMI's view, we are entering a water crisis, the outcome of which is far less certain given the enormity of the driving factors. If we fail to increase water productivity, we will inevitably fail to prevent future



**Increasing pressure to meet the Millennium Development Goals in terms of water supply and sanitation for the poor will compete for scarce financial resources in the water sector.**

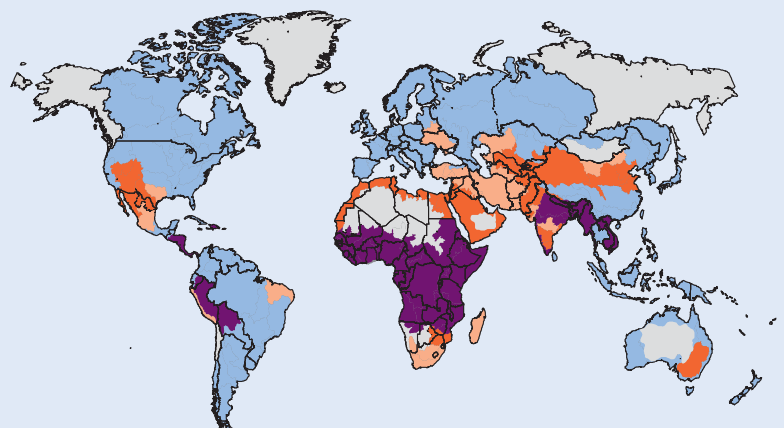
food crises. The world can have enough freshwater to produce food to feed everybody over the next half century, but world leaders, water managers and the research community must take action now to ensure that this is the case.

<sup>1</sup> Molden, D.(ed)2007 Water for food for life: A comprehensive assessment of water management in agriculture: IWMI/Earthscan

## Areas of physical and economic water scarcity

**Water scarcity is fast becoming a critical issue for many countries in the developed and developing world and could lead to a severe global water crisis if water productivity is not increased.**

■ Little or no water scarcity   
 ■ Approaching physical water scarcity   
 ■ Not estimated  
■ Physical water scarcity   
 ■ Economic water scarcity



### Definitions and indicators

- **Little or no water scarcity.** Abundant water resources relative to use, with less than 25% of water from rivers withdrawn for human purposes.
- **Physical water scarcity** (water resources development is approaching or has exceeded sustainable limits). More than 75% of river flows are withdrawn for agriculture, industry, and domestic purposes (accounting for recycling of return flows). This definition—relating water availability to water demand—implies that dry areas are not necessarily water scarce.
- **Approaching physical water scarcity.** More than 60% of river flows are withdrawn. These basins will experience physical water scarcity in the near future.
- **Economic water scarcity** (human, institutional, and financial capital limit access to water even though water in nature is available locally to meet human demands). Water resources are abundant relative to water use, with less than 25% of water from rivers withdrawn for human purposes, but malnutrition exists.

Source: International Water Management Institute analysis done for the Comprehensive Assessment of Water Management in Agriculture using the Watersim model; chapter 2.  
 Publisher: Earthscan [www.earthscan.co.uk](http://www.earthscan.co.uk)

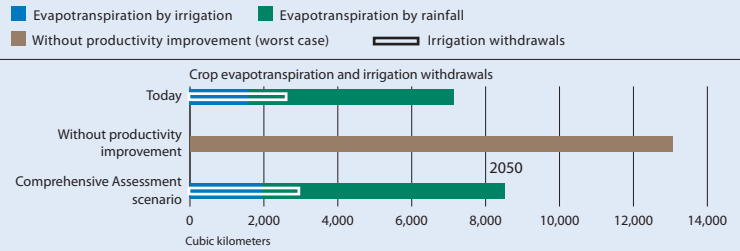
The Comprehensive Assessment highlighted the need for more research and development on both rainfed and irrigated systems to enable us keep on increasing productivity. Similarly, the World Bank's World Development Report <sup>2</sup> pointedly argued that investment in agricultural R&D has been far more effective than subsidies in helping countries meet food-production goals. So, the critical challenge for IWMI is to ensure that we are well placed to deliver innovative R&D-based solutions that will make farming more productive and enhance the livelihoods of the poor.

IWMI is a center of the Consultative Group on International Agricultural Research (CGIAR). The CGIAR was established to apply science to the challenge of feeding the world's poor, enabling them to escape poverty. While the specter of widespread famine has significantly reduced as a result of the CGIAR's contribution to help countries boost food production, the drivers affecting production systems are continually changing. This means that a new range of food-production challenges exists. Furthermore, the capacity to produce food differs greatly between regions, which leads to great inequities in livelihoods.

The availability of water and access to water will be major issues for economic development and for the livelihoods of the poor, given that they often suffer most when resources are scarce. We can describe water scarcity as physical or economic in nature.

Physical water scarcity occurs when virtually all the available water has been allocated, leaving nothing for additional use, for the future, or for the environment. It has become a reality for many regions. Much of South and West Asia, China, the Middle East, northern and southern Africa, southern Australia, and southwestern USA are in this position. Physical water scarcity puts pressure on planners and managers to develop better ways of managing existing water resources, to increase the productivity of water, and to develop 'new' sources of water, such as wastewater. Many countries have already seen water users turn to groundwater, but they often do not realize just how closely groundwater is linked to surface water.

**Global water withdrawals increase substantially to 2050**

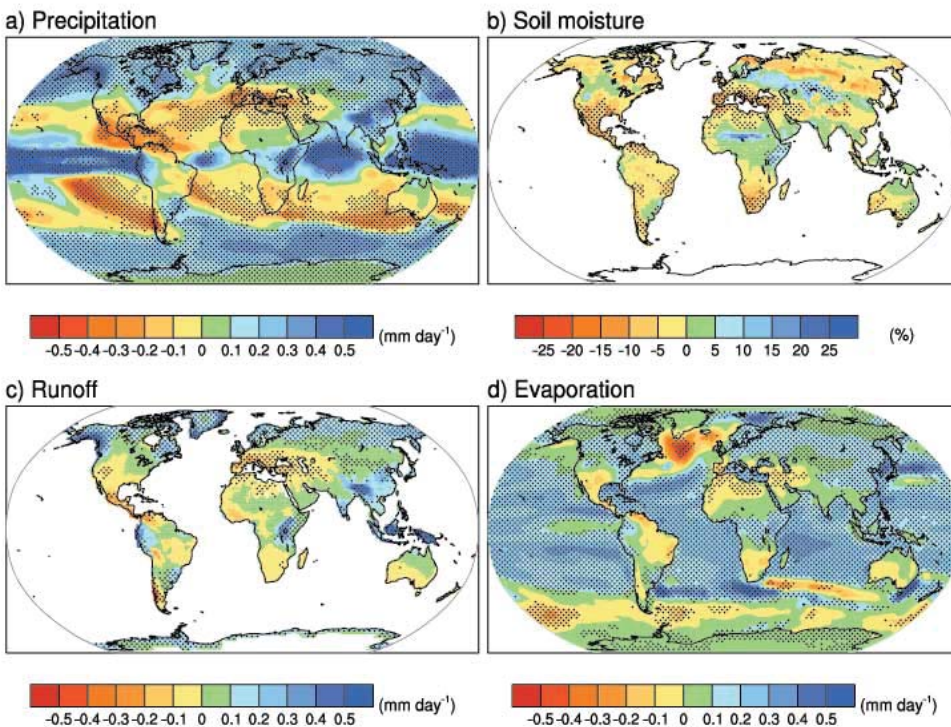


Source: International Water Management Institute analysis done for the Comprehensive Assessment for Water Management in Agriculture using the Watersim model; chapter 3.

**Physical water scarcity puts pressure on planners and managers to develop better ways of managing existing water resources. IWMI recommends targeted policy and management interventions based on sound scientific and economic evidence.**

So, other options are needed. One possibility is to focus on innovative systems to improve water storage and harvesting techniques. If we are to increase agricultural productivity, it is vital for us to address underperformance in both irrigated and rainfed systems. Another possibility is to turn what is currently wastewater or effluent from cities into a safe resource for agriculture. We also need to consider how payment for the environmental services that rivers and wetlands provide can lead to mutually beneficial outcomes for industry, agriculture, and the environment. Finally, although new technologies, including advances in desalination, may provide water for users in wealthy coastal cities able to afford higher prices, these technologies are unlikely to be an immediate panacea for agriculture in developing countries.

<sup>2</sup> World Bank 2007. World Development Report: Agriculture for Development. IBRD/World Bank.



**The impacts of climate change and variability on water and food production must be taken into account. Learning how to store water better and providing supplementary irrigation to make up for erratic rainfall supplies will be the key to overcome these challenges.**

Image Source: Intergovernmental Panel on Climate Change



There are, however, many areas in the developing world, especially in sub-Saharan Africa and Southeast Asia, where there are still available water resources, but where the development and use of these resources is constrained by a lack of capital, or appropriate institutions to support the use of that capital. The resulting economic water scarcity has major ramifications for the poor and for economic development in general, and its solution has the potential to bring global benefits and reduce stress on other water-scarce areas. The issue of inadequate infrastructure also applies to wastewater treatment facilities and the consequent widespread pollution of clean surface-water bodies.

In areas of physical or economic water scarcity, a critical factor for the future will be the impact of climate change and variability on the availability and use of water resources, whether for drinking water, hydropower or irrigation. The impact of climate change will vary depending on geography and scale. In some areas, total rainfall and its intensity will increase, causing flooding, crop damage and erosion. In other areas, total rainfall may decrease, wet seasons become shorter and variability more extreme with more frequent droughts. Learning how to store water better and providing supplementary irrigation to make up for erratic rainfall will be the key to overcoming these challenges.

An understanding of where and how climate change will show itself is the first crucial step to developing adaptive water-management strategies. Without these strategies, it will be the poor who suffer most. The challenges of physical water scarcity, economic water scarcity, the impact of climate change on water resources, and deteriorating water quality set the backdrop to IWMI's agenda for the next few years. They underline the fact that the need for scientific and institutional solutions to our water resource problems has never been greater. IWMI is well prepared for this task.

The CGIAR has identified three strategic objectives that further define the need for action, as follows.

#### Strategic Objective 1

**Food for People: Create and accelerate sustainable increases in productivity and production of healthy food by and for the poor.**

#### Strategic Objective 2

**Environment for People: Conserve, enhance and sustainably use natural resources and biodiversity to improve the livelihoods of the poor in response to climate change and other factors.**

#### Strategic Objective 3

**Policies for People: Promote policy and institutional change that will stimulate agricultural growth and equity to benefit the poor, especially rural women and other disadvantaged groups.**

Our primary focus, therefore, is on agricultural water management with the aim of improving livelihoods and poverty alleviation. This plan sets out how IWMI intends to meet these objectives, in partnership with other institutes and key stakeholders across the spectrum of biophysical, economic, and social research. The plan defines our area of operation, predominantly within water-scarce developing countries, and aims to ensure that we can produce enough food for all by finding effective ways of increasing water productivity.

The plan also defines some key research principles that we must follow if we are to succeed. It evolves from our last plan, building on our work on productive water use across a range of water management systems, basin- and global-scale analysis, and our work on wastewater and policies. One major addition is action to address climate change, as water management plays a key role in adaptive strategies. The plan also revives IWMI's thematic work on policies and institutions in a new theme – Water and Society. We see an important area of growth in water quality, which is now explicitly included in the plan. These changes are made possible by the fact that IWMI has strong foundations to build on in all of these areas.

## IWMI's Vision

**Water for a food-secure world**

## IWMI's Mission

**To improve the management of land and water resources for food, livelihoods and the environment**



Photo Credit: Nadia Manning

**Increasing biofuels production is competing for land and water resources with food and animal feed production. To grow biofuels as well as more food and feed will require a major effort to increase water productivity.**

## IWMI's Strategic Intent, Niche and Role in Water R&D

IWMI has a key advantage as an international research and development agency in that it has offices in 12 developing countries that represent a wide range of significant water-management problems. This helps us develop both a strong understanding of local water issues and productive working relationships with key local partners and stakeholders. This, together with our links with other CGIAR centers and advanced research institutes, means we are well placed to tackle the key development challenges facing the poor.

IWMI has a strong track record in holistic, multidisciplinary and interdisciplinary research (covering hydrology, hydrogeology, soil science, engineering, social sciences, environmental science, and economics). We emphasize the water–food production interface. Our clear focus on participatory on-farm research and the development of strong networks enhances the adoption and impact of our research outputs. Our developing-country locations mean we are in a strong position to undertake comparative analyses of water and food-production interventions across countries to determine optimal poverty reduction solutions.

With our strong links with national agricultural research and extension systems (NARES) and advanced research institutes, IWMI is in a good position to provide international leadership in key water-related issues. We aim to link key stakeholders (government agencies, NGOs, regional organizations) with first-class research and development outputs.

To achieve this, we focus on ensuring that policy makers and water managers understand the importance of water data, of making it available, and of analyzing it and assessing the implications, so that new policies and strategies are evidence-based. IWMI also has strong links with policy makers, farmer organizations, consumer organizations, and with investors, including international and national development banks, to facilitate the process of research for development.

IWMI is closely aligned with a number of global institutes working in the area of water. Our niche in the global water community is one of

knowledge generation and provision, and evidence for policy at local, national, and global scales. IWMI's work closely complements that of other CGIAR centers, adding the water dimension to agricultural research. The CGIAR Challenge Programs on Water and Food and Climate Change, Agriculture and Food Security provide an important platform for this joint work.

IWMI's primary areas of geographic focus are Asia and Africa where there are significant concerns about water scarcity. But, for the greatest impact on poverty alleviation, we have to be selective in our areas of endeavor. This has led us to focus on the issues of surface water and groundwater supply, including the effects of climate change, water allocation and use, water quality, wastewater reuse, and associated health and environmental risks. In addition, we also work on the crosscutting aspects of water management, such as policy, governance, and gender.

Dealing with the effects of climate change and variability on the rural poor will be a key challenge across much of Asia and Africa. And, given the growing energy requirements of the developing world, we cannot afford to overlook the competing effects of biofuel production systems on agricultural water use. Hydropower schemes are also proliferating across Asia and Africa. IWMI can play a significant role here, in helping developers and communities to understand the upstream and downstream consequences for agriculture, and in encouraging 'multiple-use' water-management strategies that optimize these schemes' benefits for the poor.

However, there are also significant differences between Asia and Africa. Asia has many countries with physical water scarcity and, as their economies develop and grow, key emerging issues will include water availability, competition between users, and human and environmental health hazards from increasing volumes of untreated, or poorly treated, wastewater. Africa, similarly, has water-scarce countries in the north and south, but elsewhere many of its water-related problems relate to the limited development of resources. Many African economies are highly dependent on agriculture, so any decrease in rainfall and water availability means a consequent drop in GDP. Enhancing crop productivity via improved rainfed production systems, new irrigation schemes, and supplementary irrigation are therefore important areas where IWMI can contribute in Africa.

## IWMI's Strategic Advantages

- **Offices in 12 countries in Africa and Asia with an extensive network of contacts and partners in water and food**
- **A problem solving/adaptive management focus aimed at putting research into development action**
- **A diverse staff providing a culturally appropriate and gender-equitable approach targeting different operating environments**
- **A focus on capacity building of developing-country nationals**
- **A knowledge and evidence-based approach to problem solving**
- **An integrated water resources management and multi-interdisciplinary approach**
- **Partnerships with other CGIAR centers via programs and projects and the Challenge Program on Water and Food that facilitate holistic problem-solving approaches**
- **Strong partnerships with regional agricultural and water organizations that ensure a focus on key issues**
- **Strong partnerships with national agricultural and water research agencies to facilitate adoption of research outputs**
- **Access to the latest water science via partnerships with advanced research institutes**



## IWMI's Guiding Principles

Following the definition of our strategic intent, IWMI has developed a series of research principles to guide our work, as follows.



Focus on poverty and gender



Improving and safeguarding water access as a pathway to poverty reduction



Integrated Water Resources Management



Understanding the interaction of agriculture with other ecosystems



Evidence-based water policy and management

- A focus on poverty and gender
- Improving and safeguarding water access as a pathway to poverty reduction
- Integrated Water Resources Management
- Understanding the interaction of agriculture with other ecosystems
- Evidence-based water policy and management

### A focus on poverty and gender

Poverty alleviation is IWMI's core business and better water management for food production is critical to achieving the Millennium Development Goal on poverty and hunger. Seventy percent of the world's 850 million undernourished people live in rural areas, and most are dependent in some way on water management for their livelihoods. Women are the key to better water management, yet water-management strategies overlook their important role. We need to understand the effects of policies and interventions on women and other marginalized groups.

Water resources development and management will continue to be the pillar of economic growth and wealth generation, and IWMI research needs to understand how these benefits can best reach the poor.

### Improving and safeguarding water access as a pathway to poverty reduction

When competition for scarce water resources exists, it is usually the environment and the poor who lose out. In conditions of physical water scarcity, we need to consider carefully any moves to reallocate water, to ensure continued access for the poor. Today, the 70% of water withdrawn for agriculture is under increasing competition from urban and industrial users; water previously allocated to poor farmers could be reallocated to cities. In conditions of economic scarcity, we must ensure that the poor also benefit from water-development schemes.

A critical issue for IWMI will be to assist in the development of water-allocation processes that identify and preserve water rights and access to water for the poor.

## Integrated Water Resources Management (IWRM)

IWMI has previously stressed the agricultural component of water resources' availability and use, especially in irrigation systems. However, as water scarcity becomes more prevalent, water resources have to be viewed in their entirety if we are to make rational planning and allocation decisions. This leads to the principle that IWMI should maintain a focus on integrated water resources management. We must pay attention not only to water availability and use, but also to competing demands, as well as to how water interacts with land and soils.

There is need for a greater focus on improved planning and management of water resources. This means identifying opportunities for multiple uses of water from sources such as rainfall, soil moisture, surface water, agricultural drainage water, groundwater, and urban wastewater. Water management in the future will be all about tradeoffs and how to deal with them. We can only achieve this effectively if we adopt a multiple-use viewpoint and system-wide approach

### Understanding the interaction of agriculture with other ecosystems

Maintaining water-dependent ecosystem services is essential for the well-being of many of the poor. Furthermore, many agricultural ecosystems depend on well-functioning ecosystem services. So, understanding the interaction between water used in agriculture and other components of the landscape and environment is critically important.

Similarly, understanding how the environment and agriculture can provide services to clean up contaminated water is also vital. Determining human health hazards and adverse effects on the environment are key components of water management, particularly as populations explode while infrastructure and environmental and health legislation are slow to keep up.

### Evidence-based water policy and management

IWMI believes that improved water management will come from targeted policy and management interventions based on sound scientific and economic evidence. Interventions can be systemic, such as policy change and institutional reform, or technological, such as low-cost drip irrigation for poor smallholders. Both have their place. The fact that governments usually control water resources means that IWMI's research results have to be targeted at planners, policy makers and regulators if necessary reforms are to be achieved. This involves work that is focused on both policy reform and on the physical requirements to upgrade antiquated systems and infrastructure.

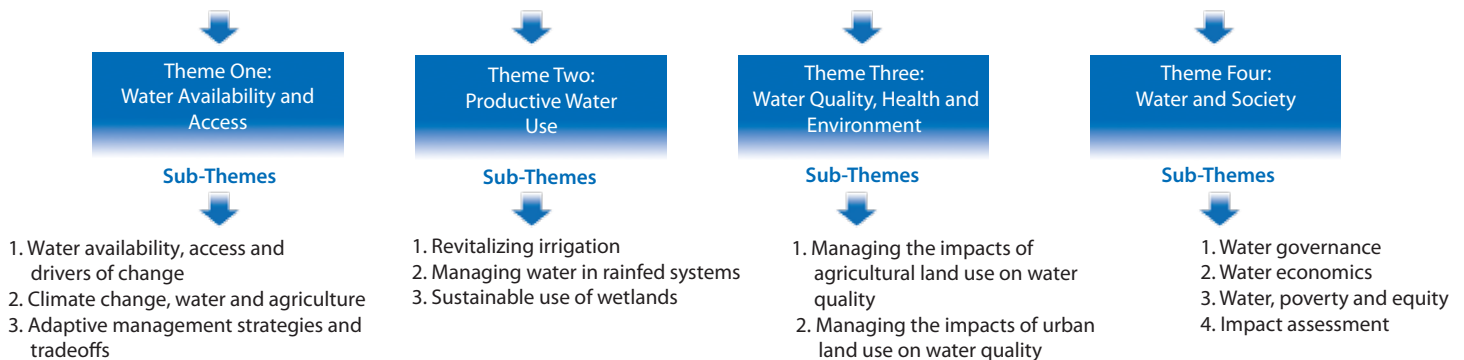
Therefore, while IWMI focuses on pro-poor water benefits, we believe that their delivery can often be better achieved by improving the water-management system as a whole. The benefits that will then flow from economic development will help the poor, as long as their access to an equitable share of water resources is protected. Above all, this principle recognizes that many changes in water management can only be made by targeting sociopolitical barriers to change. This will require political goodwill and leadership facilitated by effective support from IWMI.

## IWMI Research Themes

IWMI is organized around four themes derived from a comprehensive analysis of key water, food, and poverty alleviation issues. The themes respond to the key questions of:

1. How much water do we have and will we have?
2. How do we make this water more productive in the face of increasing demand for food and limited water resources?
3. How can we manage water quality to minimize risks to agriculture, human health and the environment ?
4. How do we help to establish better governance to facilitate equitable, productive and sustainable use of water resources among all users?

The themes are strongly interrelated and we expect to work together with external partners to solve complex multidisciplinary issues. How the specific goals of our sub-themes relate to the CGIAR's strategic objectives is shown in Table 1. However, we believe that viewing water only in relation to one sector of the economy or environment is shortsighted given the dynamic relationship water has with agriculture, urbanization, and the environment as it moves through the landscape.



Development Challenge	IWMI Sub-theme	IWMI Specific Goals
<b>Food for People:</b> Create and accelerate sustainable increases in productivity and production of healthy food by and for the poor	1.1 Water availability, access and drivers of change	To improve definition and quantification of water availability and access as well as impacts of drivers of change on both To determine how changing water availability and access affect food production, livelihoods and the environment
	1.3 Adaptive management strategies and tradeoffs	To maintain equity in water access, agricultural productivity, human health and environmental quality in the face of increasing water scarcity at basin and transboundary scales by the development of adaptive management strategies, policy responses and tradeoffs
	2.1 Revitalizing irrigation	To increase the productivity of irrigation water at system to field scales and thus benefit food production and livelihoods To formulate adaptive management strategies and institutional and policy reform to improve irrigation system performance and facilitate productivity improvements
	2.2 Managing water in rainfed systems	To upgrade rainfed farming systems and benefit smallholders through improved land and water management interventions and technologies To support improved water management in rainfed farming systems and thus rapid outscaling of innovations via identification and promotion of appropriate policies and institutional reforms
	3.2 Managing the impacts of urban land use on water quality	To make an asset out of urban wastewater by assessing and reducing possible health and environmental impacts in irrigated agriculture, especially at the urban-rural interface
<b>Environment for People:</b> Conserve, enhance and sustainably use natural resources and biodiversity to improve the livelihoods of the poor in response to climate change and other factors	1.2 Climate change, water and agriculture	To assess the potential impacts of climate variability, climate change and climate change mitigation measures on water availability and access, agricultural production systems, and associated livelihoods and ecosystems To minimize impacts of climate change/variability on agricultural water management and to enhance preparedness for floods and droughts through identification of measures that mitigate their impact and facilitate adaptation
	2.3 Sustainable use of wetlands	To protect ecosystem services, livelihoods and water productivity in wetlands through better knowledge of how agricultural activities impact wetland functions To reduce poverty through improved agriculture, fisheries, and livestock management in wetlands via identification of effective management strategies and policies to protect vital ecosystem services
	3.1 Managing the impacts of agricultural land use on water quality	To reduce the negative impacts of inappropriate land management in catchment areas to enhance water quality and livelihoods
<b>Policies for People:</b> Promote policy and institutional change that will stimulate agricultural growth and equity to benefit the poor, especially rural women and other disadvantaged groups	4.1 Water governance	To improve IWRM implementation and impact through a better understanding and formulation of location-specific policies and institutional arrangements To improve performance and sustainability of water management systems for multiple uses, for example public surface and private groundwater irrigation, through identification, testing and dissemination of new and modified governance strategies
	4.2 Water economics	To use the tools of economics to evaluate the cost and benefits of particular water interventions and allocation options To evolve practical approaches, and alternatives, to the pricing of water resources and services so as to improve water productivity, access, and equity while protecting the rights and wellbeing of the poor and ensuring environmental sustainability
	4.3 Water, poverty and equity	To reshape the water-poverty-gender nexus through a better understanding of how specific interventions can assist poor men and women farmers To address key poverty related issues, including differential access and rights to water resources, through development of poverty-sensitive water policy, investment and intervention strategies
	4.4 Impact assessment	To use an understanding of past research impacts to improve IWMI's research operations and priority setting To inform future water investments via development of broad understandings of the impacts of various agricultural water management interventions, policies and technologies

## Theme 1: Water Availability and Access

### Focus

Water availability and access are key constraints to poverty reduction and food security. Maintaining enough water of reasonable quality for agriculture will become increasingly difficult due to climate change and competition for water with industry, urban users, and the environment. Therefore, the essence of Theme 1 is coping with water scarcity and adapting to drivers of change. It will focus on an improved understanding of water availability and access in river basins, on how major change drivers influence these, and on adaptive-management strategies to deal with these changes.

Parts of the world are faced with over-allocated water supplies, reduced river flows and groundwater levels – a situation typical of physical water scarcity. Much of this is driven by agricultural water use. In other parts of the world, water is ample, but access to it is difficult due to a lack of water-resource development – an example of economic water scarcity. Theme 1 will give special attention to the quantity and quality of groundwater resources that could provide water for livelihoods in economically water-scarce basins, and as a resource needing more sustainable management in physically water-scarce basins. We will also address the need to minimize the effects on human health and environmental services caused by water infrastructure development.

Theme 1 has three sub-themes:

- Water availability, access and drivers of change
- Climate change, water and agriculture
- Adaptive management strategies and tradeoffs

### 1.1 Water availability, access and drivers of change

The starting point for sustainable water resources management is to understand how much water is available for various uses (including agriculture), the source of this water, its quality, and the variability in quality and quantity. Drivers of change – such as climate, hydropower and land-use – fundamentally alter water availability for agriculture. Access to this water is a function of availability, water rights and access policies, infrastructure, and institutions. Creating and maintaining access to water is critical to poverty reduction and economic growth.

Future research will build on IWMI's substantial work on basin water management, and will also address the impacts of global change and uncertainty over water availability and access.

#### Specific Goals:

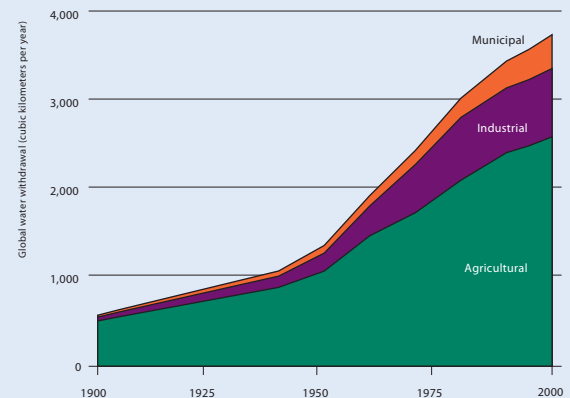
- To improve definition and quantification of water availability and access as well as impacts of drivers of change on both
- To determine how changing water availability and access affect food production, livelihoods and the environment

### 1.2 Climate change, water and agriculture

The major driver is climate change and the major uncertainty is its impact on water availability and thus on agricultural systems. Work in this sub-theme will convert global climate projections into implications for particular river basins. It will explore management interventions based on research-based knowledge of change, variability and uncertainty. It will provide an in-depth analysis of the impacts of climate change and measures to mitigate its effects on runoff and infiltration, water availability, food production, livelihoods and the environment.

IWMI's existing multidisciplinary research capacity will ensure a smooth transition to the context of climate change supported by partnerships with other CGIAR centers and with new programs, like

## Sectoral competition is increasing for blue water withdrawals for human uses



Source: Shiklomanov 2000.  
Credit: Comprehensive Assessment of Water Management in Agriculture  
Publisher: Earthscan www.earthscan.co.uk

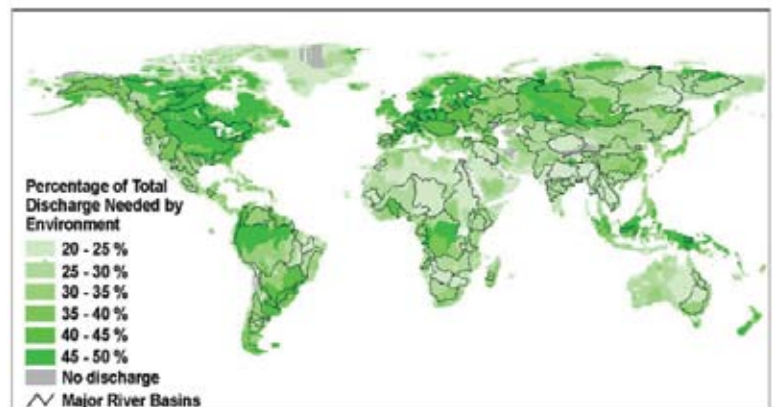
**Multiple interactions between technological choices on the one hand and their socio-ecological, economic, and political effects on the other, underpin the way societies govern their water economies.**

the Challenge Program on Climate Change, Agriculture and Food Security.

#### Specific Goals:

- To assess the potential impacts of climate variability, climate change and climate change mitigation measures on water availability and access, agricultural production systems, and associated livelihoods and ecosystems
- To minimize impacts of climate change/variability on agricultural water management and to enhance preparedness for floods and droughts through identification of measures that mitigate their impact and facilitate adaptation

### Environmental Flows



Credit: International Water Management Institute

**IWMI's environmental water assessments estimate the total volume of water that should be allocated to each river over the long term to maintain environmental functions. By comparing total water use with the total amount of water available and environmental water needs, river basins are classified as a) environmentally safe, b) environmentally water-stressed, and c) environmentally water-scarce.**



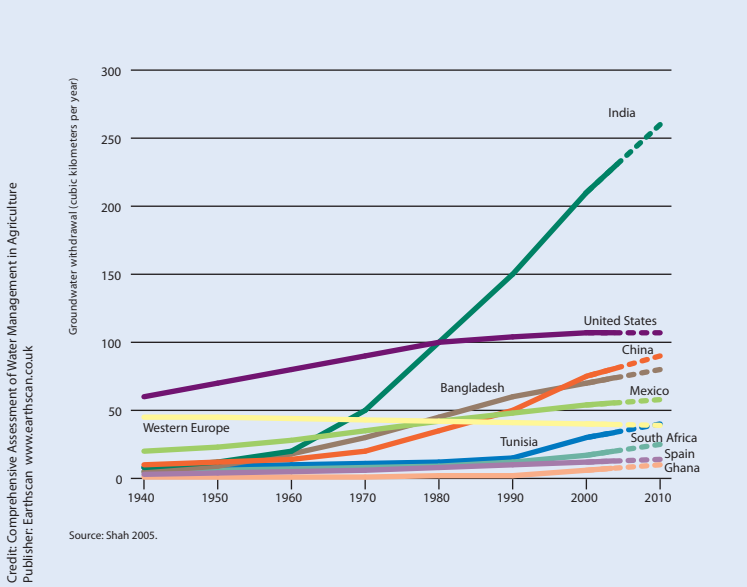
### 1.3 Adaptive management strategies and tradeoffs

Adaptive management strategies are required to balance decreasing water availability with increasing demand and to cope with uncertainties and change. The focus will be on water-allocation strategies, development of appropriate water storage, and adoption of key policy instruments providing incentives to use water differently. We will deal with strategies and policies at the basin, national, and international levels to complement Theme 2 that deals with the irrigation system or farm level. Developing new water infrastructure is a key strategy to secure water access for agriculture. However, this has significant implications for ecosystems and often results in increased risks of water-related diseases. This sub-theme will therefore consider the benefits and costs of infrastructural development on agriculture, people's health, and ecosystem services.

**Specific Goal:**

- To maintain equity in water access, agricultural productivity, human health, and environmental quality in the face of increasing water scarcity at basin and transboundary scales, by the development of adaptive management strategies, policy responses, and tradeoffs

### Development in groundwater withdrawal in selected countries

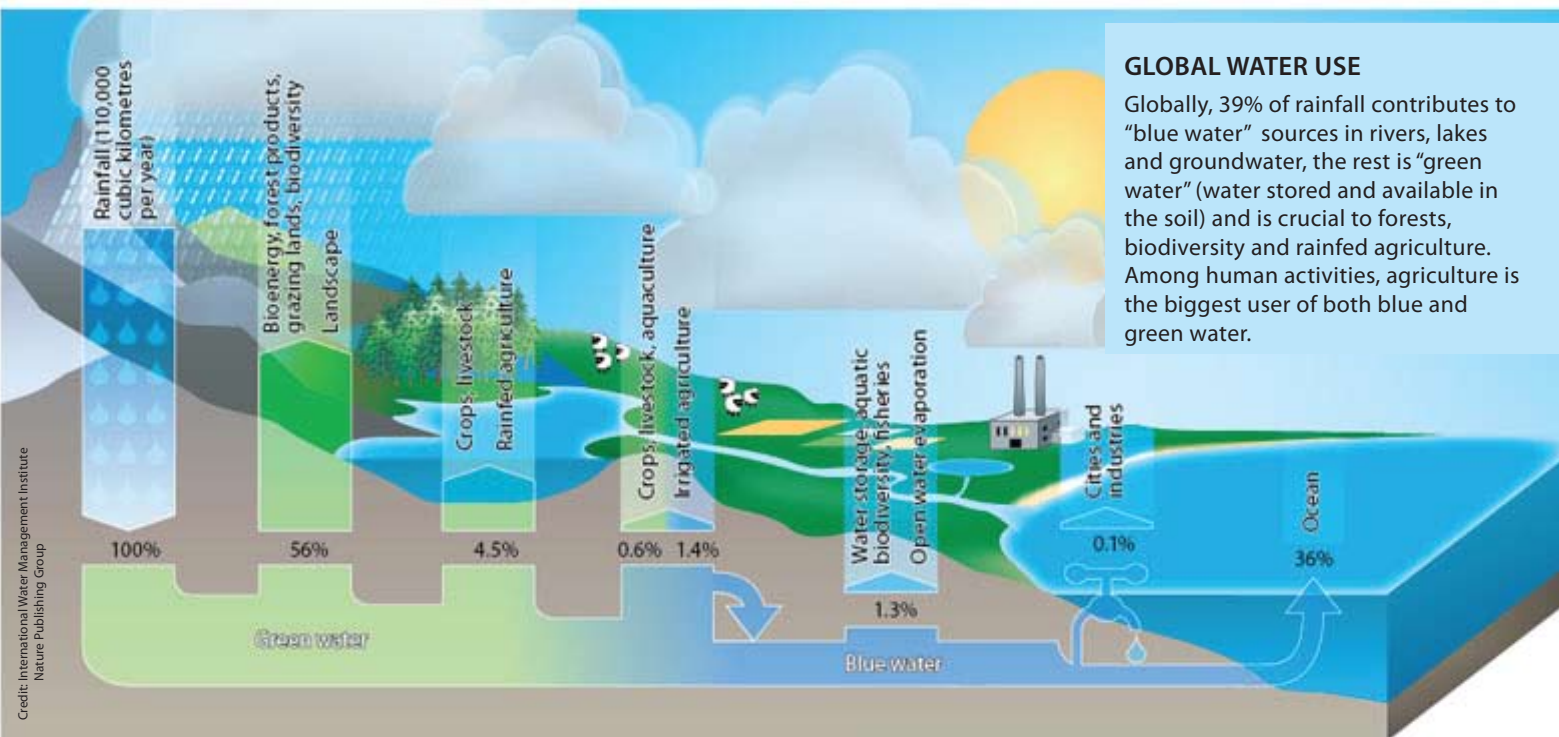


### Groundwater irrigation in a global context

Continent	Area under groundwater irrigation (thousands of hectares)	Groundwater-irrigated area	
		Share of total irrigated area (percent)	Share of cultivated area (percent)
Africa	2,472	19.8	1.0
Latin America & Caribbean	3,383	18.6	2.1
Asia	51,863	28.9	9.0

Source: FAO 2005a.

Many countries have already seen water users turn to groundwater, often not aware of the high degree of connectivity between groundwater and surface water.



Credit: International Water Management Institute  
Nature Publishing Group

## Theme 2: Productive Water Use

### Focus

This theme primarily addresses how water is used, and how we can use it more productively, in irrigated, rainfed, and wetland agro-ecosystems. It focuses on challenges arising from both physical and economic water scarcity, by creating sustainable options for adaptive management, in order to increase water productivity and the benefits gained from water for people's livelihoods.

The potential of rainfed and irrigation systems to support livelihoods and food production is far from being achieved across Asia and Africa. With the continuing challenge of reducing poverty, with rising food and energy prices, rapid urbanization and competing demands on water, and with climate change leading to more variability and uncertainty, Theme 2 will provide the necessary analyses and tools, under three sub-themes:

- Revitalizing irrigation
- Managing water in rainfed systems
- Sustainable use of wetlands

### 2.1 Revitalizing irrigation

Irrigation performance is stagnating and declining across Asia, and is disappointingly low in sub-Saharan Africa. According to the Comprehensive Assessment of Water Management in Agriculture, investment in irrigation will reduce poverty in rural areas. It will help agriculture meet changing dietary and societal demands, adapt to urbanization, industrialization and increasing environmental demand, and respond to climate change. Root causes of underperformance of existing irrigation systems are poor maintenance, inadequate policies and institutions, and lack of uptake of new technologies. We will focus on improving management and technology and, in collaboration with Theme 4, explore ways in which community-based institutions and service providers can help achieve improved irrigation performance.

In this sub-theme we will emphasize partnerships with international investment banks and national partners, including ministries, who can help turn these results into sustainable irrigation projects.

#### Specific Goals:

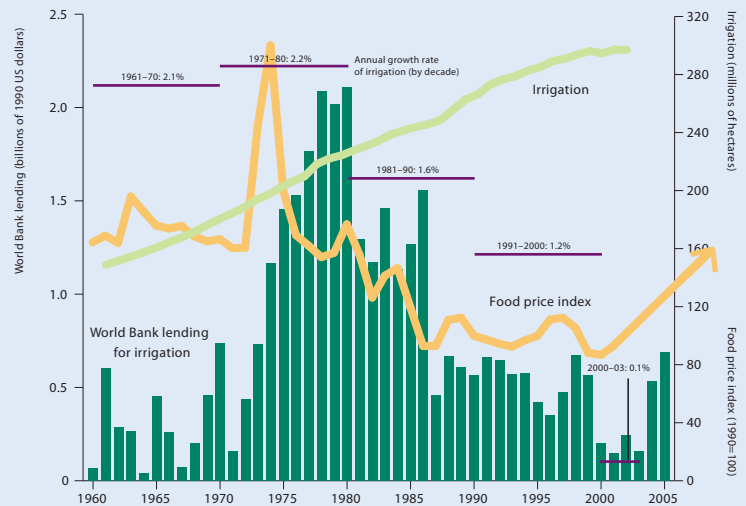
- To increase the productivity of irrigation water at system to field scales to benefit food production and livelihoods
- To formulate adaptive management strategies and institutional and policy reform to improve irrigation system performance and facilitate productivity improvements

### 2.2 Managing water in rainfed systems

Rainfed farming systems in sub-Saharan Africa and parts of South Asia suffer chronically from low productivity, resulting in food insecurity and poverty for rural populations. Water productivity tends to be very low and evaporation losses high, due to land degradation, crop losses, and inadequate or nonexistent water management. In semi-arid areas, prolonged dry spells and drought often cause crop losses. Managing water in rainfed systems will improve productivity and livelihoods. This entails better management of rain and soil moisture, and encouraging investment in new small irrigation schemes and supplementary irrigation that will particularly enhance the livelihoods of the poor and women in particular. It will also require an improved understanding of land-water interactions and how to manage the effect of water-storage structures on health.

IWMI will work with partners, especially the Challenge Program on Water and Food, to develop a range of options to upgrade rainfed systems with better water management. Important partners are international donors, regional initiatives, NARES, and development NGOs.

## Irrigation expanding, food prices falling



Source: Based on World Bank and Food and Agriculture Organization data.

Credit: Comprehensive Assessment of Water Management in Agriculture  
 Publisher: Earthscan www.earthscan.co.uk

#### Specific Goals:

- To upgrade rainfed farming systems and benefit smallholders through improved land and water management interventions and technologies
- To support improved water management in rainfed farming systems and rapid outscaling of innovations via identification and promotion of appropriate policies and institutional reforms



Photo Credit: Aminul Islam

**IWMI and partners map a wetland agro-ecosystem. Wetlands offer an important source of water and land resources for agricultural production but intensive use threatens the provision of other ecosystem services.**

### 2.3 Sustainable use of wetlands

Millions of the rural poor depend for their livelihoods on wetland ecosystems, but these are under imminent threat. In river basins where water is physically scarce, wetlands are drying up as water is taken away to serve agriculture and city users. Often it is the poorest whose livelihoods are most dependent on wetlands. Yet, wetland use for agriculture and its impact on other ecosystem services is poorly understood.

We have linked with partners who will work with us to deepen the analytical component of IWMI's research, and provide much-needed knowledge regarding interactions between wetland functions, beneficial use, ecosystem services, and plans for wetland development. The Ramsar Convention will be a primary mechanism for bringing sustainable wetland management for livelihood support into the policy arena.

#### Specific Goals:

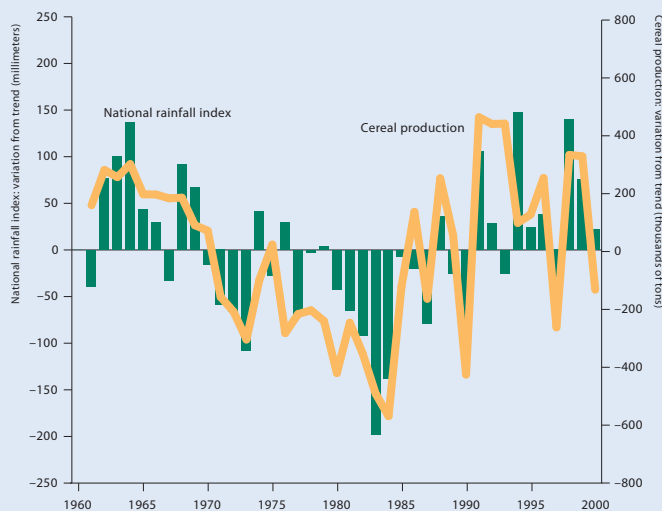
- To protect ecosystem services, livelihoods, and water productivity in wetlands through better knowledge of how agricultural activities impact wetland functions
- To reduce poverty through improved agriculture, fisheries, and livestock management in wetlands through identification of effective management strategies and policies to protect vital ecosystem services



Photo Credit: IWMI Ghana

**A treadle pump in Ghana. One of the main challenges of our times is accelerating development through pro-poor strategies and interventions that incorporate poverty and gender issues.**

#### Burkina Faso: rainfall and cereal production, 1960–2000



Credit: Comprehensive Assessment of Water Management in Agriculture

**We need to lift output from rainfed systems through the development of supplementary irrigation and agronomic practices that increase crop yields and profitability.**



## Theme 3: Water Quality, Health and Environment

### Focus

The overall goal of the theme is to explore strategies that enhance water quality, increase food production, and alleviate poverty while minimizing negative impacts on human health and the environment. Particular focus will be on improving agriculture and livelihoods for the marginalized poor in developing and emerging economies.

Increased depletion, exploitation, and contamination of water resources through urbanization, agricultural intensification, and land degradation have led to declines in water quality and quantity. We can often minimize this by providing appropriate management options and a consideration of ecosystem services. In many countries, these strategies are not widely adopted because of a lack of knowledge about their potential and the institutional mechanisms to pay for them. Increasing urbanization and intensified agriculture generate significant quantities of wastewater that is often used for irrigation at the rural–urban interface. Often, this water is biologically or chemically contaminated, presenting a risk for human, animal, and environmental health.

The theme complements Themes 1 and 2 by specifically targeting the water-quality implications of urban and rural land use, where managing the negative impacts will have significant benefits for both upstream and downstream users. It also draws on the techniques of Theme 4 to assess economic and social impacts and evaluate governance options. Theme 3 builds on the proven strengths and track record of IWMI research in the areas of wastewater, the environment and health, and links these to water-quality implications of unsustainable land use in catchment areas.

Two interlinked sub-themes will form the core focus of this theme:

- Managing the impacts of agricultural land use on water quality
- Managing the impacts of urban land use on water quality

### 3.1 Managing the impacts of agricultural land use on water quality

Inappropriate agricultural management practices associated with upstream agro-ecosystems often result in declining water quality. This has negative impacts on human health and ecosystem services for all users. We can support sustainable agriculture in upper catchments and enhance resilience in lower catchments through appropriate institutional mechanisms, technical and economic interventions, and incentives.

IWMI will build on its work in Ethiopia and with the Management of Soil Erosion Consortium–South East Asia, which has advanced our knowledge of biophysical processes and drivers of change. Our work in the theme aims to extend this to other geographical locations, where we can use research to develop novel interventions combining biophysical with social and institutional knowledge. This will require integration with Theme 4 and will explore payments for environmental services and the polluter-pays principle.

#### Specific Goal:

- To reduce the negative impacts of inappropriate land management in catchment areas to enhance water quality and livelihoods

### 3.2 Managing the impacts of urban land use on water quality

As demand for limited water resources increases from competing sectors, the sustainable use of urban wastewater will become an issue in overcoming water scarcity. Making a safe asset out of the increasing quantities of wastewater is the aim of this sub-theme. Major tasks are understanding the related risks and developing viable and adoptable management options for risk mitigation while maintaining or enhancing crop yields.

#### Specific Goal:

- To make an asset out of urban wastewater by assessing and reducing possible health and environmental impacts in irrigated agriculture, especially at the urban–rural interface



**In Mexico, a farmer washes his crops in a river carrying sewage. Widespread use of wastewater in developing countries requires strategies to safeguard the environment and public health while enhancing the benefits for poor farmers.**

## Theme 4: Water and Society

### Focus

How societies choose to govern their water economies depends upon the many interactions between technological choices on the one hand and their socio-ecological, economic, and political impacts on the other. With increasing physical water scarcity in Asia and continued economic water scarcity in much of Africa, these interactions have come to occupy center-stage in the growing global discourse on water governance. IWMI has long worked on water governance and related issues. The creation of the Water and Society theme brings these issues under the research spotlight. The theme will draw from current Institute staff, a key set of newly-hired social science and economics professionals, and outside expertise.

The Water and Society theme will concentrate on a host of related research questions. We will explore avenues to reform water governance, responding to the wide variety of contexts in the developing world. In addition to answering its own set of research questions, the key role of the theme is to coordinate social science expertise across IWMI to build evidence-based arguments for change. What is the best way to facilitate people's adaptation to climate change and variability? What can South Asia do to arrest the stagnation in its irrigation systems? What kinds of irrigation investments make best sense for sub-Saharan Africa? What can city governments do to minimize health risks from urban wastewater irrigation? Beyond basic research questions such as these, the theme also serves as a base for assessing impacts, both of IWMI's own work and of water interventions in general.

Theme 4 has four components (sub-themes):

- Water governance
- Water economics
- Water, poverty and equity
- Impact assessment

### 4.1 Water governance

In the face of water scarcity and climate change, improving water governance through integrated water resources management is widely promoted as a critical need throughout the developing world. Experience so far suggests that this is easier said than done. To



**IWMI will address key institutional and socioeconomic issues arising from water scarcity and hydrological variability in developing countries.**



**Members of a water user association (WUA) at work in Central Asia. Improving water governance through integrated water resources management (IWRM) is a critical need.**

address this challenge, the Water Governance sub-theme will assess how water can best be governed in the contexts of specific developing-country basins. In partnership with local and international partners, it will undertake practical research in support of a proactive water-reform agenda to resolve current conflicts and to avoid future ones.

We will focus on the development of models and options for water-policy reform and governance based on sound scientific and economic evidence. The work will focus on two sets of governance issues. The first engages the tradeoff and externality issues associated with watershed and basin governance. The second explores governance systems related to farm- and community-scale operations and irrigation management.

#### Specific Goals:

- To improve IWRM implementation and impact through a better understanding and formulation of location-specific policies and institutional arrangements
- To improve performance and sustainability of water management systems for multiple uses, for example public surface and private groundwater irrigation, through identification, testing, and dissemination of new and modified governance strategies

### 4.2 Water economics

Economics provides two main avenues for improving water management. The first is as a tool that can be used to assess the costs and benefits of particular water interventions. The second is as an approach to water governance. In the developing world, it is ironic that even as water becomes increasingly scarce, it often continues to remain a free or low-cost resource. Bringing water prices into play is a critical challenge that countries in Asia and Africa have to face when reforming their water economies. But mastering the political economy of water pricing is not only important because water is becoming more scarce. It is also key to efforts to direct water to high-value uses, attract much-needed investment, and improve water services. At the same time, however, water access and rights for the poor must also be protected and prioritized.





**Water policies, interventions and projects have profound impacts on how poor men and women access water for various uses.**

The Water Economics sub-theme will work on the application of economic tools in evaluating specific water use options. It will also work on the development of socially acceptable approaches for the use of economic instruments to improve the productivity, equity, health benefits, and environmental sustainability of water use. We will do this by drawing on the substantial body of economics knowledge already developed by others and by working with local and regional partners.

#### Specific Goals:

- To use the tools of economics to evaluate the costs and benefits of particular water interventions and allocation options
- To evolve practical approaches, and alternatives, to the pricing of water resources and services so as to improve water productivity, access, and equity while protecting the rights and well-being of the poor and ensuring environmental sustainability

### 4.3 Water, poverty and equity

Critical issues for the poor center on justice, equity, and security in terms of water access rights. Water policies and projects have profound effects on how the poor access water for various uses. However, the impact of water interventions on the poor, the different roles of men, women and children, and social differences within communities, are often forgotten in water intervention practice. Failing to consider these inter-relationships can have serious consequences. But the rewards of taking them into account, in terms of better water use, poverty reduction, and impact on future generations, can be equally substantial.

The Water, Poverty and Equity sub-theme will complement IWMI's overall work to generate policy-relevant knowledge to inform water researchers, planners, and investors of both the value of, and mechanisms for, considering poverty and social equity issues in water decision-making. This sub-theme will work closely with the Challenge Program on Water and Food.

#### Specific Goals:

- To reshape the water–poverty–gender nexus through a better understanding of how specific interventions can assist poor men and women farmers.
- To address key poverty related issues, including differential access and rights to water resources, through development of poverty-sensitive water policy, investment, and intervention strategies.

### 4.4 Impact assessment

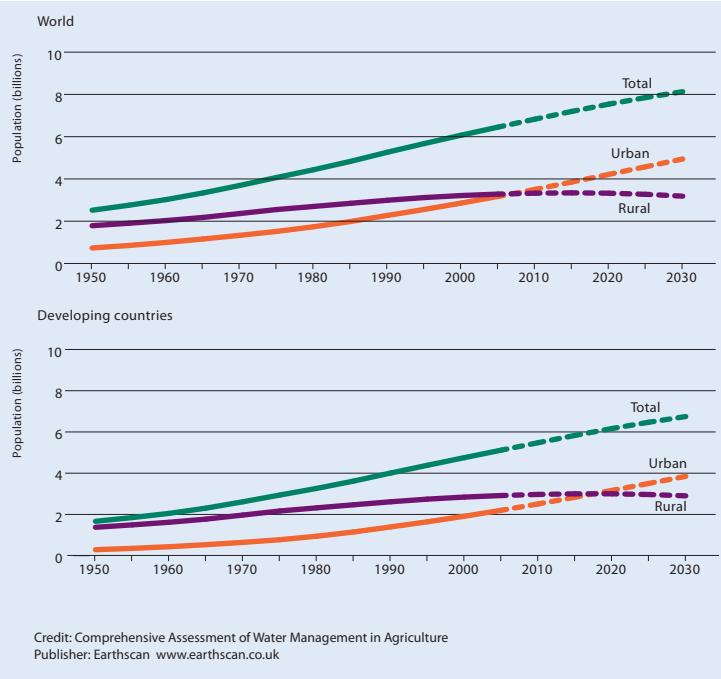
Assessing the impact of IWMI's research is essential for the Institute to ensure its programs meet the needs of its stakeholders and partners and as a means to inform and improve future research. An understanding of how agricultural water interventions have affected water use, food production, and poverty is critical for our own research decisions as well as for the recommendations IWMI develops for its target audiences.

To meet these needs, the Impact Assessment sub-theme analyses the impact of IWMI's own research, across all thematic areas, as well as that of relevant projects and programs implemented by others, using a range of ex-ante and ex-post analyses conducted in-house and through strategic partnerships.

#### Specific Goals:

- To use an understanding of past research impacts to improve IWMI's research operations and priority setting
- To inform future water investments via development of broad understandings of the impacts of various agricultural water management interventions, policies, and technologies

### The world's population is shifting to the cities



**Urbanization will require suitable infrastructure and national policies in place. The demographics of farming will change with urbanization.**



## Overall Goal Statement

In five years time IWMI's outputs will have :

- Led to at least five national governments having incorporated water availability knowledge, particularly with respect to climate change and other drivers, into sustainable water allocation and management policies that will have improved the livelihoods of the poor;
- Visibly influenced the investment policies of at least two large development donors and five national governments with respect to sustainable intensification and increased food production by and for the poor in irrigated, rainfed, and wetland agro-ecosystems;
- Reduced health risks to the public and the environment associated with declining water quality and wastewater contamination in up to 10 countries through identification of hazards, promulgation of improved risk management practices, and assistance with the development of better regulations and other risk-avoidance incentives;
- Influenced the ways in which water governance and policies, including investment policies, are tailored to specific social conditions for the improvement of water management in general and the reduction of poverty in particular.

### Key Impact Pathways

At the global level, IWMI will strive to have better water policies and management adopted by national and state governments, international funding and development assistance agencies, and NGOs, via the production and dissemination of international public goods, influential scientific and media presentations, and by contributing to committees and reviews.

At the regional and local level, we will emphasize stakeholder liaison in terms of setting objectives and developing partnerships with advanced research institutes, NARES, regional organizations, and grass roots NGOs to research the problems and deliver solutions, which some of these partners can readily adopt and outscale.

## IWMI's Stakeholders and Partners

### Stakeholders (donors and agencies with whom we interact)

Members of the CGIAR and other donors provide financial support to IWMI, without which we would not be able to operate. In the past, the majority of our funding has come from country donors. However, in future, we expect to receive increasing contributions from private philanthropic foundations.

Stakeholders are any parties, including our donors, who have an interest in the outputs of our work. One key stakeholder group is the government departments who are interested in the outputs from our projects. These include irrigation, agricultural, water resources, and environmental agencies. We believe that these departments are crucial in assisting with the adoption and extension of research outputs, both at policy and operational levels. In some cases these agencies will also actively collaborate with us to deliver projects.

At the international level, we will ensure that IWMI has a voice in key organizations like the Global Water Partnership and the Ramsar Convention. We will also strengthen links with the FAO, UN-Water, the World Water Council, UNESCO, the International Association of Hydrological Sciences, Singapore's national water agency PUB, UNCSD, and similar entities to ensure that water development issues are high on the political agenda for developing and developed countries alike. A primary business objective for IWMI will be to work with donors and other key stakeholders to determine research-for-development solutions to the challenges they are facing. At the same time, we intend to be proactive and advocate innovative methods for dealing with the world's water crisis that our donors may wish to consider investing in and our stakeholders adopting.

### Partners (people and organizations that help us deliver research)

IWMI believes that partnerships are essential in the delivery of high-quality outcomes for development. In particular, we look to organizations that can complement our capabilities. Our partners include advanced research institutes, NARES, regional, international, national non-government, and civil society organizations (CSOs).

Partnerships ensure that we tap into the multidisciplinary depth, knowledge base, and networks needed to tackle complex development challenges. Specifically, we intend to collaborate with research institutes involved in climate change projections to analyze impacts on water resources.

Elsewhere, we will collaborate with NARES to help us tailor our research outputs to regional issues, to facilitate uptake and impact of outputs, and to assist in capacity building. In other cases, we will also actively seek NGOs and CSOs as partners, ensuring transfer of new technologies to as many of the poor as possible.

## Research for Development

The most critical challenge for IWMI over the next five years is to ensure that our research output has impact. While we consider that high journal-article citation scores give evidence of the quality of our science, the critical criterion is the number of people benefiting from our research.

We are implementing a number of mechanisms to achieve this goal. Many of our projects will be seen as pre-investment studies that set the scene for major uptake when successful. All our new projects will require an impact-focused implementation strategy that can be made operational if the project succeeds. This will include the identification of impact pathways indicating who needs to be involved and what needs to be done from inception to completion to achieve the envisaged uptake and impact across similar environments. We are already determining the number of poor people who are likely to be affected by specific water interventions in India and sub-Saharan Africa. In Africa, for example, organizations like A Green Revolution for Africa (AGRA) will be the key beneficiary and potential implementer of the results of this project.

Under our management restructuring, while Theme Leaders are responsible for science quality, our three Regional Directors will be responsible for impact potential and delivery. This will involve them in promoting successful projects with those donors, agencies, and NGOs most appropriate for getting outputs adopted and into use. For policy and institutional reform, the relevant agencies will usually be the line agencies in national or state governments, so we need to consider their involvement from the project-design stage. In nearly all our projects, NGOs and NARES will not be the vehicles used for turning research into development, but equal partners in the research-for-development process itself.

IWMI will also increase its efforts to foster new programs, such as the IWMI-Tata Program underway in India, in which partnerships have been developed with numerous universities, government departments, and NGOs to work cooperatively on policy barriers to water reform. IWMI has also just established the Asian Water Knowledge Hub for Irrigation Services Reform, aimed at developing a 'one stop shop' for technical and governance issues relevant to improving the productivity of irrigation across the region.

In Central Asia, we are placing renewed emphasis on expanding water user associations, which have already seen farm water savings of 30%. In this case, partnership with the private sector and NGOs may be the preferred way forward. With respect to risks from wastewater, we have pioneered linkages with the FAO, national governments, city councils, farmer organizations, and environmental groups to ensure that our outputs are turned into policies, regulations, and grower and consumer information.

## IWMI and the Challenge Program on Water and Food (CPWF)

The CPWF was developed primarily by IWMI with CGIAR, NARES, and advanced research institute partners as a platform to integrate food and water research and to encourage partnerships within and outside the CGIAR. Consequently, the CPWF provides a major vehicle for IWMI to work with the agricultural community and to deliver impact.

The CPWF has enabled us to expand interactions with NARES and research institutes in the water and food for development area and to contribute significantly to a wider range of projects than would have been possible with IWMI funding alone. Phase 2 of the CPWF will focus on a few large projects in six key basins (Mekong, Ganges, Nile, Limpopo, Volta, and Andean sub-basins). These projects will bring together teams from research institutes, the CGIAR, and NARES to deliver practical technical, social, and institutional solutions to help lift communities out of poverty and limit the rate of degradation of land and water resources. We see this as an ideal way to turn much of our more strategic water research into development action.



The Mekong River Basin is one of six key basins where the Challenge Program works.

## IWMI's Capacity Building Role

IWMI aims to strengthen the capacity of water and land management professionals by enhancing the knowledge and skills they need to identify and address issues, and helping them acquire the expertise needed to solve problems and implement change. We facilitate capacity building in several ways.

First, IWMI's policy of doing research in partnerships promotes capacity building, by creating an environment of learning by doing. Wherever possible, our projects facilitate the transfer of knowledge and the development of capacity in local partners and stakeholder organizations through a hands-on approach, where IWMI and local scientists work together to solve specific problems. Given our locations in developing countries, we also develop the capacity of our local and regionally recruited staff through both on-the-job and other training opportunities.



IWMI researchers together with partners from Khon-Kaen University, and farmers in Northeast Thailand discuss soil remediation practices which led to higher yields of organic rice, making a positive impact on rural communities.

Second, IWMI provides opportunities for postgraduate education and postdoctoral opportunities to the next generation of water and land researchers. IWMI has a significant PhD program focused mainly on students from developing countries. Most of our projects will continue to support graduate students (pursuing Masters programs) in conducting their dissertation research. In addition, IWMI continues to offer internships to students or recent graduates, and gives them the opportunity to work on topics related to IWMI's research agenda.

A third approach is through IWMI's involvement with the CGIAR-sponsored Global Open Food and Agriculture University (GO-FAU). IWMI scientists will work to adapt research outputs into material suitable for a Masters-level course module on Water Resources Management. Several areas have been identified as course material for graduate students through distance education, including water policies and institutions; the role of gender in agricultural water management; managing water for agriculture; and multiple use services.

IWMI has innovative programs that include capacity building as part of the research process. For example, the CPWF project on Groundwater Governance in Asia engages 80–100 junior and senior staff from government, civil society, the media, and academia in an inter-disciplinary program. In a crosscutting research component that complements classroom work, junior research fellows undertake fieldwork-based interdisciplinary research, while senior officials go on study tours to countries with advanced systems of groundwater governance. Given the decline in the number of water experts in government policy and management agencies and development-finance sectors, IWMI is considering how it can help rebuild capacity at institutional levels in these situations.





IWMI designs and implements projects that include capacity building as part of the research process.

## How we Support our Work

IWMI supports its R&D programs through a range of support services headquartered in Colombo and supported by staff in our regional offices. These include library, geographic and database information systems, remote-sensing services, finance, human resources, communications, and information technology. At the CGIAR level we are an active contributor and supporter of the Alliance of CGIAR Centers. We are continually striving to ensure that we are cost-efficient across all areas and, as such, provide high-quality output at the lowest possible cost to our donors and stakeholders.

## Communicating our Work

IWMI recently underwent a review of its information and knowledge group, which has resulted in a reshaping and streamlining of these functions. Currently, external and internal communication services, library services, publication services, and data management services (including GIS and remote-sensing support) all come under the aegis of our Communications Director. Under this Strategic Plan, our goals in this area are to ensure that IWMI outputs are appropriately publicized and made available to key stakeholders and users as international public goods. This is strongly consistent with IWMI's previous objective of becoming an international knowledge center by 2008.

We have available online large amounts of remote-sensing data and products, and are leading the Asian Development Bank's Water Knowledge Hub for Irrigation Services. Central to this hub will be the development of methods and tools to help turn information into knowledge, potentially via training and involving research staff in answering enquiries. We also aim to improve our data-management system to allow further public access to water data and information collected under IWMI's project portfolio.

Effective communication of research products to key target groups is essential for a research-for-development organization like IWMI. In order to achieve significant positive impact on water management and to reach the wide variety of IWMI stakeholders – including donors, policy makers, NGOs, journalists, researchers, and students – we must make effective use of a diverse set of communication tools and approaches.

Two key areas in which we are currently working are, (1) enhancing the quality and outreach of our key research results through the internationally known IWMI Research Report Series and related products (such as the Water Policy Briefing series and IWMI Newsletter), and (2) improving IWMI's dissemination through web-based media.

In both cases, we have made significant progress, but there is ample scope for further improvement in terms of the nature, timing, and targeting of IWMI research products.

We will also develop a comprehensive communications strategy, with a supporting implementation plan, to define our vision for research advocacy, outreach, and dissemination. We will also explore how interactive forms of information and knowledge management can play a role in our future information services.

The Institute will examine the equally important area of internal communications and the related tools required to support a shared vision of institutional goals and success within a multidisciplinary and geographically diverse research environment.





**The Human Resources unit at IWMI at a planning session.**

## Organizational Structure

IWMI has amended its organizational structure to emphasize the need for the development and implementation of sound analytical research. IWMI is governed by a Board composed of independent trustees, selected on a skills basis. They are responsible for strategic direction, policy, risk assessment, and compliance. The Director General, who is an ex-officio member of the Board, is responsible for implementing these strategies and policies. The Board has been reduced from 12 to 10 members. It has also recently put in place revamped risk-management processes and program-outputs' surveillance measures, to help improve IWMI's overall performance. IWMI as a whole is assessed on its performance based on a series of scientific and administrative performance indicators administered by the CGIAR Secretariat.

Under our new structure, we have appointed four Theme Leaders who will have responsibility for strategic science directions, project management and quality control. They will report to the Deputy Director General (Research). While we hope to achieve an approximate balance in the sizes of the four research themes, there will be some initial disparities, with Theme 3 being smaller than the others.

We will also maintain the roles of Regional Directors (Africa, S. Asia and Central/S.E. Asia). Regional Directors will play a strong role in ensuring that IWMI's directions are aligned with key regional partners. They will also play an enhanced role in assisting Theme Leaders with new project directions and in ensuring that impact and adoption strategies are well developed in completed projects. The Regional Directors will report to the Director General.

Project Leaders will play critical roles in working with partners and may be responsible for multimillion-dollar projects. Some will also act as Sub-theme Leaders to assist Theme Leaders in managing their portfolios and to foster a succession planning ethos in IWMI.

To encourage a strong, common sense of direction and purpose, IWMI is opting for a management team that will include the Director General, Deputy Director General (Research), Theme Leaders, Regional Directors, and Heads of Human Resources, Communications, Administration, and Business Development.

IWMI has a human resources policy that seeks to attract top-level scientists to the organization. We also focus on nurturing the career development of scientists from developing countries and encouraging women scientists to work with us and take on key management roles.

## Finance & Administration

IWMI is developing a business plan that facilitates the delivery of the outputs described here in the context of existing and potential funding sources. In general terms, we envisage IWMI growing modestly over the next 5 years from an approximately \$22m organization to a \$27–28m organization. We will achieve this largely by growth in our African locations and some growth in S.E. Asia, Central Asia and Pakistan. The India team will remain approximately the same size as in 2008, while the Colombo headquarters will reduce slightly in numbers.

IWMI recognizes that improved information technology is one of the most significant ways in which we can deliver better services to stakeholders, partners and staff. So, over the last couple of years the Institute has made significant improvements in its support function by implementing state-of-the-art systems. These systems include SAP (ERP), an integrated human resource system, e-projects, and a time tracker. IWMI has always been at the forefront of collaboration with other CGIAR centers and has successfully implemented collaborative projects, such as SAP and HR4U, with the WorldFish Center.

The Institute recognizes the need to extend these support functions to regions where most of the work occurs and many of these platforms are already available in our regional offices. The implementation of these platforms will continue to be complemented by appropriate team building and professional/technical training of headquarters and regional administrative staff.

IWMI will also be exploring further potential economies of scale that may arise with regard to the delivery of financial, HR, and other administrative services via the current CGIAR Change Management Process.



Photo Credit: Dominique Pereira

**IWMI's Finance division has successfully implemented collaborative projects such as SAP with the WorldFish Center.**

## IWMI Core Values

- Excellence
- Impact Orientation
- Partnerships
- Teamwork
- Knowledge Sharing
- Respect for Diversity



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