TEC BACKGROUND PAPERS NO. 12

Water Financing and Governance

By JUDITH A. REES,
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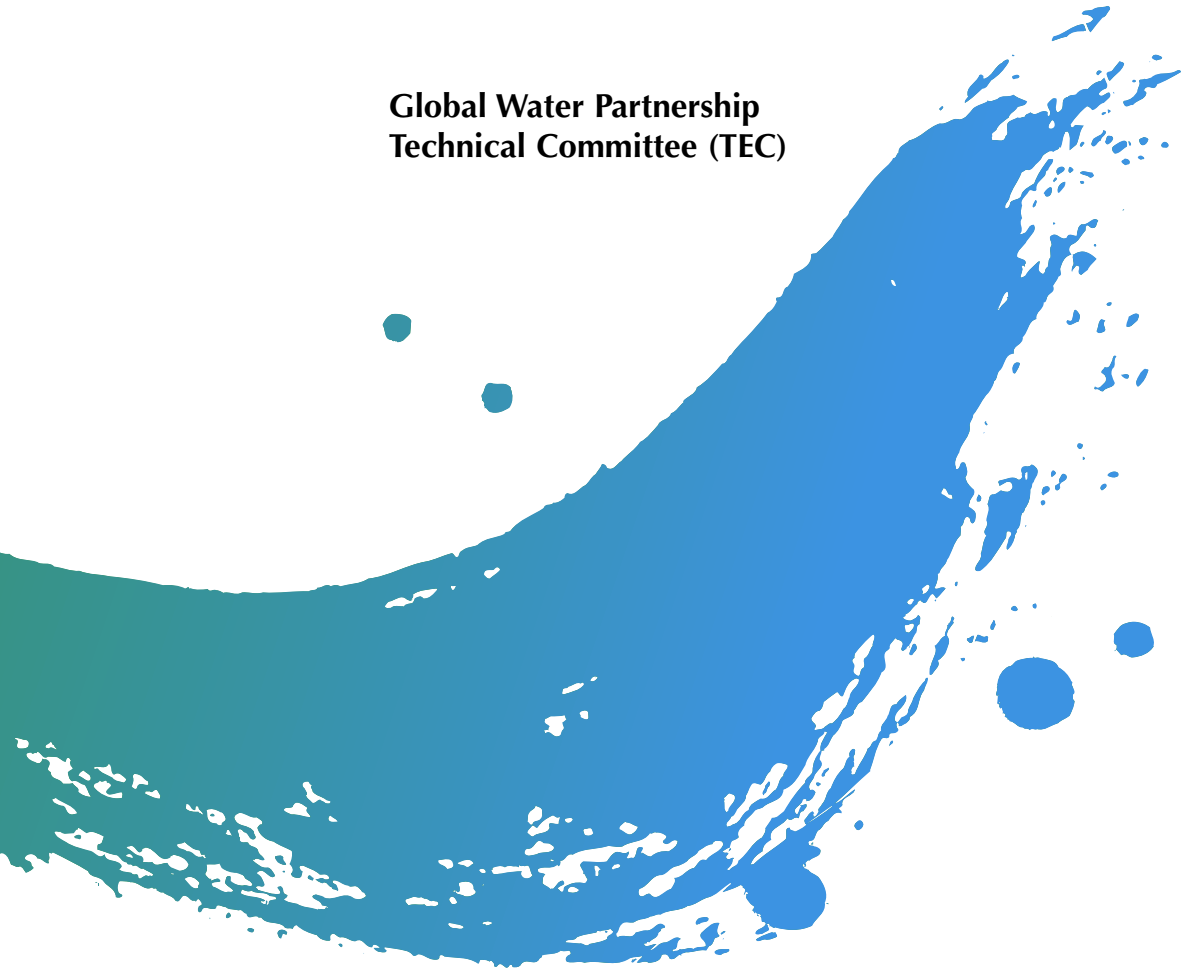
and ALAN W HALL



Global Water Partnership
Technical Committee (TEC)

Global Water Partnership (GWP), established in 1996, is an international network open to all organisations involved in water resources management: developed and developing country government institutions, agencies of the United Nations, bi- and multilateral development banks, professional associations, research institutions, non-governmental organisations, and the private sector. GWP was created to foster Integrated Water Resources Management (IWRM), which aims to ensure the co-ordinated development and management of water, land, and related resources by maximising economic and social welfare without compromising the sustainability of vital environmental systems.

GWP promotes IWRM by creating fora at global, regional, and national levels, designed to support stakeholders in the practical implementation of IWRM. The Partnership's governance includes the Technical Committee (TEC), a group of internationally recognised professionals and scientists skilled in the different aspects of water management. This committee, whose members come from different regions of the world, provides technical support and advice to the other governance arms and to the Partnership as a whole. The TEC has been charged with developing an analytical framework of the water sector and proposing actions that will promote sustainable water resources management. The TEC maintains an open channel with the GWP Regional Water Partnerships (RWPs) around the world to facilitate application of IWRM regionally and nationally. The Chairs of these RWPs participate in the work of TEC.

Worldwide adoption and application of IWRM requires changing the way business is conducted by the international water resources community, particularly the way investments are made. To effect changes of this nature and scope, new ways to address the global, regional, and conceptual aspects and agendas of implementing actions are required.

This series, published by the GWP Secretariat in Stockholm has been created to disseminate the papers written and commissioned by the TEC to address the conceptual agenda. Issues and sub-issues with them, such as the understanding and definition of IWRM, water for food security, public-private partnerships, and water as an economic good have been addressed in these papers.

Water Financing and Governance

Printed by Elanders in Mölnlycke, Sweden 2008

ISSN: 1652-5396

ISBN: 978-91-58321-70-4

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April 2008

Published by the Global Water Partnership

ABSTRACT

Traditionally, within the water sector, financing issues have not had a high profile and are mostly related to supply side investments. This is no longer sufficient as population growth, urbanisation, greater wellbeing and a higher quality of life puts the world's fragile water resources under increasing stress. With the added threat from climate change the situation is set to deteriorate even more.

Supply side issues and the financial architecture for providing essential domestic services was addressed by the Camdessus Report in 2003[1] and the issue of demand management was covered by the Gurria report in 2006[2]. These two landmark papers have prompted a wealth of interest in water financing. However, this has mainly focused on service provision and there is very little that covers the issues of financing for the overarching water resource management and governance systems that are critical for all users and for environmental protection.

Many commentators have stressed that financial needs will not be met without major reforms in water governance. By improving water governance the enabling environment for investment will improve as risks, commercial and political, will be better understood and addressed.

Over the last fifteen years an integrated approach to water resources management (IWRM) has evolved as the means to manage water more holistically and sustainably, and overcome the fragmented decision making and purely supply side approach common to the past uses and abuses of water resources.

There is a very close link between the integrated approach, good water governance and financing but, to date, there has been little discussion about this relationship. This paper aims to bring together these different strands so that a more coordinated, coherent approach to water financing is adopted. It focuses on the need to fund the water resources functions that are essential for security and sustainability and to examine the relationship between the different governance and organisational structures in the sector and their ability to secure funding for essential goods and services.

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[1] The World Panel on Financing Water Infrastructure, chaired by Michel Camdessus. Its report *Financing Water for All* is in references under its author, Winpenny (2003).

[2] The Task Force on *Financing Water for All,* chaired by Angel Gurria. Its report *Enhancing Access to Finance for Local Governments* and *Financing Water for Agriculture* is in references under the name of its author, van Hofwegen (2006).

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1. BACKGROUND, AIMS AND BASIC APPROACH

Since the publication of the Camdessus Report (2003) much has been written about water financing. Such writing has largely focussed on financial supply side issues and financial architecture – how to get more from the main sources of finance, how to raise funds from which sources, what innovative financing mechanisms could be deployed, and so on. Virtually all of the work has concentrated on financing for particular water services, predominantly water supply and sanitation, and the provision of hard infrastructure. Camdessus focused heavily on financing the water and sanitation infrastructure needed to meet the Millennium Development Goals (MDG) of reducing by half the population lacking access to safe water and adequate sanitation by the year 2015. The financial needs of the other sectors were acknowledged, as was the likelihood that the different sectors would require a distinctive approach, with sector specific solutions. However, work in these areas has been slower to materialise, and there has been a neglect of cross-sectoral matters, such as resource planning and allocation or environmental protection, which are vital to the long term health of the resource base and its use to further development goals.

Subsequent work by the Gurria Task Force on Financing Water for All (2006) again devoted most of its time to water and sanitation, with some reference to financing water for agriculture and the funding needed to manage water resources to meet the MDG Hunger Goals. The Task Force did not consider in any detail the range of services provided by the water system and the different management functions needed to provide them, all of which have financing requirements.

Reviewing the now extensive financing literature, there is virtually nothing which addresses the question of financing the overarching water management and governance system which serves the whole range of water users. This is a critical omission given the multi-purpose and hydrologically interconnected nature of the resource. The Gurria Task Force did allude to "the equally important work of financing improvements in the management of river basins" which are "the foundation of the water sector and a key component to ensuring that water services are sustainable" and the need for "innovative financing at increased levels" for resource management. However, the Task Force was not able to develop such work and address the critical question of

what would be required to finance the "managerial cement" needed to ensure that the water sector works as an efficient, integrated whole, capable of meeting economic development, equity and environmental policy objectives in a sustainable manner.

Numerous commentators, including Camdessus and Gurria, have stressed that the financial needs of the sector will not be met without major reforms in water governance. Typically, however, the focus of attention has been on improving the management of specific user services, most commonly water supply and sanitation, to attract additional financing and ensure that the services are run in a financially sustainable manner. There has been little discussion of the relationship between financing and the different governance and organisational structures already seen within the sector or proposed as part of a reform process.

The financing issue has also tended to be neglected in the literature on water governance and sector reform. Discussions on the need for integrated water resources management (IWRM), decentralisation or more participatory governance systems have paid relatively little attention to what new institutional arrangements might imply for water financing.

Towards a more holistic approach

In this paper it will be argued that a more coordinated, coherent approach to water financing is essential if the water needs of millions of people are to be met on a sustainable basis. It will focus on two related themes:

- funding all of the water resources management functions needed to maximize the sustainable benefits from the water resource base,

- examining the potential relationship between the different governance and organisational structures in the sector and the ability to secure the finance needed to provide essential water goods and services.

It is not our intention to look at the detailed financial requirements of specific water user services (water supply and sanitation, agriculture, industry, hydropower, etc.), except in the context of financing the overarching water governance and management system. Box 1 shows the distinction we make between end user services and the range of water management and governance functions needed to ensure that such services can be provided in an efficient, coordinated, equitable and sustainable way. In this paper, "water resources management" will be used to include all the items on the left-hand side

of Box 1. It should be noted that this includes spending on hard infrastructure and works entailed in providing public goods (e.g., flood control, catchment protection, river training) as well as on institutional development and basic integrative services such as hydrological data gathering, systems analysis and planning.

In looking at water resources management the starting point will be the governance roles and operational functions required to:

- ensure that the water resource base can provide the range of water products and services required for social and economic development and environmental sustainability,
- mitigate (or adapt to) the disbenefits (externalities) from water related hazards, water borne disease, pollution and the range of other side effects which particular water uses and users can impose on others within the physically interdependent water and land resource system,

Box 1: The water governance and management system

Elements of water resources management

Strategy, planning and policymaking

Strategy and priority-setting
Policymaking
Resource allocation and budgeting
Systems analysis and planning
Research and data collection
Institutional development
Training and capacity building

Engagement with stakeholders

Coordination and consultation
Regulation, monitoring and enforcement
Public awareness and information
Conflict resolution and arbitration

Water resource development, allocation and management

River basin management
Multipurpose projects
Flood control and drainage
Catchment management
Environmental and ecosystem protection
Water quality and pollution control

Water User services

Household water and sanitation
Sewerage and wastewater treatment
Industry and commerce
Agriculture and livestock
Navigation
Thermal and hydro power
Fisheries
Mining
Recreation, sport and tourism, etc.

- allocate water resources and services, along with the associated financial and human capital, in an efficient, equitable and environmentally sustainable manner.

While focussing on water resources management it is not possible to ignore the end user services. The activities of the service providers will inevitably have profound implications for water resources management; one obvious example being the impact of sanitation services and industry on water pollution control and another being the way pricing policies will affect service demands and thus the pressures on the resource base. In addition, given that financial capital is scarce, expenditure on the water services could limit the availability of funding for the water resources management functions. Furthermore, the organisational/governance structures developed for specific end user services can affect the potential sources of finance available for elements of water resources management; large-scale multi-purpose agencies could, for example, have cross-subsidy opportunities unavailable to single purpose entities. Water user services therefore, have to be considered in any attempt to develop a more holistic, integrated approach to the financing of the total water governance and management system.

When talking about a more holistic approach to water financing we are not suggesting that financial allocations should occur through a major bureaucratic exercise which seeks and inevitably fails to coordinate everything. Rather, it is seen as a process which considers the whole range of essential integrative functions and water services which require funding; examines which financial sources could potentially be available for each function and service; attempts to ensure that the most appropriate source is utilised for each purpose; and evaluates the institutional arrangements/reforms needed to increase the financial flows. In most developing (and some developed) countries many vital water resources management functions – such as catchment management, systems analysis and planning, flood protection, research, hydrological and performance monitoring, public awareness, stakeholder consultation and institutional capacity building – are neglected and underfunded. Their continued neglect is unsustainable in environmental and socio-economic development terms.

Financing needs to be recognised as a critical element in the sectoral governance reforms that are being widely advocated to meet the Millennium Development Goals and ensure the long term health of the water resource base. In 2002, the World Summit on Sustainable Development (WSSD) called for the

preparation of the IWRM and Water Efficiency Plans. Regrettably, few if any of the completed IWRM plans consider how the overarching water governance and management system is to be financed; indeed some do not mention financing at all (Biswas 2005). It is true that there are plans which call for large scale infrastructural investments and mention the need to further mobilise financial resources (GWP Eastern Africa et al. 2007) but there is little apparent awareness of the linkages between governance and finance. Calls for more money for infrastructure are generally unrelated to the creation of a supportive policy environment and viable institutions that can attract and channel the large financial sums required. The plans are typically silent on who should raise the funds, for what particular purposes and who should bear the pay back costs. Thus, an opportunity has been lost to make the critical link between infrastructural investments and the investments of quite a different type in the reform of policy, institutions and management practices so badly needed to make real and long-lasting improvements in water services.

IWRM is designed to tackle problems arising from the uncoordinated and competitive use of water resources. It will not be able to do this unless there is routine consideration of financing issues, with the institutional and financial arrangements for integrative functions being planned and put in place together. IWRM should also recognise that water problems cannot be solved solely by investments in the water sector. Consideration should be given to the ways in which funding in other sectors – such as forestry, housing and land planning or agriculture – could reduce pressures on the water system. Governance reforms not only have long term implementation costs but can also change access to, and the capacity to attract, different types of funding. Once financing becomes embedded within governance reform then IWRM can become a key to the solution to the problems besetting the water sector.

Governance and financing

The emphasis on the relationship between governance and financing is not, of course, new. The Camdessus Panel clearly stated that increasing financial flows "will make no sense and will not happen unless there is an equally unprecedented effort to reform the way the entire world tackles its water problem". It would make no sense because simply pouring new money into old management and governance bottles will fail to provide long term sustainable solutions. It will not happen because without good governance and the capacity to absorb and use funds effectively and repay loans, finance will not be attracted to the sector. Indeed, the first set of the Panel's proposals were essentially about good governance, responsibility, participation, decentralisation and transparency, and it was

made evident that changes in the method of governance will require corresponding changes in the financial architecture. The relationship between governance and finance was also explored by the Gurria Task Force, largely in the context of decentralisation and the delegation of functions and responsibilities to local governments. It is made clear that such delegation will be ineffective unless attention is paid to increasing the capacity of local governments to raise revenues. However, neither Camdessus nor Gurria addressed the institutions for water resources management, nor did they explore the financing implications arising from different governance arrangements. We take "governance" to not only connote power, authority and control, but also the relationship between the state and all kinds of non-state actors and institutions.

Unlike most previous work on water financing this paper will take a demand side perspective, focusing on what functions are to be funded and who can (and should) raise the funds. By concentrating on the who question, it becomes clear that it is impossible to divorce finance from governance and the institutional arrangements for managing the water sector. The division of responsibilities and functions between organisations and institutions at different geographic scales, will inevitably affect both who has to raise the necessary funds and the capacity to attract and absorb financial flows.

There is no organisational blueprint for the water sector and governance regimes are typically the unique product of the interplay of history, geography, politics, socio-economic conditions and power relations. However, when embarking on institutional reform it seems important that the financing implications are understood. Management reforms such as decentralisation may be highly desirable for many reasons, but they may not be desirable for attracting the level and type of funding necessary. Management and governance changes usually need to be accompanied by other changes to help ensure that financial flows are increased.

The structure of the paper

After a brief reminder about the very limited range of funding sources available for the sustainable financing of the sector, attention will be focused on the governance roles and operational functions that have to be supported to ensure the efficient, equitable and environmentally sustainable development of the resource. Consideration will be given to the socio-economic and political characteristics of these roles and functions which help determine feasible financing sources and funding mechanisms.

The discussion will then move on to address the question of an appropriate division of labour and financial responsibility between government at various levels, private sector actors of all types, market institutions, community and civil society organisations and institutions. Water sector management has to be a multi-level governance system but there are very different management models determining who does what within the overall structure; each of these models has financial implications. It is widely accepted that governance reform is critical to the solution of many problems in the sector, but in the reform process it is vital that the right conditions are created to allow the new institutions to attract, absorb and sustain the necessary financial flows.

Finally the paper will consider some of the key principles and issues involved in developing a more coherent approach to water financing and a more financially literate approach to water management and governance.

2. FINANCING ROLES AND FUNCTIONS

When it comes to financing the water sector there are no magic bullets. The reality is that there are only three ultimate sources of finance:

- User or beneficiary payments. These can either be in cash or through donations of labour or materials. Payments from some users may be used to cross-subsidise others.
- Government budgets derived from taxation or the sale of state owned resources, goods and services.
- Grants and aid from donor agencies, NGOs and charities.

Investment finance can be raised through loans – commercial, local or international, including from international financial institutions (IFIs) – or equity shareholders, but loans have, of course, to be repaid and equity investors will require dividends and/or expect their shareholding to increase in value. Unless the three ultimate sources of finance can maintain loan repayments and generate a reasonable rate of return on capital, investment funds will wither away.

This does not mean that all investments have to make a reasonable return on capital. Some vital investments, such as hydrological monitoring and systems

analysis may have very limited revenue generating capacity while others may provide payback through long term economic and social development rather than through direct financial returns. What matters is that the benefits from such investments are real and recognised, and one of the ultimate funding sources is willing and able to bear the costs involved. The experience of the 1980's Water Decade shows the financial problems that can arise when irresponsible borrowing and lending occurs without ensuring that there are realistic means of loan repayment.

The diversity of governance roles and operational functions

The governance of a multi-purpose and hydrologically interconnected natural resource entails many functions to provide efficient, equitable and sustainable services. Water is predominantly seen as a public sector responsibility but this does not necessarily mean that governmental bodies should, or indeed can, fund everything. The first step in establishing an appropriate division of labour and financial responsibilities between different potential actors and institutions is to clarify the governance roles and operational functions needed to manage the resource and deliver water services.

In the simplest terms there are seven key roles which institutions and organisations need to fulfil:

1. Strategic policy making and planning for water and the related sectors, development of enabling and regulatory environment, establishment of social and developmental priorities.

2. Ownership of the resource itself, usage rights and infrastructural assets.

3. Resource and budget allocation – land, water, financial capital and human resources.

4. Regulation and monitoring of water users and service providers, control over externalities and other forms of market failure.

5. Coordination and consultation between sectoral actors and across jurisdictional boundaries.

6. Conflict resolution and arbitration – resolve conflicts of interest between individual water users, demand sectors, different political jurisdictions, geographical localities and socio-cultural groups with different value systems.

7. Operational functions – these include hydrological data collection and systems analysis, resource development, catchment management, bulk water delivery, water treatment and delivery to final users, waste water collection, treatment, disposal or reuse, billing and revenue collection, drainage and flood protection, pollution control and ecosystem protection, training and capacity building.

These roles and functions have different economic and financial characteristics that affect who can feasibly provide them, the ability to attract funds and the possible financing sources. Their socio-political significance changes over time and varies between countries; such changes influence ideas about whom or what institution should undertake each role.

Of the first six roles only strategic policy making is unequivocally a matter for government, although even here others will have an input. "Networks build up around the government ministries formally responsible for a policy sector and it is through these networks that policy gets formulated and implemented" (Leach et al. 2007, p. 9, drawing on work by Marsh and Rhodes 1992, Smith 2000). Under certain conditions all the other roles could be (and in some countries already are) partially undertaken by private and civil society actors, markets or social institutions.

Ownership is a highly contentious political issue. Virtually all countries reject the notion that the resource itself could be owned by private interests, but this idea does not necessarily mean that usage rights and infrastructural assets need also to be publicly (or communally) owned. Nor does the asset owner necessarily have to actually deliver the services which flow from the assets. Clarity over ownership is vital in the efficient allocation of water and for attracting investment capital into infrastructure investment and renewal.

The allocation of public budgets is a necessary role of national, regional or local governments. However, resource allocations can and do occur through markets and, at small spatial scales, could be done using participatory decision systems. Likewise, regulation and monitoring, while normally a public sector matter, can variously involve self-regulation (now increasingly common in the environmental domain), civil society actors (local groups or broader consumer organisations monitoring service providers and using benchmarking, naming and shaming techniques) and social institutions (customs, conventions, behavioural rules). At the local scale, coordination, consultation, conflict resolution and arbitration can all occur through community based institutions (Ostrom 1990).

Operational functions embrace a wide range of activities of many economic types. Some, for example, are not directly revenue raising and others are natural monopolies. Still others exhibit scale economies and cannot be efficiently undertaken at a spatial scale or technological level, which makes community based or user self provision and financing a realistic option. This raises the question of how far functional 'unbundling' is feasible to allow different actors to undertake tasks in which they have a comparative advantage and to harness their financing capacity. In the water sector it has frequently been assumed that two features restrict the scope for unbundling:

- the existence of economies of scale and scope
- the hydrologically interconnected and multi-purpose nature of the resource.

There are undoubtedly economies of scale in some functions, most obviously in water resources planning, bulk water supply development and delivery, but the evidence for economies of scope appears more limited (Rees 2006). Where scale and scope economies are small, functional unbundling may be feasible without incurring significant operating efficiency losses. Likewise, the fact of hydrological connectivity within river basins does not mean that an authority, with hydrologically determined boundaries, should perform all roles and functions. Indeed, such an arrangement would go against one of the basic principles of institutional design that operators should not set policy priorities and regulate themselves. Box 2 illustrates this point with reference to England and Wales.

Given that governments typically have limited financial and human capital resources which they are able to devote to the water sector, it makes sense to harness the resources of other players wherever possible. A more coordinated approach to financing would have to consider the scope for functional unbundling, along with the reforms which would be implied (plus the required capacity building) to allow non-state actors, markets or social institutions to function successfully. Any decisions about functional separation would have to be taken with care to ensure sufficient human capacity to allow the separate units to be well run. Moreover, there are conditions under which unbundling can actually reduce the funding options and increase the cost of capital.
Even if all the opportunities are taken to involve other actors and non-public budgets in financing the sector, large areas would remain where public responsibility and finance would be the only economically or politically feasible options. There are four major reasons why this should be so, which will be addressed in the following section. Although these reasons strongly suggest the need for sig-

Box 2: The Regional Water Authorities in England and Wales

Under the 1973 Water Act over 1400 separate public bodies responsible for some aspect of water management were swept away and in their stead ten multi-purpose agencies, the Regional Water Authorities (RWAs), were created. These were 'expert' run organisations with boundaries determined hydrologically and with responsibilities for all aspects of sector management along the water supply chain, from source development and catchment management, supply delivery to waste water collection and treatment. They were also responsible for water abstraction licensing, pollution control and river water quality, drainage and flood management, fisheries and navigation.

The logic behind the administrative reform was very much that resource productivity and the coordinated provision of water services could only occur if one body had total responsibility. Until 1983 the pretence, if not the reality, of democratic representative control was maintained since the majority of Authority members were delegates from local government, but they were replaced by small boards appointed by central government. The National Government regulated some aspects of RWA activities, largely concerned with technical and service standards and borrowing limits and rates of return on capital, but that left them with a considerable degree of autonomy to determine operating practices and funding priorities. Any conflicts of interest were mediated in a non-transparent way with the outcomes determined by power relationships within the agencies.

Classic poacher-gamekeeper problems arose. Not only were the RWAs the main users of the available water resources but they also regulated the abstractions of all other resource users, including major industries; their waste water treatment plants were the main source of river pollution and yet they regulated themselves as well as all other wastewater and effluent dischargers. The total monopoly enjoyed by the RWAs became a critical issue when the Thatcher government proposed privatising them in their entirety, including giving ownership of the resource to the private sector.

Following opposition from the public and, perhaps more importantly, business interests, some functional unbundling took place. Water and sewerage companies were created and sold to private shareholders, but resource allocation, river water quality, catchment management, flood control and indeed all other river basin functions were retained in the public sector under a National Rivers Authority (NRA), now part of the Environmental Agency. The NRA regulated the water abstraction and waste disposals of the private water companies, a separate economic regulator (Ofwat) was created to regulate their economic performance, including protection of customers from monopoly abuse, and an Inspectorate monitored drinking water quality; in other words there was also regulatory unbundling.

nificant financial contributions from state budgets, they do not rule out the possibility of additional funding from other sources, which will also be explored.

Functional characteristics and the need for public funding

Public Goods

It is a widely accepted view that public goods or services need to be state provided and funded. Defined simply these are services provided to benefit communities (or an economy as a whole) rather than specific individuals. The argument for public funding is that since the benefits are enjoyed collectively it would not be possible to charge beneficiaries directly through user fees. It is further argued that commercial loans or equity capital cannot be attracted simply because it would be impossible to recoup the investment costs in the absence of the ability to charge beneficiaries.

Although the public good concept enjoys wide currency, it has elements of ambiguity. There are different notions about what constitutes public goods and disagreement over whether they all need to be financed by subsidies from the public purse. From an economic perspective a public good has two characteristics:

- *Non-excludable.* Once it is provided, it is impossible to exclude any user from enjoying its benefits. This implies that a private provider would be unable to enforce payment from users, the so-called free rider problem.

- *Non-rival.* One person's use has no effect on the amount available for others. Thus there is no economic case for charging for it – using price to ration service quantity would be pointless and would result in sub-optimal use.

Some parts of the water sector clearly qualify as public goods according to the economic criteria. Policy making and strategic planning, hydrological monitoring, resource protection, maintenance of wetland biodiversity and flood control are just a few examples of functions which meet the criteria, as are the participatory, coordination and informational services that are very much part of the IWRM process. It is not easy to conceive of these functions being funded other than from public budgets, except as has been mentioned earlier when they can be delivered at a small spatial scale by community organisations or social institutions. There are, however, countries where earmarked taxes or levies are imposed upon major water users to help pay for such public good functions.

It is not always the case however, that services which meet the economic public good criteria cannot be funded by some user charge or levy and cannot

attract private investment capital in some form. Municipal waste water treatment and the protection of water sources from pollution are both public goods but fees and taxes can be levied – in these cases not from the collective beneficiaries of a cleaner environment but from the waste generators under the polluter pays principle.

Likewise, flood and catchment protection, which have clear public good characteristics, do not have to be funded solely from public subsidies. Flood plain protection fees and development levies are possible if local governments or river basin authorities have appropriate powers and capacities to enforce revenue collection. Rather similar funding opportunities arise in the catchment management case where it may be cheaper to pay landowners to change farm and forestry practices than it is to undertake the expensive treatment of polluted raw water supplies or downstream flood protection measures.

Another possible funding model for public goods arises if public or private operators are multi-functional. With 'bundled' services it may be feasible to cross-subsidise the public good functions from profitable revenue raising services. Although functional cross-subsidies may be regarded as inefficient and creating distortions in the market for goods and services, the reality is that they are pragmatic funding solutions which have been widely employed in most developed countries for decades. Water supply has frequently been used to subsidize such public goods as hydrological monitoring, waste water treatment, storm water drainage and ecosystem protection. One example of cross functional subsidization occurs in the Netherlands Water Boards, which are governed by stakeholder councils. These fully fund all their operations which include public goods such as flood protection, pollution control, waste water treatment and the management of inland waterways from a pollution levy and water board 'tax' based on the size or economic value of the property. A key feature is that funding decisions are made transparently with the active involvement of stakeholders.

Box 3 gives a more recently established case from the Philippines where a wide range of fees are employed to fund both public and private goods and services. For such multi-functional authorities to work effectively they need to be properly structured and empowered, with sufficient financial autonomy and public legitimacy.

Merit goods

Merit goods and services are those which 'society' deems individuals should have even if they are unwilling or unable to pay for them. As with public

goods, the beneficiaries cannot be charged (at least not in full) for the services they receive so there is a strong case for suggesting that public funds should be employed to fund, in major part, their provision. This would include the merit good element in the development of hard and soft water resources management infrastructure. The merit good issue is clearly important for those countries where millions of people lack access to clean water and basic sanitation and where rural communities do not have the water supplies needed to improve agricultural productivity and reduce poverty and hunger. However, while the international community may deem that access to such basic services should be provided, national governments might not in practice have the means or the same sense of priority, given the many demands on their limited financial resources.

It has usually been argued that the most efficient way of dealing with the merit good problem is through targeted subsidies paid out of public budgets to specifically address the affordability problem for the very poor. Typically, however, a more normal practice has been to employ the merit good arguments to justify the blanket subsidies made to water and sanitation and irrigated agriculture. As is very well known this benefits the wealthy much more than the poor. Importantly, by using funds to provide private goods for people who can afford to pay for them not only is the total amount of finance available for water resources management and public good functions considerably reduced but also demand pressures on the water resources base are exacerbated.

There are examples of targeted subsidy schemes of the ideal type, most notably the much quoted Chilean case (Gurria 2006; Peña, Lurashi and Valenzuela 2004, Rees 2006), where individual low income users pay a proportion of the provision costs and the rest is provided by national government. Such schemes do, however, require quite sophisticated social security systems and good administration, conditions which do not apply in many developing countries. Another form of subsidy for poor users is more common and more easily applied; namely to employ cross-subsidies from other users of the same service. While from an economic perspective this creates market distortions, cross-subsidies can be an important funding source to reduce the pressure on public budgets. In South Africa, for example, the decision was made to give households a free basic water supply quota to avoid the need for poor people resorting to unsafe supplies. Although centrally provided funds are used to defray the costs in many municipalities, in those which are economically stronger cross-subsidies from larger water users, including industry, are employed (see Box 10 page 40 for further details about the funding arrangements in South Africa).

Box 3: Laguna de Bay Development Authority, Philippines

Laguna de Bay, close to Manila, is a large freshwater lake, one of the largest in Southeast Asia. It is a traditional fishing ground for the local population and a source of water for agricultural, commercial and domestic use. It contributes to hydropower generation through a pumped storage power plant supplying the Luzon power grid. The growth of industry in the watershed, which now supplies one-third of national manufacturing output, has caused serious pollution of the lake, which threatens the fishing industry and other users.

The Laguna Lake Development Authority (LLDA) was formed in 1996 to promote balanced use of the Lake's waters. The Authority has the authority for environmental protection and regeneration, and powers to promote the sustainable development and use of the waters, fisheries and wetlands. It is an independent body through a special charter, receiving no funds from the national budget and self-supporting through its regulatory and environmental fees.

Its revenue sources are as follows:

- Processing fees for the review and approval of plans.
- Fees for the beneficial use of lake water for fisheries, recreation, municipal, industrial, agricultural, navigation and waste disposal purposes.
- Fees to compensate for damage done to the lake from water pollution. (LLDA operates an environmental user fee system, set at a level that is an incentive to firms to treat their wastewater instead of releasing it untreated.)
- Fish pen, fish cage and related fees (this is one of the largest revenue sources; licences are issued to the highest bidders for specific areas).
- Fines and penalties for violation of the Authority's rules.
- Processing fees for clearances and permits.
- Discharge fees and fees for permission to transport oil and other petroleum products across the Lake.
- Ferry clearance and permit fees.
- Fees for laboratory services.
- Receipts from the production and sale of fish etc., from LLDA projects.
- Shoreland management and lease fees.

LLDA has been considering the creation of a trust fund with its revenues that can be used to finance environmental and water-related projects. There are also proposals to charge fees to all users for water abstraction, and to create a subsidiary company to implement developments which would have more commercial and financial freedom.

Source: ADB presentation to the Camdessus Panel, April 2002.

Market Failures

The unfettered operation of markets will not of itself lead to water "results" which are economically efficient or in the public interest. Market failures are very widespread in the water sector. Public and merit goods are themselves sources of market failure: others include non-existent markets for some services, the pervasive existence of externalities, natural monopoly and the non-representation of future water users (a sustainability issue). The existence of such failures can lead to the view that markets and private actors have no role in the sector and that public ownership, management and regulation is the only answer. Natural monopoly characteristics in the delivery of water supplies and the removal of waste water have been used, for example, to reject private provision but there is no reason why a public monopoly service should function any better than a private one. It should be noted that 'private' means any non-governmental entity, ranging from small scale charitable and community organisations to local private companies, international NGOs and transnational corporations. Also, public operators can be and are funded through private finance.

For both public and private service providers, natural monopoly is an argument for regulation by public action, not for public provision or public financing (Nickson and Franceys 2003). Likewise, externalities and non-existent markets require public regulation at the relevant spatial scale but do not mean that state provision of services or funding from public budgets is necessary. In addition, neither the regulation of natural monopoly nor externalities need be funded solely, or even mainly, from the public purse.

There are a range of mechanisms through which service 'users' of one sort or another can bear at least some of the regulatory costs (some of these have been referred to already in the section on public goods):

- *Regulatory fees and levies* – it is now increasingly common for regulators (or their governments) to recover the costs from the regulated parties. In the UK, for example, monopoly regulation is funded from a levy on the regulated private companies, while the regulation of water abstraction and wastewater discharges is funded in a number of countries through license fees and charges.

- *Payments for ecosystem services* – the regulation of environments and habitats which have to be preserved and managed for the benefit of water supply, flood plain dwellers and the range of 'downstream' services provided

by environmental flows can be funded through 'victim pays' schemes. Upstream providers of potential environmental services are paid to provide them or to abstain from practices harmful to the resource and dependent ecosystems. In Europe, for instance, farmers are paid for a variety of environmental stewardship measures, including reducing nitrate contamination – these have typically been through direct subsidies from public budgets. However, user payments through levies on water bills, fees for recreational uses or fisheries and levies on flood plain dwellers are all potentially possible[3].

- *Pollution markets* – pollution markets can be created when environmental regulators set standards for the release of water pollutants and polluters who can beat the standards are allowed to benefit from their virtue by seling excess 'pollution rights'. In Chesapeake Bay, for instance, farmers that can demonstrate that they have changed practices to reduce their non-point source emissions of nitrogen and phosphorous can sell their "nutrient credits" to other producers. Incentives for pollution abatement have thus been introduced into the system and the abatement costs are borne privately.

- *Pollution taxes and abstraction charges* – these go beyond regulatory cost recovery systems to pay notionally at least for the damage caused or opportunity costs lost as a result of wastewater discharge or water abstraction. In reality, as damage cost estimation is notoriously difficult and time-consuming (the transaction costs are high), most charges are fixed to cover the costs of schemes to make environmental improvements, build wastewater treatment plants and so forth. For example, most countries in Central and Eastern Europe have developed Environmental Funds, derived from pollution and environmental charges and earmarked solely for environmental improvements. Such 'earmarking' schemes increase public support for pollution taxes but are unpopular with Finance Ministries since they undermine their ability to control funding priorities and the principle that revenue raising and public expenditure should be separate decisions.

There are many precedents for these types of user charge or trading schemes which reduce the burden of regulating externalities and other market failures on public budgets. No-one pretends that they are politically easy to introduce, powerful vested interests will oppose them and public support will only occur if the implementing agencies are seen to be legitimate, transparent, competent

[3] In France there is an example of 'victim payment' being organised privately without a public sector intermediary. Nestlé, a producer of bottled mineral water, has bought and reforested farmland and compensated farmers who reduce the nitrate and pesticide pollution within the catchment of the mineral water spring.

and un-corrupt. This suggests that reform in public administration and capacity building will need to accompany any attempts to capture new funding sources. However, the alternative of relying solely on subsidies from public budgets is likely to be that important regulatory and environmental functions are neglected completely or are grossly under-funded.

Social-cultural and political factors

Public budgets continue to be used to provide and subsidise private goods and services, including piped water supply and wastewater removal from individual households, and the supply of irrigation water to individual farmers through managed systems. Together these services account for a high proportion of the total subsidies going from public budgets into the water sector. Some groups have ideological objections to the reduction of public subsidy, the increased use of user charges as a revenue source and the involvement of profit-seeking private enterprises in the provision of services essential to life. Others support the status quo because it serves their private interests; once subsidies have become established it is extremely difficult to remove them particularly as most have been captured by powerful political elites and interest groups.

There are however, major opportunity costs involved if unnecessary subsidies mean that the common mismatch between available public finance and needs will continue. If increased revenues are not obtained from those able to pay for the services they receive, there is little chance of providing for the un-served poor, ensuring that the water resources base can be managed to promote socio-economic development and protecting all future users dependent on the sustainability of the resource, the environment and related ecosystems. It is clear that public subsidies will continue to be needed; the critical question is who and what functions or services should receive them.

For urban water supply and sanitation functions, it is difficult to find compelling intellectual reasons why they should not over time become largely self-financing, gradually reducing dependence on public budget funding and able to attract loan, bond or equity finance. There are, of course, formidable practical barriers to the achievement of such objectives under real world conditions; lack of administrative capacity, the difficulties involved in overcoming public opposition to rate raises, the tendency for governments to intervene in revenue raising decision-making for short term political reasons, and the lack of incentives for providers to embark on the difficult financial reform process are just four of such barriers. Nevertheless, there

are examples where providers are evolving from dependence on public budgets towards commercial and financial self-sufficiency. One such example is given in Box 4.

In urban water and sanitation cross subsidisation is an option, provided it does not compromise the providers' financial sustainability. However, there may be a need for some continued public subsidy to cope with the payment capacity of very poor consumers and the extension of services to peri-urban areas. It is likely that public budgets will also be needed to support rural water supply and sanitation, as these are unlikely to be able to recover more than a proportion of investment costs.

In almost all public irrigation schemes the prices charged for water are well below full cost recovery levels and usually only a fraction even of the recurrent costs of operation and maintenance. Many farmers, large or small, pay no formal charges for their water. The present low levels of cost recovery from public irrigation schemes results in a vicious cycle of build-neglect-rebuild which drains public coffers and deprives other parts of the water sector of funds. Irrigation subsidies persist for a number of reasons – as part of policies of cheap food and food self-sufficiency, to help relieve rural poverty and underemployment, or as populist gestures by ambitious politicians. The vicious cycle referred to above is often associated with poor levels of service, swollen bureaucratic cadres, and low-level corruption, which makes farmers resistant to paying higher charges. Greater water tariffs are less likely to finance improved services where such revenues flow back to the Treasury and the irrigation agency has no control over their use. For such reasons as these, it is only realistic to expect public budgets to continue supporting irrigated agriculture. There is, however, a strong case for persisting with efforts to raise more revenue from users, while devoting more of the available public subsidy – and aid – to supporting the major structural changes in irrigated and rain-fed agriculture called for over the next few generations, most recently by the new Comprehensive Assessment of Water Management in Agriculture (Molden, ed. 2006). State funding could also be used to attract commercial finance and equity in innovative partnership contracts.

There is also a case for public subsidy of what will be private goods in the case of some large-scale infrastructural investments. This could arise when the investments are not financially viable in terms of the discounted revenues received but are economically viable in terms of the economic, social or health

Box 4: Ho Chi Minh City Investment Fund for Urban Development, Vietnam

HIFU is a state-owned financial institution directed by the City's People's Committee. It was founded in 1997 as a way of making more effective use of the state budget, and to mobilise funds from other sources for all the main types of urban infrastructure. HIFU has equity capital of around US$40 million.

The City has assigned part of state capital to HIFU with the object of converting the previous urban infrastructure subsidies into fully repayable loans, in line with official policy. The Fund has lent to projects of clearance, building and urban regeneration, and has taken over management of the city's Pollution Minimisation Fund. Through its loan syndications, HIFU has drawn other lenders into financing large infrastructure development projects, with an average leverage of 1 to 4. It has also set up a subsidiary Infrastructure Investment Company for taking up operating concessions, BOTs, etc.. HIFU was authorized to raise US$127 million in municipal bonds in 2003, repeated in 2004. These bonds offer long-term stable funding at affordable cost, on terms matched to the maturity structure of infrastructure projects.

HIFU's agenda for the future includes work with international financial partners, developing credit rating, increasing its capital base, developing capacity to meet international standards – spearheading improvements in national financial management, accounting, transparency, autonomy, and so on.

Source: Presentation by Giao Thi Yen at IADF International Conference on Financing Municipalities and sub-National Governments, 2004.

benefits to communities as a whole. As Hutton and Haller (2004) have pointed out, project appraisals may significantly undervalue water infrastructure investments if they neglect the fact that many benefits will not flow back into the sector but will come back in reduced health costs, improved labour productivity and greater economic activity.

3. MULTI-LEVEL GOVERNANCE

Up to this point the paper has concentrated on roles, functions and services. Its focus now shifts to actors and the scale at which they operate. These two interrelated issues affect access to, as well as the sources of, funding for water.

The diversity of actors

Typically water sector responsibilities are scattered over many different public agencies, operating at varying spatial scales and with very different organisational characteristics. Many are branches of government; others have a more autonomous status. Some responsibilities are also delegated, by design but more frequently by default, to private sector agents, ranging from multinational companies, through NGOs, charities and community organisations, to individual water vendors. Hybrid organisations, such as public-private partnerships (PPPs) or tri-sector partnerships which involve civil society actors, may also be involved in the sector, as well as specialist financial or development intermediaries. In addition, there are functional and spatial areas governed not by specific formal organisations but by institutions within the governance system, such as markets, common law or social conventions.

In any society the network of actors involved in water governance will have evolved over time and is unlikely to have been designed in a "fit for purpose" manner. The resulting governance structures vary greatly between countries and it is now widely accepted that there is no one 'ideal' system which meets the needs and capacities of all countries (Molden 2007, chapter 15). This clearly implies that there is no universally valid blueprint for structural reform.

For a more coherent approach to water financing to be taken three things are important:

- governments embarking on sectoral reform recognise the financial advantages and disadvantages of different sectoral management models,

- there is an awareness of the risks, as well as the opportunities, involved in attracting non-state funding into the sector, which could have wider implications for governance. (For example there may be a danger that private commercial finance, foreign aid and development finance 'cherry-pick' areas, projects and organisations which can be sound and self-financing, leaving the public purse to cope with everything else but without cross-subsidy or risk pooling opportunities),

- a financing strategy is developed to ensure that appropriate funding sources are employed for different water management functions and for the diversity of sector actors.

Models of water sector management and financee

Current debates about management and governance structures have focused on three related issues:

- the choice between centralised control and the delegation of powers and responsibilities to the 'lowest appropriate decision making scale',

- the extent to which governance structures should reflect the need to man age water resources and related ecosystems at a hydrologically relevant scale (usually considered to be the river basin) rather than the way human beings choose to organise their economy, societal interactions and political processes,

- the role and possibility of promoting PPPs or tri-partite partnership arrangements with civil society.

Our concerns are not with the general rights or wrongs of the different models but with the implications for sector financing.

Centralisation, decentralisation and delegation

Although there has been a widespread movement for central governments to devolve responsibility for water sector functions and services to lower tiers of government or specialist agencies, the most common financing model is still for central government to be the 'controller' and allocator of available funds. Much finance (tax revenues, foreign aid in grants or soft loans, proceeds of bond issues, etc.) is channelled through the National Treasury. In addition, in some countries revenues accruing to local government and other water service providers from water sales and environmental taxes may also have to be returned to the central government.

This situation has advantages:

- budget allocations can reflect national priorities and can promote equity between richer and poorer sections of the community or parts of the country,
- borrowings can be closely related to national financial capacity,

- borrowings can be directed at water resource management functions which yield shared long term benefits across several local governments or water service providers,

- the national treasury can normally get the best terms in financial markets,

- international and bilateral donors and multilateral financing institutions (MFIs) have traditionally been reluctant to deal with, or precluded from dealing with, sub-sovereign bodies.

However, there are also clear and well known disadvantages. National governments are still inclined to give low priority to the water sector and funding decisions are highly politicised. There are significant dangers that the management of public funds becomes 'autocratic' or bureaucratic. In the former case budgets tend to become "the unaccountable personal financial fiefdoms of ministers" (Roberts 2003, section 2.4). Bureaucratic systems designed to reduce clientism and corruption, become layered in complexity, with strict rules, multiple authorisations and lack of flexibility, leaving available funds unspent and unallocated. In addition, funding for water purposes may be unreliable as a result of government responses to the national fiscal situation and to new political pressures.

Decentralising responsibilities for service provision and some elements of water resources management may help overcome some of these problems as long as there is also a transfer of power over tariff setting and funding. Relating finance more closely to provision has several benefits:

- facilitating needs-based and demand-responsive approaches,

- improving accountability – it is clearer how much is needed, where the funds go, how much they cost and what needs to be done to balance the costs with revenues,

- improving predictability, since operating agencies have greater certainty about their future finances and are less dependent on arbitrary decisions of central government,

- giving local authorities or communities a stake in the project or service concerned and reinforcing their commitment to cost recovery,
- enabling new local provision partnerships to be created with civil society groups which can help bring in new funding resources, including 'sweat equity'.

On the other hand decentralisation also has its risks and disadvantages. It can have disastrous consequences for services if functions and duties are devolved to sub-national bodies lacking the human resources to handle their new responsibilities and if such responsibilities are transferred without appropriate funding or adequate revenue raising powers. Decentralising water functions and services may:

- increase service costs if economies of scale and scope are lost and local entities embark upon competitive resource developments,

- lead to the transfer of externalities (e.g., pollution or flood risk) from local providers to other government jurisdictions or agencies,

- reduce still further the funding of the range of water resource management functions, including institutional development, which yield benefits dis persed over space and time,

- reduce the scope for risk pooling and spreading so making individual service providers less able to manage risks from, for example, climatic variability,

- 'politicise' water provision and reduce the priority given to sanitation, pollution control or ecosystem protection due to local power politics. This would affect services to the poor and marginalised,

- increase local indebtedness and cause problems for macroeconomic policy,

- decrease the scope for attracting commercial finance and increase the cost of funding.

Many of these problems can be overcome. Care should be taken with what is delegated and effective regulatory systems put in place. Such systems would not only be needed to promote efficient and good quality service delivery but also to ensure coordinated catchment management and resource developments and the control of externalities. Measures would also need to be taken to build managerial capacity. The transfer of management and funding responsibilities is not a single task; a package of measures are required some of which will need considerable investment in human capital. It is vital that before embarking on decentralisation policies countries look carefully at the financing implications and the availability of human capital, and ask what can be realistically devolved, to whom and how will they access the required funds.

Changes in the supply of finance are also facilitating lending to sub-sovereign agencies and are helping to reconcile financial economies of scale with decentralisation. The Camdessus report has increased the presumption in favour of greater sub-sovereign financing, provided it is done responsibly and does not

Box 5: Growth of sub-sovereign finance

Agencies that have traditionally lent against central government guarantee (sovereign risk) are starting to develop experience taking direct sub-sovereign risk. The European Bank for Reconstruction and Development (EBRD), which has the longest experience of sub-sovereign lending, has a number of examples in Eastern Europe of "graduating" from sovereign to sub-sovereign lending, and then to the third level, that of corporate or project risk – where the loan is secured by the creditworthiness of the utility or company, or the expected cash flow of the project itself. In this process the "guarantee capacity" of the central or municipal government is released for use on essential services that do not have revenue generating potential. Lenders can obtain the political comfort they need by means of Municipal Support Agreements, under which the local government undertakes to ensure that the borrowing entity lives up to its commitments on tariffs. and so on.

A number of countries are encouraging the involvement of credit rating agencies with sub-sovereign bodies. The agencies give an objective and reputable assessment of the credit standing of municipalities, utilities, environmental funds, etc., which, if positive, can enable them to raise funds on better terms. This encourages the growth of a local capital market by giving lenders more reliable information, and creates benchmarks and standards of good practice.

Some municipalities have successfully raised their own bonds for infrastructure finance. Sometimes this is with the assistance of central government guarantees, though not all governments encourage local bond issues. Multilateral financing Institutions (MFIs) such as the World Bank, the International Finance Corporation and the regional development banks can help local bond issues by providing lenders with Partial Credit Guarantees or using the A and B Loan system, in which holders of B loans have the same security as the A loans made directly by the MFIs themselves. USAID's Development Credit Agency has also backed local bond issues for water in several countries, some of which use the model of revolving funds, with an initial injection of grant funding, and sustained by risk sharing with local financial institutions.

Sources, Asano 2006; IWMI 2006; Law 2003, www.pub.gov.sg

create unsustainable debt. There have been some interesting and encouraging developments as Box 5 illustrates.

Raising finance typically has indivisible overhead costs which are much the same for large or small sums. Local service providers may also be perceived as less credit worthy and more 'risky' as borrowers. Both factors can raise the cost of capital. In some cases such problems can be overcome by sovereign loan guarantee offered by central government or by the use of guarantees offered by international agencies. However, there are two other options which are attracting greater interest and have been applied with some success:

Box 6: Specialised sector intermediaries

Dutch Water Bank

The Nederlandse Waterschapsbank NV was formed in 1954 after the disastrous flood of the previous year, and was in effect a "borrowing alliance" of the individual water boards, which were not strong enough on their own to attract the necessary long term funds for reconstruction on suitable terms. The Bank is a public limited liability company whose shareholders are public authorities and whose borrowers have also by law to be public bodies (provinces, municipalities, Water Boards, water supply companies, etc.). All its business is done under state guarantee. It borrows long term capital on international markets at fine rates, and acts as the "house bank" to the water boards. It is a lean (35 staff), cost-effective, low-risk operation with AAA rating, and as a result lends at very favourable rates.

Source: van Dijk and Schwartz (2002).

Environmental funds

Most countries in Central and Eastern Europe operate Environmental Funds (OECD 1999), independent of the central budget, using revenues largely derived from environmental and pollution charges. They spend the proceeds in subsidies and loans for various kinds of environmental improvements (including wastewater treatment, remediation of polluted water bodies and watershed protection). Poland also has an Ecofund with revenues obtained from debt-for-environment agreements with creditor countries. The fund was created in 1992 following Poland's debt relief agreement with the Paris Club, which allowed creditors to convert up to 10 percent of debt for environmental purposes, including anti-pollution programmes for the Baltic Sea (OECD/PHARE 1998). There is a growing practice for credit rating agencies to report on environmental funds, which exposes their operations to stakeholder groups and the financial community.

- *specialised sector intermediaries,* such as national development banks, infrastructure development corporations, water banks and environmental funds, can borrow on advantageous terms and funnel funds to local agencies. Box 6 gives examples of a specialised national water bank and the growing use of Environmental Funds in Central and Eastern Europe. However, not all financial intermediary bodies have a good track record, particularly if they become politicised and bureaucratic and make funding choices on political rather than financial grounds.

- *credit pooling* – combining the creditworthiness of a number of individual borrowers, such as municipalities, can enhance their collective creditworthiness. For this to be effective there needs to be a reserve fund or pledges to cover a default by a particular participant in the scheme. Pooled municipal bonds have, for example, been floated in India and elsewhere, typically with external guarantees.

Most discussions of decentralised financing have focused on funding for local governments or specialist water and environmental management agencies. But there is an even smaller scale of providers and individual service users that also have major funding needs. The role of microfinance can be critical for poor communities although it is not without its pitfalls, schemes have not always been successful and work needs to be done to improve their impact (Insights 51, 2004).

An interesting case of the way microfinance can operate is the use of the Grameen Bank to channel ODA, from the Japan Bank for International Development, to rural communities in China (Gurria 2006, p. 44). Funding, guaranteed by the Presidency of China, allows borrowers to, among other things, build or repair wells and sanitation facilities; borrowing groups are created with responsibility for its members' repayment activities which has helped ensure a very high repayment rate. Grameen Bank micro-financing schemes have now been implemented in 34 countries and offer an important model for funding small scale improvements to water services, particularly in rural areas. As has been pointed out in the Comprehensive Assessment "Water for Food; Water for Life" (Molden ed. 2007), many farmers and community groups have the willingness to invest in productivity improvements on their own plots but can only do so if infrastructural or watershed management projects are linked to access to credit and to produce markets.

Reconciling hydrological management with human needs

From a hydrological viewpoint the River Basin Organisation (RBO) is an appealing model of water management and is being widely promoted and increasingly adopted; it is, for example, the basic organising principle behind the EU's Water Framework Directive. In practice, however, the RBO model has limitations and some attempts to implement it have been failures (GWP 2004). Moreover, "progress in establishing adaptive, multi-level, collaborative governance arrangements for river basin management has been weak, with undue emphasis on form (setting up river basin organisations) over process" (Comprehensive Assessment, p. 607). Agencies with management functions at the river or sub-basin scale can be of many different types. These range from multi-role and multi-functional operating and regulatory Authorities to those which basically are stakeholder consultative fora, which aim to promote consensus and co-ordination but have few powers. From a financial perspective, the latter type of agency has little significance, except that they almost inevitably will need support from the public purse as they will have no revenue raising powers.

Agencies with operational and regulatory functions will depend for their success on such factors as:

Box 7: France: balancing central, regional and local responsibilities

A number of national agencies are responsible for overall water policy formulation, legislation and regulation (Ministries of Environment, Sanitary and Social Issues, Agriculture and Forests, etc.), some of which provide services at district and local levels (e.g., monitoring and enforcing national drinking water quality standards, access by poor consumers, environmental regulation). These are funded from national budgets. The regulation of municipal water companies (mostly private) is funded from local taxes.

France is divided into six regional water agencies (Agences de l'Eau) corresponding to the main river basins. These are responsible for the management of water resources, including abstraction and discharges, in their respective regions. Their councils, which vote on their spending programmes, include consumers and other regional stakeholders, and representatives of the state and local governments. Funds are collected from levies on water users based on abstraction and pollution, with a contribution by central government in the form of subsidised loans[4]. Revenues are disbursed through Agences de Bassin to farms and enterprises undertaking environmental improvements or water management measures.

The formation of the six Agences in 1963 was a compromise between hydrographic factors (the existence of major river basins), the search for economies of scale, and the constitutional principle of "equal opportunity" requiring the levies to be equal in all regions, despite hydrological and environmental differences. The Agences are regularly accused of being unconstitutional, since their budgets are not reviewed by the national parliament, and their funds do not go through the national Treasury.

Municipal water and wastewater services are the responsibility of local authorities, who can either provide the services directly, or delegate them to companies, usually private, through management contracts, leases, or concessions. The most common form of contract is the affermage lease, under which the company leases the assets from the local authority in return for a fee, and collects revenues on behalf of the public client, a proportion of which it keeps. Investments are undertaken and financed by the municipality, often using loans from the central government on advantageous terms. Under concession agreements the operating company undertakes new investment, for which it arranges finance, retains revenues, and eventually hands the assets back to the local authority. Water consumers ultimately finance these various arrangements through tariffs. Municipal water services are broadly self-financing, with the exception of any concessional element in the Treasury loans.

Sources: Barraque 1998; Ballance and Taylor 2001.

[4] The high cost of complying with EU water directives has tended to raise the proportion of cost contributed by central government.

- careful specification of roles and functions to avoid the poacher/game keeper problem,
- creation of trusted technical competencies,
- broad stakeholder involvement and democratic checks on operations and performance,
- clear jurisdictional boundaries and appropriate powers,
- some financial autonomy and ability to generate sustainable revenues.

Properly constructed RBOs, with clear governance structures, can be a powerful way of coordinating activities in the river basin, regulating externalities and promoting conflict resolution through consultation and stakeholder involvement. Box 7 outlines the operation of the RBOs (Agences de l'Eau) in France. It should be noted that although the Agences have revenue raising powers they are not fully financially self-sufficient – subsidised loans are given by central government.

As seen in an earlier section there are some financial mechanisms to allow RBOs (lake basin or catchment management agencies) to raise revenues to offset their costs but, in many countries, their power to raise and retain revenue is limited, which means that important roles and functions are left under- or unfunded.

Partnerships

There is a sizeable literature on public-private partnerships (PPPs) to finance and provide water and sanitation services and to a smaller extent hydropower projects and irrigation infrastructure (e.g., the Guerdane scheme in Morocco, van Hofwegen 2006). Private companies can attract additional funding for such ventures insofar as they add financial credibility to projects and improve their cash flow generation. However, PPPs typically bring little new equity finance. Recent problems in some high profile concessions, with the inappropriate allocation of risk between partners, and with the use of inappropriate types of PPP have raised questions about their use, particularly in countries with weak governance systems and poor regulation. Box 8 gives an illustration of the difficulties involved in financing hydropower projects but the issues involved are common to most large-scale multi-purpose water infrastructure projects which involve very long pay back periods, the production of both public and private goods and have potential spin-off benefits outside the water sector.

More recently there has been a growth in the number of tri-sector partnerships involving public, private and civil society actors (e.g., Partners for Water and

Box 8: Risks and finance of hydropower projects

For a decade or more, financing of hydropower projects has been declining. This has largely reflected a decline in the number of dams and associated infrastructure being built. New proposals have aroused opposition from environmental groups and representatives of persons being displaced and resettled. There have also been concerns about the technical and economic performance of past projects, in such areas as cost overruns, construction delays, excessive sedimentation, overestimation of demand, insufficient consideration of alternatives, and so on.

Only a small proportion of hydro projects are privately financed. This is due to a combination of high front-end costs, high construction risk, environmental sensitivity, high capital intensity and heavy local costs, long payback periods, and potential conflicts between the interests of the system and the private developer. Most privately-funded schemes are small, run-of-the-river projects producing for base load, whereas hydro's true comparative advantage lies in the middle and peaking portions of the load curve, with storage, and with river basin management, irrigation and environmental externalities fully valued. Such schemes are rarely privately bankable.

The model of private financing enshrined in the concept of Independent Power Producers (IPPs) – used for both thermal and hydro projects in the 1990s – has been seriously questioned. Many projects have been abandoned or renegotiated, and there is a reduced appetite for them now on the part of investors, operators or lenders. The fundamental problem seems to have been the inappropriate application of the basic principle of risk management – that risks should be passed to those best able to bear them or who can mitigate them at least cost.

Under the IPP many risks were passed onto private partners that they were ill-equipped to shoulder – such as the construction risk on a unique site with significant unknown seismic, geological and hydrological properties, with major environmental and procedural risks. Lenders and agencies, for their part, are increasingly fearful of "reputational risk" from association with such projects. Private firms, and the banks funding their work, are resisting the assumption of these risks, except at very high risk premiums, which greatly add to the cost of the project. Such risks are de facto migrating back to the public sector sponsor, which calls into question the basis of the original pact.

According to one view, the logic of this trend is for the public sector utility off-taker to retain ownership and total control of the project at all stages, and raise funds by bonds backed by government and international guarantees.

Source: Head 2004.

Sanitation, Water and Sanitation for the Urban Poor, Building Partnerships for Development). Partnerships come in many forms but typically operate at a small spatial scale, have a pro-poor agenda and attempt to short-circuit cumbersome, inefficient and out-of-touch public agencies. Each partner commits funds or resources in kind to the venture, sometimes in unpredictable ways:

"Tri-sector partnerships are presumed to incorporate private sector funding and technical contributions, public sector monitoring and regulation, and civil society/NGO links with communities and households . . . In practice, the different organisations that come to the table may or may not offer what is expected of them. NGOs often come with funding and communities were often mobilised by public or private sector staff." (Caplan et al. 2001).

Not all partnerships have been successful and there is a major 'upscaling' problem; local involvement is critical and success often depends on the initiatives and commitment of individuals. However, such arrangements can be very important in rural and peri-urban situations to get services to segments of society that are frequently neglected and to bring in new sources of funding, including contributions in kind. Box 9 illustrates an approach used in the Sahelian region of Africa.

Box 9: Multi-partite partnerships in the Sahel

The Sahel Vert programme promotes social and productive projects (mainly water) in twenty-four villages (80,000 pop.) in Senegal, Mali, Burkina Faso and Niger. The total budget of the programme over three years is a modest 700,000 Euros of which 22 percent is contributed by the village communities, 39 percent by the French bank Credit Agricole Solidarite et Developpement, and the balance from the French NGO Eau Vive and voluntary contributions from Credit Agricole's employees.

For purely social projects 90 percent of funding comes from Eau Vive and the balance from the villages themselves. However, for productive projects a typical financial budget comprises 10 percent from the personal finance of the promoter, 40 percent from a local lender to the promoter, and the balance from Eau Vive. The local lenders can be banks, mutual credit groups, saving and credit networks, and so on. Up to half the lending risk can be covered by guarantees from Eau Vive or the village, or the collateral of the equipment provided.

Source: Presentation by Christian Houdus to Camdessus Panel, October 2002: auvive@wanadoo.fr

4. MORE COHERENT WATER FINANCING

To recap, there is no ideal governance structure for the water domain, nor a unique financing solution for the efficient, equitable and sustainable operation of the system as a whole. What matters from a coherent financing perspective is that:

- all the water resources management and service provision roles and functions are adequately covered,
- there is clarity over who does what (and mechanisms to coordinate their activities where necessary),
- those with responsibilities have the capacity and willingness to undertake and secure funding for them.

It follows that the main steps in framing a strategy for water financing are:

- map who does what,
- establish which funding sources could be suitable for each function and the potential mechanisms available to harness them,
- identify the funding gaps and areas where current governance arrangements are creating funding problems.

Many countries lack the financial capacity to cover all their development needs. Many others are hampered by problems in their governance structures which depress internal revenues and restrict the ability of service providers to attract, employ and repay investments. Still others are hampered by bureaucracy, which blocks the flow of public funding and leads to the under-utilisation of allocated government budgets; such problems have been reported in a number of countries in East and West Africa (GWP/EUWI 2007). Improved public and financial administration will be vital in ensuring that available funding can flow to water sector projects and programmes, but reforms to water governance are essential if funding is to go to areas of real need and to bodies with the capacity to spend it beneficially and recoup the costs involved on a sustainable basis. Sectoral reforms which neglect financial accountability, the ability to raise and sustain revenue flows and improvements in managerial capacity are destined for failure – public goods and integrative services will continue to be neglected and under-funded, the 'cherry picking' of financially sound projects and service areas will increase inequality in provision – and the infrastructural investments made will not realise the expected benefits.

This section proposes a small number of basic principles for devising a more coherent system of finance for water resources management and service delivery. It makes three main points:

- Sources of finance will depend on the management functions in question ("tailored for purpose") and on the extant organizational structures (their scale and functional responsibilities). The achievement of financial coherence will result in a variety of funding sources combined in different ways to suit country specific conditions.

- Public finance should be concentrated on public and merit goods; financing international externalities is a special case of this.

- "Private goods" in the water domain should, in principle, pay for themselves.

The section ends by restating the case for capacity building by public as well as private and not-for-profit agents.

Finance tailored for purpose

It is only realistic to expect different parts of the water sector to obtain their financing in different ways. Up to a point, this diversity is a healthy sign. However, the different financial threads should hang together. Coherence requires that the arrangements should be logical, affordable (to both users and taxpayers) and therefore likely to be sustainable. Coherence also means that revenue contributions are required from service users to reduce dependence on public funds and focus such funds on those functions or groups in society with no other realistic funding options. South Africa is an interesting case of cost sharing with a system attempting to balance issues of affordability and equity with the need to conserve scarce public funds (Box 10.).

The South African case shows how funding sources can be combined in response to different policy objectives and socio-economic conditions. These sources include cross-subsidies between users as an alternative to direct subsidies from national government revenue. Such cross-subsidies can have a vital role to play in the many countries where the poor simply cannot afford to pay, and they have been used for decades in a number of developed countries as a pragmatic solution to a financing problem. The scope for user cross-subsidization may be reduced in decentralised systems if the poor are spatially clustered, unless some mechanisms are in place to ensure that "rich" jurisdictions support "poor" ones.

As mentioned earlier, opportunities for cost sharing through functional cross-subsidization may also exist depending on the package of responsibilities given to particular water management (i.e., whether functions are 'bundled' or unbundled). Multipurpose water management agencies have various possible sources of income, and could be self-financing if they were properly structured and empowered, and also had sufficient financial autonomy. Revenues from profitable functions could be applied to cross-subsidise "public good" services. Although such cross subsidies might not be economically efficient and will not be acceptable everywhere, they can be a useful additional revenue source. However, these agencies are liable to accumulate monopoly power, and their internal priorities for spending or decisions on revenue raising are not guaranteed to serve the wider public interest. They may furthermore, lack the capacity or incentives to operate in a technically efficient, equitable and sustainable manner. It is therefore, important that institutional arrangements are in place to ensure transparency and accountability.

Unbundled services reduce the scope for cross-functional subsidization, but they may allow different actors to provide and secure financing for the different functions that occur along water service delivery chains. Certain functions may be best delivered by technically competent, independent agencies or companies, capable of economies of scale and able to attract commercial funding and equity finance. Major infrastructure construction or bulk water supply delivery could come into this category. However, other agents may be better suited to delivering local services that are demand-responsive and suited to the financial capacities of particular communities – basic sanitation for the poor is a likely case in point (Rees 2006).

Breaking down the delivery chain has the additional advantage that some checks and balances are introduced into the system. The provider of one segment will be in a position to scrutinize the performance of others in the chain. Such a segmented system is not necessarily suitable for all countries and situations, involving as it does a great deal of trust between the different segmental actors and clear financial and contractual arrangements between what are in effect partner operations. Nevertheless, it is an option worth considering, harnessing the resources of community organisations, NGO, charities and small scale private operators.

An issue that arises in this context is how a segmented system would affect borrowing terms. Service providers or user groups may be self financing and able to repay loans on conventional terms, but may still be unable to get access

Box 10: South Africa: coherent finance and affordability

The policy framework for national water resources was stated in 1997, enacted in 1998 and completed with a strategy statement in 2002. The state is custodian of water, but licences for its use are issued for up to forty years. Land ownership is de-linked from access to water. There is a high level of user finance: bulk water is priced to cover the costs of infrastructure development, return on assets, resource management and economic scarcity, while metropolitan and industrial water and single user developments are generally fully funded, and draw finance from commercial sources. Exceptions to "user pays" include poor farmers (where tariffs to cover O and M costs are being phased in over five years), environmental protection and international obligations. Water resource development in South Africa is expensive and there are no cheap and easy solutions at the current stage of development, but funding has largely been successful, due to the large historic level of public investment, the level of economic development, and the large internal capital market.

For water services, rural programmes are funded by a combination of user payments, cross-subsidies, and transfers from the central budget to weaker municipalities. People were generally willing to pay for water, but many could not afford the amounts required for basic minimum needs, and were resorting to unsafe supplies to avoid payment. Hence the decision to supply all households with a free quota of 6 kl (6m3) per month, with a stepped tariff applying to consumption in excess of this. Within economically stronger municipalities the service is funded by cross-subsidies from larger water users and industry: for others, the majority, the Equitable Revenue Act provides for central revenue sharing to defray costs. A small number of municipalities have operating agreements with private companies.

The Government provides various financial support mechanisms. Grants are available for feasibility studies, training for Water User Association leaders and for enabling poor farmers to buy water licences. Funds are also provided for infrastructure (subsidies for on- and off-farm irrigation infrastructure, direct investment in major works, etc.). The Government can subsidise "social" elements of a project, comprising the costs of users who cannot afford to pay. The Department of Water Affairs and Forestry (DWAF) guarantees some water lending by the Land Bank and commercial banks.

Sources: Presentations to the Camdessus Panel by Rt. Hon Ronnie Kasrils and Mike Muller, November 2002; Presentation by Barbara Schreiner to Working Group on Financing Water for Agriculture, Pretoria 2005.

to local finance. In some cases commercial loans are not available at all or, because of the perceived high default risks involved, attract very high interest rates. Even when official development assistance (ODA) or loans from MFIs are available these typically go initially through national treasuries, and when they trickle down through the governmental system each agency involved adds the odd percentage point to the interest rate[5]; so that by the time it reaches the community level it is no longer affordable. Mechanisms to get the loans directly to small scale providers, such as the micro-financing institutions and credit pooling arrangements discussed earlier, are of vital importance.

Public finance for public goods

The use of public finance to promote and support services that can be clearly identified as public goods is an impeccable principle (Kaul and Conceicao 2006). Where public finance is scarce and has many other claimants (the frequent case) it should be allocated first to public goods and services (the identity of public goods in the national water sector was discussed earlier). Public funding is also likely to be needed for merit goods and for major long-lived infrastructural investments which will yield benefits for the wider economy. This last need for public funding should however, be treated with caution as there are numerous examples of projects being developed based on over optimistic benefit estimations or where the wider social, health or economic development gains are not translated into revenue streams for the government. In such cases there is a real danger that loan repayments (and the conditions for financial sustainability) will not be met.

A special, but widespread, case of public goods at the international level are the externalities of trans-boundary and international water bodies. It is estimated that 40 percent of the global population lives in internationally-shared river basins, and depends for water security on effective trans-boundary water management. The upstream-downstream issue is particularly acute when the different parts of a river basin lie in different countries. Likewise, major funding problems can arise when pollution externalities are international. In many cases, it is more efficient for country A to carry out the necessary basin management, or pollution abatement, than country B – but how can A recover these management costs?

In the above example, A's actions confer external environmental benefits on B. A may also produce public goods for a wider international community (e.g.,

[5] These margins may reflect additional risk and due diligence tasks faced by successive layers of administration, as well as extra bureaucratic costs.

where important wetlands are protected). In the absence of a national system of fiscal transfers, A can recover costs through:

(a) membership of a regional body such as the EU offering cheap loan or grant facilities for environmental remediation,

(b) eligibility for international aid, for example, the Global Environment Facility is an important funder of global or regional public goods,

(c) agreements with the neighbouring country(ies) for sharing costs or raising common revenues. Some of these agreements are long-standing and elaborate, for example, those covering the Nile, Mekong, Jordan, Okavango, Senegal, Ganges, Indus, etc. – and in developed countries the Rhine, Meuse, Danube, etc.). Financing arrangements for these organisations tend to be highly specific. In the developing country cases donor agencies make up the most common source. Levies on national governments typically contribute a minor and unreliable part of the budgets of these organisations. Some bodies levy surtax on investments in projects using trans-boundary waters (Box 11).

Funding trans-boundary water endeavours depends crucially on political and institutional arrangements, which are highly case-specific. These organisations have had a very chequered history. Where benefits are global or regional ("club" public goods) it is easy to justify the use of global funds such as the Global Environment Facility (GEF) or other international and bilateral aid. Contributions from regional governments should, in theory, reflect the incidence of net bilateral benefits and costs. Reliance on surcharges on bilateral projects channelled through trans-national bodies can, as noted above, bias the organisation towards the promotion of bilateral interests.
A proposal has been made for the creation of an International Shared Waters Facility to provide an independent support to trans-boundary water cooperation with an assured budget and critical mass (ODI et al. 2001).

Private goods should pay for themselves

Whatever is not a "public good" in the water domain, using the diagnostic proposed earlier, is by definition private. Beneficiaries of water functions and services which are excludable and rival should be charged. The main qualification to this principle is that the charge should be "affordable" to all, and that special support should be available to financially weaker parts of society.

Pursuing this principle implies:

- improving self-financing of service providers,
- reducing 'blanket' public subsidies and redirecting the savings to genuine public goods, sectors, communities and individuals that cannot cover their own costs,
- capturing the costs of mitigating externalities from polluters, environmental 'victims' or beneficiaries of ecosystem services who can afford to pay for them,
- charging for the enjoyment of water-related services (angling, navigation, recreation, and so on).

To do any of these things, local government providers and specialist water and environmental agencies need a degree of financial autonomy and assurance that the increased financial flows will be available for their use and not simply absorbed into national budgets. National governments will however, need some oversight and regulatory powers to ensure the legitimacy of sub-sovereign expenditure.

Measures for revenue enhancement will not be easy to implement. There will be opposition to reductions in subsidies and to what may be seen as new environmental charges and taxes. Opposition is likely to come from powerful vested interests, including business. The notion of paying for water abstraction, waste disposal and in situ river services are likely to be particularly contentious where these are, or have been, subject to customary water rights. As Van Koppen et al. (2007) points out, the whole process of state regulation of resources previously 'owned' by communities and individuals can disempower poor traditional right holders and make the availability of essential water services even more problematic for poor, marginalised communities.

The financial self-sufficiency of water service providers could be increased through improved operating efficiency, reductions in leakage and other forms of waste, more effective revenue collection and the reduction of water theft. However, tariff increases are also likely to be necessary. The public acceptability of these tariff increases will be greater in the context of providers:

Box 11: Financing the Mekong River Commission

Between 1957 and 1975 the Mekong Committee, supported by the Mekong Secretariat, was a regional UN body, funded by the UN. It then entered an unsettled period when it became increasingly hijacked in favour of bilateral projects, until it was reconstituted as the Mekong River Commission (MRC). The MRC currently has a core budget of $2 million contributed by the four regional members, grants from donor agencies (some of them in kind) and an 8 percent surcharge on donor-funded projects implemented by the MRC.

MRC's programme budget is larger – US$15-20 million per annum – and is funded almost entirely by grants from regional governments and bilateral and international agencies. An earlier proposal to finance the MRC from a Mekong Trust Fund fell foul of some members. The MRC's history illustrates the tendency of the Commission to downplay its "regional public goods" mission in favour of bilateral initiatives – especially when its income is partly based on the surcharge on bilateral projects.

Most recently the MRC has adopted a programmatic approach, with four main work programmes ("key result areas"). These are funded by the World Bank/GEF and various bilateral donors.

Source: ODI et al. 2001.

- seen to be improving efficiency, service coverage, quality and reliability,
- operating in a transparent and accountable way,
- using tariffs designed intelligently to protect the poorest users.

Such reforms to management practices will also be essential for the providers to attract investment funds.

However unpalatable the attempts are to increase revenues, the alternative must be worse, namely the continued drastic under-funding of many water resources management functions and essential water services. The bottom line is that the public funding of private goods for those able to pay for them comes at a considerable price – the perpetuation of the inefficient, inequitable and unsustainable management of the water resources base and all the services dependent on it.

Funding for capacity building

Throughout this paper it has been stressed that water management reform and attempts to improve the financial viability of providers in the sector will not succeed unless considerable efforts are also made to increase human capacity.

One potential source of funding for capacity building is development assistance, not only from overseas but also from NGOs and other operators in the country with proven capabilities.

Aid (ODA) is particularly appropriate for the finance of institution building and support, since it can fund lasting partnerships between institutions. The relationship can comprise twinning, training, technical assistance and consultancy, as well as capital aid for relevant kinds of plant and equipment. Capacity building of this kind normally relies on grant funding, which makes it more common among bilateral donors than in the IFIs. The latter tend to get access to grants via specially created trust funds fed by bilateral donors or UN agencies. Twinning and other kinds of partnerships can be "North-South" or "South-South". Peer-group support can also be within the same country.

Donor funding of capacity creation, institution building, etc., is useful in such cases as the following:

- Funding of the preparation of IWRM plans. This is often perceived as a "one-off" exercise and there is a risk that the involvement of short-term, and often foreign, consultants can block local "ownership" or "buy in" for the IWRM process. ODA could however, be employed in the plan devel opment and implementation over a longer term, with a commitment to building local capacity.

- Twinning arrangements between "mature" water institutions and those in the process of development. These tend to be medium-long term arrangements involving secondment of staff, training, consultancy, and so on. Scandinavian municipal water operators have such agreements with their counterparts in the Baltic States and Russia, though twinning can also work for "South-South" cooperation. The Compendium of Actions produced by the UN Secretary General's Advisory Board on Water and Sanitation (UNSGAB 2006) includes a chapter on the promotion of Water Operators' Partnerships.

- Technical assistance for the preparation of tenders and contracts for large and complex concessions, often involving private contractors and operators. The International Finance Corporation (IFC), the European Bank for Reconstruction and Development (EBRD) and other IFIs have provided such support alongside their capital loans, usually funded from donor grants. The Inter-American Development Bank (IADB) recently announced

the formation of a revolving fund for technical assistance in such situations, to be replenished by the successful bidder.

There is a strong trend amongst some donor agencies towards the provision of financial aid to local budgets, particularly in the context of achieving the MDGs for social services such as health and water. While such devices directly address local funding shortages and bottlenecks and kick-start programmes with early social pay-back, they risk creating financial, institutional and ultimately political dependency. This is a dilemma to which there is no easy answer.

Non-structural activities require modest funding but are slow to implement and require steady long term funding. Much ODA is committed on relatively short term project basis, typically three to five years. To have a significant impact on policy, planning and capacity building, longer term programmes are needed; these should link capacity building to real activities where the long term development of skills is vital.

Box 12: Sector Wide Approach to Planning in the water sector

Sector Wide Approach to Planning (SWAps) have been described as:

". . . pooling of resources to support a single sector policy and expenditure programme, under government leadership, by adopting common approaches across the sector and progressing towards relying on government procedures to disburse and account for funds." (WSP/Kenyan MWI, 2007).

In the Kenyan case, SWAps are being implemented along with policy and institutional reforms, notably the separation of service provision from regulation and policymaking, the separation of management of water resources from water supply and sanitation services, and the adoption of key principles of water governance such as decentralisation, participation, autonomy, accountability, efficiency, and financial and ecological sustainability.

In a SWAp all important investments should be consistent with a Sector Investment Plan and a Sector Information System should be developed. Donors are encouraged to harmonise with each other, to relate their activities to the SIP, and to move towards the use of common channels of finance and procedures over key matters like procurement and technical standards. Progress in these areas will reduce the administrative load on recipient administrations and diminish the transaction costs of aid. An aim of the SWAp is to progressively attract aid in programme rather than project form.

Sources: Asano 2006; IWMI 2006; Law 2003; www.pub.gov.sg

In water and other basic social services ODA is increasingly being offered in a programmatic framework, such as the Sector Wide Approach to Planning (SWAp) outlined in Box 12. It is noteworthy that SWAps provide a medium-long term framework for managing the ODA, and that they usually include a strong policy and institution building component.

5. CONCLUSIONS

It is widely recognised that better water management and governance is the key to developing a sustainable, efficient and equitable water sector. However, this paper has argued that any attempts to introduce water governance reform need to actively recognise and incorporate the financial dimension. Likewise, efforts to attract the additional finance so badly needed by the sector have to be accompanied by governance reforms to ensure that the funds are employed efficiently and that the financial flows can be sustained. Better water governance can produce a more efficient allocation of finance within the water sector. It can reduce the need for finance by saving money where, for example, a change in policy avoids an expensive new investment or the creation of a regulatory system results in improved operating efficiency or more competitive bidding for contracts. The resultant savings can be deployed elsewhere for developing infrastructure or management systems.

The importance of good governance in attracting the finance needed to meet the water and sanitation services MGDs has been stressed in many earlier pieces of work, including by the Camdessus and Gurria task forces, but looking at governance reform purely from the perspective of individual end user services is not enough. The relationship between governance and finance has to be viewed within the context of the sector as a whole, recognising that:

- The performance of individual water services is dependent on a whole range of water resources management functions which need to be financed, but will then facilitate access to finance for other functions and services. There are many examples: the creation of a good data base and monitoring system is a precondition for serious funding; the development of hydrological and climatic data provides a more secure basis for hydropower and irrigation investments; funding the creation of an independent regulator, a dispute resolution or arbitration system can reassure

private investors; institutional change allowing the introduction of a system of pollution or abstraction charges provides a new revenue source for environmental management; and so on.

- The economic characteristics of different water resource management functions and services profoundly affect the funding sources which can feasibly be accessed. Given limited government budgets and funds from donors, it is important that those functions and services which can raise revenue from user or beneficiary payments do so. The opportunity costs involved in continuing to use public funds to provide private goods to those able to pay for them is high.

- The spatial, functional, socio-political and professional characteristics of water resources management agencies and service providers can critically effect their ability to access different funding sources and their capacity to achieve financial sustainability. Proposals for institutional reforms, not only in the water sector itself but also in public administration more widely (such as local government reform) should be clear about the potential financial implications and what measures need to be taken to sustain financial flows.

- Financing structures without funding to develop their supporting institutions is ultimately wasteful and nugatory. Investment in major infrastructure benefits from coherent policies, the right legislative framework and appropriate management instruments.

The two way interaction between governance and finance should be a critical element in the IWRM planning process agreed at the World Summit on Sustainable Development in 2002. Countries drawing up IWRM plans should 'mainstream' finance considering who and how finance should be provided for all important functions and services, as well as infrastructure, on a long term basis. At the present time few plans do this – finance is either the missing element or is referred to only to demand more. It is not enough for the water sector to simply call for additional funding; virtually every sector in a developing economy is likely to be able to show financial need. IWRM plans, or general efforts to improve water governance, which make a serious attempt to deal with financing needs and sources, including increasing the efficiency with which existing resources are utilized, will be more credible and more likely to attract the required funding. Giving a higher profile to finance will inevitably lead to greater contact between Min-

Box 13: Economic returns on water investment

In the well-known study by WHO authors (Hutton and Haller 2004) a large number of studies of household water and sanitation programmes were analysed. It was found that a $1 invested typically returned benefits in the range $5-28, mainly arising from time savings from closer access, plus gains in productive time and other expenses from avoided diarrhoea.

Other studies have demonstrated the net economic benefits from spending on water resources management – in the first case below, protecting and enhancing the value of an existing investment, in the second case, providing a cheaper and cost-effective solution to a water quality problem.

For the Paute hydroelectric scheme in Ecuador it was found that upstream investment in watershed protection and erosion control was economically and financially attractive to the (private) power company. Savings in the costs of dredging, plus the value of extra power from prolonging the reservoir's life helped to safeguard the large initial capital cost of the scheme (Southgate and Macke 1989).

A second case is the New York City-Catskill watershed management programme which involves the investment of $1.5 billion over 10 years to reduce water pollution in the upper watershed. This programme, administered by the Catskill Watershed Corporation, a non-profit organisation, reduces the costs of conventional water treatment for the residents of new York. (UNECE 2005).

istries of Finance and water authorities; more informed dialogue and a financially-literate approach to reforms in the water management and governance system should also help to ensure that all parts of the sector receive their due share of annual budgets.

There is also a real need for water professionals to marshal evidence about the economic and social benefits from investing in water infrastructure (hard and soft) and services. Without such evidence water is likely to continue to lose out to sectors where either the rates of return on investments appear to be higher or where the contribution to poverty reduction policies seems more direct (for example, health and education). Such evidence could help counter the common problem of the reluctance of Ministers of Finance to include water investments in public investment programmes (and the associated absence of water in many poverty reduction strategy papers, PRSPs). As Box 13 shows, there is evidence on the economic returns from investments in water resources management and water services, but such evidence is patchy and much more country/regional specific analysis is necessary.

Governance and finance are inexorably intertwined. Countries that make progress in water governance reform should find that the task of raising finance becomes easier. When the sector can demonstrate that it has the institutional capacity to manage its finances more efficiently and productively, improve cost recovery and repay its borrowings, so it should be able to attract more finance and lay the foundations for sustainability. The 1980s Water Decade provides lessons for the future: plenty of infrastructure was created but, in many cases, it was badly chosen, poorly maintained, and lacked supporting institutions. Consequently, the investments did not realise the expected benefits and did not adequately address the service deficit.

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E-mail: gwp@gwpforum.org
Website: www.gwpforum.org

ISBN: 978-91-85321-70-4