

PROVEN INSTITUTIONAL, FINANCING AND PRICING PRINCIPLES FOR RURAL WATER SERVICES

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ABSTRACT

The International Commission on Irrigation and Drainage created a Committee in 2001 to prepare a Position Paper in response to the World Water Vision's proposed "full pricing" of services to ensure sustainability. International experience in the structuring of service entities, cost recovery and financing investments was considered in the adopted response. Historically, beneficiaries formed what have proved to be self-sufficient service entities for urban supply, irrigation and agricultural and storm drainage. Rapid expansion of services by governments after 1945, resulted in services that were not self-sufficient and systems having serious physical deficiencies in design and construction. Under-funding of O&M due to inadequate cost recovery and insufficient subsidies resulted in mounting obligations. Structuring system transfers to beneficiaries has proven difficult at best.

INTRODUCTION

The Hague's World Water Vision proposed 'full pricing' of water-related services as essential to the socio-economic sustainability of the services. In response, ICID charged the Task Force Committee (TC3) to prepare a Position Paper on the subject. The final Position Paper, *Irrigation and Drainage Services; Some Principles and Issues Toward Sustainability*, is available at www.icid.org

Long-term sustainability of services – irrigation, drainage and flood control – is not possible without full payment of the financial costs incurred. The relevant question posed is; who among the beneficiaries and national and local taxpayers is going to pay what share of the cost of each of these services? This is a highly emotional and politically charged issue with a range of philosophical views. The question is of particular interest where governments are subsidizing such services and by people who wish to influence water-use through pricing or distribute costs broadly within the local economy. The unreliability and inadequacy of subsidies as other demands on the government's budget grow poses increasingly serious risks to the sustainability of services as evident in too many countries.

The ICID Position Paper includes an Annex describing institutions, financial mechanisms and pricing principles utilized by existing successful entities providing these services. Many fully self-sustaining service entities continue under practices devised in the 1800s and early 1900s -- some several centuries

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earlier – well before major involvements by governments and international agencies. Countries and people that deal with the issues of financial sustainability would find it prudent to examine what has proved successful before imposing unproven concepts on farmers and taxpayers.

This paper provides a highly condensed summary of some key feature of long-established services described in the Annex to the Position paper. But first a summary of the TC3 Principles is provided as background to this discussion.

SYNOPSIS OF PRINCIPLES IN TC3 POSITION PAPER

A draft TC3 Position Paper, reflecting discussions at the 2003 Montpellier ICID meetings and modifications obtained from later exchanges among ICID members, was addressed in the Moscow meeting in 2004. Five principles are recommended to guide measures to improve the sustainability of water-related service agencies.

Principle 1 – Transparency of Cost Recovery TF3 advises to carefully define the scope of the services, identify all beneficiaries, and enter a contract stating responsibilities, accountability and charges; key elements towards sustainability.

Principle 2 – User empowerment TF3 advises to define formal means for agency/customer meetings, maintain a government oversight in the decision making on services consistent with its responsibility to represent the interest of society as a whole and the marginalised in society in particular.

Principle 3 – The “Sustainability Cost Recovery”, a first ambitious Step TF3 advises to place service entity’s budget priority on maintenance and renewal of the services infrastructure to guarantee the sustainability of the service and customer satisfaction, ahead of capital repayment coupled with staff constraints.

Principle 4 – Economic incentives towards “best practices” TF3 advises to keep a discussion of economic incentives as a last step for irrigation services until the services reach maturity, because such pricing systems are efficient only if they are understood by customers that are able to adjust their behavior in response to the incentive.

Principle 5 – Clear Policies TF3 advises to emphasize to the public that irrigated agriculture is governed by two policy areas – agricultural and water -- with conflicting rules and objectives. These conflicts should be explained in discussions with people in other water sub-sectors so their leaders may understand the complex nature of measures to ensure the sustainability in irrigated agriculture.

PERSPECTIVE FROM EXPERIENCES WITH SUSTAINABLE WATER-RELATED SERVICES

Reasons for Sustainability and Self-Financing

The concept of socio-economic sustainability of irrigation, drainage and flood control services is not new. Sustainability has been, and continues to be, the fundamental characteristic that rural societies seek in all factors important to their primary economic activity -- agriculture. The extent of services required differs from one area to another, but their effectiveness is a primary determinant of the farmers' success. In turn, the adequacies of the associated institutions and financial mechanisms have been critical to achieving 'sustainability'. The same may be said of urban residents and their services -- and has held true for centuries.

Accordingly, those engaged in the field and political leaders responsible for the welfare of their people should consider what prior generations did to create self-sustaining services. Most of the service problems today reflect the investment and institutional actions of governments during the previous 70 years. During this period, organizational and financial principles were determined mostly by politics and good intentions, discarding many principles devised much earlier. The governments in developing countries made the decisions on constructing services, including the extent and means for financing. Prior to the recent burst of development, farmers and rural communities largely made those decisions.

Further limiting today's options are the increasing demands on government budgets to support the rapidly expanding urban population. The needs for improved health, education and infrastructure, are forcing governments to reconsider their financial support for rural services. Political influence is shifting from the rural to the urban areas reducing the rural sector's ability to maintain its historic share of the budget. As a consequence, countries are rushing to transfer to the farmers the responsibility for most, if not all, O&M and facilities rehabilitation of the governments' recently-built systems.

Water-related Services

The scope of water-related services provided by agricultural service providers is far more extensive than implied in much of today's discussions that dwells on irrigation. Farmers (and ICID) also deal with agricultural drainage, storm water drainage and flood control, which are not 'water uses' nor easily measured services. Though covering a far greater farm area than irrigation, the sustainability of these agricultural water-related services is not adequately addressed in deliberations or literature -- either within ICID or within the larger public debate. They are seldom mentioned in discussions of cost-recovery for services. Nevertheless, these services must be just as sustainable, in every measure, as irrigation. The failure of any one of the non-

irrigation services in an area will directly affect the sustainability of the area's irrigation.

A second omission in discussions is the fact that most successful government and farmer-owned service entities provide more than one of the identified services as dictated by the farmers' needs. Most irrigated rice areas in the world also have storm drainage problems. Most irrigated arid regions have agricultural drainage needs. Agricultural drainage was taught in conjunction with irrigation for a reason. Thus, the form of service provider and the method of cost recovery and financial self-sustainability must be tailored to the situation.

A third omission is the need to deal with the growing situation where one water services entity will provide both village and agricultural services. This is forced by constraints on the area's water supply and the need for drainage and local flood protection by expanding villages. At the same time, village waste disposal may affect costs of both water supply and the drainage services. Obviously, there are differences in the supply reliability and annual service period required by villages compared to irrigation that should be reflected in service charges and cost-recovery mechanisms.

Water-related Service Entities

In this document, the term Water Service Entity (WSE) is used to denote the service provider, whether the service is irrigation, agricultural drainage, storm drainage, flood control, a mix of them (which is the scope of ICID) or even a joint service with villages. The organizational form of the WSE may be a government agency; a quasi-government customer-owned; a non-profit customer-owned mutual; or an investor-owned organization. The concepts of financial sustainability, financial self-sufficiency, financing mechanisms, service charges and fundamental responsibilities are similar. The form of WSE, however, appears to directly influence its ability to become self-sufficient.

One class of WSE warrants particular attention. Quasi-government entities have very limited government powers, but play a major role in providing services to rural customers. These entities have none of the traditional powers of civil government and do not report to other government agencies, except where a local body may administer such a WSE, for example a 'country' drainage district.

Their classification stems from their power, granted by legislation, to levy property taxes – a government-only power. They may secure loans and issue general obligation bonds backed by the power to tax all members. In the case where a bulk water supply or irrigation WSE constructs hydro-generation facilities, it may also issue revenue bonds backed by power sales. These powers make this class uniquely advantaged to assure financial self-sufficiency – equal to the capability of financially

isolated subunits of local government that provide urban water, sanitation and storm drainage services.

Service, Institutional and Lending Principles that Affect WSE Financing

All water-related services provide economic and social benefits directly to identifiable beneficiaries. It has been historical practice and a basic policy of social equity that groups within society who directly benefit from a service, particularly if it supports economic activity, should pay the resulting costs. This holds true for urban and rural services in the developed and most developing countries. In countries where the government's social policies do not require beneficiaries to pay full costs of services, the government should explicitly, by a legal document, identify the sources of the replacement funds and the mechanism and schedule for full payment to the WSE funds sufficient to cover the full cost of the services. Anything less precludes sustainability.

Increasingly, WSEs – new, existing and transfers – will need access to commercial bank loan and bond financing. Such arrangements are common in countries where WSEs are financially self-sufficient, particularly for the larger schemes. The legislation would be most effective in lowering borrowing costs if it includes the means to create quasi-government WSEs and the mandate and means for auditing the WSEs.

The policies of lenders may directly determine cost-recovery mechanisms and other characteristics required of the WSE, regardless of its form or its service. Lenders will insist upon reliable and fully adequate sources of revenues for the period of the loans or bonds. Government subsidies to the WSE should be explicit in legal documents, since lenders discount the reliability of subsidies subject to politics. For long-term financing of new or rehabilitation of existing works, lenders will require full cost recovery and usually that the WSE has powers of taxation and an adequate emergency reserve fund or like means to carry it through periods of lower revenues caused by drought or economic downturns.

Lenders want to ensure that there is an adequately reliable service to the beneficiaries to better guarantee their repayment capacity over time. During inevitable low revenue periods for a WSE, most lenders stipulate the priority of WSE expenditures using the funds available. Routine O&M is first priority, replacement of reserve fund is second, emergency funds is third, interest on loans and bonds is fourth and capital repayment last. (The WSE itself should have the same policies relating to its cash flow.) Lender provisions will require automatic increases in charge rates if a prolonged revenue deficiency develops.

Lenders will require that a WSE providing water supply has been granted a legal, recorded permanent water-use right to the required quantity, quality and reliability of supply. This is as important to the lender as an assured revenue stream and for the

same reason – sustainability of the service, the agriculture and the WSE. And the farmers' expenditures to improve their agriculture, including irrigation technology, depend on permanent rights.

Governments need to establish a professional government audit/regulatory 'utilities' agency to review WSE borrowing plans and revenue assumptions, particularly if they involve bonds. This is essential to help assure the lenders and bond purchasers that the specific WSE's program is viable. Equally, such examinations will instill confidence in the broader use of this form of financing within the entire country.

Finally as earlier inferred, two other features of rural services may affect the form of WSE, service pricing and financing policies and mechanisms. These are the specific mix of services to farmers and the joint but different content of services that may be provided by a WSE serving both villages and farmers.

Considerations in Discussing Service Charge Practices

There must be both the political will to adopt and society's acceptance of the mechanisms for any service charge policy to survive. The policies and mechanisms for assessing and recovering charges must be simple, easily understood by the customer/beneficiary and judged to be obviously fair. The term used in this document is 'service charges' covering all methods of assessment – service tariffs, property taxes, routine labor assessment and one-time assessments.

'Market pricing' and 'opportunity-cost pricing' are not found in established WSEs or in discussions of their irrigation, drainage and flood control services. 'Market pricing' has very limited validity in formal transactions in irrigation (or urban) services. The prices of bulk water supply to San Francisco are a fraction of those in most neighboring irrigated areas and are not marked up to 'market' prices. Indeed, the San Francisco bulk water is not made available to any 'markets'. The physical, institutional, political and social restraints to market pricing in developing countries make it infeasible. 'Opportunity-cost pricing' is not utilized for any services in developed or developing countries.

As shown in the report, "ICID Survey on Funding of Operation, Maintenance and Management of Irrigation and Drainage Projects," (Lee, 2002), those WSEs obtaining customer payments close to full funding of O&M rely on both tariffs and some form of property taxes. These may be paid in labor, common in many developing countries, particularly on customer/beneficiary-owned schemes.

By far the most common basis for charges for rural and urban services – and found in utility principles – is full financial cost of services. Costs include investments, replacement, O&M and repayment of any borrowing. The calculation to collect all costs on a consistent basis from all beneficiaries is straightforward and the customer/beneficiary can understand the principle as being equitable.

There are strong economic and social equity arguments for countries to have consistent policies for the recovery of the costs for all services in both the rural and urban sectors. Discussions in any one sector should be within the transparent framework of policies that the country applies to all water-related services in all sectors. Then all beneficiaries will feel they are treated equally, garnering the political support so necessary for consistent payment of the charges.

Farmers in the adjacent areas of rainfed agriculture do not believe subsidizing irrigation is equitable when they receive neither a service nor a subsidy. Rarely is it judged equitable to assess any irrigation costs to adjacent villages any more than assessing those farmers for village services.

Gaps in Information on Policies and Practices

ICID has developed considerable information regarding service charges (Lee (2000)). The findings are based on data from schemes representing 'best practices' secured by the respective National Committees of ICID in twenty-three countries. Fifty WSEs are 'public /semi-public' entities where the government sets conditions of service, sets charges and usually subsidizes the service agency. Twenty-three WSEs are government departments that provide the service and a budget subsidy to augment customer payments, if any.

Unfortunately, there is inadequate information on customer-owned and managed service entities. Very few belong to the National Committees of ICID, essentially none in the developing countries. Country water departments have little information on this class of WSE and other organizations have conducted only limited investigations. Yet, very significant areas of developed and developing countries are served by farmer-constructed and owned irrigation and drainage systems that have proved over many decades to be financially and physically self-sustaining.

Customer/beneficiary-owned WSEs provide the majority of urban and rural water-related services in the world. These include sub-units of local government with taxing powers governed by a council that is elected by the customers, quasi-government with a customer-elected board of directors, and similarly organized non-profit WSEs without taxing powers. Typically, these are the best managed WSEs precisely because the customers agree to the service objectives and elect their representatives to the management body that has the power to hire and fire the administration and their workforce. The customers have a continuing 'regulatory' oversight with direct communications to WSE board members or governing council.

There is another characteristic common among self-sufficient irrigation WSEs; they retain the entire water right and do not distribute it among the members. The water right is the most important asset of these WSEs. The membership cannot afford to have some members sell their portion of the water right outside the WSE since it

affects the financial viability of the WSE and the operational utility of the infrastructure for remaining members. As mentioned, lenders rely upon this asset remaining in full with the WSE.

Obviously, there are a numerous examples where government agencies at the state or central level provide very efficient, high quality, reasonably priced services. Caution should be exercised before judgment is rendered concerning such WSEs. There are good reasons why village, town, county and city services are largely provided by subunits of local government in developed and many developing countries. Nevertheless, sustainability of such WSEs depend upon sound politics, comprehensive staffing rules and fiduciary oversight.

Information on performance and financing mechanisms, including any government subsidies and grants, for both urban and rural WSEs should be available in a common format to engender trust, transparency and equity.

A SYNOPSIS OF INTERNATIONAL EXPERIENCE WITH FINANCING AND COST-RECOVERY

A range of historical information is required to properly analyze options and formulate equitable, practical, financing and service pricing policies. Only a few of those cited in the Position Paper Annex are offered in this paper.

Full financial cost recovery discussed earlier largely held true in Europe and North America prior to the early 1900s and have been applied in many of the more recent agricultural projects. Prior to the era of international lending, construction and O&M of many existing irrigation systems in developing countries were entirely funded by the farmers organized as customer/beneficiary-owned WSEs. The approximate percentages of typical examples in 1995 amounted to; Nepal (65%), Indonesia (20%) and Morocco (55%).

The world-famous Valencia Water Court in Spain is but part of a very comprehensive WSE structure established by the Arab Cordoba Caliphate more than 1,000 years ago and respected by all subsequent governments. Provisions include water rights tied to the land and not permitted to be sold separately; firm operating rules and equitable full cost-recovery with an internal enforcement mechanism. This WSE has been fully sustainable through all matters of rule, adversities and economic conditions.

In widely separated countries, people living in areas prone to inundation by storm water organized and dealt with flooding in the same manner. In the Netherlands local rural communities in 1100, in Germany in 1200 and England shortly thereafter established what became customer-owned WSEs. To the many thousands of such WSEs in these countries may be added even more in North America. Earlier irrigation, drainage and flood control developments of similar structure are found in Asia, the Middle East and North Africa.

Today, government irrigation agencies apply some level of cost recovery through service charges on the recently constructed schemes. The greatest variation regards recovery of the capital cost component. Most developing, but also recent 'privatization' in developed countries such as Australia and UK have foregone recovery of past capital costs. Australia and UK policy is to recover costs on new investments – in the case of UK by the for-profit companies now operating the facilities. Through the assessment of labor input to constructing facilities from the potential local beneficiaries, the Chinese governments avoided a majority of the costs of building irrigation and agricultural drainage and even major components of regional flood control works. The policy of the US government is to recovery all capital costs of urban and power services. The only subsidies to federal irrigation projects is forgone interest on the initial construction. The full capital costs of irrigation is included in service charges, though ownership remains with the government. Taxes on farm produce are assessed in some countries. But it is difficult to ascertain the portion credited to the associated water-related services.

The recovery of capital costs of local flood control facilities varies greatly. Local storm drainage, agricultural drainage and flood control services typically protect all property within an area. Varying portions of capital costs are collected through a property tax or a required contribution of labor. Some countries assess costs for such services to all beneficiaries (occasionally prorated among zones of different benefits). Local government councils and their tax collection units often function as the management agency since O&M is low and intermittent, hence, no permanent WSE administration staff is required. Typically there is no cost recovery for regional drainage or flood control, though some, such as the China, may require adjacent beneficiaries to provide labor for maintenance.

Developed and the developing countries may subsidize construction to accelerate the completion of facilities – particularly for pollution control. All countries assist the most poverty stricken with access to services for purposes of basic health and those activities that they pursue for economic survival. It is in the later vein that countries justify irrigation and drainage subsidies.

An increasing number of developing countries that face rapidly increasing demands on their national budgets will have to require beneficiaries of irrigation and drainage services to pay full O&M, as a minimum, in labor or fees for the services. Otherwise there the services will wither.

Privatization has been touted as the solution. One can argue its virtues, but that doesn't alter the need for cost-recovery.

FINDINGS

The international experiences from this investigation indicate that:

1. Irrigation and drainage systems constructed by farmers prior to the era of major government involvement and with firm water rights, remain physically and financially self-sufficient.
2. One characteristic of self-sufficient WSEs is that service charges are levied to all direct beneficiaries at a rate that recovers all financial costs of service and nothing more. The only excluded cost might be recovery of investment if facilities ownership does not remain with the WSE. None include a component to provide for 'profits'.
3. Charges to a distribution WSE for bulk water supply provided by another WSE are incorporated together with the distribution WSE's costs into the customer service charges.
4. There are no example WSEs that base service charges upon the free market, opportunity costs, marginal costs or economic costs. This is also true of urban services except where WSEs charge a modified marginal cost to urban areas located outside of the WSE's legal service area.
5. The great majority of the world's WSEs that have proven to be self-sustainable are directly or indirectly owned and governed by local customers/beneficiaries of the service(s) structured as quasi-governmental WSEs or local government subunits governed by the beneficiaries' elected representatives.
6. Successful, for-profit, irrigation WSEs in developing countries are typically small, serving a cluster of farmers from wells or low lift pumps from channels.
7. Successful, farmer-owned WSEs for irrigation as a part of government projects were created simultaneously with or before the major works were constructed and are of the quasi-government form of organization. These receive bulk supply that may be subsidized or at full cost from a government system, but the WSE charges typically cover all internal distribution costs.
8. A majority of central or provincial government-operated irrigation WSEs in developing countries base charge rates on the recovery of a portion of service costs augmented by unreliable subsidies or are under-funding.
9. Irrigation WSEs recently created by the transfer of service responsibility from government in developing countries usually levy charges based on O&M cost with mixed results; many are deteriorating from lack of funds to rehabilitate facilities. Water rights are often found to be questionable.
10. Self-sustaining storm drainage WSEs continue to be constructed by beneficiaries in developed countries utilizing quasi-governmental forms of organization without government financial support.
11. Local and regional flood control has a mixed history with governments assuming increased responsibility and costs as the protected area increases.

REFERENCES

Lee, P. (2000), "ICID Survey on Funding of Operation, Maintenance and Management of Irrigation and Drainage Projects." ICID Central Office, New Delhi. www.icid.org