

## CHAPTER 4

# The Changing Institutional Context

### 4.1 Transboundary Water

Given the high level of transboundary resources in sub-Saharan Africa, agreement on their use is key to sustainable agricultural water investment. Current processes are therefore emphasizing cooperative and mutually beneficial development. Shared basins cover 63 percent of the land area of sub-Saharan Africa and 12 countries of the region depend on external resources for more than one-half of their total water resources. With this large proportion of shared water resources, regional planning and coordination for transboundary resource allocation, for IWRM, and for catchment management are particularly important (FAO, 2006). A number of states have been cooperating under various programs. For example, Mauritania, Senegal, and Mali established the Organisation de Mise en Valeur du Fleuve Senegal (OMVS) in 1972, and have since constructed dams at Daima in Senegal and Manantali in Mali for irrigation, hydropower, and navigation. Lake Victoria faces the threat of environmental degradation which may be aggravated by increased irrigation upstream, and although there is as yet no formal treaty relationship, riparian states are cooperating on the preparation of a joint 'Vision and Strategy Framework' for its management (Box 4.1). This framework,

**Box 4.1****Kenya Begins Cooperation with Lake Victoria Riparians on Environmental Issues**

Kenya shares over one-half its rivers, lakes, and aquifers with neighboring countries, but has not yet entered into any formal agreement with any riparian state. However, Kenya is keen to develop the water resources of the Lake Victoria Basin for agriculture and other uses and has joined with other riparians in preparing a joint ‘Vision and Strategy Framework’ for its management. Collective action is being triggered by the increasing eutrophication of the lake from excess nutrient loads, a substantial portion of which stems from Kenya fertilizer use.

*Source:* World Bank, 2004a.

however, may prove inadequate to stem negative impacts on the environment arising from, for example, releases for hydropower that are causing lake levels to drop excessively. An initial focus on the benefits of cooperative management—say, for water flow and quality—and of agreed or cooperative development for irrigation and hydropower can lead in due course to more formal relationships and viable transboundary institutions.

This creates opportunities for optimizing investment strategies at the basin scale, and partnerships for joint management and development of a number of shared basins in sub-Saharan Africa have been created. For example, to achieve sustainable water security, Nile Basin riparians are working on shared waters. The Nile Basin Initiative offers considerable potential for major cooperative development of the basin, including large-scale irrigation and hydropower development. In addition, opportunities for regional cooperation and integration in a range of activities beyond the river have arisen as a consequence of strengthened relations built up from the Initiative (World Bank, 2005f; World Bank, 2005b).

Regional organizations and donors have helped to forge these partnerships and have provided investment support, for example, for the OMVS and the Nile Basin Initiative. With donor support, the SADC countries agreed a Protocol on Shared Watercourses in 1995 as a basis for regional integration in water resources management and investment. This led to the 1998 Regional Strategic Action Plan for IWRM in SADC countries and has now triggered the Zambezi Process among the eight

riparian states and the establishment of a permanent Zambezi Water-course Commission (World Bank, 2005c). These partnerships give priority to investment in agricultural water and hydropower.

## 4.2 Strategic Planning and Agricultural Water

*The last decade has witnessed important changes in approaches to international development assistance.* These have included the unprecedented consensus on development objectives in the form of the MDGs, as well as the commitment in Paris in 2005 by a large number of development assistance stakeholders as to how those objectives may be pursued more effectively.<sup>1</sup> Poverty reduction strategy papers (PRSPs) or other forms of strategies for poverty reduction have provided the point of reference for national development efforts in most sub-Saharan Africa countries.

However, not all poverty reduction strategies have recognized the role that agriculture can play in poverty reduction and few have acknowledged the importance to the sector of agricultural water development. Early PRSPs did not always explicitly recognize the critical role of the agriculture sector in poverty reduction and growth, although more recent examples have done so. They have, however, generally still not assigned much prominence to agricultural water development. Consequently, the subsector has tended to be neglected in investment programs for the agriculture and water sectors. The reason for this neglect lies partly in the negative perceptions of agricultural water referred to earlier in this report (see section 3.2 above) and partly in the fact that in many countries agriculture and water are served by separate ministries, which, because of divided responsibility, has too often led both to neglect the subsector (IFAD, 2002).

On the other hand, agricultural water development strategies have, in the past, not been entirely consistent with PRSP objectives. Specific poverty reduction objectives have not featured prominently in water sector and irrigation strategies, and often they have not reflected the poverty reduction objectives of the PRSPs. For example, the 1995

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1. At the Paris High Level Forum on aid effectiveness held in February/March 2005, the international community endorsed the *Paris Declaration on Harmonization and Alignment*, making a commitment to a series of measures to achieve greater aid effectiveness: (a) countries should take responsibility for setting *country-led development strategies*; (b) aid should be *harmonized* through common arrangements for financing and technical assistance; (c) aid should be *aligned* on national development strategies and institutions and on strengthened country systems; (d) aid should be *managed by results*; and (e) there should be *mutual accountability*, for example, through joint assessments of donor actions.

Mozambique National Water Plan mentions smallholder irrigation only briefly, despite the prominence given to the subsector in the PRSP.

There has been an absence of a strategic approach to investment in agricultural water. In general, a strategic approach to agricultural water has not been adopted, and agricultural water investment programs have often been poorly integrated with overall development objectives and policies (IWMI, 2005d). In some cases, projects have been selected in pursuit of goals such as food sufficiency and have lacked basic economic viability. An example is the development of pump irrigation schemes for cereals production in Nigeria discussed above (see sections 2.3 and 3.1).

*However, a new generation of irrigation strategies in sub-Saharan Africa has begun to emerge in recent years.* These respect the need for an integrated, strategic approach to agricultural water development and take advantage of potential synergies with macroeconomic and sectoral policies (World Bank, 2005b). The best of these strategies also reflect the new development paradigms and recognize the need for community empowerment and participation in design and implementation, as well as a market driven approach (Box 4.2). In particular, they acknowledge that productivity and profitability are the keys to sustainability and that it is necessary to remove constraints to their achievement. They emphasize the need for farmer initiative and financing, with a reduced but tactical role for public financing. The irrigation strategies of Ethiopia and Zambia are good examples of this new generation. Although it is taking time for these strategies to be fully owned and agreed by stakeholders—both national and donor—some results are now being achieved. In the case of Mali, for example, the integrated strategy exercise has resulted in a switch of irrigation investment away from large-scale public projects to participatory approaches, public private partnerships, and more emphasis on smaller scale schemes.

The strategic planning process has also received impetus from the preparation of National Medium-Term Investment Programs under CAADP (IWMI, 2005d; AfDB/FAO, 2005). At the regional level NEPAD's 2002 CAADP adopted land and water management as the first of its four pillars for priority investment and proposed extending the area under "sustainable land management and reliable water control systems" to 20 million hectares (i.e., approximately double the area currently under water management in sub-Saharan Africa) by 2015,<sup>2</sup>

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2. NEPAD has since proposed extending this time horizon.

**Box 4.2****Recent Irrigation Strategies are In Line with a Market-Driven Approach**

Working with the FAO, six West African governments—Mali, Mauritania, Senegal, Ivory Coast, Niger, and Burkina Faso—have developed irrigation strategies with approaches in common.<sup>a</sup> These include:

- A redefinition of the roles of the state, farmers, and the private sector, with a new emphasis on liberalization, farmer empowerment and minimal government involvement;
- Participatory approaches from identification of projects through to management of the works;
- Prioritization of individual or small group schemes;
- Review of more alternative interventions to find solutions that are least cost and most profitable for farmers;
- Accounting for environmental impacts and social equity;
- Requirements that farmers cover O&M costs and a share of the capital costs;
- Removal of administrative and fiscal obstacles; and
- Promotion of demand driven research.

a. Mali *Stratégie de l'Irrigation* 1999; Mauritania *Stratégie du Développement Rural* 1997; Senegal *Stratégie de Développement de la Petite Irrigation* 1999; Ivory Coast *Stratégie de Développement de la Petite Irrigation* 1999; Niger *Stratégie Nationale de Développement de l'Irrigation et de Collecte des Eaux de Ruissellement* 2001; and Burkina Faso *Stratégie de Développement Durable de l'Agriculture Irriguée* 2004.

Source: Gadelle in Sally et al., 2002.

although the rationale for this was principally to reduce national and regional food imports, rather than poverty reduction per se. The main emphasis was investment in infrastructure rather than institutions. However, a 2005 progress review drew attention to the low level of investment actually achieved since CAADP's launch in 2002 (only \$0.5 billion, compared with its target of \$9.9 billion, with only a modest pipeline). The review observed that a lack of implementation capacity in public agencies and private service providers was a constraint and concluded, *inter alia*, that CAADP needed to be rescheduled to take account of this. The review also observed that increased productivity

could not be achieved through investment in water management infrastructure alone. There needed to be investment in a package of institutional measures and market access/post-harvest rural infrastructure (AfDB/FAO, 2005). Currently, countries in the region are preparing, with FAO assistance, National Medium Term Investment Plans and a portfolio of bankable projects (Annex 9).

### **4.3 Policy Reforms and Agricultural Water Development Strategies**

#### ***Macroeconomic and Public Sector Reforms***

A number of countries have undertaken policy reforms intended to improve the macroeconomy and performance of the productive sectors. These have often included liberalization of exchange rates and controls, removal of tariff barriers, market liberalization, and a generally pro-enterprise framework. Public sector reforms have involved redefinition of the core functions of government—essentially allowing it to concentrate more on policy matters, strategic planning, regulation, and facilitation of development and less on being an investor, implementer, and service provider—with greater reliance on the private sector and the market.

#### ***Agriculture Sector Reforms***

In parallel with the above, a number of countries of the region have prepared new agriculture sector development strategies and embarked on reforms intended to promote agricultural growth. The emphasis has been on increasing productivity and profitability in the smallholder sector (Box 4.3) and greater recognition of the role that the private sector—from smallholder farmers to large-scale commercial estates and agribusinesses—can and does play in the agriculture sector (IFAD, 2002).

Nevertheless, the impacts of agriculture sector reforms have not yet reached their 'steady state' and delivered the anticipated benefits. In particular, reductions in the scope and operations of public agricultural support services have in some cases left smallholder farmers without the technology or financing to increase their productivity (although this is not to say that the previous level of service was in any way adequate). At the same time, although the withdrawal of the state from marketing has removed some distortions that would often have disadvantaged smallholder producers, it has often left farmers unprepared to deal with the market. Preparing smallholders to meet this challenge is critical for success in agricultural development generally. Hence, organizational

**Box 4.3****Reforms Under the Agriculture Sector Development Strategy, Tanzania**

Tanzania's Agriculture Sector Development Strategy (ASDS), which was published in October 2001, comprises a set of innovative and practical actions intended to stimulate agricultural growth and reduce rural poverty. These include a focus on commercialization of the agriculture sector and increasing its productivity and profitability.

Arrangements for implementation of the ASDS are elaborated in the Agriculture Sector Development Program (ASDP) Draft Framework and Process Document (September 2002). At the heart of ASDP is a sector-wide approach to changing the function of central government from an executive role to a facilitating one, to empowering local government and communities to reassume control of their planning and implementation processes, and to encouraging private sector participation in all aspects of agriculture—including investment, processing, and marketing. Under this new approach, 70–80 percent of public (government and/or donor) funding of the sector will now be managed by district councils and utilized through District Agricultural Development Plans (DADPs). Greater use will be made of outsourcing through contracts with private sector service providers, and greater awareness of cross cutting issues, including gender and the environment, will also be promoted.

The new approach will require a transformation in the way public investments in the smallholder irrigation subsector are analyzed, planned, and implemented. In conformity with the ASDS and ASDP, planning and implementation of smallholder irrigation subsector investment projects must now be based on the need for them to be driven by irrigators (or potential irrigators), responsive to market opportunities, coordinated at the local level, and profitable. This implies a need for more critical analysis of proposed investments and greater farmer participation in this process and that of their subsequent planning and implementation. It also implies a need to recognize that participation means more than mere consultation and that it takes time. It furthermore implies a need to recognize that farmers are the best judges of their own investment priorities and that these may not necessarily include investment in physical irrigation works, which do not always present the best opportunities for increasing output and incomes. Farmers may instead, for example, have identified a marketing opportunity or constraint that, if seized or addressed, would achieve their objectives more effectively.

*Source:* Ministry of Agriculture and Food Security, Tanzania, 2003.

development, training, and capacity building to link smallholder farmers to markets have now become at least as important as infrastructural development (Box 4.4; IFAD, 2003).

*Efforts are being made to help small farmers meet the challenges posed by reforms.* These include efforts to empower smallholders to develop their own capacity to respond to their needs for financial services through membership-based organizations such as savings and credit cooperatives and credit unions. These farmer-owned organizations are proving particularly well-suited to the financing of individual irrigation investments, where the entry cost can be as low as \$15 (Table 4.1) and where success can generate the credit rating and cash flow that allow an irrigator to progress to higher levels of investment. Some farmer-owned organizations, for example CECAM in Madagascar, have developed

#### **Box 4.4**

#### **Supporting Policy Reform in Tanzania**

The \$42 million Agricultural Marketing Systems Development Program, co-financed by AfDB, IFAD, Ireland Aid, and others, has been assisting the government of Tanzania in bringing about a comprehensive change in the agricultural marketing sector with the objective of making rural markets work better and empowering smallholders within them. The program is: (a) strengthening about 1,000 producer groups to enable them to enjoy a stronger bargaining position and more leverage on policy formulation, identification of marketing opportunities and price negotiations for both inputs and outputs; (b) supporting local government reforms by capacity building intended to lead to rationalization of regulation and taxation regimes to promote improved efficiency in the marketing system as a whole; (c) improving market infrastructure through construction or rehabilitation of 700 kilometers of rural roads, 200 kilometers of access roads, and 30 market centers, and through financing of post-harvest facilities; (d) strengthening the capacity of the Ministry of Cooperatives and Marketing (now the Ministry of Marketing); (e) helping producer groups, grass-roots institutions, traders, and processors to access loans from commercial banks for promotion of marketing activities; and (f) establishing and strengthening market links between producer groups, grass-roots institutions, processors, local marketing chains, and exporters.

*Source:* IFAD, 2001.

**Table 4.1 Investment and Working Capital Requirements for Intensive Irrigated Production in Kenya**

<i>System</i>	<i>Area irrigated (m<sup>2</sup>)</i>	<i>Investment cost (US\$)</i>	<i>Production costs (US\$)</i>
Bucket kit—drip irrigation	50	15	< 9
Drum kit—drip irrigation	500	110	< 95
Treadle pump	6,000	185	< 880
Motorized system (4 HP)	10,000	610	< 1,480

Source: Financing Small Scale Irrigation in Sub-Saharan Africa, interim results of a World Bank/GTZ study.

products such as leasing that are well adapted to individual irrigation investment. In Niger, local artisans have supplied treadle pumps to farmers on a hire-purchase basis.

Smallholders have also been empowered to access extension services, through a range of service providers contracted directly by farmers, as well as participatory approaches such as farmer field schools (Box 4.5).

Efforts are also being made to empower smallholders and their organizations to collectively engage with input and output markets. These include attempts to develop market links in which the various actors—private commercial entities (such as agri-processors and exporters, smallholder producers, the public sector and NGOs)—are brought together into ‘win-win’ partnerships intended to ensure equitable returns to both smallholders and the private sector entities concerned (Box 4.6). Establishing a supportive policy and legal framework, as well as capacity-building to help smallholders adapt to transformation, is essential.

### **Water Sector Reforms**

*The many functions and interrelated impacts of water require an integrated inter-sectoral planning approach.* As elsewhere in the world, agriculture is the largest user of water in most countries of sub-Saharan Africa. Its use therefore has the most interactions and impacts with other parts of the hydrological, environmental, social, and economic system and must fit within a rational allocation of water resources between the environment, agricultural, hydropower, urban, and industrial withdrawals, as well as for other economic uses such as transport and tourism.

The 1992 Dublin Statement on Water and Sustainable Development reflected international consensus that, in light of intersectoral competition for water use and growing water scarcity worldwide, effective management of water resources was essential. The Dublin Statement called for an integrated, intersectoral approach to water management and allocation, from

**Box 4.5****Farmer Empowerment through Farmer Field Schools in Kenya**

The Integrated Production and Pest Management Program in Kenya was implemented by the Ministry of Agriculture in Kenya with the collaboration of the Global IPM facility of FAO and financial support from IFAD. It adopted the Farmer Field School approach, which can be described as a community-based, practically oriented field study program involving a group of farmers, facilitated by extension staff (public or private) or, increasingly, other farmers. The FFS provides an opportunity for farmers to learn together and adapt practices, using practical hands on methods of discovery learning that emphasize observation, discussion, analysis, and collective decision making. The process aims to build self-confidence and to improve group and community skills. The knowledge acquired during the learning process enables farmers to adapt their existing technologies to be more productive, profitable, and responsive to changing conditions, or to test and adopt new technologies.

The IPPM-FFS Program was implemented over three seasons in three districts of Kenya's Western Province—all of them poor districts, badly affected by HIV/AIDS, high population densities, declining farm sizes, and deteriorating soil fertility. In total 471 FFSs were established under the program, with an average of 25–30 members each, or a total of about 13,000 farmers, of which approximately 60 percent were women. Self-targeting resulted in the vast majority of the membership being drawn from the middle and poorest socioeconomic stratum.

The most important lessons learned were:

- FFS encouraged communities to validate and adapt improved technologies and empowered them to find solutions to their problems.
- Farmer management of FFS funds, particularly payments for extension services, substantially improved the accountability and performance of extension providers.
- The promotion of farmer-led FFS, with farmers (rather than extension staff) as facilitators allowed the program to reach a much larger number of farmers than would otherwise have been the case.
- FFS empowered communities and raised their profile at a district level, hence increasing their ability to influence local level planning.
- Women seemed to especially value the approach, owing to its practical, field-based learning focus and the social value of the FFS groups.

*Source:* Khisa et al. in Penning de Vries et al., 2005.

**Box 4.6****Win-Win Partnerships for Market Links in Zambia, Zimbabwe, and Niger**

Despite abundant land and water resources, Zambian agriculture is poor, with weak markets and rudimentary irrigation techniques. The Zambia Agribusiness Technical Assistance Centre (ZATAC) has promoted outgrower horticulture schemes directly linked to ready markets through agribusinesses. This strategy offers small growers an opportunity to be partners in the value chain and offers agribusinesses a chance to increase their supply base and benefit from economies of scale without the associated capital investment. ZATAC helped override the water constraint by providing credit for irrigation equipment. For the first time in the history of Zambia, smallholders now grow fresh vegetables for markets in Europe in an alliance between smallholder producers and agribusinesses.

Farmers at Maunganidze and Mupangwa/Mutaradzi irrigation schemes in Zimbabwe have benefited from an IFAD grant-assisted pilot market link support program implemented by a national NGO. This focused on contract growing of various crops such as tomatoes and Michigan Pea Beans (for baked beans) for a local canner. The NGO facilitated contract negotiations for the growers' associations, under which: (a) the canner would provide crop inputs against a deposit of 10 percent of the total costs paid into a bank account operated jointly by the canner and the association, (b) the association would undertake to deliver a quota of crops grown, and (c) the canner would purchase the crop at a fixed price. The NGO for its part also provided technical support to the growers.

In Niger, an entrepreneur has set up a grading and packing plant with a capacity of 60,000 tonnes for export of the prized Galmi onion. A small nucleus estate is providing about 10,000 tonnes of onions. The firm is contracting with outgrowers for the balance, and is providing extension advice and credit.

*Source:* IFAD, 2007; World Bank, 2005a; World Bank, 2005b.

evolved. Significantly, the IWRM approach emphasizes *inter alia* the need for economic efficiency in water use.<sup>3</sup> Five sub-Saharan African countries have responded by adopting IWRM as a policy instrument, and several others plan to do so.

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3. The IWRM approach also emphasizes: (a) the need for a whole catchment approach to development; (b) subsidiarity in planning and decision making; (c) the pivotal institutional role of women; and (d) basic human rights to clean water and sanitation at an affordable price.

IWRM approaches are increasingly needed as water constraints grow to reduce the social, economic and political costs of unmanaged appropriations, uncertain water rights, and environmental externalities. In Kenya, for example, the costs of a lack of integrated water management have been high (Box 4.7), with social costs from unmanaged water appropriations, economic costs from hydrological variations and unclear water rights and allocations, and political costs from uncertainties over transboundary water resources. These costs arise from a vicious circle of lack of integrated resource management, underinvestment in infrastructure and management, consequent degradation of catchments, and limited buffering capacity for extreme events, and consequent reductions in growth (World Bank, 2004a).

*IWRM has presented operational challenges.* It is not clear, for example, that the agriculture sector has effectively engaged in IWRM stakeholder debates. In some instances, national agriculture policy has been silent on water development for the sector. In addition, while water reforms may have addressed historic imbalances in access to agricultural water by providing decentralized catchment planning authorities and agricultural water user associations, it is not clear that implementation of IWRM practices to date has empowered disadvantaged groups to participate effectively in water allocation and use decision processes (Perry et al., 1997; Derman et al., 2002). Although IWRM considers the basin as the unit for planning, the experience so far with basin level approaches in

#### **Box 4.7**

#### **Kenya Needs IWRM to Manage Irrigation Expansion**

Uncontrolled irrigation expansion in Kenya's Laikipia district, is destroying downstream livelihoods and habitats. In the period 1990–93 there was a 300 percent increase in water use in the district arising mainly from an expansion of irrigated agriculture. Over 90 percent of these extractions were unauthorized. Downstream, the median flow of the Ewaso N'giri River in February has dropped from 9 m<sup>3</sup>/sec to just 0.9 m<sup>3</sup>/sec (a 90 percent reduction). Now downstream users can no longer obtain essential water, the ecological functioning of the river is impaired, lakes and wetlands are drying up, and fish catches—a source of protein for the poor—are declining.

*Source:* World Bank, 2004a.

the region has been mixed. Some river basin organizations have played more of a development and operational role than a resource planning and management role. The Nigerian River Basin Development Authorities, for example, began not only as water resources managers but also as major investors in large public schemes, both dams and irrigation.

*Notwithstanding these challenges, the issue is not whether IWRM and an inter-sectoral planning approach should be adopted, but how to improve the process to obtain the best possible results for agricultural use and poverty reduction.* Central to the IWRM concept is a decentralized, inter-sectoral approach to water resources management, as well as self-regulating and self-enforcing mechanisms for sustainable management that consider all needs within a catchment and ensure that smallholder farmers are adequately represented in governance, stakeholder debates, and allocation decision making. The challenge is to put such approaches into practice. IWRM needs to build on and integrate traditional and indigenous water practices where appropriate. Full accountability of river basin organizations will be essential (World Bank, 2001).

#### **4.4 Role of the Public and Private Sectors in Agricultural Water**

*Private investors have proved more successful than public ones.* The countless private schemes all over the region are testament to the ability of the private sector to identify viable opportunities, implement projects, and manage them sustainably. Private schemes range in size and nature from agribusiness estates such as the world's largest irrigated sugar estate—the Kenana scheme in the Sudan—through smallholdings successfully supplying high-value horticulture for export from many countries, to traditional small-scale paddy irrigation schemes in Madagascar. Key factors in success have been investment choices based on confirmed demand, and subsequent ability to manage the investment profitably and sustainably (NEPAD, 2005).

*By contrast, public investment has encountered problems of both implementation and subsequent management.* Although the reasons for these problems are many and various, the principal have been: (a) the pursuit of multiple objectives such as resettlement or poverty reduction that have led planners to take investment decisions that neglected basic conditions of economic viability, profitability, and sustainability; (b) high capital costs due to over-design and implementation cost overruns; and (c) lack of a sustainable model for operation and maintenance. The best performing public investments have been those where farmers

had a large say in design and implementation, and subsequently took over responsibility for management.

*A new development paradigm is emerging in which market-driven profitability and private investment play a larger role.* Across the region, governments have increasingly adopted a market driven, private sector led vision of agricultural development (see section 4.2 above) in which the role of the public sector is to help the private sector to serve commercial farmers and concentrate public resources increasingly on serving the poor. Under this approach, market-driven profitability is the over-riding concern, in which the private sector—from smallholder to major business—is the investor and manager of choice. Governments play a role in facilitating private market-driven development and investing in economically viable and financially sustainable schemes where the private sector cannot and where there is a clear public interest of poverty reduction. With this approach, smallholders are expected to become essentially commercial farmers. Governments, therefore, have a major role to play in empowering smallholders to participate fully in commercial agriculture. A good example of this approach is the Green Scheme in Namibia, where since 1994 government has developed basic water delivery infrastructure and allocated 50 percent of the irrigated area to larger scale farmers who then provide water and other services to smallholder commercial farmers.

Governments can promote private investment by developing the legal and institutional framework and investing in infrastructure and research and development. Experience has shown that governments can take specific steps to promote private investment in agricultural water by both large and smallholder investors. A priority is to develop secure arrangements for land and water tenure that encourage private, long-term investment and the development of efficient land and water markets. The promotion of financial market development is also important, ranging from encouraging the development of local financial organizations that can serve smallholder needs (see section 4.3) to formal sector instruments such as guarantees. Infrastructure development to reduce market transaction costs is also important. Finally, investment in market-oriented research and development, wherever possible in partnership with the private sector, helps to develop cost-effective technology for agricultural water management for commercial production.

Best practice public investment is based on economic criteria and the presumption of future handover to farmers. Recent best practice public investments follow criteria for economic viability, profitability, sustainability, and poverty reduction, basing schemes on farming systems and

farmers' livelihood strategies, involving farmers as partners from the start and—except where scale is too great—handing over completed schemes for subsequent farmer management. Clear arrangements for any 'co-management' and co-financing of operation, maintenance, and replacement costs are needed if there is an essential public role such as managing major headworks and networks.

Partnerships with private investors and service providers have been successfully based on public interest and comparative advantage. Co-investment with the private sector has worked well where governments underwrite part of the costs of a small-scale initiative that is later taken to scale by the market (for example, promotion of a treadle pump supply chain). In some cases, governments have successfully shared the costs of major investments with the private sector in order to stimulate growth (for example, the development of the Markala dam by the government of Mali and the private investment in developing the irrigated area). There has not yet been a case in the region of a 'build-own-operate' or 'build-own-transfer' arrangement in agricultural water, where the government taps the investment resources and management skills of private entrepreneurs to implement a public interest project, but examples from Morocco and Egypt indicate the potential. Governments have also promoted the development of private or NGO service providers, delegating some otherwise public service functions to them. Box 4.8 lists some typical public-private partnership arrangements that have been successfully implemented in the region.

*Governments have special responsibilities in the most resource-poor areas.* In the marginal semi-arid areas, agricultural water investment opportunities are generally limited. Although in the longer run household livelihood strategies are likely to be predominantly off-farm diversification and out-migration where economically viable and financially sustainable agricultural water technologies are available, public investment is justified in promoting sustainable land and water use practices to use scarce resources optimally. The justification for government support is all the stronger where there are significant externalities, for example, investment in land and water conservation on hill slopes under watershed management programs.

#### **4.5 Sector-Wide Approaches**

*The development effectiveness of past project approaches has often been limited.* Past public investment in agricultural water has been principally

**Box 4.8****Public Private Partnerships in Agricultural Water**

Examples of public private partnership (PPP) in agricultural water include:

- Partnerships for research and development of new technologies, for example through NGO/SME partnerships with NGOs or small enterprises for treadle pump promotion.
- Partnerships to help the private sector develop supply chains to enable smallholder irrigation farmers to respond to market opportunities such as the Smallholder Irrigation Market Initiative.
- Partnerships to promote links between small and large enterprises as in the Green Scheme in Namibia, Swaziland LUSIP, or contract farming at Maungandze in Zimbabwe.
- Partnerships in irrigation management and service provision.
- Partnerships in development and operation of major agricultural water infrastructure.
- Partnerships in irrigation development such as the partnership in Mali where government has invested in the Markala Dam and a private enterprise is developing 25,000 hectares for sugar cane plantation.

Source: IWMI, 2005f.

through individual projects, often financed in part by donors. The development effectiveness of project approaches has been limited not only by problems of design and implementation, but by their inherent fragmentation and duplication. At the policy and institutional level, project approaches have lacked shared strategy and prioritization, and have given inadequate attention to systemic issues and structured institutional development. At the implementation level, projects have often reflected a donor-driven agenda and resource allocation, and have created parallel systems and 'project empires' rather than building national capacity. The transaction costs of project approaches have been high.

Sector-wide approaches (SWAPs) generally, and agricultural SWAPs in particular, are intended as a means to coordinate and harmonize efforts at policy dialogue, institutional reform, and efficient investment. In recent years, a number of countries in the region have begun to develop sector-wide approaches, moving progressively away from project

to program approaches within a coherent strategic framework, a movement strengthened by the Paris agreements on aid effectiveness (see section 4.1 above). Sector-wide approaches are based on a partnership between: (a) the government, which is expected to provide leadership and develop a coherent sectoral strategy; (b) international development partners, who are expected to align their support on the country-led strategy and, to the extent possible, harmonize their support through common arrangements for financing and technical assistance; and (c) other stakeholders, including civil society and the private sector. In contrast to earlier approaches, sector-wide approaches are intended to focus not only on the financing of a comprehensive investment program, but also on policy dialogue and change, and on the provision of support to, and reform of, national institutions (IFAD, 2007).

The potential benefits from sector-wide approaches are, essentially, enhanced development impact and lower transaction costs. At the strategy level, this should be characterized by stronger country ownership and leadership, a coordinated and open policy dialogue, and prioritized and rational resource allocation. At the institutional level, the approach should help strengthen national capacity, systems, and institutions. At the implementation level, scaling up of best practice and benefits to the entire sector should be easier. There should be sector-wide accountability, ultimately with common fiduciary practices and environmental and social safeguards; and there should be a focus on results and reduced duplication in reporting and transactions.

Such approaches have potential but are hard to put together and experience if sectoral approaches to agriculture or water in the region are limited.<sup>4</sup> The approach could be adopted to address the specific problems identified throughout this report, particularly strategic planning, institutional development and capacity building, and cost-effective public investment. In most countries in the region, the fiduciary pre-conditions for budget support are absent, but there have been attempts to bring all stakeholders behind a coordinated irrigation sector strategy and program. In Niger, for example, several years of effort have produced consensus on the national irrigation strategy, and the related action plan was adopted by Presidential Decree in late 2006. A permanent secretariat is responsible for coordination and follow-up. However, even with this background, donors have been slow to commit financing within the program framework.

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4. A number of countries have applied the approach in the health and education sector (Zambia, South Africa, Ghana, Mozambique, Tanzania, Uganda, Ethiopia, and Burkina Faso).

## 4.6 Decentralized Development

Traditionally, the governments of most developing countries have employed conventional public sector organizations to provide infrastructure and services at the local level. However, alternative approaches to local development have evolved over the past two to three decades. As part of wider public service reforms, a number of countries in the region have engaged (or plan to engage) in decentralization of their public development efforts to increase the participation and ownership of rural communities in planning, budgeting, and implementing public rural development programs, including those for agricultural water.

*Essentially, two forms of decentralization have evolved: 'decentralized sectoral' and 'decentralized local government'.* Under the first of these, development is budgeted, coordinated, and implemented by sectoral ministries through their local level (i.e., provincial and/or district) staff.<sup>5</sup> Under 'decentralized local government' approaches, however, a proportion of public (government and/or donor) sectoral funding is managed by local authorities and utilized through locally prepared development plans.

*Decentralization is not an end in itself; it is rather a means to developing effective, responsive, demand-led services and, in particular, to making government services more locally accountable to rural people.* Taken in isolation there is no particular reason why decentralization should enhance accountability; on the contrary, it may well entrench the influence and power of local elites—and it may lead to even greater inefficiencies than before (Box 4.9). The key to successful decentralization is to empower rural people, enabling them to develop the skills, knowledge, confidence, and the organization that they require to participate in local political processes and hold government and private service providers accountable to them. Thus, while decentralization could enhance the development impact of agricultural water investments, it presents a complex political, technical, and administrative challenge to governments and demands strong management capacity to guide the process forward. It needs to be accompanied by programs of support to develop good governance, as well as capacity building and empowerment (IFAD, 2002).

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5. This approach is sometimes referred to as 'deconcentration' to distinguish it from decentralized local government.

**Box 4.9****Decentralized Agricultural Water Development without Empowerment**

The 5-hectare Dombolidenje Dam and Irrigation Scheme in Zimbabwe was financed through a national project but was planned and decided upon at district council level following a lengthy participatory process that included extensive training and capacity building for local communities. Implementation was managed by district council staff with the support of district-level line ministry staff. It cost \$82,000/ha and earns farmers 1 cent/day.

The experience suggests that decentralization and participation do not on their own guarantee good outcomes. In this case, the communities concerned had not been empowered to take an informed investment decision. Had they been aware of the costs and alternative investment options, they may well have chosen a more profitable use of the available funds. Neither had they been empowered to ensure cost control, because the service providers—both public sector and private—were not accountable to them. The experience not only highlighted a lack of empowerment, but also a lack of capacity within the local planning structures for sub-project screening, appraisal, approval, and subsequent implementation.

*Source: IFAD, 2007.*

**4.7 Management of Publicly-Financed Irrigation Schemes**

As in most other regions, the sustainability of publicly-funded irrigation schemes in sub-Saharan Africa has been poor, mainly because of over-reliance on government support for scheme management and O&M, declining government budgets for recurrent costs, and low levels of cost recovery from the users. As discussed above (section 3.1), governments in many countries of the region have, in the past, not only financed the capital costs of irrigation projects—large, medium, and small-scale—but they have then played a major role in scheme management, particularly of the larger schemes, and have also taken responsibility for the bulk of O&M costs. Public management of schemes has been plagued by numerous problems. Water service has often been poor, and many schemes have needed rehabilitation to make up for delayed maintenance.

In recent years, the trend has been to encourage the users of publicly financed irrigation schemes, who belong to WUAs, to take responsibility for their management and O&M. Although this has applied to both new and existing developments (see Box 3.2 for the case of the Office du Niger), the extent to which this responsibility is accepted by scheme users depends on a variety of factors, including the scale and complexity of the scheme, its technical suitability for farmer-management, the capacity of the users, and the intrinsic profitability of the scheme. In the case of new development, therefore, it is now usual to ensure that technical designs are appropriate for farmer-management, with estimated O&M costs that can be afforded from the proceeds of crop sales while still leaving sufficient margin to provide an incentive to irrigate. It is also common practice to adopt participatory processes for identification, design, and implementation of schemes to promote user ownership and commitment, as well as to establish sustainable farmers' organizations—such as water users' associations (WUAs)—to take over full management and O&M responsibility (although this is unlikely to be achieved without secure land tenure, as well as clarity regarding legal rights over infrastructure and equipment).

Small- to medium-scale interventions are generally intrinsically more suited to farmer management than large-scale schemes. Small- to medium-scale schemes are intrinsically easier for farmer organizations to manage than larger ones, although capacity building for scheme management is essential even for small-scale schemes. The Participatory Irrigation Development Project in Tanzania, for example, facilitates the establishment of WUAs on a demand-driven basis and works with them to upgrade existing small-scale irrigation schemes or develop new ones, on the understanding (recorded in memoranda of understanding) that the association accepts full responsibility for O&M.<sup>6</sup>

There will be, however, cases in which important economies or market opportunities are presented by new investment in larger scale developments which may be beyond the ability of WUAs to manage, operate, and maintain. In these cases, there may be a continuing role for government in scheme management and O&M in partnership with a federation of WUAs, an irrigation district or the like, with government taking responsibility for the major infrastructure, and user organizations responsible for secondary or tertiary units. The latest innovations, for example, will include that of the Lower Usuthu Smallholder Irrigation Project,

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6. The experience has been used as the basis for new guidelines for decentralized participatory irrigation development that have been prepared by the Ministry of Agriculture and Food Security (Government of Tanzania, 2003).

an 11,500-hectare smallholder sugar project in Swaziland, where it is intended that the entire system, including a diversion weir, off-river storage, and canal system, will be governed by an irrigation district that will contract out O&M to a private sector water service provider (Box 4.10).

*The experience with farmer-management of public irrigation schemes has been mixed.* WUAs formed for small-scale rice schemes under the Upper Mandrare Development Project in Madagascar were only weakly established and unclear as to their responsibility for repairs in the event of flood damage to the headworks. At the Participatory Irrigation Development Program in Tanzania, although WUAs were aware that they were responsible for major repairs, they were not clear how they would finance such repairs should they become necessary. At Maunganidze in Zimbabwe, although the WUA was well-established and well-organized, it would probably have found it difficult to raise the cash for major repairs to borehole pumps. In none of these cases, therefore, was financial sustainability—one of the principal objectives of farmer management—assured (IFAD, 2007). In both cases, greater effort needed to have been made to ensure that the O&M costs were really within the users' capacity to sustain in the long term.

*Irrigation management transfer on existing schemes has also not always proceeded according to plan.* For example, on the Petits Perimetres Irrigués

#### **Box 4.10**

### **Swaziland's Innovative Approach to Water Service Provision and Cost Recovery**

The 11,500-hectare Lower Usuthu Smallholder Irrigation Project is intended to be operated by smallholder organizations for commercial sugar cane production. The main, secondary, and tertiary infrastructure will be grant-funded by the government. Farmer organizations will pay 100 percent of the capital cost of on-farm works by taking commercial loans to be repaid from the proceeds of sugar cane production. In addition, they will pay a charge that covers the cost of O&M by a private-sector water service provider contracted by the farmers' apex organization, replicating an existing arrangement by large-scale private estates in the parallel Mhlume basin. Part of these costs may be cross-subsidized by the existing large-scale sugar cane growers who currently pay nothing for water drawn from run-of-river supplies.

Source: IFAD, 2001a.

Project in Madagascar, water user groups were set up to manage O&M and subsequently to take over the schemes from government. However, formal transfer was extremely slow, a relatively small percentage of schemes were transferred, and less than 10 percent of the user groups remain in operation (IWMI, 2005g:34).

*In some cases, the state has exited too rapidly after irrigation management transfer and farmers have been left to pick up the pieces; they were unprepared for the task, with severely negative productivity consequences.* Sometimes irrigation management transfer has failed when irrigators simply inherited a scheme for which financial profitability and institutional capacity for sustainable irrigation did not exist (Box 4.11). For example, in Madagascar, the government passed a law in 1990 governing irrigation management transfer and embarked on a program, with donor support, to rehabilitate schemes, increase cost recovery, and hand over to WUAs. However, by 2003, only 3 percent of the public sector scheme area had been transferred (8,607 hectares out of a total of 270,000 ha). Meanwhile, government expenditures for O&M decreased from 50 percent of the budget of the Ministry of Agriculture to just \$42,000, and very little advisory or management support had been provided. Irrigation service charges had been set at just \$6/ha, so far below the required level (at least \$23–38) that schemes were not being maintained. In effect, the process resembled abandonment more than transfer, and this undermined production. Consequently previously highly

#### **Box 4.11**

### **Examples of Poorly Handled Transfer of Irrigation Management**

In the Arabie-Olifants scheme in South Africa, the cropped area declined by 70 percent the year after the Agricultural and Rural Development Corporation withdrew. Smallholders were unable to access the working capital to pay for inputs and services.

In the handover of pump schemes in Niger, land ownership was not transferred. Irrigators could be evicted and replaced, so they had no incentive to invest and no sense of ownership of the scheme they were supposed to pay for and operate.

*Source:* IWMI, 2002.

productive schemes in which the nation had heavily invested for more than 50 years have been almost completely lost (World Bank, 2003).

*The problems encountered are not inherent in the concept of irrigation management transfer.* Much of the irrigation management transfer in the region has failed simply because it was badly handled and did not respect essential institutional and financial preconditions. Too often governments and projects stopped short of genuine capacity building and farmer empowerment, and service providers (public sector or private) have not been accountable to farmers for the services (such as design and construction, extension, water supply, O&M) they provide.

*Successes in WUA formation and irrigation management transfer do exist, and they indicate pathways for the future (Box 4.12).* For example, in the irrigation management transfer program in Senegal supported under the World Bank-financed Fourth Irrigation Project 1988–1993, a number of large-scale schemes in the Senegal River Delta were transferred to Unions Hydrauliques, which had been set up to manage electric pump stations and recover costs from farmers. After a difficult start, these organizations succeeded in obtaining bank credit to finance operations and improved the water service; they also reduced theft. The Unions invested in research and extension, and with new rice varieties from WARDA, profitability improved and output revived. Now the Unions are moving into input supply and output processing and marketing in order to increase value added and incomes. The keys to this success appear to have been: continuing capacity building from the state and NGOs; access to working capital; and a sense of ownership that brought out the needed entrepreneurial and management skills within the Unions (Ibrahima Dia, Private Irrigation in the Senegal River Delta, in IWMI, 2002:121ff).

In most cases government funding for scheme management and O&M is unlikely to increase, the issue is not whether schemes should be farmer-managed, but how to ensure that schemes are effectively managed and O&M costs recovered. Although it is unlikely that farmers will be able to meet the capital costs of major infrastructure, it is essential for sustainability that they at least meet the full O&M costs. Ideally, schemes should be entirely farmer-managed, or managed by their apex organizations.

Success depends on: (a) the intrinsic profitability and physical sustainability of the scheme; (b) capacity building for scheme management, operation, and maintenance; (c) secure land and water rights; and (d) careful management of the WUA formation/management transfer process, including post-handover support (Box 4.11). Cases like that of Niger, where 25 years after cooperatives took over, they still need

**Box 4.12****Examples of Successful Irrigation Management Transfer**

In South Africa, the Small Growers Development Trust runs a program of financial, training and support services that has helped 42,000 smallholder cane growers in Natal/Kwazulu and KaNgwane to take over and manage their irrigation schemes.

IPTRID studied irrigation management transfer in 12 rice schemes in five West African countries (Burkina Faso, Mali, Mauritania, Niger, and Senegal). Schemes were all pump then gravity distribution models. The study found that despite many problems, farmers had found ingenious solutions with the help either of state irrigation agencies or NGOs. Examples include: contracting (with the help of the state irrigation agency) with a local engineering firm for water distribution, maintenance, and financial management; using software to calculate the optimum cropping calendar and water scheduling (with the help of an NGO); and acquiring a rice mill and selling high quality rice direct to groceries in the capital at a substantial premium (Ingrid Hermiteau, Assisting Sustainable Irrigation Management Transfer, in IWMI, 2002).

A group of smallholders at Hereford in South Africa took over their irrigation scheme. They received support from an NGO, Africare, which enabled them to develop a contract farming arrangement for vegetables for export to Hong Kong and France and for sale to the national market. The export company provided a strict planting program and extension advice. Incomes increased and farmers were able to finance the O&M of the scheme and improve their standard of living.

*Source: IWMI, 2002.*

support—and the schemes still need periodic rehabilitation—demonstrate the difficulty of achieving these conditions. Where scale and complexity preclude full farmer management and there is no alternative to management by a government agency, the agency needs to be financially self-sustaining. Water service charges must be adequate to cover the real costs of O&M, and overhead costs need to be kept to the minimum. Above all, the agency needs to be transparent and accountable to the users—a condition that can usually only be achieved when there is genuine participation of the users in its management. The case of the Office du Niger (Box 3.2) shows that these conditions, although difficult, can be achieved in the region.