

FINANCIAL SUSTAINABILITY OF SOIL AND WATER COMMITTEES MECHANISMS AND OPPORTUNITIES

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1. Introduction

Sustainability of development of a region has gained increased importance ever since the environmental and social concerns regarding development have taken deep roots in the thinking of people and governments. No longer can large development projects be sold merely on benefit-cost ratios. Gradually, the number of stakeholders interested in or affected by development has increased to the extent that typically membership of River Basin Organizations or Basin Water Councils (BWC), new organizational set-ups designed to promote integrated river basin development and management, now run in scores cutting across nearly all segments of the society; government and non-governmental, public and private, local and regional etc.. Managing the concerns of all stakeholders has become a complex activity, not only in terms of creating suitable management bodies generating a mix of 'public and private system which should not only be financially independent, socially oriented and sensitive to environmental aspects, but must also act in a democratic and participative manner' (Dourojeanni, 2001). "Sustainable development does not refer to a tangible and quantifiable goal to be achieved in a given period of time, but rather to the possibility of maintaining a balance between factors that explain a certain level of development among human beings, a level that is always transitory, evolving and at least in theory should always lead to an improvement in the quality of human life (Dourjeanni, 1994). Sustainable development is thus the result of a set of decisions and processes which have to be carried out by generation of human beings, under ever changing conditions and usually insufficient information, subject to uncertainties and with goals which are not shared by a population that is showing a growing trend towards individualism.

Sustainable development however, seems to set very broad goals without laying out specific measures to achieve them. These include;

- Territorial organization for the management of each resource and environment
- Organization and training of the population
- Research on ecosystems
- The establishments of systems of management of given areas
- Strengthening of public institutions (especially local governments) to provide support for environmental management
- Awareness of economic value of natural resources
- Keeping of natural heritage accounts, and
- Preparation of operating manuals and rules
- Financial stability of river basin organizations and authorities

The last of the above items is the focus of this paper, i.e the financial sustainability basin water committees or councils now preferably called “soil and water committees”.

The financial sustainability of basin water councils is linked not only management and operational structures of the water councils, but depends a lot on the financial health of all water related and environment agencies. An authority struggling to meet its operating expenditures has little time or resources to be involved in other basin activities. Traditionally, there is little problem in finding funding sources for initial investment in hydraulic works; it is the stage of operation and maintenance of the systems that poses a challenge to viably sustain activities of authorities. In order to understand the financial implications in a river basin, it is important to understand the river basin processes, the functions, the institutional structure, the dynamic of finance and funding sources in a river basin.

2. Integrated Management at River Basin Level

In all river basins people are daily performing thousands of actions. The fact that they perform these actions does not imply that they are automatically part of a process of river basin management, let alone that they are integrated. In order to form part of a process of river basin management, such actions must first be coordinated with one another with due regard for their joint effect on the dynamics of the river basin and its inhabitants. It is not necessary, however, to co-ordinate all the actions executed in a river basin. Only certain actions have to undergo this process, such as decisions regarding flood control or the multiple use of a basin’s water. For the process of river basin management to be “integrated”, actions have to be performed which yield benefits in both the productive and the environmental senses in the light of basin’s behavior. In addition, the management system has to be such as to allow users to take part in decision-making in the interests of equity.

The management of a river basin relies on the conjunction of two groups of complimentary actions. One group of actions directed towards developing the natural resources (using, converting and consuming them) present in the river basin in order to boost economic growth, and a second group of actions directed towards managing them (conserving, reclaiming, and protecting them) with the aim of ultimately ensuring environmental sustainability.

The Integrated Management at River Basin Level (Table 1) consists of preliminary, intermediate and permanent stage. The preliminary stage is the planning stage, involving studies, plans and investment in key projects. The intermediate stage is development stage, such as construction of storage dams, irrigation and drainage networks, forest and natural resource management etc. The third stage is most critical and that is the operational and management stage in which the impacts of projects and issues of maintenance and sustainability become important.

Table - 1

MANAGEMENT AT THE RIVER BASIN LEVEL: STAGES AND OBJECTIVES

| | River basin management objectives | | |
|---|--|--|--|
| Management stages | Integrated use and management | Use and management of all natural resources | Water resources management (integrated or sectoral) |
| | (a) | (b) | (c) |
| (1) Preliminary stage | Studies, plans and projects | | |
| (2) Intermediate stage (investment) | River Basin Development | Natural Resources Development | Water Resources Development |
| (3) Permanent stage (operation, Maintenance, management and conservation) | Environmental Management | Natural Resources Management | Water Resources Management |

“Watershed Management”

Source: Axel Dourojeanni (1994)
Economic Commission for Latin America and the Caribbean

3. Operational Aspect of River Basin Management

a. Processes involved in river basin management

River basin management involves a series of parallel processes that can be implemented in parallel. These include: (i) communication and awareness-raising (ii) formation of alliances and agreements; (iii) legalization of operations; (iv) scenario development, evaluation and diagnosis (v) operational consolidation of each water user (vi) administrative organization; (vii) economic valuation and preparation of strategies; (viii) operation of the shared hydraulic system; (ix) conservation of bodies of water, natural habitats and biodiversity; and (x) water pollution control, stream corridor restoration and recovery of rural and urban drainage capacity. These processes can be divided into three groups: a central coordination process, a group of socio-economic processes, and a group of physical and technical processes.

Communication and Awareness-raising

It is important that all the stakeholders in the basin are fully aware and informed of the need to have a river basin organization. Data should be collected which organizations are operating in the basin, which of them distribute water, how they measure distribution, are there any water quality records, how they operate existing water systems and with what resources.

Formation of alliances and agreements

Alliances should be formed between various stakeholders; public, private, NGOs, local governments, universities and professional organizations. The focus should be on a small clear cut objective such as clean-up of a lake, reforesting a river bank, administering the water of a river or a canal etc. Cooperation on a smaller scale will lead to fostering alliances on a larger scale.

Legalization of operations

Although the River Basin Organization should be given a legal cover eventually, work can be started by simple agreements between various organizations for specific tasks on smaller scale. Legal status can be given to actions by ministerial resolutions establishing special programmes and projects and responsibilities which are assigned by law to local governments which then give their actions legal status through the modalities of ordinances, regulations and other directives.

Scenario development; evaluation and diagnosis

Once a minimum commitment has been obtained from stakeholders then they should be encouraged to participate in public debates about the issues to be addressed. The use of GIS can be extremely helpful in this case.

Operational consolidation of each user

Once the stakeholders have started complying with minimum standards and requirements, they should be encouraged to consolidate on the gains. For example, support should be given to agriculture users. Drinking water supply and sanitation services, mining, fisheries, recreational users, who alter the flow, quantity of water to some degree to conform to standards.

Administrative organization

Administrative framework must be established for collection of charges, registering of stakeholders, accounting, financial controls, monitoring and ensuring compliance, procurement of equipment and hiring of staff and consultants. Good financial management is key to the survival of BWC and it can happen only if it generates confidence in its financial management and quality of work.

Economic valuation and preparation of strategies

Plans and strategies are presented in the form of programmes of work that have due technical and financial backing. Once the plans are put into place the process of planning never ends.

Operation of the shared hydraulic system

Qualified technicians are needed to operate and maintain the hydraulic system that should include water monitoring systems backed by a strong communication network.

Conservation of bodies of water, natural habitats and biodiversity

Besides operation of hydraulic systems, works are also required to restore river banks, rehabilitate biological habitats. Landscape and biodiversity must be maintained. Account of normal and seasonal flows needs to be maintained.

Water pollution control, stream corridor restoration and recovery of rural and urban drainage capacity

In most river basins, with high urban concentration, the rivers and streams are already polluted many to irreversible situations. Restoration of those rivers is a huge task that has only been accomplished in some industrialized countries.

b. Functions of Basin Water Council

Coordinating Function

The river basin organization should serve as a coordinating forum for water resources management using water/environmental criteria. The extent of the organizations executive power (i.e. rights and responsibilities) should preferably be stipulated in water law. In carrying out its duties, the new organization should respect those organizational and functional multi-purpose water management structures already in existence that operate efficiently.

Administrative Function

In order for the river basin organization to accomplish its administrative functions, it is vital that the law require internal administrative regulations to be drawn up for each of them.

Allocative Function

If the river basin organization has the power to allocate functions and responsibilities to other bodies or users with a view to improving multi-purpose water use, the law should state exactly how this is to be done. In order to ensure the users commitment, the legislation in force should provide for and facilitate their participation in water resources management, since clearly not all will be willing to rulings by a river basin organization and will thus oppose the creation of such an organization at least initially.

Consultative Function

Aside from its coordinating role, the river basin organization should be able to provide advice to other bodies involved in water management at the river basin level. One essential aspect of this function consists in providing the agency responsible for granting water rights with information on the water balance in the river basin.

Monitoring Function

The river basin organization should be charged with monitoring watercourses in the river basin from their source, over the entire length, and in respect of all their uses. This requires the existence of standards in respect of water quality and quantity which serve as the legal framework for the task of monitoring compliance. Standards and regulations will only be observed if, in addition, arrangements to penalize non-compliance effectively have been put in place.

Arbitration Function

Since the river basin organization is a coordinating body with participatory management, it is also considered to be the most appropriate entity for acting as the arbiter in disputes that arise over water use, as well as for preventing disputes.

c. Institutional Structures for River Basin Management

Management Structure

Management structure vary depending on the extent t which the different actors participate in the management process. The name given to the river basin organization does not necessary reflect their degree of participation in the decision making process. The most common formulas are; “river basin commissions”, river basin committees”, “river basin councils” and “river basin agencies”, which display a wide range of types of participation by the actors involved in the decision making process. In other cases, the management structure consists of aboard of directors, which may be composed of government officials only or may include users, NGOs, universities etc. The board of directors should have the power to decide, resolve and enforce agreements. (It should not be merely an advisory or coordinating body).

Operational Structure

An operational structure is the body that puts the decisions of the management group into practice. It executes actions and processes, either directly or through consultants and contractors. The operational structure of a river basin organization must have highly qualified personnel. They are the “agency” in the strict sense, although they may be known by other titles, such as executive office, technical group, technical office, corporation or even institute, for example. The operational structure is the one responsible for providing studies and information that the management group needs to take decisions.

Financial Structure

The body responsible for raising financial resources is one of the most difficult to design. In many countries, it is common to find that financial resources for river basin management are only available at the phase of executing hydraulic works, which is obviously not the solution for a river basin organization that is intended to be permanent. Few “models” of financial structure are transferable from one country to another. The “polluter pays” principle and subsidies and incentives are a good option but are clearly insufficient and even inapplicable to any river basins that are characterized by informal settlements and producers. Any financing proposal must take into account the situation of the country, region and river basin.

4. Financial Sustainability Of Basin And Basin Organizations

The financial sustainability of basin and basin organizations is critically dependent on what people pay for using water. If irrigation use is the predominant water use in a basin, as is mostly the case, then the water charges for irrigation is critical in determining whether irrigation authorities are financially sustainable or not, given that the operation and maintenance of an irrigation and drainage system constitute the largest component of basin organization’s activity. In addition to irrigation, other uses

of water, such as water supply, wastewater, flood control, storm water all place demands on budgetary sources of a basin. The financial health of executing water agencies and authorities, particularly their operation and maintenance costs which largely depend on operating revenues determine the sustainability not only of the physical infrastructure but also of environment. If people pay minimal charge for water use then the water systems are bound to come under financial strain which in turn lead to degradation of the systems and of the environment. In Pakistan, which supports world's largest irrigation systems and which are central to Pakistan's economy, lack of proper maintenance of irrigation systems have resulted in catastrophic situation where increasingly farmers depend on groundwater to make up for irrigation shortages and because of the relatively poor quality of ground water the cultivated area has increasingly become saline.

Financial accountability is thus essential to all enterprises, public and private, including water resource activities. Financial planning for water is a sub-activity of overall water planning which involves anticipating and accounting for the flows of money into and out of water enterprise, from the inception of planning through operational phases. Financial planning requires a responsible assessment of the risks involved in different strategies and a careful approach to committing the public's resources, both present and future.

Financial planning of basin would require capital budgets for investment in infrastructure projects and operating budgets for operating and maintaining the systems. The capital budgets for building dams, water supply systems, wastewater collection and treatment systems, etc are often financed through national and provincial development budgets. Their operation and maintenance usually is done through operating revenues which depend on the water charge, property taxes, income tax, sales tax etc. In some cases, if the debt servicing is involved in capital budgets, these may be part of operating budgets of an authority. Financial planning must include future operating budgets and expenditure of water management agencies. For example, a flood control project may obligate the management agency to large future maintenance expenditures and these must be anticipated during planning phase.

Water supply system expenditures should usually be financed through operating revenues. Projects might include distribution system expansion, a new or expanded treatment plant, and improvements to meet water quality requirements. If all expenditures are carefully forecasted, rates should not rise too much. In water supply systems, revenues will also depend on population growth and per capita demand, so faulty forecasts can be harmful to financial management.

Wastewater systems usually face shortage of funds because people and governments seem less inclined to treat wastewater discharging into a river or stream. Storm drainage and flood control programs also traditionally have proved difficult to finance because of the "here today, gone tomorrow" nature of storm flows. Financial planning for storm drainage has become more sophisticated in recent years, and new concepts promise to tie storm-water benefits closer to assessments to improve the financial picture. A storm water "utility" approach as a means to raise funds to construct and maintain systems is becoming popular in industrialized countries. This approach to financing is appearing for other services as well, including street maintenance.

5. Sources of Funds

Financial planning requires supply of funds. For most part, water projects are financed from public revenue such as taxes, assessments and fees. Funding for capital budgeting is different from operating budgets. For the operating budget, fees and dedicated tax revenues are popular choices. Different jurisdictions utilize different mixes of taxes, but income tax, property tax and sales tax are normally the major ones. Whether the water entity is a creature of state to local government, the diversion of these taxes to water programs is a political decision.

The choice of fees or tax source is dependent on the political judgement of equity in a given situation. Today there is a marked trend towards self-finance for water programs. This means that the water service is completely self supporting on the basis of fees and charges. Taken to an extreme, this concept has secondary impacts which must be considered. For example, if a decision is made that a water and waste water utility will suddenly become self-supporting, with no subsidy from property taxes, low income residents will feel a punishing increase in rates. If the decision is to use a declining rate structure, then basic rates for small users will be high. If a 'lifeline' rate is used, some will object that it is unethical for one class of users to subsidize others.

The problem of financing capital budgets is more central to the planning function at national and provincial levels. Traditional sources of funds from Federal and Provincial budgets are drying up and innovative ways of creating financial sources are being thought of. In United States, following are various sources of financing water projects: (Grigg, 1985)

Local Debt Financing—bonds

- General obligation bonds
- “Mini” general obligation bonds
- Revenue Bonds
- Special assessment bonds

Local debt financing---State assistance

- Economic development funds
- State government obligation bonds
- Revenue bonds
- General fund appropriation
- Direct state purchase
- Bond banks
- Enterprise authorities
- State bond guarantee fund

Fee Systems

- User fees
- Impact Fees
- System development charges
- General facilities charges
- In-lieu-of-construction charges
- Latecomer fees

Lease Financing

- Straight-operating fees
- Lease-purchase agreement
- Leveraged lease financing
- Certificate of participation

6. Privatization

“Privatization” refers to the provision of public services by the private sector to help solve investment problems in water and wastewater facilities in new ways. Examples of past successful applications of privatization may be found in the areas of water supply, transit, solid waste management, and cable TV, to name a few.

Privatization seems to rise and fall with trends in the economy and in government regulation. Interest in private water systems, for example, has followed opportunity, and many of these systems are found in suburban situations where services were not available from the public sector. There are two new trends driving the interest in privatization: (1) a shift away from reliance on government spending at all levels and (2) greater incentives for the private sector in the form of tax credits and accelerated depreciation.

The concept that private enterprise can provide wastewater treatment without external grants at lower user fees than local governments even should the latter have substantial external grants. The conclusion is based on developments and assumptions that require further testing: the incentives of the tax act, the efficiency of private operations, and lower construction costs brought about by more rapid decision making and project implementation.

Steve Hanke, an economist with Johns Hopkins University, Baltimore, has been studying the financing of water facilities in several countries. In a Wall Street Journal article dated September 3, 1982, Hanke pointed out some of the advantages of private systems over public ones. In France it is quite common for water services to be handled through concession agreements. Private businesses can construct and operate water systems under long-term contracts with local governments. The plant and equipment will revert in their original condition to the local government at the end of the concession period. Another arrangement is for the public entity to bear the construction cost and for private business to operate the facility. Sale-and-lease back arrangements may also be used to the advantage of the public entity.

7. Water Charges for Irrigation

a. Purpose of Water Charges

Water charges to be paid by users for irrigation usually represent the largest source of revenue in a basin. Water charges represent payment to an irrigation authority for the delivery of surface irrigation water. Revenues from the charges should normally be sufficient to allow irrigation authority to meet reasonable costs of providing this service, thereby allowing it to operate as a financial autonomous body. Revenues

would be needed to cover expenditures for satisfactory performance of canal systems, for the rehabilitation and replacement works as needed, including the overhead administrative costs of irrigation authority. In addition, a portion of its revenue may be earmarked for funding activities of Basin Water Council. Capital works would normally not be funded with water charges.

b. Form of Water Charges

Crop based charges

In most countries of world (Pakistan, Iran, India etc.), water charge is actually a crop tax and often for the purpose of raising revenue in general and not for the purpose of operating and maintaining the irrigation system. The situation is further complicated in areas where groundwater usage is extensive making water charge linkage to irrigation services distorted. Crop-wise fee structure usually varies with type of crops either in terms of value, water use, or the length of time that the crop occupies the land.

Volumetric Charge

In canal irrigated area the actual volume of water delivered in a unit time depend on the flow in canal which makes the volumetric measurement cumbersome and hence determination of water charge for each irrigation becomes difficult. In such a case, a quasi-volumetric approach could be used by using a flat fee per day that the canal is open. Usually the farmers on a canal have a fixed time depending on their land holding. Some allowance is made for farmers at head or tail of canal, although the farmers at tail end usually have lot of complaints.

c. Magnitude of Water Charges

Water charges are usually fixed through legislation and they tend to remain fixed for fairly long period of time falling behind inflation rate thus causing financial problems for irrigation authorities. It is a politically difficult decision to raise water charges to their nominal monetary amount. It is not uncommon to postpone such decisions for long periods, increasing the budgetary gap between the revenues received from irrigation charges and irrigation expenditures.

One alternative that has been used fairly successfully in the Philippines is to establish the water charge in terms of the value of a specified amount of a key commodity produced in the irrigation area. As the price of this commodity increases, the amount of funds generated by the unchanged water charge also increases. While commodity prices are not a perfect index for inflation, this approach is likely to reduce the problem of a decrease in the real value of the charge due to inflation.

d. Ability of Farmers to Pay Water Charges

A major concern with respect to raising water charges is the ability of farmer to pay for the increased water charge. This is complicated in part because of the variability that always exists among farmers in the benefits they receive from irrigation, and thus

their ability to pay for it. It is also often difficult to estimate the increase in net income that the farmer receives as a result of irrigation. Yet it is this increase that represents the upper limit of any reasonable economic definition of the farmer's ability to pay, because payments in excess of this amount would leave the farmer worse off than if he had not received irrigation water at all. One way to estimate the ability of farmer to pay for canal irrigation water is to consider what they pay for private tube well water. It may be argued that canal water maybe of higher quality than tube well water, but on the other hand farmer has greater control of timing over tube well water which is available on demand and thus has higher economic value, as many studies in Pakistan indicate.

8. CONCLUSIONS AND RECOMMENDATIONS OF THE IIWORKSHOP FOR MANAGERS OF RIVER BASIN AUTHORITIES IN LATIN AMERICA AND THE CARIBBEAN ON FINANCIAL ASPECTS OF RIVER BASIN AUTHORITIES

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| <ul style="list-style-type: none"> ♦ Modern legislation must specify the need to determine the value, price, and scales of charges for water, taking into account the fact that water is not only a resource and a socio-environmental factor, but also an economic good. |
| <ul style="list-style-type: none"> ♦ To determine the economic value of water it is useful to use the market as a mechanism for allocating rights and financial contributions. It should be borne in mind that this principle is not absolute and that the market for water rights must be regulated by the State. |
| <ul style="list-style-type: none"> ♦ It is more efficient to meet the need for financial resources to support river basin authorities than to provide the same resources in order to alleviate the consequences of a negative impact caused by the lack of such management. |
| <ul style="list-style-type: none"> ♦ In many of the countries of the region, major weaknesses in existing legislation make it difficult to establish sources of financing which are clear, transparent and sustainable in the long term. The main weaknesses in the system of financing of the water sector are not solely a matter of charging for water use as such, but also have to do with deficiencies in supervision and pollution control, water resources conservation, and monitoring the effects of extreme natural and other phenomena. |
| <ul style="list-style-type: none"> ♦ In practically all countries of the region, water users are willing to pay for water-related commercial service. Furthermore, in some countries there is a growing belief that payment should be made for water use or for activities which cause externalities, and that the funds collected should be used to finance water management activities. |
| <ul style="list-style-type: none"> ♦ Some countries of the region have already implemented or are implementing systems of charges for water use, there are similar proposals in other countries, and many countries already have the elements that would be needed for the possible implementation of such systems. |
| <ul style="list-style-type: none"> ♦ The basic charge which is used for maintaining a water management entity at the river basin level should come from a fixed, permanent source, contributed by water users and by all the inhabitants of the river basin. Charging for contamination will only be feasible once systems are in place for direct or indirect measurement of contamination, which may take over 10 years; a simple system of charges should therefore be used initially. |
| <ul style="list-style-type: none"> ♦ Multilateral financial assistance institutions should expand their activities to support the creation of water management organizations at the river basin level. |

Source: ECLAC (1997), Report on the Second Workshop for Managers of River Basin Authorities in Latin America and the Caribbean. Santiago, Chile, 11-13 December 1997, LC/R. 1802, 1 September 1999, Santiago, Chile

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