

# **Managing water resources equitably, efficiently and sustainably: Programmatic contexts**

## **Chapter** **3**

**Contents - Click on the links below to move to the appropriate page**

[Introduction](#) 57

[Water resources assessment and planning](#) 59

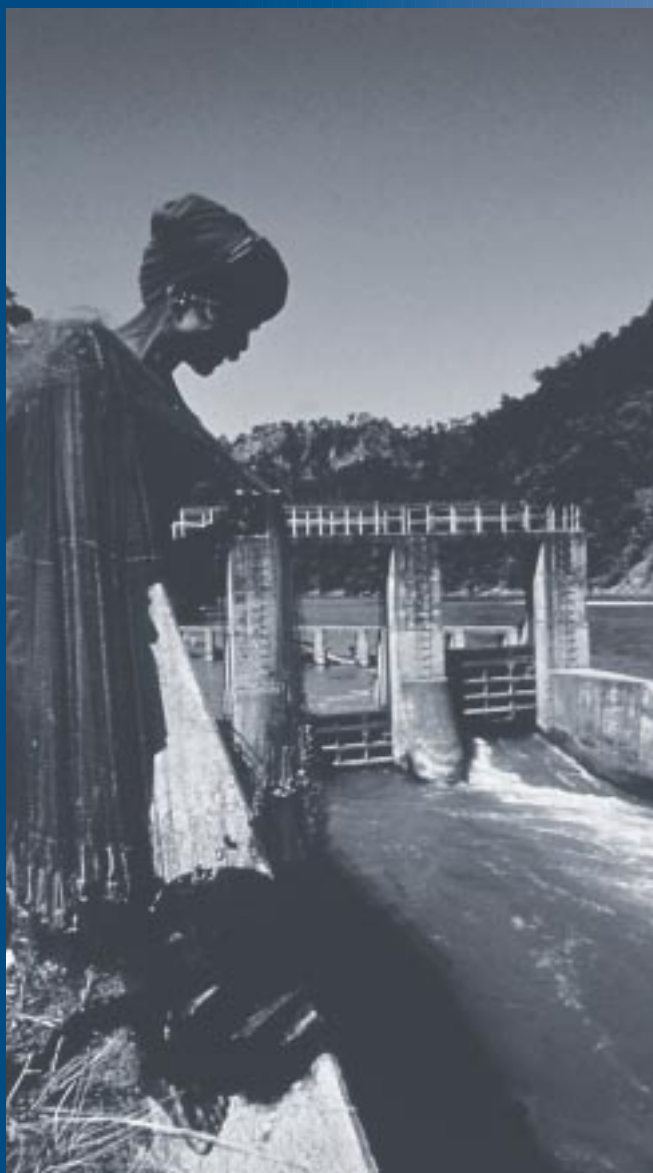
[Basic water supply and sanitation](#) 62

[Municipal water and wastewater services](#) 64

[Agricultural water use and management](#) 66

# 3

In this chapter, the programming contexts for the application of the policy principles are presented. These have been called 'Focus Areas' in keeping with terminology adopted in Agenda 21.





# Managing water resources equitably, efficiently and sustainably: Programmatic contexts

## Introduction

In the previous chapter, sets of policy principles have been presented as the bedrock of a strategic approach for water-related programming and project activity. These principles provide an operational philosophy and framework for EC development co-operation in areas relating to water resources management and service delivery. In this chapter, the programming contexts for the application of the policy principles are presented. These have been called 'Focus Areas' in keeping with terminology adopted in the Earth Summit document, Agenda 21.

These Focus Areas allow programming contexts to be grouped according to four broad types of activity: **Water resources assessment and planning (WRAP)** which includes all activities designed to assess the availability of the natural resource, protect its quality, and plan its use; **Basic water supply and sanitation services (BWSS)**, which covers service provision in rural areas and marginal or poor urban areas, usually consisting of low-technology, community-managed systems; **Municipal water and wastewater services (MWWS)**, which covers major urban and industrial installations and systems, including wastewater treatment and sewerage systems; and **Agricultural water use and management (AWUM)**, which covers installations and activities related to agricultural use of water, especially for irrigation. No pre-determined priority is

given to any one Focus Area as compared to any other. The programmatic activities covered by the Focus Areas are explored more fully below.

The application of principles to the Focus Areas is intended to be carried out in such a way that all principles are applied in all contexts. This should pre-empt the possibility that any one Focus Area could be treated in isolation from any other. There are many linkages between Focus Areas. Work directed towards provision of basic water supplies, for example, cannot omit to consider agricultural water management activity, or vice versa. Activities related to Water resources assessment and planning will, by definition, impinge upon activities in all other Focus Areas. The grouping of activities should not detract from the need to view water holistically and foster an integrated management approach across usages and programmatic activities.

The organisation of programming contexts represented by the four Focus Areas aims to accomplish a number of objectives. In the first place, it reflects the broader range of programming activity necessitated by the new thinking about water as a resource whose protection and usage must be comprehensively planned. Secondly, it allows programming contexts with similar social, economic and technological characteristics to be grouped together: Basic water supply and sanitation services, for example, includes both rural and poor urban settings where



small-scale, differentiated installations managed and operated on a local basis are likely to be the norm. Thirdly, it allows the integration of major works for drinking water supplies with those for environmental sanitation, wastewater management and sewerage. And finally, it transcends merely technical categories such as 'irrigation' in favour of larger concepts such as Agricultural water use and management, which includes land-water management, flood control, and environmental protection.

The Focus Areas also offer a framework broadly matched to sectors, although they do not correspond precisely with standard administrative sectors (see box). As has already been

pointed out in Chapter 1, the term the 'water sector' has been strenuously avoided in these Guidelines. Water-related activity transcends many sectors, including productive sectors such as agriculture and industry, social sectors such as public health and urban planning, and some new umbrella sectors, such as the environment, which may include water resources management alongside housing, transport and environmental conservation. When the phrase 'the water sector' is used, it usually refers only to public health engineering for drinking water supplies and sanitation – which is another reason to avoid it.

### Focus Areas and administrative departments

**Water resources assessment and planning:** co-operating administrative departments are likely to be: Planning, Environment, Water Resources, Hydrology, Energy, Transport.

**Basic water supply and sanitation services:** co-operating administrative departments are likely to be: Public Health, Rural Water Supplies, Co-operatives, Community Development, Local Government, Urban Planning.

**Municipal water and wastewater services:** co-operating administrative departments are likely to be: Public Works, Urban Planning, Municipal Authorities/Local Government, Health, Industry, Transport.

**Agricultural water use and management:** co-operating administrative departments are likely to be: Agriculture and/or Irrigation, Water Resources, Fisheries, Public Works, Planning.

The variety of administrative arrangements for water-related activity, both between sectors and at different levels of national, local and municipal authority, makes it easier to distinguish between categories of activity than classify water activity by sector. It is a part of the operational philosophy expressed in these Guidelines that, even in countries where there is a separate Ministry of Water Resources – which is the case where scarcity of water or some other factor makes water politically important – water-related policy will

need to be examined in and integrated with the work of other sectors and administrative departments. The existence of such a Ministry does not preclude the possibility that certain water-related activities receiving development assistance will fall under the aegis of another ministry (or public sector body answerable to a ministry): industry, agriculture, energy or public health are obvious possibilities. The concept of Focus Areas for programming activity suggests, but does not prescribe, the most appropriate administrative



aegis for any given project.

Certain water-related projects, especially in the context of basic water supply and sanitation services, may be carried out in direct partnership with community-based organisations and NGOs. However, even in these cases it will be necessary to consider which

government administrative entity or entities need to be involved, or at least kept informed, during the planning and implementation process. Even micro-level projects need to be notionally integrated with larger water-related development policies, plans and programmes.

## **Focus Area 1: Water resources assessment and planning (WRAP)**

The lack of an integrated approach to the management of water resources has led in the past to isolated investments in water-related activity, some of which have inadvertently resulted in negative consequences on other users or on the environment. This Focus Area has been devised to allow for special attention to be given to macro-planning of water resources management; activities which fall within it may be new or unfamiliar to many users of these Guidelines, but should be given due consideration given their over-arching importance for all water-related activity.

Apart from its importance for human survival and well-being, water is a basic ingredient in many productive and non-productive activities. Surface water resources are derived from rivers which may originate outside national and state boundaries; even where there are no problems of trans-boundary competition, river basins rarely

correspond to existing administrative boundaries within countries. Similarly, groundwater extraction does not occur tidily: its beneath- and above-ground impacts are not confined to particular administrative localities. As already outlined, there are many cross-sectoral considerations to be taken into account, alongside the geographical anomalies associated with the resource itself and its location vis a vis human settlements and its deployment for economic production. Water use is closely linked to land use, and freshwater outflows can have significant impact on the coastal zone. Water is therefore extremely complex to manage.

At national level, activities within this Focus Area will mainly be designed to develop and support a co-ordinated strategy on the use of water resources. The main purpose of such a strategy will be to ensure sustainable development in all water-related sectors in the various

### **Possible project activities in Focus Area 1 include the following:**

- Studies into land and water use patterns
- Hydrogeological/hydrological surveys
- Review of practicality of establishment of River Basin Organisations
- Ecosystem protection/conservation
- Review of water laws and regulatory framework
- Establishment of national water standards
- Development of data collection and monitoring systems
- Cross-sectoral planning in hydropower and navigational uses of water
- Flood/drought prevention and control
- Conflict resolution concerning water uses and upstream/downstream users



## Project example: Sub-Saharan Africa Hydrological Assessment and HYCOS

The severe droughts of the 1980s led to appeals from many African countries for international support for water resources development activity, and at the same time revealed major deficiencies of hydrological services in the region. Growing water scarcity and rising population were jointly acting as an important constraint on the alleviation of poverty and the improvement of health standards. But the commitment of funds to suitable and effective interventions depended upon better hydrological data and data-gathering networks. The EC therefore became involved in the financing of two projects; Sub-Saharan Africa Hydrological Assessment and Hydrological Cycle Observing System (HYCOS).

The Hydrological Assessment project's objective was to assist Sub-Saharan countries to establish sound hydrological monitoring systems for the purposes of planning and evaluating water resources development projects. Its three major components were: preparation of inventories of the present status of data collection, processing and publication; identification of major gaps in the current networks (including equipment, techniques, institutions and training); and recommendations for programmes to upgrade water data collection. A number of donor agencies were involved, including UNDP, UNESCO, WMO, the African Development Bank, the French Government and the EC. The World Bank executed the project, except in three countries (Rwanda, Burundi and Zaire) where it was not only funded but implemented by the EC.

By 1993, four sub-regional reports and 39 country reports and a series of hydrological and hydrogeological maps had been generated by the project. A number of critical issues had been identified, many of which stemmed from cuts in public spending associated with Africa's economic difficulties. One of the main recommendations was the development of a Sub-Saharan African component of the global Programme WHYCOS – 'World Hydrological Cycle Observing System'. The funding of the first regional project in the Southern African Development Community (SADC) was approved by the EC, and launched in 1997.

SADC-HYCOS has three main purposes: to provide SADC with an information system for the sustainable improvement of regional integrated water resources assessment, monitoring and management; assist the participating countries to develop their own national capacity in these fields; and to collaborate with other national, regional and international efforts to modernise, rationalise and improve water resources information systems.

The expected outcomes of SADC-HYCOS include the installation of a real time data collection and transmission system with a network of 50 Data Collection Platforms (DCPs); these will be located at benchmark hydrological stations. This should lead to the development and implementation of an operational regional database aimed at providing updated and timely data of consistent good quality. Training activities and on the job experience for technicians from the SADC countries will be provided at a Pilot Regional Centre established at an existing institution to implement the project.



regions of the country, and in so doing, help to avoid or resolve conflicts of interest over allocations of water between stakeholders. In countries vulnerable to extreme events such as drought or floods, planning considerations will need to include disaster prevention.

The various uses of water from multi-purpose dams (for irrigation, power, municipal supplies, recreation and flood control) will be reconciled within WRAP activities. This is also the context in which the interactive requirements of energy production (hydropower) and water use in, for example, irrigation will need to be jointly considered.

Water resources assessment and planning activities can and should take place at sub-national levels as well, and form a part of regional, district and area development plans. A number of supporting activities will therefore be needed at local levels.

The Focus Area would include consideration of the planning implications of activities for non-consumptive uses such as flood control, hydropower and navigation; and consideration of the impacts of other activities on these non-consumptive uses. Projects covering these activities will most likely be promoted by donor officials or recipient country agencies concerned with energy or transport and not directly interested in water resources. An integrated approach is needed to ensure that they are taken into account in the management of the resource. Similarly, the protection of the environment and environmental or ecological needs, often remote from project locations, can be neglected unless an overall perspective is applied.

An integrated approach is essential for the higher tiers of authority in order to set out the limits for activities which may otherwise neglect the broader view. It is also important that decision makers have access to adequate information on the resource and user demand patterns in order to make correct decisions on policy, allocation, pricing, legislation and other issues which will have a direct impact on sustainable socio-economic development.

WRAP interventions are unlikely to include construction and will more often consist of studies and institutional strengthening. Issues to be addressed include: policy and legislation regarding ground and surface water, trans-boundary planning and negotiation, river basin planning and management (including the interaction between water and land use), environmental protection and conservation, distribution of responsibilities for management of the resource and management of water-related installations, regulation of service providers both public and private, and the co-ordination of, and conflict resolution between, sectors involved in water use.

The Focus Area is also concerned with basic information collection, storage and access for water resources, including: hydrological and hydrogeological assessment, river gauging, climate and consumption patterns, improving the knowledge base concerning quantity and quality of water, calculation of needs and demands, establishment of standards, research and specialist studies for example on environmental factors and the development of monitoring systems and techniques.



## Focus Area 2: Basic water supply and sanitation services (BWSS)

This Focus Area covers programmes and projects which have to do with the extension of basic water supply and excreta disposal services to unserved and underserved populations in low-income communities in both rural and urban environments. These usually consist of low-technology, community managed schemes, in which local authorities play a facilitating and/or supervisory role. However, in large towns and cities, the municipal authorities have ultimate responsibility for the provision of services, and need to fulfil their responsibility by establishing the regulatory framework, urban planning, and playing their part in facilitating service spread.

In most programming exercises, schemes for rural and urban areas are conceptually differentiated. This is not only because the administration of rural and urban areas falls under different authorities, but because there is a perceived dichotomy between the poverty, neglect and economic backwardness of rural areas in the developing world, and the wealth, high levels of capital investment and political leverage which characterise urban settlements. This perception has tended to lead to neglect of poor urban areas, in water-related activity as in other forms of infrastructural investment. Although

rural areas have also suffered from neglect, activities launched during and since the International Water Decade of the 1980s have produced a significant improvement in coverage rates, at least as far as drinking water supplies are concerned. Sanitation coverage, however, has in fact declined and as a result more policy attention is now being given to waste disposal, especially in densely-settled low-income areas in towns and cities. Enhanced programme support is needed in this context.

The major public works with which municipal authorities are mainly pre-occupied in the water, sewerage and urban drainage context rarely provide service outreach to slum and shantytown areas. Thus, even where levels of urban coverage appear high, the figures may mask the fact that coverage in marginal communities is inadequate or non-existent. As a population group, the urban poor is the fastest growing in the world. The risks to their own health, and of the spread of communicable disease to other neighbourhoods, posed by their crowded, insanitary and germ-laden habitat outstrip the public health risks of service deprivation to any other population.

Basic services providing drinking water and human waste disposal in poor communities, whether rural or urban,

### Typical project activities for Focus Area 2 include the following:

- Rural water supply schemes
- Water supplies for low-income urban communities
- Environmental sanitation in low-income urban communities
- Rural environmental sanitation schemes
- Data gathering from intended localities
- Research and development of low-cost hygienic latrine technology
- Knowledge, attitude and practice studies
- Establishment of local Water Committees
- Programmes for hygiene education
- NGO capacity-building



## Project example: Gokwe Integrated Rural Water Supply and Sanitation Project, Zimbabwe

Since independence in 1980, the government of Zimbabwe has placed considerable emphasis on improving the well-being of the rural population using a national Integrated Rural Water Supply and Sanitation Programme as part of their strategy. The two districts proposed for EC funding, Gokwe North and Gokwe South, had a combined population of 430,000 who regularly suffered from diarrhoeal infections, and from eye and skin complaints. A primary cause was poor sanitation and hygiene practices, coupled with the use of unsafe drinking water. Surface water supplies are few, usually contaminated, and often at a considerable distance from people's homes while water from shallow wells is often unreliable. The paucity of supplies was an encouragement to lack of hygiene in the household.

During a three-year implementation period the project aims to rehabilitate 50% of existing water points to the national standard level; provide new domestic water points (boreholes and wells) to 50% of the population; introduce a three-tier maintenance system in connection with all new and rehabilitated water points, including village-level caretakers; facilitate the construction of latrines in 20% of all households; educate all communities in health and hygiene and in maintenance of water point facilities; and strengthen the process of decentralised planning and implementation of integrated water and sanitation programmes.

The project benefits from collaboration from a number of partners, requiring emphasis on co-ordination mechanisms'. These include the Ministry of Health and Child Welfare, which is actively involved in a latrine-building and hygiene education programme, and the Ministry of National Affairs Employment Creation and Co-operatives, whose Village Community Workers have the responsibility of mobilising project beneficiaries. The Ministry of Local Government and National Housing, through the District Development Fund, is involved with the establishment of water points and the provision of wells, while the Department of Water Development supervises borehole drilling. Finally, the Department of Agricultural Extension is responsible for land use planning in the context of the siting of boreholes and wells.

are significantly different in concept from conventional mains connections and standard sewerage and drainage. They usually consist of low-technology installations: for water supply, handpump-tubewells, rainwater catchment tanks, gravity flow to standpipes; for sanitation, pit latrines, and where practicable, simplified sewerage systems and septic tanks.

Given that many such schemes are likely to be installed in areas where no existing services exist, preliminary activity may require data gathering, and the establishment of water monitoring systems. This activity is linked to the previous Focus Area (WRAP).

Most BWSS systems are much cheaper to install than standard public health engineering; but they are unconnected to a central operating system. Thus, their operation and maintenance requires very different arrangements from centrally-run systems, as does any system of charges to customers. The importance of gaining community participation and ownership to ensure O&M and cost recovery has led to innovatory approaches for management of community-based service schemes. This Focus Area therefore covers basic services schemes which have these common technological, management, financing,



social and economic characteristics, and can profit from the body of recent experience associated with such schemes.

While national governments need to be aware of the possibilities for basic services spread using innovatory approaches – innovatory not only in the context of technology, but as importantly in social, organisational, management, and financing dimensions – the main operational responsibility for basic services schemes is likely to rest with local authorities, local councils, NGOs and community groups. Many basic services programmes will depend for their successful outcome on an understanding of local people's existing beliefs and behaviours surround water use and human waste disposal, gender roles in relation to water-collection and

storage, and the establishment and/or use of community mechanisms for the expression of views and decision-making. Hygiene education components should be included (*see Part III*).

There should be local participation in settling issues as siting and responsibility, organisation of labour for ditch and tank construction, promotion of hygiene education and environmental cleanliness, local capacity-building in service management, and the collection of levies. In particular, clear responsibilities at the local level for systems of operation and maintenance of installations, and meeting their costs, need to be established. therefore, socio-cultural and information, education and communications issues will be particularly relevant.

### **Focus Area 3: Municipal water and wastewater services (MWWS)**

This Focus Area covers major water- and sanitation-related activities undertaken within the municipal area, usually under the auspices of the Municipal Authorities and with their support and facilitation. These Authorities will inevitably have an important role, if in some cases primarily a regulatory one, in basic services schemes for low-income urban areas covered in the previous Focus Area. But in BWSS schemes, especially where informal or illegal settlements are concerned, community groups are usually the key operators of services. The municipal water and wastewater services encompassed by this Focus Area are primarily capital-intensive types of programmes and projects with more sophisticated technology and maintenance requirements as compared with basic services schemes.

Programmes and projects in the Focus Area will therefore include water supplies, sewerage, urban drainage, and pollution control for a wide range of industrial, manufacturing and domestic

consumers. Given the rapid rate of urbanisation in many developing countries, one area of concentration will be the development of additional water sources (see also WRAP); the increasing distance of intakes from urban settlements is, in many cases, contributing to the escalation of costs, imposing a need for water-saving and efficiency. Rehabilitation and repair of existing systems, including the reduction of wastage from leaking pipes and reservoirs, will be an important area of activity. Optimal use of existing systems should be preferred to extension of new systems (unless the new systems are intended for unserved, especially low-income, populations).

Water quality is also a growing concern. Prevention of seawater intrusion into aquifers, wastewater treatment, and control of upstream and downstream pollution are becoming major issues in many developing country cities and towns. Innovative solutions such as recycling and re-use of



### Typical project activities for Focus Area 3 include the following:

- Wastewater treatment plant, taking into account industrial uses
- Municipal sewerage installations
- Review of tariffs and introduction of new tariff structure/metering
- Re-orientation/retraining of municipal water authority staff
- Development of private sector partnerships in service management/extension
- Rehabilitation of existing systems
- Leakage control
- New system of tariff collection/penalties for non-payment

water and water saving strategies will be needed. Cost recovery, regulation and demand management will be key elements of programme and project design. Activities in this Focus Area will relate closely to those covered under EC Guidelines for Urban Development which are also under preparation.

The institutional responsibilities and type of agencies involved in provision and management will come under scrutiny in this Focus Area, probably to a greater extent than programmes and

projects in the basic services Focus Area. There is likely to be more opportunity for the involvement of private sector companies or public/private partnerships in the management of programmes and projects. Reforms of the institutional framework for provision and maintenance of services may well be indicated, especially in order to effect efficiency savings and cost recovery; some projects may address such concerns directly.

A wide range of stakeholders, many

### Project example: Extension of the sanitation network in Cairo

By the year 2000, Cairo's rapidly growing population will reach 16 million inhabitants. The sewerage network was built at the beginning of this century, and by the 1980s it was already clearly inadequate to cope with the growing strains imposed by an ever larger and rapidly growing population. It was regularly affected by overflows due to damaged pipes and overload.

To resolve this insanitary situation, the Government launched a sewerage extension programme aimed at providing Cairo with a sanitation network that would be sufficient to cope with the city's growing needs. The largest component of the programme consisted of the construction of five main waste water pipes, 11 km long in total. Responsibility rested with the Ministry for Reconstruction, Housing and Public Services, through the Organisation for the Execution of the Greater Cairo Wastewater Project.

A sanitation fee was introduced for the first time in the 1980s. Despite several increases, it remains low. More significant increases will be needed to cover construction and maintenance costs. The Government took this need into account in its 1992–1997 five-year plan.

The project, which is being supported by the EU through the European Investment Bank, will significantly improve the environmental situation of Cairo, alleviating the environmental and health risks in the town centre.



with considerable vested interests, may need to be involved; many customers are likely to be educated, articulate and organised and will demand a level of provision above the basic needs. In some

instances, sophisticated and costly technical solutions may be indicated; but all potential solutions will need to be tested against efficiency and 'appropriateness' criteria.

#### **Focus Area 4: Agricultural water use and management (AWUM)**

Food security and agricultural development are closely linked to water resource availability, and the increasing pressure of population on food supplies means that many countries are interested in expanding their cultivable areas by recourse to irrigation. In many developing countries, irrigation is the main user of water, with almost 70% of the engineered supply absorbed by agricultural production. The construction and repair of reservoirs for storing and retaining surface water is a main irrigation activity; efficiency in the use of water in irrigation is a critical consideration. For the EC, irrigated agriculture forms a significant part of development co-operation, particularly in Asia.

In the past, many irrigation projects have inadequately taken into account potential negative environmental

outcomes. The importance of drainage for salinity control and the prevention of water-logging should not be neglected. Similarly, the adverse environmental aspects of drainage, including the disposal of drainage water, are of great importance.

This Focus Area is intended to cover schemes relating to agricultural water use and management at all levels, from small-scale, community-based schemes to large-scale formal schemes requiring sophisticated engineering. In Asia, it is likely that the rehabilitation and modernisation of existing systems will take precedence over the development of new schemes. In Africa, new small-scale developments owned and run by smallholders will probably be more common.

Irrigated agriculture is a complex activity, and the water volumes and

#### **Typical project activities for Focus Area 4 include the following:**

- Development of agricultural sector policy on irrigated farming
- Small-scale storage systems for irrigation
- Flood control measures
- Drainage/prevention of water-logging
- Credit programmes for smallholder irrigation
- Rehabilitation/modernisation of irrigation systems
- Establishment of Farmer User Groups and Participatory Irrigation Management
- Means of improving irrigation efficiency
- Provision of water for livestock



flows it necessitates cannot be addressed in isolation from questions relating to land use, cultivation methods and cropping – issues not addressed in these Guidelines. Appropriate solutions must be developed in accordance with prevailing conditions, in relation to farming and to water resources practicalities. Livestock needs, and grazing practices and impacts, will also need examination, and conflicts between farmers and herders resolved. As a general principle, optimisation of existing systems to improve irrigation efficiency is preferred over new, large-scale irrigation schemes given all the environmental and other difficulties attendant on macro-interventions. In some instances, conjunctive use of surface and groundwater will need to be considered.

While infrastructure will remain important in project design,

institutional, social, economic and capacity-building issues will be equally so. An understanding of gender roles and support for women farmers will be an important aspect of many activities, especially in Africa.

As competition between water user increases, there will be pressure to reduce the volumes absorbed by irrigation, at least for crops of relatively low social and economic value. At the same time, demand for foodstuffs and higher agricultural yields will continue to rise. Thus the challenge is raise crop production while consuming less water and operating within a more restrictive financial and economic regime.

Measures to reduce water consumption, cost recovery and demand management will therefore be important concerns of programme and project activity in this Focus Area. As for other Focus Areas, the need for re-orienting or

### Project example: Irrigated citrus cultivation in Bali, Indonesia

Small farmers in the northern Buleleng District of Bali grow tangerines as a cash crop. With irrigation, the income generated by the crop can be multiplied by three. The purpose of the project, therefore, is primarily to increase farmers' incomes and provide job opportunities for the poor. The intention is to irrigate 1,575 ha. of citrus plantation by installing wells; drinking water facilities will also be provided.

Due to blight – now eradicated – the tangerine crop has recently deteriorated. Thus emphasis will be placed on reviving tangerine production by strengthening the extension service of the Ministry of Agriculture. Applied research will be undertaken to strengthen the extension package, and extension staff and farmers will undergo training. Rural institutions known as *subaks* (water user associations) will be given support, and the participation of women encouraged. Since it is intended that these *subaks* will become responsible for the effective functioning of the irrigation services after the completion of external assistance, the strengthening and training of these bodies is regarded as critical to project success.

The users will contribute to project costs through the provision of land for installations and the provision of labour for land-clearing. Farmers will also be expected to deposit in a blocked account in the name of their *subak* regular contributions to a fund for repairing and replacing irrigation equipment as and when necessary. The details of this repayment policy will be worked out with the *subaks* during the early phase of the project.



restructuring Government agencies involved in agricultural water use and management is likely to be a major issue in project design. The involvement of the private sector as a partner in construction or management of schemes is likely to be a recurring theme, as will the role in management and financing of Water User Groups and other private associations of farmers or other expressions of civil society.

Many community development programmes and projects which include small livestock development, horticulture, mini-enterprises and community-based units for manufacture of food or craft products necessarily include water-related components. Projects for the development of community vegetable gardens,

aquaculture, or woodlots may involve land use changes that affect water resources. The social importance of irrigated agriculture is often neglected: it can be a motor for rural development, and may include non-water components such as feeder roads, electrification, and schools construction. All these kinds of projects – at least as far as their water-related components are concerned – can be regarded as falling into this Focus Area. Other projects falling into this category include those for prevention of desertification, water harvesting, soil erosion control and flood control of agricultural land. In certain countries with special geographical characteristics (e.g. Bangladesh) flood control may have a special status.