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COST RECOVERY AND RELATED ASPECTS OF RURAL WATER SUPPLY

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ABSTRACT

Water can be described both as a basic need and as a scarce resource.

As in the case of the other basic needs of food and shelter it should, in the first instance, be considered as the responsibility of every individual, family and community to supply in its own needs, either through payment or some other appropriate method of making at least some contribution towards the satisfying of its basic needs.

In any given situation the availability or scarcity of water as a resource is a function of its quantity, its quality, its locality, its accessibility and its dependability (or consistency of supply).

In the case of a water supply scheme, one can say that the water is free but that there is a cost attached to both the improved availability and the increased scarcity of the water.

Aspects related to the recovery of this cost that are briefly discussed include technological appropriateness and adequacy; opportunity cost of capital and of other resources; a framework of reference for development that firstly addresses needs and then resource development; the phasing and prioritizing of resource development; community involvement; willingness and ability to pay; subsidizing; user charging and the need for appropriate institutional arrangements.

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COST RECOVERY AND RELATED ASPECTS OF RURAL WATER SUPPLY

Water can be described in many ways. One way to describe it is to say that it is a **"basic need"**. Another is to say that it is a **"scarce resource"**. Thus we find the seemingly strange and contradictory situation that water can be described both as a **need** and as a **resource**.

Let's first consider the aspect of **BASIC NEED**:

The most **basic needs** of any living being are said to be **water, food, and shelter**.

Today it is fairly generally accepted in most parts of the world, including the majority of developing countries, that every individual, family or community should at least strive towards a reasonable measure of self-sufficiency in satisfying its needs for food and shelter (or housing) - either by providing for itself through own production or manufacture or by obtaining it through purchasing (buying), or in payment for it in some form or another. (One form of payment is to make one's labour available to an employer - in other words, you pay with your labour instead of money - and the employer then totally or partially provides one's need for food and/or shelter as part of the remuneration package. The subsidized cafeteria in the work place and the well-known government housing subsidy for civil servants that is found in various Southern African states, are typical examples of these).

In other words, supplying the basic needs for food and housing is seldom if ever a totally free handout on a permanent basis, although it may sometimes be subsidized by Governments or others. In general, the approach is that everyone pays for his **food and shelter**.

It is rather strange, therefore, to come across the still fairly widely held view in some circles that clean and conveniently distributed potable **water** should be provided by a government totally free and gratis to everybody because water is said to be a **basic need**. I would like to maintain that in many respects exactly the same norms re provision basic needs should apply to **water** as to **food** and **shelter**, namely that only in the case of the most basic requirements of the extremely poor and needy and in other very exceptional circumstances should it be provided totally free. It should in the first instance be considered as the responsibility of every individual, family and community to supply its own needs, either through payment or some other appropriate method of making at least some contribution towards the satisfying of its basic needs. Once the acceptance of this principle has been agreed on, we can fruitfully start talking about ways and means of improving the efficiency with which basic needs can be satisfied, through communal co-operation, economies of scale, etc. The costs attached to improving the situation and the allocation of responsibilities for covering these costs can then also be discussed.

In the case of domestic water supply, in particular in the rural context, a fundamental policy approach that seems to be gaining ground is to charge only a nominal token fee (or even nothing at all) for supplying the most elementary needs and then to charge either a higher fixed tariff or differential rates on a rapidly increasing scale for increasing levels of comfort and consumption. Many variations can be found on this theme and some of them are being addressed in the preparation and appraisal of a number of rural water supply projects currently being considered for financial support by the Development Bank of Southern Africa. The principle in every case is that there is both a component of supplying an elementary need (the "consumptive" component) and a component of improving the situation, (the "productive" component), and that the consumer should be allocated at least a

co-responsibility for supplying his needs in respect of both components. The exact nature and extent of any possible assistance or subsidization that might be considered can vary according to circumstances. The relative weights of the various components and a variety of other factors can play a role in this. The important point to note is that the "basic need" element is only one of a number of factors that play a role in water supply for human consumption.

Let's now consider the aspect of water being described as a **SCARCE RESOURCE**:

For some time now it has been a fairly widely acknowledged fact and there is a growing realization that on the macro scale water is becoming an increasingly scarce and valuable resource. This applies particularly to the more arid and faster developing regions of the world, including Southern Africa. This is true, not only in respect of the more arid western parts of the sub-continent but also the more densely populated and intensively cultivated eastern parts.

The scarcity of water can, in this regard, be described as one of the most pressing needs of the majority of rural communities in the various lesser developed regions and states of Southern Africa. Also in connection with agriculture it is an extremely scarce and valuable resource.

In any given situation the **availability or scarcity of water as a resource** is a function of its **quantity, its quality, its locality, its accessibility and its dependability (or consistency of supply)**.

If we consider a river, lake or spring with an abundance of clean, pure water in its natural condition readily available to us, on our doorstep, and we ask ourselves: "What is the cost of this water, that is so readily available to us?", the answer has

to be "zero!" In this case nature is providing a continuous flow of water in excess of our needs and, as long as the state of nature is not disturbed, man cannot claim any direct "costs" associated with the availability of these natural water resources.

However, such an ideal state of affairs is not often encountered nowadays and, as soon as we wish to make changes to either the quantity, the quality, the location, the accessibility or the dependability of the natural water resources, we begin to incur costs.

Let us, for example, take the case of a typical water resource, such as might well be encountered in the case of a normal Southern African river system, that has to be utilized to supply the domestic needs of a growing rural population.

If we want to improve the **dependability** of the resource we might have to construct one or more dams suitably located higher upstream; if we want to change the **location** of the water we might have to install pumping plants, pipelines and service reservoirs; if we want to improve the **accessibility** to the water we might have to develop an extensive reticulation system complete with strategically placed standpipes and even house connections; if we want to improve the **quality** of the water, we might have to build treatment plants; and if we want to increase the **quantity** of water available, we might in addition to increasing the capacity of various components of the system in some way or another have to divert additional supplies from other sources, eg. basin transfers, well fields and/or buying and importing it from other states, regions or consumers.

In each case we can calculate how much it will cost to change the natural water availability into the desired conditions. We will then have a certain cost for the water. This cost will probably continue to increase as the demand for the commodity increases

and with it the resultant costs of making it available. This means that we can in actual fact say the water is free, but there is a cost attached to both the improved availability and the increased scarcity of the water.

This cost will have to be recovered in some way or another and there are a number of related aspects that have a bearing on this cost - and also on the whole question of how to recover costs. I would first like to address a number of these **RELATED ASPECTS** and then only towards the end of my paper very briefly and more directly address the aspect of cost recovery itself.

It would not be too bold a statement to claim that with modern technology mankind can make available virtually any flow of water almost anywhere in the world. (After all, he has already placed a man on the moon - and supplied him with the necessary water for the trip!) To make a large supply of water available in some remote part, one eg. simply has to go to the nearest sea coast, build a huge desalination plant, and pump fresh water via pipelines to any designated place. However, such a statement probably has little practical meaning since in most cases the cost of such water at its designated place would be so high (in terms of both absolute terms and relative to its possible uses in that place) that probably no one would be willing or able to pay for it. The challenge is therefore not in the first instance one of **technological magnificance** per se, but rather one of **technological appropriateness and adequacy** in order inter alia to optimize costs - or at least to help keep costs and the various other related factors within the realms of an optimally balanced design, geared towards the most effective and efficient way of supplying the realistic needs of a given situation.

Another important aspect that comes into play in the development of a water resource is the **"opportunity cost of capital"**. This means that one must not only consider what the costs of developing the resource in terms of a certain project proposal

would be, but also ask oneself: "To what other (alternative) uses could that capital have been put if it was not invested in this particular project?" In other words, "What other opportunities for possibly far more profitable investment in real development have been or will be lost due to the investment of this capital in this project?" Similarly, the question can be asked whether and what other alternative (and maybe even far better) opportunities for profitable utilization of the available water might be lost due to the utilization of that scarce resource for a certain development project. Opportunity cost can therefore be expressed either in terms of the capital or the other resources (eg. the scarce water resources) or both, that are tied up in a particular project, or that are to be tied up in a proposed project.

In order to ensure a rational approach towards the development of any water resource, it is proposed that the consideration of any project proposal should be approached within a certain standard **framework of reference** for development.

Such a framework of reference should in the first place take into consideration all the various **needs** that have to be satisfied. These needs will have to be addressed within the necessary perspectives of time and geographical distribution. The questions of alternative demands and of relative priorities will also have to be addressed.

In the Southern African context, the proposed framework of reference for the development of a major water resource should therefore firstly provide for the necessary geographical perspectives to be developed on the particular consumptive and development needs of each particular district, each individual State, each Development Region and also of the Southern African Region as a whole. This should be functionally classified into the various primary and secondary needs. Such perspectives should furthermore cover a time horizon spanning the short, the

medium and the long terms. In addition, the framework should make provision for the identification and comparative consideration of alternative and competing demands and for the realistic determining of the most relevant opportunity costs involved. Finally, it should accommodate the determining of relative priorities, which should in turn determine the possible future development of the resource.

This means that only after sufficient clarity has been obtained on the **need (or demand)** for the development of the resource, should attention be given to the necessary further steps towards the actual development of the **resource**.

After all, there is a parallel to be found in the private sector: Any successful entrepreneur in manufacturing or other form of private sector business will firstly conduct a careful market analysis before embarking on a costly programme of research and development for the launching of a new product or line of business. Why should the same then not also apply to the development of a water resource? Likewise it should be geared towards supplying the need of a consumer whose willingness and ability to pay should play an important role in the determination of how and at what cost and price the product or service should be developed!

Under anything approaching normal circumstances, therefore, not only the consumer's needs but also his willingness and ability to pay should be very seriously considered. This should be done before any final decision is taken on whether to proceed with a particular project or not. It should also determine to what standards and costs the facilities should be constructed.

Within this whole framework of reference the **phased development** of a water resource should be undertaken in such a way that it will ensure optimal effectiveness and efficiency in the utilization of scarce resources towards the satisfaction of the realistic needs of the community as it develops over time.

It is of extreme importance that especially a community with very limited financial and other resources at its disposal, such as are commonly encountered in developing economies, should not be unnecessarily burdened with costs associated with the provision of facilities that will in actual fact only be required in years to come. A phased planning approach can make it possible for today's communities to pay only for today's needs and maybe only to a limited extent for some immediately foreseeable future needs that can not be accommodated efficiently at the appropriate future date. It will also provide the necessary flexibility to make adjustments in the light of changing circumstances over time, thus ensuring optimal efficiency at any point in time.

If a large scheme with ample spare capacity for future use is fully constructed and paid for today, it will for many years be used only to a rather limited extent relative to its actually available capacity. This means that the true unit cost per actually consumed unit will for many years be unproductively high. It also means that an unsatisfactory situation exists in terms of lost opportunity cost. Should the consumer have to pay, it will mean that he has to be charged an unrealistically high unit price of consumption, and will in effect for many years be getting a rather poor return on his capital or poor "value for money". It can actually hamper his development instead of stimulating it. The recommended approach should therefore be to plan for a fairly extensive time horizon in terms of anticipated or possible future needs, but to restrict implementation for the time being to only the first of what might well, over time, be developed into a number of further phases.

Another related aspect that is considered to be of the utmost importance is **community involvement**.

If the individual and the community is expected to pay for the service, it is considered important that they should be consulted

in the decisions taken about the project. In this and other ways the individual and the community should be encouraged and enabled to really identify themselves with the project.

Firstly they should be consulted in the identification of their needs. In this respect it should be clearly understood by all concerned that the higher the needs the higher the costs will be to supply those needs. (The unit costs might be lower, due to an economy of scale, but the final costs will still be higher.) These needs should be assessed in terms of immediate needs as well as possible changes in needs over time.

Closely linked to the question of needs is also the question of both willingness and ability to pay. In this respect, it is important to take note of the distinct difference between the consumer's **willingness to pay** and his **ability to pay**. Too often the (very human!) situation is encountered where the consumer's sometimes rather emotional willingness to pay far outstrips his more rational and realistic **real** ability to pay. It then becomes part of the responsibilities of both the planner and the higher level decision maker to ensure that full cognisance is taken of the consumer's real ability to pay and not only of his willingness to pay. This, however, does not replace or reduce the importance and necessity of consulting the consumer and involving him as fully as practically possible in the whole decision making process. In the end, the overall success of a project can often be greatly enhanced by the degree to which the consumer can identify himself with the project. He might eg. in principle be quite willing and even keen to pay for a certain improved service that is under consideration. But he might not be aware of his possible inability in the end to pay for his preferred standards of service. The implications should then be clearly explained to him and carefully considered by and with him.

The solution might in the end be to consider a lowering of standards. But, alternatively, he might prefer to retain the higher standard of service and be able to contribute towards a

reduction of construction costs by providing his labour free of charge or at a rate far below current market related rates. A combination of the two solutions might also be possible. In another case, again, the situation might be that the user wishes to participate by contributing his labour, but wants to be paid in full for his labour inputs and will then be both willing and able to pay over time for the finally agreed level and cost of service to be provided.

Another solution that seems to have considerable merit in certain cases, as an alternative for consideration in cases of restricted ability to pay, is the possibility of initially providing only a very fundamental reticulation under the main scheme. It can then also be part of the planning process to agree with the community on a strategy whereby they will themselves over time expand the system with the gradual addition of further reticulation components as and when they find it possible and feasible. It might start off with water being supplied initially only at the various service reservoirs, being followed gradually by the addition of reticulation lines with standpipes and then it might eventually even include a considerable number of house connections. This might over time require additional expansions to the capacity of the originally constructed scheme, but in the end prove to be by far the best solution under the circumstances. Without the community's involvement and identification with the project, it might however be impossible to implement.

We now come to the specific aspect of **COST RECOVERY**:

It can probably, to a certain extent, be considered the prerogative of a government, or local authority, to decide to what extent and how it wishes to finance or co-finance the capital cost of schemes for the supply of water to its inhabitants. It can, eg. decide to allocate funds from its central revenue fund or from any of a number of other possibly available sources of a general nature. Similarly it can probably

decide to what extent it wishes to continue financing or **subsidizing** operational and maintenance costs from those or other sources. As an alternative, or as a supplementary measure, it can decide to recover all or part of the capital and other costs through some form of direct or indirect **user charging**. These can eg. be via differential tariff structures or by way of levies of some kind.

General revenue is normally a rather restricted and exhaustable source of finance. A large variety of needs are usually to be financed from this source. These needs will always be more than the resources that can be made available to satisfy it if financed from this source. The potential for utilizing these available resources towards the supply of water is therefore, in actual fact, very limited. This means eg. that the government will be able to supply in all the various needs of the community to a much lesser extent if it does not also embark on some system of more direct cost recovery, eg. through user charging, in all those cases where it is in any way possible.

Various systems of cost recovery through user charging can be considered. The simplest would probably be to impose a standard levy on all consumers, to be paid on a monthly or annual basis at the same time as some other regular payments are made to the government or to the municipality or other form of local or tribal authority. This, however, does not satisfactorily distinguish between the large and small user or between the user that requires a service entailing high costs and the one making only moderate demands on the system. After all, one does not pay the same for a Rolls Royce or Mercedes as for a Volkswagen, or for a trip to a distant country and a trip around the corner.

A far better approach in many cases would therefore be to introduce some differential system of user charging in which a distinction can be drawn between various users and various levels of service.

The ideal situation would be where each user can be charged the real cost of supplying the service to him at a particular point and to measure it in accordance with his actual consumption figures. For this purpose the installation of meters for the accurate measuring of consumption and the development of a sophisticated tariff structure becomes essential. The necessary **institutional arrangements** for regular data capturing (meter reading, etc.) and for the related aspects of billing and revenue collection need also be attended to. It is also highly preferable that the same institutional authority should basically be responsible for all aspects of the operation, including the various technical aspects as well as expenditure control and revenue collection. A financial control system that will enable the regular compilation and meaningful consideration of a balance sheet of income and expenditure is considered essential in this respect.

An alternative institutional range of options that seems to be enjoying increasing attention at the moment is that of **privatization**. In water supply, as in a number of other fields, it appears to be developing into an interesting possibility for the future, (which might not be so far off either). It has been the subject of a number of recent papers and seminars in Southern Africa and I will, therefore, leave it as a possible subject for further attention at some future occasion.

In **CONCLUSION** then, we have seen firstly, that water can be described both as a basic need and as a scarce resource, and also that there is a cost attached to the utilization and improved availability of water.

As in the case of the other basic needs of food and shelter it should, in the first instance, be considered as the responsibility of every individual, family and community to supply in its own needs, either through payment or some other

appropriate method of making at least some contribution towards the satisfying of its basic needs.

In any given situation the availability or scarcity of water as a resource is a function of its quantity, its quality, its locality, its accessibility and its dependability (or consistency of supply).

In the case of a water supply scheme, we have said that the water is free but that the cost is attached to both the improved availability and the increased scarcity of the water.

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Of particular importance is to realise that the needs of the community will always be more than the resources that can be made available to satisfy those needs. This is particularly so in the case of general revenue which, in many respects, should be considered a rather restricted and exhaustible source of finance. The success that can be achieved in the recovery of costs through the introduction of appropriate systems of more direct user charging could, therefore, have a vital influence on the successful improvement of rural water supply and consequently of the general well-being of the people residing in the developing regions of Southern Africa.

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