

The Decade and beyond

by Joseph Christmas and Carel de Rooy

Universal access to water and sanitation by the year 2000 could cost a massive US\$36 billion annually. But by shifting resources to low-cost technologies, investment at 30 per cent of this level could provide for 80 per cent of the unserved.

THE INTERNATIONAL Drinking Water Supply and Sanitation Decade (IDWSSD) of the 1980s introduced several new ideas, learned from past evaluations of water and sanitation programmes in several countries. This new thrust directed attention to several previously untouched issues: institutional development and sector planning; the development of community awareness and participation, including the increased involvement of women; the development and utilization of affordable, appropriate technologies; the integration of water supply with sanitation and hygiene education; the importance of adequate operation and maintenance of systems; the mobilization of communities to manage their programmes, including the development of their own cost-recovery measures for operation and maintenance; the significance of human resources development; and the need for international co-ordination and co-operation regarding sector inputs.

Decade performance

The Water and Sanitation Decade was launched in November 1980, and at the same time the downturn in the world economy had begun to be felt in the developing countries. Gross Domestic Product (GDP) growth rates in developing countries started to drop and their long-term external debts during the 1980s more than doubled. Demographic growth, particularly

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in urban areas, further complicated the problem of extending water and sanitation facilities to a fast-growing population. Even at the end of the 1980s, there is no general, significant improvement in the adverse economic climate and the explosive population growth among developing countries. There are, however, regional disparities in the effects of the economic situation and the responses. Asia is showing more buoyancy and resilience while Africa and Latin America are suffering immensely. Thus, two factors — inadequate funding and high population growth — contributed significantly in curtailing the coverage rate for water and sanitation, thereby preventing the achievement of

universal access to these facilities.

But the Water and Sanitation Decade is not only about numbers, it's about people too. Despite its inability to achieve 100 per cent coverage in water supply and sanitation by 1990, it has succeeded in introducing low-cost technologies, and in focusing attention on the user communities as active participants in the developmental process, rather than their being merely passive recipients as before.

Despite the austere economic climate, total global annual funding for the water and sanitation sector among developing countries is estimated at US\$10 billion. Globally, it is estimated that 65 per cent of sector funding during the Decade came from each nation's own resources. In Africa and the least developed countries, where the major reliance appears to have been on external funding, this proportion was only slightly in excess of 25 per cent, whereas in the countries of the Middle East, the figure was about 90 per cent.

The available information



The Decade has succeeded in introducing low-cost appropriate technologies, like this UNICEF-developed India Mark II handpump.

UNICEF/Maggie Murray-Lee

indicates that modest progress in extending service coverage to the population of developing countries took place between 1980 and 1990.

Progress in rural areas

The most dramatic increase took place in rural water supplies, where the number of people with facilities increased by 240 per cent. The number of rural inhabitants with new sanitation facilities also increased, though less spectacularly, by 150 per cent. Increases in the number of people provided with facilities in 1980, relative to 1990, were 150 per cent each for urban drinking-water supply and for sanitation. In the face of a rapidly expanding urban population, however, these increases in the number of inhabitants provided with adequate services did not necessarily translate into equally significant increases in the proportion of people with services, relative to the total population. Only in rural water supplies was there a doubling of the proportion served between 1980 and 1990.

The data show, among other

things, that over the 10-year period an additional 1.35 billion and 0.75 billion people were served with water and with sanitation facilities, respectively. As expected, there are significant variations from region to region (and even from country to country within a region). A review of progress in Africa is of particular interest since the continent contains most of the world's least developed countries, and has suffered acute water problems associated with drought during the 1980s. Overall, countries in the African region fell significantly short of their targets for the decade of the 1980s.

After 10 years of intensive global effort, water and sanitation coverage in developing countries in 1990 is: urban water 82 per cent; rural water 63 per cent; urban sanitation 72 per cent; and rural sanitation 49 per cent (Figure 1). Thus in absolute terms, at the start of the 1990s, there are an estimated 1.23 billion people in developing countries without access to adequate and safe water supplies, and 1.74 billion without access to appropriate sanitation, that is 31

per cent without water, and 43 per cent without sanitation. The consequences of this, in terms of human health and suffering, as well as social and economic cost, are staggering.

Lessons of the 1980s

In retrospect, the Decade has revealed that:

- Progress has been made in developing models for the sustainable development of water and sanitation programmes in the rural and peri-urban areas of developing countries. But greater efforts are required to translate these models into workable approaches for application to programmes, especially for the rapid delivery of programmes and an acceleration of the coverage rate. Active and systematic management of the 1980s decade could have resulted in greater progress, if applied.
- Globally, virtually all developing countries lack properly devised action plans for the methodical guidance of their decade activities.
- Women's involvement, crucial for community participation, has not been systematically enlisted, but, at best, is ad hoc.
- The promotion and acceptance of cost-sharing mechanisms (cost recovery schemes for operation and maintenance, etc.) face formidable resistance at government level in many countries, and are difficult to put in practice at the community level.
- Maintenance still poses significant problems despite the appropriateness of the technologies. The problems relate mainly to sustainable funding for the provision of spare parts.
- Low-cost technology projects get only about four per cent of the estimated total annual external funding of \$3 billion while the governments' firm commitment to such projects is indicated by a six-fold increase since 1980.
- In global terms, there is lack of trained professional and sub-professional personnel within the sector within developing countries.

Global requirements

As water and sanitation programmes are national responsibilities, the strategies and



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A dramatic increase took place in the provision of rural water supplies, where the number of people with facilities increased by 240 per cent.

planned activities of the United Nations agencies and the rest of the external support community should strengthen and reflect national priorities and, additionally, complement national endeavours in such a manner as to enhance overall effectiveness.

It is clear that if developing countries' water and sanitation programme delivery continues in the 1990s in the same vein, and at the same rate as in the 1980s, the global service coverage in the year 2000 will fall well short of 100 per cent. Figure 2 indicates the projected percentage coverage at the year 2000, for water and sanitation in both urban and rural areas, based on the implementation rates of the 1980s.

Against this background the broad requirements of the water and sanitation sector in developing countries, for the 1990s, include the following:

- Re-formulation of national coverage goals to achieve widespread access to water and sanitation by the year 2000. This long-term goal should be subdivided into expected annual coverage so as to facilitate annual monitoring.
- Re-invigoration of and re-application of the concepts and approaches of the International Drinking Water Supply and Sanitation Decade of the 1980s.
- Rationalization in the use of sector funds. Total global annual funding for the sector among developing countries during the 1980s was about \$10 billion. The External Support Agencies provided approximately \$3 billion of this total. Estimated funding needs for the 1990s are

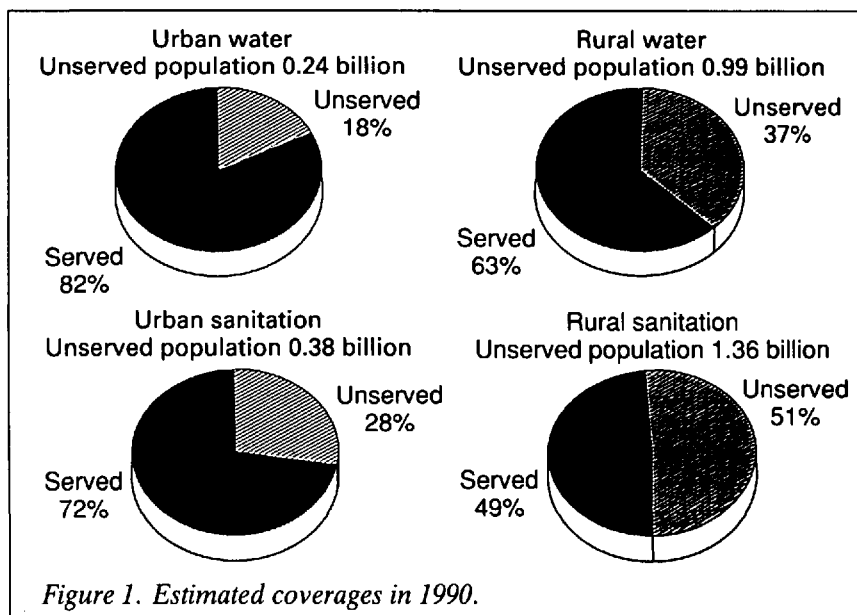


Figure 1. Estimated coverages in 1990.

\$36 billion annually, based on 100 per cent coverage by the year 2000. As funding in this order of magnitude is unlikely under the prevailing economic conditions, greater cost efficiency and effectiveness, even with the existing funding level, is required to accelerate the coverage rate.

- Intensification of measures to control the population growth rate and to curtail urbanization.
- Priority to be given to personnel needs, via human resources development, to strengthen national institutional structures.
- More vigorous promotion and application of low-cost technology programmes, with emphasis on technical co-operation among developing countries, and the dissemination and exchange of information amongst the scientific community in developing countries.
- Meaningful linkage of the water and sanitation sector with other

sectors, especially health, education, women, communications, and nutrition (via home-gardening).

- Execution of all programmes as integral components of overall water resources management and environmental health.
- Strengthening and broadening the co-ordination and co-operation among national governments and the External Support Agencies.
- Establishment of policy and strategies to make extensive and systematic use of social communications for the global and community-based mobilization of people and resources.

Priority actions

Though there are many activities to be implemented in the 1990s, priority attention should be given to the implementation of the concept of management by objectives, with respect to the water and sanitation sector, at both the country and the global level. Regular, perhaps annual or more frequent, monitoring of the sector's performance should form the basis for its management. To achieve this aim, the following should be pursued:

- Execution of a review of each country's status regarding water and sanitation coverage as of 1990 and a realistic estimate of coverage to be achieved by the year 2000; and the types of assistance required.
- Establishment of an action plan — just a framework — for the 1990s, based on the review of the country's status and its goal.

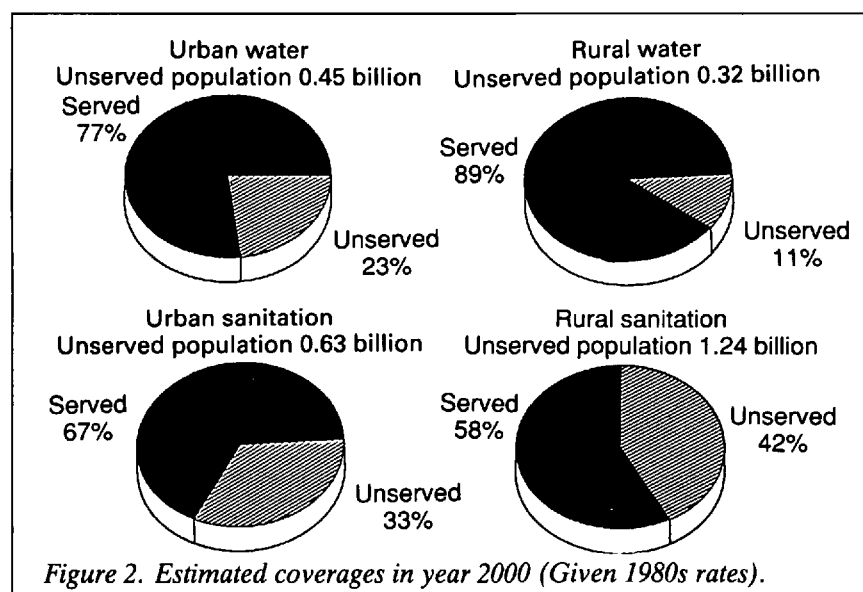


Figure 2. Estimated coverages in year 2000 (Given 1980s rates).

- Establishment of a national monitoring unit by government, at the country level, with assistance, if necessary, from the External Support Agencies. The unit will monitor the sector performance and apprise the country-level management (co-ordination) body of its findings. Actions are to be taken based on these findings.
- At the global level, a management/co-ordination entity, comprising members from the developing countries and the External Support Agencies, should be formed to perform a largely advocacy role on behalf of the sector, with respect to findings from global monitoring.

Costing model

A costing model, with respect to capital investments only, is devised to provide an estimated cost of completely serving the unserved among developing countries with water supply and sanitation by the year 2000. Recurrent costs, though highly essential for operation and maintenance especially, are not included in the model. Costs are based on 1990 values. The model can be considered a preliminary one with the possibility of further refinement.

The total population among developing countries in 1990 is estimated at 4 billion, with urban and rural areas having 1.33 and 2.67 billion people, respectively. The total population among developing countries, by the year 2000, is estimated at 4.81 billion, with urban and rural areas having 1.90 and 2.91 billion respectively.

China, India, Pakistan, Bangladesh, Indonesia, and Vietnam in Asia, Nigeria and Egypt in Africa, and Brazil and Mexico in Latin America, account for approximately 75 per cent of the current developing countries' population, and it is likely that this picture will not change significantly over the next decade. What happens in these countries will therefore dictate the overall outcome in costs and coverage by the year 2000.

The 1980s witnessed for the first time in history a concerted effort to provide poor people in urban and rural areas with water and sanitation services on a large scale. One of the outcomes of this effort is the emergence of an array of low-cost approaches and tech-

nologies which has resulted in significant cost reductions as they are transferred from their research and developmental phase into large-scale implementation programmes.

While progress has been made in cost reduction via low-cost technologies, it is undeniable that as urban centres grow and more distant and/or deeper additional water sources have to be identified and developed, the cost of service delivery may increase.

This principle is not limited to urban areas; when the more distant and isolated populations in rural areas have to be reached, the scarcity of adequate infrastructures tends to raise developmental costs substantially.

For the costing model, the unserved population is divided into three broad geographic groups representing what, in reality, is much less well defined. These are urban, peri-urban, and rural. Specific 'technology categories' are then assigned to the geographic groupings.

The model assumes that low-cost technologies will be applied to the

entire rural areas; that 50 per cent of the urban areas will have high-cost technologies; the remaining half of the urban areas will be equally divided into low-cost and intermediate-cost.

Investment cost and population served

In absolute terms, 0.81 billion people in urban areas and 1.30 billion people in rural areas will require water supply, and 0.95 billion urban and 1.68 billion rural people will need sanitation services, if full coverage is envisaged by the year 2000.

A total cost of approximately \$357 billion is needed to attain a water and sanitation service coverage of 100 per cent by the year 2000 based on the following distribution of technology categories:

- \$247 billion for high-cost in urban areas.
- \$26 billion for intermediate technologies in mainly peri-urban areas.
- \$11 billion for low-cost in (the

The geographic groups with their corresponding technology categories.

<i>Technology category</i>	<i>Cost per capita (in US\$)</i>
High-cost technology	
Urban water supply	200
Urban sanitation	350
Intermediate technology	
Peri-urban water supply	100
Peri-urban sanitation	25
Low-cost technology	
Rural water supply	30
Rural sanitation	20

High-cost technology applies to the urban-type system with elaborate pumping stations, water and sewerage treatment plants, complete distribution systems and individual household connections for both water supply and sewerage.

Intermediate technology, applicable to peri-urban areas essentially, comprises pipe-borne water supply (no allowance for elaborate treatment) leading to public standposts, and on-site sanitation including technologies such as pour-flush and ventilated improved pit latrines.

Low-cost technology, targeted to rural areas essentially, includes handpump-equipped boreholes or hand-dug wells, rainwater harvesting systems, and pipe-borne gravity-fed systems with public standposts for water supply. Sanitation technologies are the same as those allocated to the 'intermediate technology' category with a slight cost reduction allowing for the use of locally available construction materials for the building of latrine superstructures.

remaining) peri-urban areas.
 ○ \$73 billion for low-cost in rural areas.

Figure 3 provides further details regarding the costs for water supply and for sanitation, within the framework of the technology types. All costs are based on 1990 values.

The 10-year capital investment cost of \$357 billion, when apportioned, allows for \$147 billion for water supply and \$210 billion for sanitation. These estimates imply an investment of about \$36 billion per year over a 10 year period (1991-2000), with \$15 billion for water supply and \$21 billion for sanitation. The cost derived is equivalent to about three and one-half times the average annual investment into the sector during the 1980s. (Developing countries spend about \$200 billion annually on their military.)

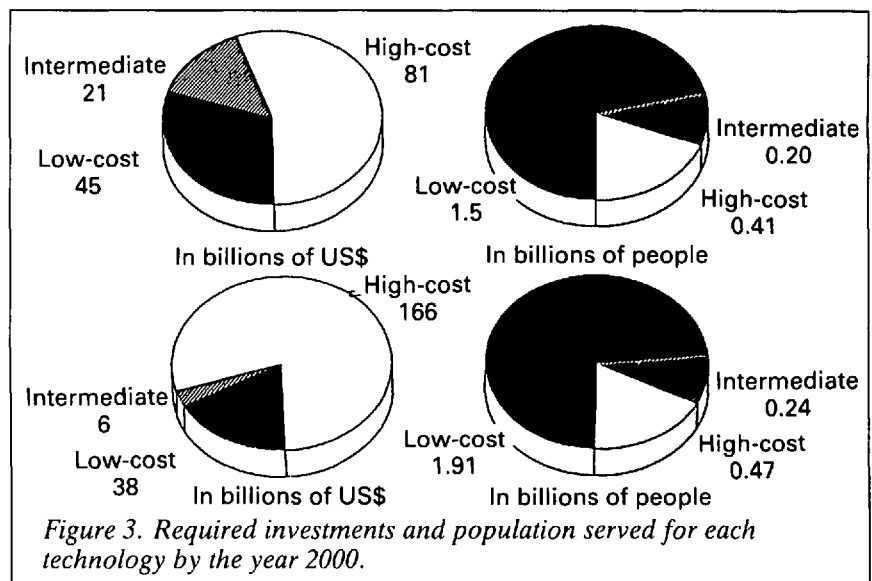
However, as sector funding of \$36 billion annually is unlikely to be forthcoming in the current economic climate, restructuring the use of existing sector funds in terms of efficiency and effectiveness must be pursued parallel to mobilizing for additional funds.

If one were to focus on the provision of low-cost technologies to the poor, herein categorized as the total rural population plus 50 per cent of the urban population (essentially peri-urban), it is clear that with only 30 per cent (\$110 billion) of the total investment of \$357 billion, over 2 billion needy people could be reached with sanitation and 1.6 billion people with water supply, which is 80 per cent of the total unserved.

Conclusions

The International Drinking Water Supply and Sanitation Decade came to an end in 1990. Though the Decade has not achieved its numerical objective of universal access to water and sanitation, it has been quite successful in creating awareness about the sector and in developing workable strategies and models which enhance sector sustainability.

The disparity in coverage between urban and rural areas, the wide differential between the provision of water-supply facilities and those for sanitation, the active and meaningful involvement of women in the management of water and sanitation programmes, and the effective means of accelerating



coverage in a sustainable manner, are all issues for which effective answers must be found during the 1990s.

Additionally, it is clear that with approximately 30 per cent of the total capital investment required to provide water and sanitation services to all by the year 2000, 80 per cent of the unserved could be reached by use of essentially low-cost technologies. This fact emphasizes the need to shift some resources from high-cost technologies to low-cost alternatives.

If the sector were to perform at

the level in the 1990s that it did during the 1980s, a significant proportion of developing countries' population will yet be unserved by the year 2000. Thus, the strategies of the 1990s must be such that their combined effect will make an enormous difference with respect to sector performance. A more management-oriented sector, based on frequent and systematic monitoring at country and global level, with an institutionalized entity for global advocacy, should form the corner-stone of the thrust for the 1990s.

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