

*Poverty Reduction and IWRM*

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 12 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 its mirror bodies, the GWP Regional Technical Advisory Committees (RTACs) around the world to facilitate application of IWRM regionally and nationally. The Chairs of the RTACs 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.

## ***Poverty Reduction and IWRM***

©Global Water Partnership

All rights reserved.

Printed by Elanders Novum, Sweden 2003

First printing, February 2003.

No use of this publication may be made for resale or other commercial purposes without prior written permission of the Global Water Partnership. Portions of this text may be reproduced with the permission of and proper attribution to Global Water Partnership. The findings, interpretations, and conclusions expressed within this publication are entirely those of the author and should not be attributed in any manner to GWP, nor as official expressions of the Global Water Partnership Technical Committee.

ISSN: 1403-5324

ISBN: 91-974559-0-3

## *Poverty Reduction and IWRM*

This paper was prepared for the Global Water Partnership by Maggie Black, based on work carried out by Ramesh Bhatia, and Kumbulani Murenga with contributions from the GWP Technical Committee. It is a contribution to the pro-poor water governance theme of the Water and Poverty Initiative co-ordinated by the Asian Development Bank.

This paper is dedicated to Anil Agarwal (1947-2002), former GWP Technical Committee member, who inspired its creation and devoted his career to Indian environmental protection and the conservation of the natural resource base on which so many livelihoods depend.



*Published by the Global Water Partnership*

## ***PREAMBLE***

---

This paper focuses on the implications for poverty reduction of taking an integrated approach to water resources management. The paper has been prepared by the Global Water Partnership as one of a series of papers that are being prepared for a Water and Poverty Initiative (WPI) instigated by the major donors under the co-ordination of the Asian Development Bank.

In recent years there has been an increased focus on reducing poverty as a key responsibility of government and objective of donor support. This was reinforced at the UN Millennium General Assembly when the Millennium Development Goal of halving the proportion of the world's population living in extreme poverty by 2015 was agreed by all member countries of the United Nations. Other goals and targets specific to water and poverty were agreed at the Millennium Assembly and at the World Summit on Sustainable Development.

Traditionally, poverty reduction has focused on increasing economic growth at the national level. Whilst this may be necessary it is not sufficient since it neglects the distribution of assets and income. Poverty reduction is a complex issue and specific targeted actions are needed to ensure support to weak and marginal communities. Many factors need to be taken into account for poverty reduction, such as employment generation, income and food security. Water is also a component of a poverty reduction strategy but hitherto this has not been well articulated. Many aspects of water provision and management are relevant to poverty reduction; this paper however, focuses on the role of integrated water resources management.

There is evidence that good governance is a fundamental requirement for development and poverty reduction and for water this can only be achieved through an integrated water resources management (IWRM) approach. IWRM is defined as a process which promotes the co-ordinated development and management of water, land and related resources, in order to maximise the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems (GWP, 2000).

IWRM aims to strike a balance between the use of resources for livelihoods and conservation of the resource to sustain its functions for future generations. The definition of IWRM embraces economic efficiency, environmental sustainability and social equity – the three E's. Much work has been done on the economic and environmental sustainability issues but less attention has been paid to equity; this paper aims to redress that imbalance.

## ***CONTENTS***

---

1. Introduction	<b>6</b>
2. Poverty analysis and water	<b>8</b>
3. Beyond sector-based approaches	<b>14</b>
4. IWRM in action to reduce poverty	<b>21</b>
5. Conclusions and recommendations	<b>35</b>
References	<b>39</b>

## 1. INTRODUCTION

---



This paper outlines how the integrated management of water resources and water-related services can help to reduce poverty in the contexts of public health, land use, food production, livelihoods, industrial development, urban planning and environmental protection. Specifically, the paper aims to address the following areas:

- To show how IWRM fits within broader pro-poor governance dimensions, facilitating decision-making in the implementation of water and land use policies;
- To highlight overlooked connections between access to/use of water and poverty, and indicate how current fragmented water management approaches can, and do, lead to adverse impacts on poor people;
- To explore how a changeover to the IWRM approach is an important ingredient of strategies for poverty reduction, citing practical examples where its adoption has had economic, social, and equity benefits;
- To examine some of the modalities of IWRM at sub-national and national levels and their specific implications for poverty reduction.

Access to and use of water are fundamental to human survival, health, and productivity. The indivisibility of these functions of water to support human well-being lies at the heart of a holistic view of the resource and the need to assure its sustainability and that of the environment dependent upon it, for all those living today and for future generations. The management of water in its different contexts has typically been assigned to a variety of institutions (public and private) operating independently from one another. This approach was administratively convenient in a world where there were no apparent constraints on the resource. This approach is no longer appropriate; it is now recognised that water in a given water basin is a continuum, hence its use for one purpose affects its availability or quality for others in the basin. There is increasing competition between different uses



and users over access to the resource for different purposes, sometimes leading to public unrest and inter-state or international tension. Indiscriminate and uncoordinated usage has also led to serious ground- and surface water pollution and environmental degradation. An integrated approach to water resources management allows competing claims to be moderated by well-informed and participatory political processes and economic mechanisms.

In the competition for access to and use of water, it is necessary to ensure that those with the least leverage in society – many of whom are already without an adequate or reliable water supply or means of waste disposal – do not suffer further disadvantage in the implementation of water-related policies. Experience shows that in any competition over access to resources, whether these be natural resources or man made services and livelihood opportunities, those living in poverty do less well than others, unless they or agents acting on their behalf manage to secure their relative interest vis à vis those with more economic, social and political clout. For this reason equity considerations are an important aspect of policy formulation for development interventions; those who are least able to exert their claims should receive special attention.

The paper does not attempt to argue that an integrated approach to water resources management is a panacea for poverty reduction. Rather, the paper argues that no strategy for poverty reduction can be effective unless water policies in all their dimensions are brought within its purview, and an integrated approach is adopted which allows competitions over access and uses to be fairly and transparently moderated. Although the principle of IWRM has now been widely accepted in the international discourse and to some extent in national water policies, its translation into revamped laws, regulations, institutions and management systems is still in its infancy. However, some case examples already exist which show that integrated approaches to water resources management and use can help people living in poverty to secure their livelihood base – and therefore their survival, health and productivity – and may even help them to improve it.

The paper therefore strongly argues that IWRM as a policy tool demands a higher level of significance in the anti-poverty agenda than

it is now accorded, and explores the implications for policy-makers of elevating its importance in current international, national, and sub-national poverty reduction initiatives.

## **2. POVERTY ANALYSIS AND WATER**

---

The nature of poverty is a subject about which a vast analytical literature exists, as do theories of causation and response. Poverty is usually defined in socio-economic terms, and perceived as a condition in which people's livelihood capacity is inadequate to meet their own and their children's basic needs. This is either because of lack of access to the natural resource base; or because of lack of paid employment or viable entrepreneurial opportunity; or because of some form of special vulnerability; and additionally because of lack of access to basic services (health, education, water supply and sanitation, etc.). However, people who endure poverty may define their condition differently, seeing their problems as characterised less by economic disadvantage or lack of service access than by powerlessness, voicelessness, insecurity and fear – socio-political factors (World Bank, 2000).

Although trends in developing countries' GNP over the past 50 years indicate progress in reducing poverty, in fact averages disguise the existence of large sub-groups whose situation has remained the same or is deteriorating. Income disparities between rich and poor both between countries and within them have widened in the same period. There are today estimated to be 1.2 billion people living on less than \$1 a day, and 2.8 billion living on less than \$2 a day (UNDP, 2001). Many of these people are not living in economies powered primarily by cash transactions via a recognised market. These statistics have many weaknesses but are the best estimates available of the dimensions of global poverty and 'the poor'.

**Box 1 – The water-poor**

The 'water-poor' could be defined as follows:

- Those whose natural livelihood base is persistently threatened by severe drought or flood;
- Those whose livelihood depends on cultivation of food or gathering of natural products, and whose water source is not dependable or sufficient;
- Those whose natural livelihood base is subject to erosion, degradation, or state confiscation (e.g. for construction of major infrastructure) without due compensation;
- Those living at a long (defined) distance from a year-round supply of drinking water;
- Those obliged to expend a high (e.g. >5%) percentage of household income on water; slum dwellers obliged to pay for water at well above market rates;
- Those whose water supply is contaminated bacteriologically or chemically, and who cannot afford to use, or have no access to, an alternative source;
- Women and girls who spend hours a day collecting water, and whose security, education, productivity, and nutritional status is thereby put at risk;
- Those living in areas with high levels of water-associated disease (bilharzia, guinea-worm, malaria, trachoma, cholera, typhoid, etc.) without means of protection;

Those most vulnerable would include the elderly; minorities (especially indigenous groups), those affected by HIV/AIDS or other kinds of catastrophic illness, or physical or mental impairment and those living in shanty-towns and surviving in the informal or invisible economy.

One or more of the conditions described in the box above mean that the poor endure high levels of infant mortality, child malnutrition, morbidity, illiteracy, and other indicators used as surrogates for poverty. Although the precise interconnections are hard to capture, current patterns of land and water use, and of household and community service provision are integral to the severely disadvantaged situation of the poor within the global community. In understanding the relationship between water resources management and poverty, it is these broad

statistics which are pertinent, and not only the more often cited coverage figures that give data only for drinking water supplies and sanitation which illustrate a sub-set – albeit an important one – of the total picture.

### **Box 2 – Statistical coincidence?**

The numbers of those living on less than \$1 a day (1.2 billion worldwide) coincide approximately with the numbers of those without access to a safe drinking water supply (1.1 billion). The numbers of those living on less than \$2 a day (2.8 billion) coincide approximately with the numbers of those without access to safe sanitation (2.4 billion). At present, there is no way of knowing whether this symmetry is causal or coincidental.

*Source: WSSCC, 2000*

Poverty has typically been measured according to economic criteria, using crude wealth-related indicators such as average GNP per capita (UNDP, 1990), or 'below poverty line' income or consumption, usually set at arbitrary levels based on the cost of a minimum food basket. Over recent decades, poverty measures have broadened to include social indicators such as life expectancy, infant mortality rate (IMR), literacy, levels of malnutrition, women's status, and access to services (UNDP, 1990). A set of social and economic targets for 2015 covering these areas was agreed at the UN Millennium Assembly and Sustainable Development Summit as the defining parameters of a renewed international onslaught against poverty [see box 3].

### **Box 3 – Millennium Declaration Goals for 2015**

- Halve the proportion of people living in extreme poverty
- Halve the proportion of people suffering from hunger
- Halve the proportion of people without access to safe water and basic sanitation
- Enrol all children in primary school
- Achieve universal completion of primary school
- Eliminate gender disparities in primary and secondary education
- Reduce maternal mortality ratios by three-quarters
- Reduce under-five mortality rates by two-thirds
- Halt and begin to reverse the spread of HIV/AIDS

*Source: UNDP, 2001*

Although the broadening of the debate concerning poverty is to be welcomed, in relation to water resources and their uses, it is not yet broad enough. The WSSD Plan of Implementation takes a step in the right direction with calls for the development of 'integrated water resources management and water efficiency plans by 2005' and the promotion of laws that guarantee water use rights, both of which have implications for poverty reduction strategies. But as far as direct poverty linkages are concerned, the principal indicators cited relating to water are still confined to supply coverage of safe drinking water and sanitation services. It is pertinent to note that the major expansion of sanitation services required to meet the target will have to be dry, or 'on site' sanitation. Waterborne sewerage is out of the question for the vast majority of the 2.4 billion currently unserved, on grounds of cost, excessive use of freshwater (for sewage transport), and waterway pollution.

### **Access to, and use of, the resource**

There is presently no coherent analysis of the relationship between poverty and water access and use. It may be classified according to water accessibility, to income and living standards, to the satisfaction of 'needs' or to the demand for health, education, electricity and other services. Although water is today acknowledged an 'economic good', its role in economic productivity, eco-system integrity, and socio-economic status, including that of women, is neglected. The range of poverty analysis relating to water is thus both weak and narrow.

There is a standard assumption that the provision of household water supplies and sanitation will primarily benefit women and children, but analysis of household income levels and food security in relation to water provision is rare. Minor attention has been paid to such aspects as the hours of women's and girls' toil saved from collecting water, but the direct value of water in productive areas of their lives is typically ignored. Only the impact on health has been systematically analysed, to justify household supplies in terms of a reduced burden on health service infrastructures.

Water is critical to the interaction between people and their livelihood base. For the majority of poor people in developing countries, this

consists of land, forests, rivers, and small-scale entrepreneurial activity based on natural products. A 1992 IFAD study showed that out of 4 billion people in 114 developing countries, more than 2.5 billion lived in rural areas, of whom more than half lived on highly degraded soil, and around 1 billion lived below the poverty line (IFAD, 1992). Such people are vulnerable to rainfall variation and seasonal food and fodder shortage and many are also at risk from catastrophic flood. At times of drought, even if drinking water supplies remain, the land becomes barren, livestock dies, and with the exhaustion of their food supply, people are forced to migrate unless relief is provided. The importance of water to livelihoods, as well as to survival, health and quality of life, is implicit in life expectancy rates, hunger and malnutrition levels, poverty rates among women, employment migration, urbanisation rates, flood displacement, even school retention rates. Therefore poverty analysis which excludes access to water for purposes other than drinking is highly flawed.

Figures on water use in irrigation and agriculture, and in industrial production and urban services provision, are available but they are not adequately incorporated into poverty analysis – on either side of the balance sheet. There are undoubtedly food productivity and nutritional gains from irrigated agriculture, and the subsidies from under-priced water received by farmers using irrigation are often justified on the basis of cheap food for the urban poor (IPTRID, 1999). Irrigation coverage statistics and crop productivity levels may give indications of national wealth and there are clearly extensive benefits for rural development; however, these may not reach the poor unless they are specifically targeted. The negative social and environmental impacts, such as water-logging and salinity, disruption to downstream fisheries and introduction of water-associated disease (Postel, 1992) are well documented and often affect the poorest first. It is thus essential to determine implications for the poorest members of society of major changes in land/water use patterns – who gains and whether there are losers – in order to reduce socio-economic disparities or inequities.

### **Service coverage and equity**

As already noted, drinking water supplies and sanitation service coverage are recognised as poverty indicators but existing data is inadequate

as far as equity considerations are concerned. Statistics from the Joint WHO/UNICEF Monitoring Programme (JMP) show levels of water supply coverage but do not record whether the installations are functioning. For example, coverage is clearly lower than statistics suggest in slums and shanty towns where half the urban populations reside; indeed if dwellers are designated as illegal squatters they may vanish entirely from official statistics. Likewise in rural areas coverage data are rarely disaggregated to identify the very disadvantaged groups (IIED, 2001).

In some parts of the world, pressure on the resource has led to declines in water table levels and serious depletion of quantity because no attention has been paid to aquifer recharge to counteract extraction rates. This has also led to pollution, and to degradation of chemical quality, with the intrusion of fluoride, and heavy metals or salinity into groundwater. It is invariably among the poorest and most vulnerable populations that these problems are most acute, and where there are fewer resources to expend on filtration or other appropriate decontamination measures.

### **IWRM and poverty analysis**

The current analytical failure to capture the critical importance of water in livelihood provision and protection needs to be remedied. The water and poverty focus needs to be expanded beyond drinking water and sanitation service provision. Issues relating to the degradation of soils, forests, biodiversity, and water quantity and quality have been analysed in relation to environmental costs and protection measures, but the interactions between these phenomena and livelihood systems based primarily on the natural environment have been insufficiently noticed. Where farming and fishing communities have built their livelihoods on the behaviour of natural water courses, lakes, wetlands, and the fertility they provide, the implications of major environmental change for their productivity and household food security need to be factored into analysis. Analysis based on an IWRM framework can allow equity considerations to be given a higher level of attention than has usually been the case.

Arguably, to give water its due emphasis in poverty analysis, nothing less than a paradigm shift in poverty perspectives is called for. The term 'water security' (GWP, 2000) has been used to describe the balance between the multi-purpose uses of water and the sustainability of resources at household, community, and levels above. Indicators for monitoring aspects of water security, including the quantitative and qualitative condition of the resource over time, need to be established in different settings as an integral component of poverty assessment and reduction. The first edition of the UN World Water Development Report, to be released in 2003, and the MDG (Millennium Development Goals) task force established by the UN Secretary-General Kofi Annan after the WSSD will provide an opportunity to establish such indicators. If a shift in poverty and water perspectives occurs – which will have to happen if poverty is to be meaningfully addressed – the case for an integrated approach to water resources management becomes self-evident.

It is surprising, given the recent international concern over water issues, that few governments have highlighted water conservation or services as a critical element of their Poverty Reduction Strategy Papers. This indicates a lack of awareness of the economic significance of the resource base, the need for its conservation, and for sustainable service delivery among officials (usually from Ministries of Finance or Economic Development), who prepare these strategies. The Water and Poverty Initiative should help redress this omission.

### **3. BEYOND SECTOR-BASED APPROACHES**

---

The management of water resources and services was, and for the most part continues to be based in the separate sectoral administration of the different uses of the resource. Drinking water supplies and sanitation are part of public health and/or rural or infrastructural development; irrigation part of agriculture; municipal services under urban administration and public works; water for mines and industries under industry. Some water-related responsibilities also fall under ministries of environment, transport, fisheries, recreation and tourism. Laws and regulatory regimes have typically been separate for different uses and have not been co-ordinated within one framework and implementation institutions remain unconnected.



This fragmentation means that there has been no means of moderating between competing, or high-value and low-value, demands. The lack of information and understanding by different user groups – rural/urban, upstream/downstream – about resource constraints and the need to reconcile competing claims often leads to the settlement of water-related disputes in ways that are politically motivated, unscientific, and short-term. As pressure on the resource has grown, and the costs of water infrastructure have spiralled, it is urgent that we move beyond this fragmented approach. To provide coherence and guarantee the sustainability of the resource and ensure its equitable and efficient use is the genesis of the current push for integrated water resources management.

### **Sector-led policies and programmes and poverty reduction**

Within the range of differentiated responsibilities around water, the main sector in which governments have undertaken poverty-targeted programmes is in rural drinking water supplies and sanitation, promoted to improve public health. There have been initiatives to provide water supplies and sanitation in urban areas but only occasionally have these included slums and shanty-towns [see box 4]. During the International Water Decade low-cost approaches were developed and promoted, usually involving hand pumps and community standpipes for water (and in some cases household connections, mainly in towns); and 'on-site' facilities (pit latrines) for sanitation. The extent to which poor households have been reached as a sub-set of new users is unknown. But it is fair to deduce, at least from rural coverage figures, that a large number of poor households now have access to a water supply which did not have one before. Sanitation still lags very far behind.

There is some evidence that access to water has an impact on poverty. A recent study in the poverty-stricken coastal districts of Nicaragua (5,025 households) found that households with a well had 20-100% more income than those without, with the difference being most marked among the poorest; and that 40% of the extra income came from garden plots and small livestock managed by women around the house (van der Zee et al., 2002). Similarly, evidence from Ghana suggests that the income of poor farmers in the peri-urban area of Kumasi

increased significantly with the informal irrigation of horticultural crops for local markets (Cornish et al., 2002). From the household perspective, it is often artificial to classify a source of water as purely for drinking, personal hygiene and domestic use; or alternatively, as purely for irrigation. Poor people's 'demand' for water is usually for water generally (not only for health purposes) as essential to their lives and livelihoods and this is an important and neglected angle on the role of domestic service provision in poverty reduction. At the household and community level, most people in marginal environments view water holistically. They naturally operate according to the principles of integrated water resources management, whatever the sectoral context of the services provided.

#### **Box 4 – Private consortium goes for 'water for all'**

In 1997, Mayniland Water Services Inc., a consortium formed by Benpres Holdings Corporation and Ondeo Services, won a 25 years concession for water and wastewater services for the West Zone of Metro Manila. Hundreds of pockets of 'blighted areas', containing 35% of households, were deprived of water services, and obliged to buy highly-priced water from private vendors. In 1999, a survey showed that for the poorest inhabitants, those who had no connection to services paid more than twice the proportion of their household income for water, and consumed less than one third of the amount, compared to those who had one. The company determined to provide 'water for all'. For blighted areas, they offered alternatives: public faucets operated by Community Water Associations, or individual connections. Because of their poor experience with public faucets and prospective savings on water expenditure, people preferred household connections. Accordingly a Bayan-Tubig – Water for the Community – project was started. Much of the supply-line was laid above ground, against the walls along narrow alleyways. Batteries of meters were placed in the most convenient location, with plastic pipe connections leading from one meter to each house. This system allowed 58,000 additional household connections to be made, metered and charged for in places where dwellings were rudimentary and even illegal.

*Source: Ondeo Services, 2001*

Large-scale investments in irrigation have been primarily posited on economic growth from raising crop production levels, either of food or cash crops, to improve national availability of food stocks and raise income from agricultural exports. There is ample evidence (IPTRID, 1999; Jones, 1999; Bhatia, 2000) that irrigation has succeeded from this perspective, and has prompted development in poor rural areas thus addressing poverty in various ways. Indeed, without major irrigation schemes the economy of countries such as Egypt and Pakistan would collapse, leading to increased urban migration and political instability. However, equity considerations are often addressed only at the macro-policy level. The implications of irrigation investments for groups living in poverty, as opposed to their implications for overall economic productivity, have frequently been ignored. Such investments may also discriminate in many cases against the poorest, with those living 'at the end of the canal line' in more remote, usually poorer, settlements left with little or no water (Chambers, 1988). The need to rectify inequities in who gains and who loses have been left to social welfare, food subsidies, and resettlement or land compensation programmes. These have often proved inadequate, reinforcing rather than offsetting economic marginalisation.

There is also evidence that land use and agricultural policies have provided incentives to grow higher-earning water-intensive cash crops such as rice and sugar-cane, even in water-short areas. In many countries, developed and developing (Postel, 1992), subsidies are provided for surface irrigation and/or electricity used for water pumping. Although these are often justified in the name of helping poor people, the benefits often go primarily to the better off. Perverse subsidies send wrong economic signals to consumers and result in wastage of water and excess pollution, thus promoting unsustainable water resources management.

A more integrated approach that targets the poor is needed to make irrigated agriculture both economically attractive nationally and water and poverty friendly at the local level. There is some evidence, for example, from North East Brazil and India that investment in water infrastructure can create a dynamic rural economy, reducing out-migration and increasing agricultural and other forms of employment. Nev-

ertheless, it is now recognized that the conventional approach of 'construction at any cost' is unacceptable. The irrigation sub-sector needs to improve existing systems, especially addressing maintenance and financial sustainability, and identify approaches that use less water more productively and become more aware of how policies and projects interact with poverty dynamics. The prospects of this would be improved by adopting a more holistic, less fragmented, approach to water management and bringing the full range of economic, social and environmental considerations into one policy framework.

### **Recognition of water's value: from supply to demand**

Water has always been recognised as a social good, but since the International Conference on Water and Environment in Dublin in 1992, water has also been recognised as an economic good; a viewpoint confirmed at subsequent international conferences and summits. With this recognition has come a decline of international support for supply-driven policies. The World Bank and others have pointed out the wastage and lack of efficiency resulting from the construction of schemes for which costs are not recovered from consumers and which cannot be maintained (World Bank, 1992). Additionally, the spread of services was so costly that the worst-off remained unserved. When services did reach them, the installations often fell into disrepair because communities were uninvolved and the authorities' capacity overstretched: in India's rural water supplies programme, for example, between 20% and 40% of hand pumps are estimated to be out of action at any time (UNICEF, 2000). In urban schemes, waste has been common and leakage and illegal take-off high. The funds, institutional and regulatory capacity for managing services were absent or poorly applied. Lack of any perception of the opportunity cost of water in alternative uses – a perception which has begun to grow only since water became recognised as scarce – resulted in low tariffs for domestic and industrial users. Non-targeted subsidies resulted in the better-off receiving the benefits of water services and subsidies in urban areas (Nicol, 2000).

However, promoting a change to demand-driven and realistically priced water supplies is difficult politically when water has been previously treated as an infinite resource – a 'free' or heavily subsidised

good – both for urban populations and for large-scale and medium-scale agriculture. Farmers with capital resources have gone in for water-intensive crops in many dryland areas, on the basis of uncontrolled groundwater extraction and depletion. A further downside of unrealistic value-assignment and pricing is that pollution loads in rivers and lakes are very heavy. Many water bodies, particularly during low-flow summer months, are heavily polluted resulting in serious public health and epidemic disease consequences, which again are primarily borne by the poorer members of society. Realistic regimes of pollution charges and enforcement measures are therefore also needed, as well as means of protection of water quality at community and household level.

Demand-driven services are supposed to help poor people by allowing their needs to be expressed and catered for, and by putting management of their services into their hands. Their 'willingness to pay' for adequate services and to mobilise around an essential resource has been widely demonstrated [see box 5]. However, it is important that the introduction of the approach is not done in such a way that an earlier-acknowledged governmental responsibility to provide for poorer sections of the community is not simply abandoned. Unless better-off users are also expected to pay a more realistic price, the effect can be discriminatory. Allocations from the resource base are often skewed in favour of politically dominant groups, and unless there are serious reallocations of service benefits, or significant adjustments in tariff burdens to promote equity, the least well-off will continue to be disadvantaged.

During the past 15 years, there has been a growing emphasis on community management, and in some cases ownership, of water facilities, both for irrigation schemes and community water supply installations. However, the jury is still out on whether turnover from government to farmer Water Users Associations is successful as far as smallholder incomes are concerned (Shah et al, 2002). Community management of drinking water supplies and sanitation has also had mixed results, depending on a number of variables including technical support, skills transfer, and managerial back-up. Policies which appear, therefore, to be oriented towards poverty reduction by decentralising responsibilities and ownership of water-related installations may have considerable

benefits if handled carefully but can have the opposite effect if government simply divests itself of costly responsibilities for purely fiscal reasons.

### **Box 5 – From supply to demand**

An experimental project known as Yacupaj, meaning 'for the water' was started in the Bolivian Department of Potosi in 1991. Up to this time, the assumption had been that campesinos on the high Altiplano lived such a marginal existence that they could not pay for water or sanitation services. Yacupaj set out to turn this premise on its head. Project implementation rules, technological design criteria, financial policies, and maintenance structures were developed. To participate, groups of local communities had to accept financial and technological constraints, agree to undertake O&M, and find around 50% of the total investment. Although many would have preferred household connections, they mainly went for gravity-flow and public standpipes because that was what they could afford. By 1994, Yacupaj had provided services for one-third of the 115,000 people eligible to participate. Most of those who had not done so did not want to – they were happy at present with what they already had. A survey a year later showed that 90% of water installations and 82% of sanitation facilities were functioning. A national World Bank-assisted \$46 million programme grew out of Yacupaj.

*Source: Black M, 1998*

The recognition of water as an economic good requires that water resources are allocated between high and low value uses. However, equating willingness to pay with value is problematic and there are enormous complexities in establishing and managing pricing regimes and developing efficient, transparent and accountable collection systems and the creation of appropriate water right systems. Allocation of water through licensing and regulation also offers difficulties for equitable distribution as those with political and economic clout tend to appropriate resources; and the regimes for pricing, licensing and adjudicating property rights may benefit the rich in countries with inefficient or corrupt administrations.

IWRM thinking cannot 'solve' such underlying socio-political problems in a country but can provide a framework in which many problems can be debated. IWRM can establish the right policy framework and rules of the game – with equity as a key policy driver – as well as the necessary institutions to administer these rules. Within demand-driven approaches, IWRM can allow communities and larger administrations to manage resources for many uses in tandem by participative (democratic) and demand-responsive processes. Finally, an integrated approach can help to mediate competing uses, and ensure minimal services for rural and urban poor are recognised as a high-value use and design pricing regimes accordingly.

#### **4. IWRM IN ACTION TO REDUCE POVERTY**

---

The need for an integrated approach to water resources management has been recognised as axiomatic in international circles, and IWRM principles are increasingly being adopted within water-related policies and good governance. Gradually, countries are introducing reforms in law, policy and administration which reflect the new concern for sustainability, equity, and efficiency. However, few countries are without politically and economically entrenched vested interests around water. Reforms, especially reforms that emphasise equity, are difficult to carry out in a climate of opinion which has yet to understand that water conservation is essential for future survival and development, and is opposed to the idea of water service provision as priceable. In some settings, politicians have built careers on promises of free or all-but free services for water, power, and other public utilities, and cite a pro-poor agenda to defend policies which are unsustainable and which therefore ultimately cannot serve poor people. Therefore progress towards effective reform is likely to be slow. Without significant and wide-scale changes in popular perception, especially among middle-upper income and politically significant groups, it may prove impossible in some countries for a long time to come.

However, civil society does not always wait for government to act. There are a number of settings where the reality of water scarcity and its disastrous impact on human survival, health and productivity has led to the emergence of local integrated water resource management

solutions even if they were not consciously launched under an IWRM banner. The introduction of government-led sectoral programmes during the development era has weakened such community-led solutions and the control of water supplies by impersonal and remote bodies has not always been to the advantage of low-income communities. On the other hand, local level decisions can have adverse impacts elsewhere within a basin and a government led holistic approach is the only means to secure basin-wide sustainable resource use.

### **Watershed protection and regeneration**

There are many forms of 'integration': integration of competing uses, integration between sectoral concerns, integration of demands from different groups, including those who are at-risk and those who assume control over resources when given half a chance. Balancing demands requires a political process and negotiation among the parties, whose common interest lies in effective water management.

The onset of water scarcity, because of drought or declining water tables, can provide an impetus to community regeneration of watersheds or depleted aquifers by adaptive use of traditional technologies. Most recent experiments in localised watershed management, micro-planning of land and water use, or integrated service provision have been undertaken by visionary pioneers and local NGOs wrestling with practical problems on the ground. In some cases, these efforts have been backed by official policy and support for the development of models provided by external donor agencies.

The water-short Indian states of Gujarat, Madhya Pradesh, Maharashtra and Rajasthan are home to many such examples. The Centre for Science and Environment (CSE) in Delhi has documented many cases of community-based ecological regeneration based on rainwater harvesting, a centuries-old range of Indian hydraulic technologies which had been eclipsed by the government's commitment to supplying rural water services free to communities since the 1960s (Agarwal and Narain, 1997). In the face of severe drought, communities have constructed tanks, check-dams, and other small structures to capture runoff in river-beds and wells. They have succeeded over time in recharging aquifers and transforming local eco-systems as well as their surrounding economies. Transparent and participatory decision-making



and the establishment of community property rights over the local resource base have been critical. Local bodies decide priorities, resolve conflicts, and set burden- and benefit-sharing rules. Small rainwater structures are swift to show regenerative results, and within a few seasons the rise in the water table can be remarkable. Results for many communities have been nothing short of spectacular, with continued cultivation and relative prosperity when surrounding areas with identical rainfall are unproductive, their wells dry, and their inhabitants forced to migrate elsewhere [see box 6].

### **Box 6 – Rainwater harvesting: IWRM in action**

One pioneering organisation is the Tarun Bharat Sangh (TBS) in Rajasthan. Since the late 1980s TBS has helped communities build 4,500 small dams and other rainwater harvesting structures, transforming the economy of 147 villages. In one area, a 'Water Parliament' (Sansad) has been established among the 72 communities along the banks of a section of the Arvari River. Around 300 johads – small dams and bunds – were built by the communities, whose representatives meet in the sansad once a month to settle issues. Their rules include strictures on water pumping, a ban on water-intensive crops such as sugarcane and wheat, another on tree-felling, fines for infringements and larger fines for not reporting infringements. However, it is worth noting that 377 cases have been taken out against the TBS for building illegal structures under legislation left over from the British raj, such is the level of obstruction which unconventional initiatives vis a vis water and land use can confront.

*Source: Dying Wisdom (CSE 1997) and CSE website, 2002*

Examples exist of watershed protection and regeneration in other parts of the world. An interesting case in South America concerns the management of the watershed of the river La Quebrada Chocho, Colombia, with the creation of an Association of Users to buy the land around the watershed, reforest and protect it. A case involving indigenous people in Mexico involves the restoration of traditional Aztec Chinampas at the Xochimilco Watershed. This civil society initiative has shown how the implementation of a common agreed project among different water

users can lead to a complete hydrological regeneration of an area. The promotion of the river basin or catchment area as the logical geographic unit for the realisation of IWRM in practice has attracted much attention, but at levels above the localised, river basins rarely conform to administrative or political boundaries and there are many examples of tensions between upstream and downstream users in different jurisdictions.

### **Box 7 – Regional water co-operation**

The Republic of Mozambique, the Republic of South Africa and the Kingdom of Swaziland have committed themselves to an (interim) agreement, which aims to promote co-operation on the protection and sustainable utilisation of the water resources of the shared Incomati and Maputo Rivers. The main principles on which the Agreement is based are those of equitable and reasonable utilisation of the water resources of the shared rivers for economic and social purposes between the three countries, as well as ensuring protection of the environment. It provides Mozambique, the most downstream country, with protection against over-exploitation of the rivers by upstream neighbours and guarantees the water supply for the country's capital of Maputo based on current needs and increase in water demand based on projected population and industrial growth. This will enhance economic and social stability in the sub-region. Further, in the Agreement water has been allocated for the development of smallholder irrigation in Swaziland and South Africa. Unusually the agreement is based on equitable sharing with the more powerful upstream state taking account of the critical development needs of its poorer downstream riparian neighbours and this should contribute to poverty relief in limited areas of economic development.

At the macro scale level, there are a growing number of agreements concerning water-sharing between states within federal countries, and between countries sharing transboundary waters. River basin co-operation has been propelled into existence by the competition between users and uses along such major waterways as the Ganges, Nile, Jordan, and Mekong Rivers. Here, the impetus – especially in such water-short areas as the Middle East and Northern Africa – is the resolution of tensions over the use of internationally shared waters. Equity con-

siderations are usually interpreted as the balancing of upstream and downstream interests, in both water quantity for take-off into reservoirs and canals, and in the deterioration of water quality by upstream pollution. Although international agreements on shared water have little directly to do with poverty, nonetheless their decisions may have a direct impact on those who depend on the sharing of water costs and benefits, among whom poorer and more risk-prone groups suffer from the usual discrimination and disadvantage of those 'at the end of the line' or 'in the path of the flood' unless their interests are specifically protected [see box 7].

### **Community management of services**

Issues surrounding integrated management of water services include the need to address service sustainability, environmental protection, and equitable provision of supplies for disadvantaged populations. During the past two decades, there have been a large number and variety of initiatives in informal urban settlements, and in rural and riverine areas, to develop systems of community ownership and management of services which integrate demand and supply, and promote technologies which are economically and environmentally sustainable (WSSCC, 2000). Usually, development NGOs have acted as intermediaries between communities and government administrations to help work out structures and systems (technological and financial), organise and fund training of community-level workers, and enable water user associations and local water committees to become established. Socio-political dynamics pose many, often underrated, problems in all community-based participatory approaches and such initiatives are not a panacea. More independent evaluation is needed to determine the reasons for success and to determine the means to replicate those successes.

One factor in many successful community schemes is women's participation in spite of initial resistance within traditional societies. There has also been a strong emphasis on demand-responsiveness, information-sharing, and long-term operations and maintenance. Choice of technology, and the potential for the community to run it and pay for the service it provides, is critical to a successful outcome. There is little point in providing electrically pumped supplies, or even handpumps,

if breakdowns cannot be repaired. Communities are often well aware of their technical and financial limitations (Shah et al, 2002). For example, when given the option, most communities in Niassa province of Mozambique choose a protected well in preference [see box 8].

**Box 8 – The economics of sustainability for poor communities**

In Niassa province of Mozambique, WaterAid has been supporting district administrations and local NGOs to implement a demand-responsive approach to community water supplies. The methodology took into account communities' ability to pay installation and recurrent costs, and they chose from a menu of technologies. Demand rose from nine installations in the first year to 144 in the third. By far the majority of these low-income communities have chosen protected wells as opposed to hand-pumps which they do not believe they can afford. This has released the programme from the standard problem of spending its time repairing and resuscitating non-functional handpump-boreholes, and while not ideal, protected wells are a major improvement on streams and swamps, the sources used before.

*Source: E Bresslin, WaterAid Mozambique; project papers*

One example of a project which has met the criteria for successful water services on IWRM lines is a large-scale gravity-feed water supply scheme in the water-short Hitosa district in the Arssi zone of Ethiopia (Silkin, 1998). The technology is simple and cheap: capped springs in the surrounding mountains, with pipelines serving 122 public tapstands and connections to some individual buildings. The complexity of the schemes lies in its management requirements: 28 villages and three small towns with 56,000 customers were to be served, and 140 kilometres of main and subsidiary pipeline had to be operated and maintained. However, the parties involved opted for community management, supported and facilitated by government and the development NGO WaterAid. An elaborate structure of representative bodies, at community and district level, with many women participants, was established over the period of three years during which the pipelines were built. Community funds and labour quotas were agreed, and a collection system for water tariffs put in place. Water is bought for many purposes, including livestock in the dry season, and beer-making

in the wedding season. In spite of the deep sense of vulnerability to water shortage in the area, the transformation from a situation in which water was scarce but free, to a situation in which it is plentiful but paid for, has been harmonious. There is constant demand from new villages to be included and steadily rising consumption rates, and the outstanding question is how the water committees will adjust tariffs to control demand as pressure on the resource mounts in future years – a reminder that IWRM is a dynamic process.

Many other similar examples of small-scale community water services management exist in a number of countries around the world, proving the point that such initiatives can lead to higher levels of service provision and higher productivity for disadvantaged populations. However, it is important to note that at present most initiatives depend on local commitment and enthusiasm and are only operational on a small scale. What may be practicable vis à vis integrated management at a community level – in a small river valley for example – can be very difficult to 'scale up' significantly since the number of competing interests exponentially multiplies. A rare example of large-scale integrated water resources management based on watersheds exists in Jiangxi province, China [see box 9].

Where governments have begun to decentralise the management of water-related installations and services to local communities with support from appropriate tiers of technical and administrative bodies, many questions remain about responsibilities at the various levels. Most governments are understandably reluctant to confer responsibilities over watershed management to communities or larger social units in a systematic way. The problems of integration with geo-political and administrative structures are very real and decentralisation is perceived as a risk to service consistency and technical standards. Aside from this, there is resistance from the various bureaucracies and their construction allies, for whom any loss of control over implementation of service delivery has negative financial implications. The principle of integrated water resources management may thus be universally accepted, but there is a long way to go in its translation into a wider operational policy and practice framework.

**Box 9 – Mountain-lake-river integration in Jiangxi, China**

Jiangxi province, with a population of 41.4 million, is hilly and mountainous, and suffered severe environmental degradation in the 1960s and 1970s. There was soil erosion, frequent droughts and floods, and accelerating desertification, pollution, and spread of schistosomiasis. In the 1980s, a programme to reverse environmental decline began. It was based on the concept that mountains, rivers and lake (MRL) comprise an integrated system, whose deterioration was leading to poverty. The Jiangxi provincial government set up an MRL Development Office, with sub-branches, to plan poverty reduction programmes based on catchments rather than on administrative boundaries. The emphases were: sustainable development of small watersheds in mountain zones; integrated development of hilly land; eco-agriculture and schistosomiasis control around Poyang lake. A network of projects was established, supported by 27 demonstration sites and 127 extension stations. The programme, which is exemplar of IWRM principles, has proved that a balance can be struck between environmental protection, economic development and social stability. However, political support of a kind almost unique to China, was essential for such a wide-ranging programme in so large a demographic, geographical and administrative unit.

*Source: GWP, 2002*

Some water-short communities in rural environments have lost faith in the authorities promises to provide water from macro-schemes remote from their control, which may be dependent on the whims of upstream users, remote administrations and conflicting jurisdictions. In some cases they have taken matters into their own hands. Such ad hoc development however can be a disaster for others within the same basin. Unplanned community level developments along the Pangani River in Tanzania has led to serious conflicts between poor communities as water resources have dried up in the lower catchment (Burton, 1997).

It is therefore important to address the practical implications of promoting integrated water resources management as a means of resolving equity issues at levels above the localised community, and put in place laws and policies to meet the difficulties. Decentralisation and commu-

nity-based solutions can help the poor and marginalised groups but should not become the new mantra as this could lead to anarchy. Under IWRM Governments must take responsibility for allocation and regulation of water resources and not abdicate its responsibility to local groups or NGOs. The signs are that, politically, the tide in favour of integrated water resources management is turning and a better balance between centralised and decentralised management can be achieved.

### **Absorbing equity considerations into IWRM policies and mechanisms**

In order for IWRM to be progressively introduced, there will need to be changes in law, policy, and regulatory frameworks. In undertaking such changes, equity requires that the interests of people living in poverty need to be considered and affirmed. Legislation governing rights over water can affect disadvantaged groups in a variety of ways, both positive and negative. Affirmative or protective legislative elements include (Solanas and Villarreal, 1999):

- granting of special water rights to people designated as 'below poverty line' de-linked from land-ownership;
- protection of traditional and customary water rights enjoyed by indigenous and minority populations and/or due compensation in the context of major irrigation or hydropower projects where access to their livelihood base is affected;
- reservation of some quantity of water to be enjoyed as a free good, and for environmental protection, to sustain population groups with little or no purchasing power and avoid degradation of the environmental/livelihood resource base.

Recent water legislation regarding land and water use has been passed in South Africa and Zimbabwe. The South African National Water Act and the Water Services Act, both passed in 1997/8, are widely regarded as pioneering in their assertion of the right of all citizens to access to a minimal level of water provision and held up as a model of IWRM principles. In Zimbabwe, a revised Water Act has attempted to cater for equity in allocation by reducing water rights/permits that were held in perpetuity; and the concept of priority date system related to the granting of water permits was removed. These provisions are designed to protect the interests of the less well-off (smallholders and farm labourers) who were previously hindered from adequate access due to the

extensive granting of water rights and permits to large, predominantly white, farmers. It remains to be seen whether this will in practice lead to more equitable distribution.

Changes in policies and legislation have a substantial impact on opportunities for the poor. For example (World Bank, 2001), in 1992 Mexico passed a new water law, which introduced radical changes in the way in which water is managed. Of greatest importance were giving users much greater say, and introducing tradable water rights. In some areas the effects have been dramatic, with substantial reductions in the pumping of aquifers, and with water moving from traditional low-value crops to new high-value crops. However, within water law and policy changes intended to improve efficiency and conservation, especially where market incentives are introduced, careful attention is needed to considerations of equity. Water markets can help improve water allocation and use, thereby promoting efficiency (Kemper, 2001); but unless their introduction is accompanied by appropriate provisions for vulnerable groups, and for environmental protection, the trading of water can promote social exclusion and environmental neglect. The same observations can be made in relation to the policy thrust for the private sector involvement in water services; providing water for customers who use small quantities and cannot afford to pay for service infrastructures is not an attractive market proposition. On the other hand, weak and politically manipulated public utilities often exclude poorer areas and under-charge wealthier citizens. Whether service providers are public or private the poor will only benefit with effective regulation that is based on equity and financial sustainability.

A number of laws and regulations relating to water and land use remain on statute books around the world which are often applied in a discriminatory way against disadvantaged populations, effectively depriving them of customary rights over the natural resource base and denying them title. A conscious effort needs to be made to reconcile such customary rights equitably within a modern legal framework; the rapid pace of change, the spread of the global economy and its absorptive power of resources and entrepreneurship, may otherwise further marginalise vulnerable groups who are unable to defend their rights at



law. Considerable care is nevertheless needed to avoid 'capture' by powerful groups.

Changes in local and regulatory regime need to be accompanied by the allocation of sufficient financial, institutional and human resources to allow for their effective implementation. Many existing laws are not applied because there is no system of implementation or capacity in enforcement bodies. All regulatory and judicial systems are costly to administer. Equitable operation of laws and policies requires a degree of regulation capacity, and a climate of democratic accountability, lacking in most developing country contexts with large populations living in poverty. Laws and policies may be well intentioned, but where they are selectively applied they may be used to discriminate against disadvantaged and weaker groups while those with influence treat them with impunity. Greater transparency with more equitable access to information is a key factor in a more just enforcement of laws.

### **The reform and development of institutions**

The introduction of IWRM in such a way as to ensure equity has important implications for management and institutional systems [see box 10]. Within the range of activities cited in this box, two categories of action can be distinguished. The first category includes those which are specifically targeted towards disadvantaged populations, and includes interventions directed at vulnerable, at-risk, and low-income groups, including changes in the design and management of services, drought mitigation, and environmental protection for degraded areas and polluted waterways on which marginalised people depend. The second category includes the introduction of a more rigorous equity focus within existing service delivery systems and water resource management regimes. Given the recent emphasis on water as an economic good, and the use of market mechanisms to control demand and ensure financial sustainability – policies which can reinforce inequities rather than reduce them – the second category of actions is likely to be even more challenging to implement than the first.

**Box 10 – Ensuring equity in IWRM**

- the collection of data relating to 'water poverty' which enables the understanding of water-related poverty issues to be expanded beyond service coverage;
- a specific focus on populations 'at water risk': those vulnerable to drought, water scarcity, and flood;
- orientation of those professionally involved in providing and running services concerning the specific needs of socio-economically vulnerable groups, including women, children, those affected by HIV/AIDS or other similar condition, indigenous and minority groups;
- capacity building of professionals in the full range of low-cost and appropriate technologies for water, irrigation and sanitation;
- capacity-building at all levels for democratic and demand-responsive approaches, especially at the community level to which local planning of resource use, and management and maintenance of services, will increasingly be devolved;
- a special emphasis on the involvement of women in community management mechanisms and in policy development;
- development of partnerships between different sectors, and different types of implementing bodies – public, private, NGO – to secure communality of interests and synthesis of pro-poor policies;
- advocacy of pro-poor approaches towards subsidies and pricing mechanisms which can be used to reduce inequitable allocations of service benefits and access;
- the active use of existing assessment and data-collecting tools that enable disadvantage, discrimination and demand patterns to be captured (environmental impact assessment, gender assessment, social impact assessment, participatory rural appraisal);
- a stronger policy emphasis on information, education and communications campaigns to inform people of the links between water, sanitation and health, and to promote hand washing and other key elements of a hygienic way of life;
- the use of IWRM management tools for efficient and equitable management change (GWP, 2002).

The introduction of market values within an IWRM framework allows prices to be set for high-value and low-value uses. The difficulty is that, in market terms, a high-value use might well be one in which water is extensively used for production of crops (or raw materials extraction) which command a high export price, but which exhaust the water resource base. Equally, if a high-value use is assigned to securing a minimum water supply for people living in poverty, it will be difficult to procure resonance in market values. The management of prices, tariffs, subsidies, and the systems needed to implement them in such a way as to ensure equity without intrusion from politically and economically powerful groups, require a high degree of sophisticated management, and a regulatory and operational regime beyond the capacity of many existing administrations. It is not practicable to lay down a set of universal principles concerning the use or non-use of subsidies, or for tariff structures and pricing regimes. The many economic parameters, including users' capacity to pay and the possibilities for cross-subsidies, have to be addressed in each setting. Thus, capacity building for undertaking such exercises should be a priority; and likely shortcomings in implementation should be recognised and avoided.

Since, within an IWRM approach, a wide variety of economic, social and environmental factors need to be brought within an overall policy framework, the building of partnerships is an essential part of the political processes required. Links between user groups, service delivery groups, local councils, sectoral bodies, government departments, non-governmental organisations, external support agencies and private companies can yield cost savings, reduce conflicts, and enable the comparative advantages of players to be harnessed. Some of these players have a more authentic understanding of poverty dynamics, and a better track record in addressing poverty issues: some kinds of user groups, local councils, and NGOs are primarily concerned with poverty reduction. But these organisations rarely have broad command over policy-making, nor do they have the resources to implement service delivery or environmental protection programmes on any but a very localised scale. Bridges need to be built between those bodies which interact directly with water-needy, disadvantaged and vulnerable groups, and those developing or implementing policies and programmes at district and national level [see box 11].

**Box 11 – Partnership in river-wide institutions**

In 1998, a Bulgarian NGO – the Centre for Social Practices in Sofia – initiated the Varbitsa Watershed Council to bring all the communities dependent on the Varbitsa River around the table and settle inter-cultural and inter-ethnic differences. The aim was a river-wide development plan, in which local municipalities would sink their differences. In time, it was hoped that this pilot Council would enable new approaches to be adopted by the Ministry of Environment leading to larger Watershed Councils. In the first stage of the Council's work, conducted under the chairmanship of the Mayor of Kirkovo, an ethnically mixed Muslim municipality, scientists mapped out the river's problems. The Varbitsa is now the first thoroughly researched river in Bulgaria. By 1999, the Council had an action plan, and a number of local, inter-ethnic, problems had been already solved by the collaboration of local authorities. The government has now agreed to produce a new Water Law promoting the establishment of Watershed Councils.

*Source: GWP Central and Eastern Europe Water Forum, Prague, 2002*

The effective use of assessment tools in the planning and implementation of service schemes and major irrigation and hydropower projects will help the processes of allocation, environmental mitigation, and moderating competing claims in such a way that the interests of equity are served. The social, economic and environmental uses of water by different population groups – upstream/downstream, urban/rural, male/female, rich/poor – and the capacity of available sources in terms of quantity and quality need to be fully understood. Tools such as Resource Assessment, Social Impact Assessment, Environmental Impact Assessment, Gender Assessment and Participatory Rural Assessment can be used. Data should be shared with user groups, and public campaigns of information and education undertaken to familiarise all members of society with the constraints on water resources and the need for sustainability. Ultimately, well-informed stakeholders, especially among disadvantaged and vulnerable groups, are the best guarantee that their rights to water and claims for a legitimate share of the common resource base will be met.

## 5. CONCLUSIONS AND RECOMMENDATIONS

---

Since the principle of integrated water resources management became accepted in the international discourse on how to manage water in a highly-populated, over-polluted and water scarce world, there has been a tendency to regard its implementation as all that is needed to usher in a new era of sustainable, efficient, and equitable water resources management. There is an inadequate appreciation of the gap between rhetoric and implementation, and the profound overhaul of laws, policies and practices which acceptance of the principle of integration necessitates. There are very real complexities in putting it into effect, at all levels and in all contexts – managerial, administrative, technological, behavioural, and above all political. Some of the competitions over freshwater resources which IWRM can moderate are deeply felt – livelihoods depend on them, and effective modalities for negotiation will not spring into existence because policy-makers agree that they should. Protecting the interests of the 1.2 billion people who live direst poverty as a sub-set of these negotiations adds a further set of complications. However, the adoption of IWRM makes this prospect more attainable than would otherwise be the case.

The pace and sequence of reforms for IWRM are critical. Policies, laws and management instruments are only as good as those who administer them. The introduction of IWRM, which in most settings is still in its infancy, must be backed up by the development of effective water governance (Rogers and Hall, 2002) that puts into place coherent systems. This in turn requires the development of human and institutional capacity to manage the resource and water-related services according to a range of social, economic, environmental, and technological principles (European Commission, 1998). These have yet to be fully absorbed by professionals, bureaucrats, and politicians for whom long-established mind-sets and rules of practice are understandably difficult to replace. Not only those specifically involved in water management need to be re-oriented. Many economic planners and finance officials have yet to appreciate water's role in all aspects of productive life, and the profound implications of water shortage and pollution for the livelihoods of the population as a whole, let alone its most vulnerable members. Water's role in poverty reduction is significantly under-esti-

mated among decision-makers and development practitioners of all kinds. As a starting-point, a much better analysis is required of the interconnections between access to water and water-related services, and the priority needs of those whose lives are supposed to improve as a result of poverty-reduction initiatives.

In all competitions over resources, there are always winners and losers. IWRM is not a silver bullet and does not avoid the problem of difficult trade-offs; it merely makes these possible to identify and moderate, and to establish a framework in which all the different users and stakeholders can have their say. In order for people living in poverty to do so effectively, significant affirmative action on their behalf will be needed. It is only realistic to recognise that political resistance in many settings will be considerable, and the implementation of IWRM will have to grapple with the trade-off between the feasible and the theoretically ideal. The need to secure the rights of vulnerable groups to their natural resource base of land and water should not be sacrificed in the cause of service efficiency and cost-recovery.

The following recommendations emerge from the paper:

- Since 'water poverty' is an important and unrecognised component of poverty generally, and lack of access to water resources and adequate services is integral to the disadvantaged situation of the vast majority of the poor, a concerted effort should be made to promote a paradigm shift in thinking about poverty. If the parameters of water's role in poverty were extended beyond drinking water supplies and sanitation to land and water use in productivity and livelihoods, the case for IWRM as part of poverty reduction would become self-evident.
- Sectoral approaches to water resources management need to be abandoned, not only on grounds of inefficiency, unsustainability, and lack of environmental protection, but because they are unlikely to promote equity. Up to now, the only sectoral programmes specifically targeted to poor people have been rural drinking water and (dry) sanitation programmes, and some smallholder irrigation services, conservation schemes and urban supplies projects. However, since their thrust has mainly been to expand coverage, information

about their impact on poorer groups is sketchy and assumption-led. If sectoral policies were brought within one framework, allocations between users, including lower- and higher-income groups, could be managed in a transparent, democratic and equitable way.

- Care needs to be taken that recent changes in water-related policy deriving from the Dublin principles – water is a scarce resource, water is an economic good – are not introduced in such a way as to discriminate against poor people. In any competition over scarce resources and services for which payment is required, those with least economic and political clout will lose out unless their interests are defended. Experience has shown that reduction of subsidies, charging of fees, privatisation of services, and decentralisation of maintenance and ownership to community groups, can discriminate against poor people unless introduced in an enlightened, efficient and equitable manner. IWRM cannot guarantee that this will happen, but it makes the prospects more likely.
- Those cases where IWRM already operates at community and area level should be given a greater degree of formal recognition, and those authorities which have been unwilling to incorporate these approaches into mainstream water- and land-use policies should be encouraged to do so. Efforts should be made to explore and solve the problems of introducing watershed- and catchment-based management of natural resource bases on which so many livelihoods depend, in co-operation with existing administrative and political jurisdictions.
- Reforms to laws, policies, institutional and management structures designed to promote integration of policies and services should place an important emphasis on equity and poverty reduction. The need for democracy, transparency, and information sharing in the context of major infrastructure projects, especially those which involve substantial environmental changes, should be underlined. Advocacy relating to IWRM should emphasise its value in poverty reduction strategies, which should repair their neglect of water resources management as a necessary component.

- Within IWRM frameworks, specific policies and programmes should be undertaken to redress the disadvantages of at-risk and vulnerable groups, especially those living in marginal, drought- or flood-prone environments, and those already suffering from exclusion such as indigenous groups, those in shanty-towns and illegal squatter settlements, and those suffering from other forms of disadvantage such as women and children living in rural or urban poverty without support from male bread-winners.

IWRM cannot be a panacea for poverty reduction, as this paper has repeatedly underlined. However, it can facilitate management of water resources and water services in ways that will help to reduce poverty. Any proposed change in laws, policies, and administrative structures has implications for winners and losers which may not be clear at inception. Since IWRM contains prospects for the equitable allocation of benefits from water and services dependent on it, it is important that these opportunities for healthier and more productive lives among the most at-risk and disadvantaged population groups are not lost, but are transformed into reality.



## References

---

- Agarwal A and Narain S (ed), *Dying Wisdom: 4th Report on the State of India's Environment*, CSE, Delhi, 1997.
- Bhatia R, *Poverty and Irrigation in India: Some Empirical Findings*, Research Report, Resources and Environment Group, New Delhi, Draft, January 2000.
- Black M, *Learning What Works, A 20-year Retrospective View*, UNDP-World Bank Water and Sanitation Programme, 1998; based on Jennifer Sara et al, *Rural Water Supply & Sanitation in Bolivia*, UNDP-World Bank WSP, 1996.
- Burton M A, *Water, conflict and the environment: A case study from Tanzania*. In *Water: Economics, Management and Demand*, Eds. M. Kay, T. Franks and L. Smith. F&N Spon, London, 1997.
- Cornish G A and Lawrence P, *Informal irrigation in peri-urban areas*, DFID Research study OD144, HR Wallingford, November 2001.
- Chambers R, *Managing Canal Irrigation: Practical Analysis from South Asia*, Cambridge University Press, 1988.
- EC, *Towards sustainable water resources management: A strategic approach*, EC Guidelines for water resources development and management, EC, 1998.
- GWP, *Towards Water Security: A Framework for Action*, GWP, March 2000.
- GWP, *Integrated water resources management*, TEC Background Paper 4, GWP, March 2000.
- GWP, *ToolBox for IWRM*, Version 1, GWP, December 2001.
- IFAD, *The State of World Rural Poverty*, IFAD, 1992.
- IPTRID, *Irrigated agriculture and poverty reduction*, IPTRID, 1999.
- Jones W I, *The World Bank and Irrigation*, World Bank OED, 1995.
- Kemper K E, *Overcoming Water Scarcity and Quality Constraints: Markets for Tradable water rights in Chile*, IFPRI, 2001.

Ondeo, Water Supply in Low-Income Areas, West Zone Metro-Manila, Paper by Ondeo Services presented at Water and Poverty Conference Dhaka, September 2002.

Postel S, Last Oasis: Facing Water Scarcity, WWI and Norton, 1992.

Rogers P and A W Hall, Effective Water Governance, GWP, TEC Background paper No 7, November 2002.

Silkin T, Hitosa Water Supply: A People's Project, WaterAid, 1998.

Solanas M and F Gonzalez-Villarreal, The Dublin Principles for Water as Reflected in a Comparative Assessment of Institutional and Legal Arrangements for Integrated Water Resources Management, GWP's TAC Background Paper No 3, 1999.

Tushar Shah et al., Institutional Alternatives in African Smallholder Irrigation, IWMI, Research Report 60, 2002.

UNDP, Human Development Report 1990, OUP, 1990.

UNDP, Human Development Report 2001, OUP, 2001.

UNICEF, Learning from Experience: Evaluation of UNICEF's Water and Environmental Sanitation Programme in India, 1966-99, UNICEF New York, 2000.

World Bank, Water Supply and Sanitation Projects: The Bank Experience 1967-87, World Bank Operations Department, 1992.

World Bank, Voices of the Poor, a Study in three volumes commissioned by the World Bank, OUP, 2000.

van der Zee J J et al., The Impact of Farm Water Supply on Smallholder Income and Poverty Alleviation along the Pacific Coast of Nicaragua, CESADE, Nicaragua, 2002.

World Bank, Attacking Poverty, World Development Report 2000-2001, World Bank, 2001.

WSSCC, Vision 21: Water for People, A Shared Vision for Hygiene, Sanitation and Water Supply, WSSCC, March 2000.

Previously published papers in the TEC Background Papers Series:

- No 1: “Regulation and Private participation in the Water and Sanitation Sector” by Judith A. Rees (1998)
- No 2: “Water as a Social and Economic Good: how to Put the Principle into Practice” by Peter Rogers, Ramesh Bhatia and Annette Huber (1998)
- No 3: “The Dublin Principles for Water as Reflected in a Comparative Assessment of Institutional and Legal Arrangements for Integrated Water Resources Management” by Miguel Solanes and Fernando Gonzales-Villarreal (1999)
- No 4: “Integrated Water Resources Management” by the GWP Technical Advisory Committee (2000)
- No 5: “Letter to my Minister” by Ivan Chéret (2000)
- No 6: “Risk and Integrated Water Resources Management” by Judith A. Rees (2002)
- No 7: “Effective Water Governance” by Peter Rogers and Alan W Hall (2003)



This paper is printed on swan-marked paper.

The Nordic swan mark guides consumers to the most environmentally sound products. To acquire the swan symbol, producers must adhere to strict guidelines which are revised on an ongoing basis. This paper was produced according to these guidelines.



GWP Secretariat, Hantverargatan 5, SE-112 21 Stockholm  
Tel: +46 (0)8 562 51 900 Fax +46 (0)8 562 51 901  
E-mail: [gwp@gwpforum.org](mailto:gwp@gwpforum.org) website: [www.gwpforum.org](http://www.gwpforum.org)

ISBN: 91-974559-0-3