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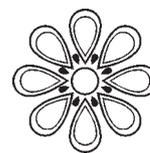
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Sustainable financing of WATSAN

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IF THE TREND in coverage for water supply and sanitation that prevailed during the International Drinking Water Supply and Sanitation Decade continues in the 1990s, then at the dawn of the 21st Century almost 1 billion people will still be without access to clean safe water and 2.2 billion to environmental sanitation - or one fifth and two fifths respectively of the population in developing countries, over 75 percent of whom will still be in rural areas despite rural-urban migration [UNICEF, 1995]. If this is not to become the optimistic scenario, sustainable financing strategies in the sector will need to be examined more holistically.

Any financing strategy must take account of the "water environment" in which the issue is not whether water is an 'economic' or a 'public/private' good, but rather that an 'economic resource'. Its management entails not only its extraction, use and re-use, but a holistic approach in which the financing strategies are derived from a socio-economic and long-term environmental perspective — rather than only an estimation of costs and sources of funds. In the case of rural and peri-urban sanitation, the issue is not so much that of public/private or hardware/software but rather of attitudinal change and 'effective' demand for increasing and improving access. This paper examines some of the financing issues in the sector within the framework of sustainable development.

The financing challenge

The magnitude of the challenge, the historical role of the state in the provision of water and sanitation services to the poor and unreached, and the resource constraints facing national governments have led to advocacy for low-cost technology in an effort to rapidly expand coverage. The fundamental premise for this approach is derived from the essential perceived role of the state and that of donor agencies in meeting this basic need through financing in the form of subsidies and grants for increasing access. It is this role that has been challenged in recent years suggesting a new look at sustainable financing strategies [World Development Report, 1994; Serageldin, 1994; Briscoe and Garn:1995].

Estimates for low-cost technology in rural and peri-urban areas suggest that the minimum level of services can be provided on a population weighted average cost of about US\$16 per capita — \$10 for water supply and \$25 for sanitation. The cost estimates and level of funding in the 1980s suggest that the additional required resources would be in the order of US\$5 billion per year in 1994

prices [Nigam and Ghosh, 1995]. While such estimates provide ballpark indications of the 'level' of resource mobilisation, on its own they say little about sustainability. Sustainable financing needs to be developed in conjunction with mechanisms for community participation, management and cost-sharing.

The financing strategy will drive the choice of technology if the objective is to meet the target of universal access within a set time frame. If the source of funding is primarily government and donors, then issues of cost-effectiveness and standardisation become important. If reliance is placed on effective demand as a major source of funds, then issues of equity, efficiency and regulation become more relevant. The choice of technology will then be determined by consumer preferences to the extent that there is a choice. Even here the government has a major role to play in areas such as standardisation of technology choice in order to reduce the long-term costs on society through economies of scale in production of materials and operations and maintenance. The challenge is to marry consumer preferences for the level of service with sustainable financing mechanisms. In this task, the issue is not only whether consumers are willing to pay for basic or improved levels of service, but also the pursuit of financing mechanisms that are financially, economically and institutionally sustainable taking due regard to the ability of the poor to pay. The goal of universal access to water supply and sanitation cannot be met without efficiency and effectiveness in resource use; additional resource allocations; and use of alternate financing mechanisms [Nigam and Ghosh, 1995].

The historic thrust of the 1980s for the mobilization of national and donor resources to meet the basic human need and 'right' of water was effective in increasing access for millions of people. Many lessons were learned. Sustainable functioning of the services provided by government or donor support required community ownership which was engendered, in part, through community participation and management in all aspect — planning, installation and operations and maintenance — and by cost-sharing. The mobilization of the community through local water committees, training of community representatives for operations and maintenance of the facilities and collection of funds was seen as an effective mechanism for sustainability. Since women are the primary fetchers of water, it was learned that their participation at each stage was essential. Women were trained as mechanics to take care of the low-cost technology of a borehole

with handpump. In a number of instances where such a strategy was not employed, huge investments were lost. In Malawi, of the 3,500 boreholes with handpumps that were installed over the past 20 years, almost 40 per cent are in disrepair requiring significant new investment because of an absence, in part, of community-based management and a lack of sustainable financing for operations and maintenance. People who previously received access have had to resort to the old ways or walking long distances to the nearest functioning pumps. The challenge is to develop sustainable financing strategies around the lessons learned.

Meeting the challenge

A fundamental premise on which financing strategies have been analysed and developed is the determination of the nature of the good — public or private. Goods which have significant positive externalities in their production or consumption should be provided by the state whereas goods, in which the benefits accrue to the individual or households, should be financed by recovery of costs - user charges. These principles of public finance have directed the debate over cost-recovery.

It is difficult and not useful, however, to make clear distinctions on the public and private nature of water supply and sanitation. Safe and clean water supply and sanitation provide a number of health benefits which have a positive externality on society as a whole. Health benefits are not the only reason for the state provision of these services. Reducing the time for women in fetching water allows women to engage in other productive activities and take care of children. Reducing time for girls in fetching water allows girls to go to school. Girls' education yields a higher rate of return than any other investment available in developing countries [Summers, 1994]. Educating girls has large social benefits in terms of savings from improved hygiene and birth control. Educated women choose to have fewer children. By bringing water supply closer to the home, thereby reducing the time girls have to spend in fetching water, the externality accrues to society as a whole. Similarly, there are also environmental externalities. Water supply closer to the home may allow environmental considerations to be built in more effectively. Pollution of water sources, over-extraction of water from groundwater aquifers and soil degradation are all negative externalities, the costs of which may not be fully reflected in user charges. These considerations suggest that a holistic approach to water supply and sanitation — water resource management — may be a more productive basis on which to build financing strategies. The analysis along the lines of the public/ private nature of the good may not provide clear-cut answers because of the difficulty in the assignment of marginal, private/ social cost and benefits. Instead, as will be suggested in this paper, community management of the water environment may be a better starting point for the design of both environmentally sound policies and strategies to-

wards water supply and sanitation and for the sustainable financial mechanisms.

Cost-sharing, cost-recovery, willingness and ability to pay with community participation

In the literature, willingness to pay (WTP) analysis has focused on the consumer surplus as a source of financing. Willingness to pay is the maximum amount which users of a water supply or sanitation facility would be willing to pay for it rather than go without it. Various direct and indirect approaches have been developed in order to estimate how much people are willing to pay for services, including an assessment of what people are already paying for these services which may often be inferior and more costly than other alternatives. An association is then made between willingness and ability to pay, suggesting that if people are willing to pay then they are also able to pay.

The emphasis on ability to pay derives from the fact that willingness to pay analysis ignores the overall burden on the household. Water is life and it is not un-expected that willingness to pay will be high. The fact that the poor are often better payers does not always mean that they are *able* to pay. Often the poor pay for water but at a high opportunity cost in terms of essential needs such as food, health, nutrition and education which are sacrificed [Ghosh and Nigam, 1995]. Also, willingness to pay by women may not be matched by ability, because of their lack of control over household income. As such, WTP analysis fails to take account of the integrated nature of poverty [Cleaver and Elson, 1995]. The dynamics of household decision-making, control over material and non-material assets and the overall economic and social burden need to be built into the analysis [Cleaver and Lomas, 1996]. This does not mean that households should not be expected to pay for services. The debate should instead look at the design of mechanisms for meeting the capital and recovering the operation and maintenance costs of water supply and sanitation taking account of *equity*, *efficiency* and *effectiveness* in resource use. The following lessons should be drawn upon and used as the principles for designing sustainable financing strategies:

- National governments and donors support to reach the unreached will remain critical and they will in most countries be the 'first call' for meeting the resource needs but communities must share in the cost of service provision both to alleviate the resource constraint but more importantly for sustainability. Inadequate maintenance and ineffective management, coupled with unsustainable financing mechanisms, can lead to failure.
- Communities must be empowered — economically and socially — to take care of and improve their services.
- The principle of community cost-sharing (in the form of labour and in-kind contributions) of capital and

recurrent costs for basic levels of service taking account of willingness and ability to pay and recovery of full capital and recurrent costs for higher levels of service should be adopted in order to extend basic services and ensure their sustainability [UNICEF, 1995]

- Cost-recovery mechanisms are most successful when there is community participation in their design, implementation and management. This community focus is often neglected in the desire to set up institutional structures.
- Sustainable financing strategies in the sector will require the complementary development of micro-credit and savings mechanisms in which people can borrow and save small amounts for income generation and build a source of financing from which they can pay for improved levels of services and operations and maintenance. Such an approach recognizes that while the poor cannot pay for the capital investment, they are willing to contribute small amounts. The challenge is to mobilize these small streams of payments within appropriate financial structures. Without mechanisms which consider the financing issue in the wider context of poverty eradication, the concept that "water has economic value" will fail to serve as a basis for sustainable financing strategies.

Government and donor financing

Investment in water supply amounts to only about 0.4 per cent of GDP in developing countries compared to 5.5 per cent for infrastructure and 4.7 per cent for health [World Development Reports, 1993, 1994]. This represents only about \$3 per capita for water supply and sanitation compared to \$41 for health and \$49 for infrastructure. Almost 75 per cent of the total investment in water supply and sanitation is in urban areas (WHO, 1992). Even in regions with high overall coverage, significant disparities remain. In Morocco, for example 84 per cent of urban dwellers have access to safe water compared to only 18 per cent in rural areas. The financing issues here relate not only to the levels and rural-urban disparities in the current financing patterns, but also to the efficiency and effectiveness of the investments.

Despite huge financial outlays in the sector, the efficiency in the utilization of funds has rarely been studied and addressed systematically, primarily due to a lack of collection and availability of data. There are, however, strong reasons to suggest that the sector has shown significant inefficient utilization of funds. In Kerala during the period 1977/1978 to 1989/1990, while water supply coverage has doubled real investment in the sector has increased sixfold indicating that real unit costs have more than trebled in the provision of water supply [Pushpanadan et. al, 1995]. The extent to which this escalation of costs is a reflection of the increasing marginal cost resulting from locational, topographical and technological factors still remains to be analysed but cost over-run is likely a significant additional factor. Increased government and

Micro-financing for rural water and sanitation

The Grameen Bank

The Grameen Bank in Bangladesh is a well known provider of credit to over two million of the poor in landless, mainly women. The bank is financing also financing rural water supply and sanitation. In 1992, it provided US\$5.7 million in loans for tube wells and sanitary latrines which more than tripled to US \$18 million in 1993, 9 per cent of which was for sanitary latrines. The interest rate on loans for tube wells is 20 per cent while for sanitary slabs and rings is 8 per cent repayable over two years. Repayments are made in weekly installments of 1 per cent of total disbursement. All members are eligible. The loan amount for tube wells is about US\$125 individually and \$18 for sanitary latrines bought from the bank's manufacturing units. Between 1992 and 1994, the bank has provided loans for about 70,000 suction tube wells.

Source: Nigam and Ghosh, 1995

donor support is essential to facilitate the extension of services but this must be within financial and institutional structures which are cost-efficient and accountable. Approaches calling for the re-structuring of the financing of the sector, debt-for-development swaps and water and sanitation bonds are also needed for mobilising additional resources to reach the unreached.

Reaping the 'efficiency dividend'

Cost recovery in urban water supply in many developing countries is only about 30 per cent. It is the rich in urban areas that benefit most from the government financing and subsidies. Other significant losses prevail. For example, it is estimated that loss from leakage in urban water supply in some countries is as high as 40 per cent. In Cairo, readings of one vacated office building over one weekend showed that over 75 per cent of the water was lost from leakage. China's network of 600,000 km of underground pipes are estimated to be wasting US\$360 million worth of water each year. A saving of 1 per cent could supply 6.5m people with water for one year (Financial Times, July 30, 1996).

Willingness and ability of urban and peri-urban consumers to pay for services is generally high but in the absence of improved services based on the criteria of quality, quantity and reliability or certainty (QQR), and well functioning and accountable institutions, significant amounts of investments in urban areas are wasteful and financially not sustainable without subsidies. At the same time, peri-urban dwellers pay higher amounts for inferior services such as those from water vendors. In some developing countries peri-urban dwellers are forced to pay as

much as 35-40 per cent of their income to purchase water. This is more a reflection of the inequity and hardship faced by these people than of willingness to pay. Improved cost recovery in urban services through QQR and greater accountability can allow for the reaping of the 'efficiency dividends'. The operations and maintenance of urban water utilities should be self-financing — meeting the capital costs through government financing and bonds issued on the national market which are initially guaranteed by the government to promote market based capital financing. Improving their technical and organizational efficiency can allow for the restructuring of the national financing of the sector in favour of the poor — although given the urgency of the need to meet the basic right of water and sanitation, one cannot wait for this to happen but simultaneously other actions need to be taken.

Basin management approach

A holistic approach to the 'water environment' has considerable implications for the financing mechanisms. An important synergy can exist in some areas between urban and rural provision of water supply and protection of the environment and water sources. In South Africa, the Umgeni Water Board is demonstrating that a long-term view of water as a resource which needs to be managed is not only profitable but essential for environmental sustainability. In this, the failure to take account of the stewardship role of rural dwellers in protecting the environment and water sources can result in higher costs in the long-run for society as a whole. Realizing these synergies, Umgeni Water started extending water supply services and health and hygiene education to rural areas. The approach recognizes that the allocation of private and social benefits must be made on the basis of the entire basin rather than on a project basis when services are extended to the unreached.

The basin management approach also suggests that the 'pricing' policy for water as an economic resource needs to be addressed. Only about 8 per cent of freshwater resource is used for domestic purposes, 23 per cent for industry and 60 per cent for agriculture [Gleick, 1993]. In many countries the two major users of the resource pay little or no charge for its use although their use impacts on the availability and cost of drinking water supply. The stresses and costs for drinking water supply as a result of the demand pressures from agriculture, environmental degradation, lowering of the water tables and water quality impacts on a wider group of people than those at a point source. The pricing and cost-recovery for water supply in the longer run will have to take account of the socio-economic dimensions more explicitly if water is to be treated as an 'economic resource'. Equity in tariff policy has also raised an interesting issue regarding the accounting and pricing of water supply in South Africa which is relevant for other countries as well. "Because certain communities have been served for a long period, the historic cost of the original infrastructure is very low

Synergies in urban and rural water supply and sanitation

The Umgeni Water Experience

Umgeni Water, the largest water utility in the province of Natal, South Africa takes a long-term view in the provision of water supply to a catchment of 24,000 sq. Km. and a population of 5.5 million people of which 1.5 million are rural. Development and growth has put the water resources under stress. The utility identified a major source of pollution to be from the discharge of raw and treated sewage into the basin resulting from increased urbanization and informal settlements. In addition, soil erosion in the headwaters was causing increasing silt loads in rivers and reservoirs. As a result the cost of water supply to urban users was increasing due to expensive treatment processes.

To counter these long-term effect, the utility started providing water supply to rural areas also demonstrating that services could be provided jointly to rural, peri-urban and urban areas in a cost-effective manner with full cost recovery for the operations and maintenance cost. The utility covered the capital cost by a capital subsidy from the urban to the rural areas which, when a broader perspective is taken of the environment and long-term cost-price relationships, is essentially seen to be of benefit to the urban dwellers. The utility charges households the full capital cost for house connections and recovers the full recurrent costs. Umgeni Water is a parastatal which receives no subsidy is triple A rated on the stock market and issues its own bonds. The excellent record of cost recovery was achieved by:

- the provision of services which the community is willing and able to pay for;
- providing services only when the community is mobilized
- keeping cost of service delivery low through the use of local water committees for the administration of the rural schemes
- community development training in negotiating skills. Water management and hygiene is promoted by the utility through rural planning officers.
- employment of local people during the construction of the pipeline.

Source: Nigam and Ghosh (1995)

and has little impact on tariffs. The cost of replacing or expanding such infrastructure is very high. It is possible that calculating tariffs on the basis of the current value of the infrastructure would help both to restrain growth of water consumption, an increasingly important consideration in many areas, as well as generate funds for basic investment needs" [South Africa, 1994]. This aspect may become increasingly important. The first task, however, is to improve cost-recovery in urban areas through QQR.

Privatisation and franchising

Privatisation of public water delivery and sanitation utilities is increasingly being promoted as a sustainable financing approach. The spectrum of this approach ranges from NGOs, to contractual arrangements for service delivery and operations and maintenance by the private sector, to franchising and ultimately the sale of public property to private investors or providing the private sector with the rights to engage and manage all aspects of service delivery and O&M. The wide range of possibilities suggests that there are a number of alternatives for structuring private sector participation. For example, franchising provides a fixed-term monopoly to a service provider within a geographical area. Under this system the private sector would provide the financing thereby reducing the pressure on public financing. Public funds can be released for reaching the poor and those that would not be reached by such arrangements. Private sector financing of the public sector through concessions has been common in France [Davezies and Prud'homme, 1994]. This is a contractual arrangement between the public authority and private enterprise which is generally accompanied by subsidies and risk sharing. The public sector contracts the private sector to act in their stead through the delegation of specific authority.

Because any utility in this sector will be in a natural monopoly situation, the greater the degree of private sector participation the greater the need for effective regulation. Privatisation and the concurrent development of effective regulatory mechanisms has yet to emerge in many developing countries but the principle of separation of the role of 'owner' from 'regulator' is essential. Where this is not always possible, there will need to be an examination of Chinese walls or 'fire-walls' as in the case of the financial services industry in order to safeguard equity considerations so that the unreached are not left behind. Various permutations and combinations can be examined in private sector financing. For example, greater efficiency and accountability may be achieved with the sale of only part of the utility to private sector investors. In Chile less than 1 per cent of the shares in the two largest water supply and sanitation utilities are traded on the stock exchange but the companies are managed as private sector enterprises rather than public [Lee, 1996]. Any formulae for private sector participation must be recognize federal situations in which bulk water supply is often managed under federal and inter-state provisions.

Promoting share ownership in the rural sector and local entrepreneurship

Variations on the privatisation alternatives could be the sale of a proportion of shares in the utility to the customers of the utility to bring about both a sense of ownership and greater accountability. This idea can be extended to rural water supply and sanitation as well. . The idea that is being proposed here is that consumers could be provided ownership shares in the utility both for urban and rural water supply, on a criterion of full recovery of the amount due by them for water supply and sanitation services charged on the principle of community cost sharing and cost recovery taking account of willingness and ability to pay. The ownership in these utilities would be beneficial to the consumers if the utility was managed on a profitable basis. This would instill a sense of ownership and improved accountability. So while the consumer would have an upside through an incentive mechanism built into the cost recovery system, they would not necessarily experience a downside in this proposition. The initial funding could be from government through its capital outlay or guaranteed bonds but shares would be held by the consumers under the particular utility. The initial capital outlay can be recovered over a long period of time. If the utility becomes profitable and its shares are subsequently sold to others also then the consumers would also benefit.

Building non-government financial intermediaries:

The Mvula Trust

In an effort to match soft funds from government and donor agencies with community demand and ownership in the absence of effective demand as a result of either an absence of a framework for service delivery or ability to pay non-government financial intermediaries can be promoted. The Mvula Trust in South Africa is a parastatal development finance institutions which receives seed money from government and donors which provides to communities for water supply and sanitation. This financing window provides financing on the criteria of community demand. The community has to come together to form water committees, hold meetings, form an association with a bank account, prepare a project proposal and plan, complete application forms, negotiate contracts with the private sector providers of services and collect 8 per cent capital contribution before it can get soft funding in the form of loans and grants. While this is potentially a mechanism for instilling the spirit of "effective" demand, the capacity building of the community members is equally demanding.

The key elements for the expansion of environmental sanitation and hygiene practices are attitudinal change and effective demand. The private sector and small scale local entrepreneurs should be promoted through seed money for manufacture of low-cost sanitation facilities. These costs should be recovered on the criterion of effective demand from the community. Such an approach can increase coverage and usage more rapidly than any form of government or NGOs attempts to go to scale. Rural Sanitary Marts in India provide one example of such a strategy. Locating such marts in areas where the rural consumers gather to sell their products or services such as dairy and sugar-cane or other agricultural cooperatives is one marketing strategy that has been tried.

Capacity building and institutional issues

Any financing strategy must be located within sustainable institutional structures for success. The approaches based on lessons learned have focused on demand (not necessarily effective demand). This is expected to bring about ownership because facilities would only be provided to those who express a demand and meet certain conditions. The accompanying requirements called for setting up local water committees. To bring the community closer to government sources of financing while at the same time ensuring a 'sense of community ownership' has led to various attempts to develop efficient structures and building of capacities. In South Africa, the Mvula Trust has been set up to act as a non-government financial intermediary. Governments should examine the scope for the setting up of non-government financial intermediaries — NGFIs - for rural and peri-urban water supply and sanitation which could function on a self-financing basis with seed money and revolving funds. Various innovative approaches in setting up such institutions can be explored.

Conclusions

Sustainable financing strategies should be examined in a more holistic framework of the 'water environment'. Often what happens to the water environment in a basin/watershed, as a result of rural and urban pressures has an impact on all the people in that basin and elsewhere. The emphasis must, therefore, shift towards *community based management of the water environment*.¹ The implications of this strategy for sustainable financing mechanisms calls for the development of country and region specific actions covering:

- choice of appropriate technology with standardisation — marrying consumer preferences with affordability;
- community management, awareness, and information exchange on all aspects of the water environment;
- mobilising critical government and donor funding through the restructuring of budgets and aid, debt for development swaps, and mechanisms such as water bonds;

- community mechanisms, including building institutions and capacities at the local level to manage and recover the cost of water as a 'resource';
- pricing of water as an economic resource in all its uses - agriculture, industry and drinking;
- a basin approach to water supply, sanitation and the environment;
- development of rural credit and savings mechanisms;
- examining the spectrum of private sector participation adapted to local situations; and
- building capacities at all levels within sustainable formal and non-formal financing structures.

This paper has provided some general principles for sustainable financing derived from various lessons. *The challenge is to design country/region and community specific innovative financing strategies which aim to both improve existing structures and set up others in a sustainable manner.* There can be no blueprint when countries are in different stages of development and face different socio-economic constraints. Communities can also not be expected to wait while policy-makers learn lessons. They are capable of taking actions provided they are empowered.

References

- Briscoe J, and Garn, H., "Financing water supply and sanitation under Agenda 21", *Natural Resources Forum*, Vol. 19, No.1, pp.59-70, 1995.
- Cleaver F. and Elson, D., "Women and Water Resources: Continued Marginalisation and New Policies", *International Institute for Environment and Development, Gatekeeper Series No. 49.*, 1995.
- Cleaver F. and Lomas, I., "The 5 per cent 'rule', Fact or Fiction?", *Development Policy Review*, Vol. 14, pp.1-11, 1996.
- Davezies L, and Prud'homme, R., "The Economics of Public/Private Partnership in Infrastructure" in *Private Financing of Public Infrastructure: The French Experience*, a study under the direction of Claude Martinand, Ministry of Public Works, Transportation and Tourism, Paris, France 1994.
- Lee, T.R., "Alternatives for Private Participation in the Provision of Water Services", forthcoming *Natural Resources Forum*, November 1996.
- Ghosh, G. and Nigam, A., "Comments on 'Financing water supply and sanitation under Agenda 21' by John Briscoe and Mike Garn" *Natural Resources Forum*, Vol 19, No. 2, pp.161-165, 1995.
- Gleick, P.H., "An introduction to global fresh water issues", in *Water in Crisis: A Guide to the World's Fresh Water Resources*, edited by Peter H. Gleick, 1993.
- Nigam, A. and Ghosh, G., "A model of costs and resources for rural and peri-urban water supply and sanitation in the 1990s", *Natural Resources Forum*, Vol. 19, No.3, pp.193-202, 1995.
- Nigam, A. and Talbot, R., "From Rural Water Supply and Sanitation to Freshwater Management and Attitudinal Change", forthcoming, 1996.

- Pushpangadan, K, G. Murugan and Navaneetham, K., *Status Report on Rural Water Supply in Kerala State*, Centre for Development Studies, Thiruvananthapuram, Kerala, 1995.
- Serageldin, I., "Water Supply Sanitation and environmental sustainability: the financing challenge", World Bank, 1994.
- South Africa, Republic of *Water Supply and Sanitation Policy - White Paper: Water - an indivisible national asset*, Department of Water Affairs and Forestry, Cape Town, November 1994.
- Summers, L., "Investing in All the People: Educating Women in Developing Countries". EDI Seminar Paper No. 45., World Bank, 1994.
- UNICEF, *UNICEF Strategies in Water and Environmental Sanitation*, UNICEF, New York, 1995.
- World Bank, *Investing in Health*, World Development Report, 1993.
- World Bank, *Infrastructure for Development*, World Development Report, 1994.
- World Health Organization, *International Drinking Water Supply and Sanitation Decade, End of Decade Review* (as at December 1990) Geneva, 1992.
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- ¹ For an elaboration of this concept see, "From Rural Water Supply and Sanitation to Freshwater Management and Attitudinal Change" by Ashok Nigam and Rupert Talbot, forthcoming, 1996.
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