LATIN AMERICAN AND CARIBBEAN SEMINAR ON WATER AND SANITATION FOR LOW-INCOME GROUPS

Recife, September 29 to October 5, 1988

REPORT

Manufactured in the United States of America
First Printing, June 1989

This document has been prepared and published by the Water and Sanitation Division, Infrastructure and Urban Development Department, of the World Bank. Copies may be obtained from the Water and Sanitation Division. Material may be quoted with proper attribution.

CONTENTS

INTRODUCTION

This document presents the main proposals and conclusions from the Regional Seminar on Water and Sanitation for Low-Income Groups in Rural and Periurban areas that was held in the city of Recife, Brazil, from September 29 to October 5, 1988.

The Seminar was promoted by the Government of Brazil, through MHBES (the Ministry of Housing and Social Welfare), the Government of the State of Pernambuco, through SSOMA (the Secretariat of Water and Sanitation, Public Works and the Environment), the World Bank, ECLAC (the Economic Commission for Latin America and the Caribbean), and the UNDP/Brazil (the United Nations Development Program). Participating in the seminar were representatives of the water and sanitation sectors of 20 Latin American and Caribbean countries, five countries in other regions that had been selected for their achievements in the sector (i.e. the People's Republic of China, the Arab Republic of Egypt, the Republic of India, the Federal Republic of Nigeria, and the United Republic of Tanzania), together with international organizations, bilateral assistance agencies, and non-governmental organizations.

The main objective of the Recife Seminar (which was the fourth biannual regional meeting, following regional meetings in Africa and Asia) was to evaluate results and progress in the Region's water and sanitation sector over the Decade. A further objective was for all the countries in the Region, together with the external assistance organizations, to define guidelines and make recommendations for continuing and extending activities in Latin America and the Caribbean.

The Seminar was concluded with a policy statement, known as the Recife Statement. The Statement notes that the water and sanitation sector has been and still is one to which the Latin American nations assign insufficient budget priority, and points out that "the number of individuals without service will reach alarming proportions unless radical measures are taken to make water and sanitation services a top priority." This situation is "the result of flaws in the priority-setting process, which leads to confusing what is technically feasible with what is economically and socially desirable." We observe in the region a simultaneous improvement of the level of services provided to the middle and upper income groups, and a decline of the sanitary situation of the low-income groups. Along with the other organizations committed to the goals of the International Drinking Water and Sanitation Decade (IDWSSD), the UNDP/World Bank Water and Sanitation Program is geared to increase the capacity of countries to deliver water supply and sanitation services to low-income groups, primarily with low-cost and community-based approaches.

Saul Arlosoroff
Program Manager
Water and Sanitation Division
Infrastructure and Urban Development
World Bank

ACKNOWLEDGEMENTS

Acknowledgements are due to a number of people and organizations for making the Seminar possible and ensuring its success.

Firstly thanks go to the local organizing committee, provided by SSOMA, the Pernambuco Secretariat for Water and Sanitation, Public Works and Environment, in particular to Mr. Luiz Baltar; to the UNDP office in Brasilia, especially Ms. Elice Marquart who provided invaluable organization assistance before and during the Seminar; and to the staff of the UNDP/World Bank Water and Sanitation Program, in particular Mr. Daniel Gubler and Ms. Mari Dhokai, who contributed significantly to the preparative arrangements and to the management of the meeting.

Many participants contributed actively to the drafting of the Recife Statement. Special mention should be made of Prof. José Azevedo Netto, of Sao Paulo, who chaired the drafting group, of Mr. Augusto Sergio Guimaraes of the Superintendencia Estadual de Rios e Lagoas of Rio de Janeiro, of Dr. Alberto Kattan of the Subsecretaria de Recursos Hidricos of Argentina, of Mr. Asher Kiperstock of the Secretaria de Desenvolvimento Urbano of Bahia, of Mr. Carlos Alberto Ciarlini of SSOMA, of Mr. Miguel Solanes of UNDTCD, and of Dr. Alberto Florez-Muñoz of CEPIS.

Our warmest thanks go to Mr. Ruy Gomes do Rego, of Recife, Brazil, who wrote this report.

1. EXECUTIVE SUMMARY

A lack of financial resources cannot be regarded as the reason why the goals of the International Drinking Water Supply and Sanitation Decade have not been achieved in Latin America and the Caribbean. This may have been the most surprising conclusion drawn at the Recife Seminar, given that the data presented at the Special Session on technological options (see 3.2.4 below) indicate that only 2.5% of the Region's aggregate external debt (i.e. US$8 billion) would be sufficient to provide the necessary infrastructure for the 160 million persons currently living in the poor rural and urban areas of the Region and lacking water supply and sanitation.

The participants unanimously agreed that the quantitative targets for the Decade (established at the 1977 Mar del Plata Conference on water supply) will obviously not be achieved; i.e. the total population will not be properly provided with a minimum water supply and sanitation infrastructure within the decade. Several countries even expect that coverage rates will be lower in 1990 than in 1981.

This prompts a fundamental question: why will the targets not be achieved? Were they too ambitious? Or did problems and obstacles arise that were not anticipated at the beginning of the Decade? The opinions presented by the representatives of the five different groups of participants (see 3 below) fall into two different categories: one relating to operations, and including technical and institutional considerations, and a broader category that includes socioeconomic and political issues. The following are among the main problems identified:

Operations:

(a) The high loss rates, and underutilized and deteriorating installed capacity;

(b) although technological solutions for most problems in the sector are undoubtedly available in the Region itself, the use of inappropriate technologies has been (and continues to be) a considerable obstacle;

(c) insufficient capacity for preparing and managing programs and projects;

(d) the operational and financial inefficiency of the institutions responsible for the sector, added to the dispersal of responsibilities among many different agencies;

(e) the inability of the existing institutional and legal framework to provide for consumer participation and the optimization of existing and potential resources;

(f) disequilibria in the allocation of technical and financial resources, which are generally concentrated on central urban areas, at the expense of periurban and rural areas.

Broader issues:

(a) Failure to give investment priority to the sector, together with the poverty of the Region and the financial constraints resulting from the external debt burden;

(b) the mistake of regarding the water and sanitation sector as only a provider of social needs for low-income groups, instead of recognizing it as one of the economic sectors;

(c) the changes caused by the economic crisis and the new political balance in society, rendering existing institutional structures ineffective;

(d) the failure of governments to address ecological issues, reflected in the lack of legislation and control over the pollution of water sources, which increases water production costs considerably.

In spite of these problems, the various groups believed that the Drinking Water Supply Decade had produced several positive results for the water and sanitation sector, including the following:

Operations:

(a) Low-cost technological responses to the most crucial water supply and sanitation problems, either developed as programs included in the Decade (e.g. hand pumps) or as a result of such programs;

(b) institutional and legal models adapted to the sector's real needs and developed by various countries that had improved their coverage rates;

(c) increased knowledge of the sector's real problems, now making it possible to define the necessary solutions both qualitatively and quantitatively.

Broader issues:

(a) Raising the consciousness of several governments across the world regarding the importance of water supply and sanitation for health and for economic and social development;

(b) international awareness of the scale of the problem and the ethical and moral obligations arising from the activities undertaken jointly by developed and developing countries;

(c) the evidence that a lack of resources is not in itself the main obstacle, since several countries have demonstrated that -- if there is sufficient political will -- much can be achieved even with little financing;

(d) acknowledgment of the importance to the sector of the Decade's programs, reflected in the unanimous desire on the part of all groups of participants that the programs and international cooperation established during the Decade should be expanded.

Finally, several recommendations were made for the continuation and reorientation of the Drinking Water Supply Decade's programs and activities, (both worldwide and regional), the following being the most important:

(a) The need to match demand, consumption and current service conditions for society as a whole, paving the way for the eventual provision of full services;

(b) the need to standardize cost and performance parameters and criteria so that developments in the sector can be monitored and evaluated at international level;

(c) the establishment of a process for evaluating the results of the Drinking Water Supply Decade so that strategies can be reformulated and new priorities and realistic targets defined in light of present knowledge;

(d) the need to link urban water supply and sanitation programs with mother-and-child health and welfare programs;

(e) the incorporation of the political dimension into problem-solving and decision-making in the sector;

(f) greater coordination among international agencies, particularly with regard to the following:

- improved links between the national and international agencies operating in each country;

- establishment of an international system for disseminating innovative ideas and technologies, using existing information networks;

- specifically for Latin America and the Caribbean, the establishment of a regional center for providing training in basic water supply and sanitation;

(g) increased monitoring and attention with regard to ecological issues, especially waste water treatment and the disposal of solid and toxic waste;

(h) expansion of the programs for the Decade ending in the year 2000, coordinating them with the "Health for All" program, an essential aspect being the preparation of special action plans for each country that take account of the following points:

(i) efficient and rational water use, with particular attention to regaining and increasing the productivity of installed capacity;

(ii) reduction of production costs, particularly by safeguarding water sources;

(iii) application of billing policies designed to rationalize consumption;

(iv) use of technologies capable of incremental development;

(v) impacts of water supply and sanitation systems on public health;

(vi) health education;

(vii) community participation, with emphasis on the involvement of women in the various phases of the process;

(viii) assignment of priority to drainage and urban cleaning;

(ix) institutional and legal development;

(x) training.

2. RECIFE STATEMENT

On the occasion of the Latin American Regional Seminar on Water Supply and Sanitation for the Low-Income Groups n Rural and Periurban Areas, held in Recife, Pernambuco, Brazil, the following statement was issued by the representatives of the Latin American and Caribbean governments and institutions, the bilateral assistance agencies, the international organizations, and other Third World countries:

I. GENERAL

1. Only through coordination of their economic and technological capacities and their natural resources can the Latin American nations meet their social requirements -- requirements that demand both a creative and decisive response.

2. The goals set for the International Drinking Water Supply and Sanitation Decade (IDWSSD) will not be achieved. Nor is it pessimistic to expect that, despite the efforts of the NGOs, the percentage of people served will be lower in some cases than at the start of the Decade.

3. Although the cooperation and assistance provided by the international agencies to Latin American nations represent important means of ensuring that already-critical situations do not deteriorate even faster, this collaboration has not played a decisive role in effectively improving existing conditions.

II. ECONOMIC ASPECTS

1. The present crisis facing water supply, sanitation and other basic services in the Latin American and Caribbean nations is due to adverse economic factors.

2. Economic relations resulting from the external debt and other damaging factors are the direct causes of large transfers of wealth that are diametrically opposed to basic considerations of justice and the essential principles of the IDWSSD.

3. The water and sanitation sector has been and still is one to which the Latin American nations assign little budget priority. During the economic boom of the seventies, certain countries did make large investments; however, these were based on other than social considerations. These sporadic attempts failed to give the sector more political significance. In most cases, the financial allocations were inadequate to meet the growing demands of the population.

4. In the present economic crisis, the sector is likely to receive even lower priority. This implies that the number of individuals without service will reach alarming proportions unless radical measures are taken to make water and sanitation services a top priority. Only then can the sector contribute to the health, social well-being, and economic development of our people.

5. In light of this situation, it is questionable whether sanitation policies can be adopted that will meet the minimum needs of the low-income groups, since the fact that costs cannot be met by the groups themselves and possibly not even by their governments means that service coverage will be restricted.

6. These crises are also the result of flaws in the priority-setting process which lead to confusing what is technically feasible with what is economically and socially desirable, and result in scarce resources being used in nonpriority undertakings.

7. This truly critical economic situation at the same time provides opportunities for the promotion of low-cost solutions, models whose pertinence is more easily understood in times of economic crisis.

III. INSTITUTIONAL ASPECTS

1. The general inefficiency of the sector is another factor behind the low coverage rates, particularly in the low-income groups. Billings are regrettably below production, and natural, financial, and other resources are being used inefficiently.

2. The sector's institutional problems reflect the overall institutional situation: resources and decision-making authority are concentrated in centralized agencies and services, where local or private-sector roles or capabilities are either limited or not even considered. Consequently, the distribution of sector funds between central and outlying areas is uneven, the local authorities are restricted in terms of decision-making and executive powers, and institutional capacities for mobilizing resources are unnecessarily restrained.

IV. TECHNOLOGIES

1. The adoption of appropriate and low-cost technologies, in addition to solving the problems of the lowest-income population groups, has revealed the errors inherent in using sophisticated technologies whose installation and maintenance costs far exceed local financial capacities.

2. Technological factors do not, except in some cases, represent an impediment to, or restriction on, the development of satisfactory solutions to the diverse requirements of the population.

V. EDUCATION AND COMMUNITY PARTICIPATION

1. It is essential that the adoption of technical decisions be preceded by sufficient analysis and debate by political representatives of the community. This is the only way to ensure joint participation in decision making.

2. Community co-participation is a decisive factor in the education process, as well as in the population's efforts to find appropriate solutions.

3. It is acknowledged that domestic water use is usually among the responsibilities of women and that the participation of women in water and sanitation projects is a priority consideration from the planning through the implementation stage.

4. But participation alone is not enough. Changes in personal hygiene, rational water use, and service maintenance demand a permanent and intensive health education program.

VI. RECOMMENDATIONS

A. Consequently, it is recommended that governments:

1. Take immediate steps to foster the development of the Latin American population by improving their living conditions in both qualitative and quantitative terms. These terms should be in line with social indicators accepted by the governments and by the international development agencies.

2. Bearing in mind that destruction of the ecosystem is an important factor in underdevelopment, give priority to the conservation of natural resources by avoiding their deterioration, pollution and devastation. Such environmental deterioration not only endangers people's health but demands highly complex treatment and highly technical procedures, raising costs and lowering even further services to the poorest population groups.

3. To ensure that studies and projects that may have a marked effect on the environment are preceded by an assessment of their environmental impact.

4. Make decisions on measures to be taken in the water and sanitation sector that are developed from discussions with the communities involved. Dissemination of information to the public is essential.

5. Adopt simple, low-cost alternative technologies, and introduce policies that are designed to ensure more rapid attainment of the desired coverage, with less investment. Make operation and maintenance of the systems more technologically independent.

6. Give priority to areas with little or no service coverage, so that the benefits of drinking water and sanitation services are shared by all.

7. Increase the output of existing water supply systems as a means of extending coverage to the poorest urban groups, and at the same time postpone new investments in system expansion. To achieve this goal, priority must be assigned to reducing losses and promoting efficient water use; in this way, uninterrupted good quality service can be ensured.

8. Establish mechanisms that enable women to participate in all stages of project planning and implementation.

9. Give priority to the implementation of institutional development programs by: continuing personnel training at all levels, adopting fair pricing policies, and improving the efficiency of billing and collection for the services. All of this will permit gradual recovery of investments and ensure that low-income groups receive permanent attention.

10. Encourage an exchange of technical information in this area in order to strengthen the current process of integration, using, inter alia, the Panamerican Sanitary Engineering Information Network (REPIDISCA). The goals should be: to establish criteria for assessing performance, to set priorities, and to institute comparative parameters for the services and their cost.

11. Emphasize training and education programs in health and hygiene. These programs must be implemented in an intensive manner, using participatory communications techniques.

12. Increasing service coverage in the poor and rural areas means that governments will have to decentralize funds and decision-making processes, while conforming to coordinated national policies. At the same time, they must provide the technical and financial support required for the effective development of local capacities to meet national objectives.

13. The assigning of institutional support, promotion, and supervision responsibilities during the implementation of drinking water and sanitation programs should be sufficiently flexible to allow for the use of those national agencies closest to the target population.

14. The implementation process should include a broad range of institutional mechanisms that can mobilize funds for desired goals. This would involve the use of public institutions and private bodies, such as user cooperatives, and would assign responsibility to sectoral, professional and business groups.

15. As far as possible, broaden community and user participation to include not only field activities, but also planning and policy making.

B. It is recommended that international and bilateral agencies:

1. Step up the flow of grants to the sector, facilitating access to these, and reducing interest rates and other costs entailed in loans to the sector, in light of the social and health benefits to be derived. It is suggested that the financial agencies monitor the use of the subsidies to the sector in order to ensure their proper use.

2. Endeavor, in cooperation with the governments, to streamline intermediate procedures in the release and administration of international funds so that resources are not diverted for bureaucratic tasks.

3. Allocate special resources in the form of loans and grants to update the management and technical capacities of professionals in the sector.

3. REPORTS, PROPOSALS AND CONCLUSIONS

The Latin American and Caribbean Seminar on Water and Sanitation for Rural and Periurban Groups was divided into Plenary Sessions, Special Sessions and Field Visits (see Annex 2: Program). These included presentations and reports by representatives of the following five groups of countries: (i) countries in the Latin American and Caribbean Region; (ii) countries selected because of their experiences during the Decade; (iii) international organizations; (iv) bilateral assistance agencies; (v) nongovernmental organizations. The reports and proposals, together with the conclusions resulting from discussion in the plenary sessions, are summarized below.

3.1 PLENARY SESSIONS

In the format adopted for this report, participants' contributions to the plenary sessions are presented according to the group to which their countries belong, so that the main views and approaches of each of these groups can be appreciated. These contributions are also subdivided into their socioeconomic and political, technical, institutional and legal aspects.

3.1.1 Latin American and Caribbean Countries

At the end of the plenary sessions, the prevailing view was that, in general, the quantitative goals set for the International Drinking Water Supply and Sanitation Decade will not be achieved in Latin America and the Caribbean. With the exception of some positive results obtained in countries such as Costa Rica, Cuba and Chile, where coverage rates for water supply and sanitation have reached satisfactory levels, the position in many countries has deteriorated considerably compared with the beginning of the Decade. There is an increasingly evident need for the governments in the Region to establish effective political priorities in the water supply and health sector and for the industrial countries to adopt specific measures for reviewing and assessing the Region's external indebtedness, which has caused foreign exchange losses that frustrate any attempt to achieve socioeconomic development. Nevertheless, the Decade is proving to be an important mechanism for making the governments of those countries more aware of the real extent of the problem.

The reports by the Region's representatives, together with the main proposals and conclusions resulting from their addresses to the plenary sessions, are summarized below and divided into socioeconomic and political, technical, institutional and legal aspects. In addition, the table in Annex 4 shows the main data, policies and important programs of each country in the Region.

(a) Socioeconomic and political aspects:

- The problems of water supply and sanitation are not limited to questions of technology, since the LAC countries already possess considerable capacity for solving these. The fundamental issues are political and economic, and are related to the following points:

(a) the failure to give priority to investment in the sector;

(b) poverty in the Region;

(c) financial constraints mainly resulting from the LAC countries' external debt burden.

- Sanitation, water supply and other social needs are problems of society as a whole, and not only of governments and low-income groups.

- The worsening health standards among the poor in Latin America and the Caribbean is seriously affecting the Region's production capacity and economic development.

- Water and sanitation should also be regarded as an economic sector, because water is a necessary resource for economic development, not merely a social need. The current neglect of the sector is incomprehensible.

- The conventional cost-recovery model (through billing) favors investment in higher-income urban areas, at the expense of periurban and rural areas. In addition, this model has shown that it can be self-sustaining only in the case of water supply.

- More effective policies must be applied to rural areas. The position is particularly serious in scattered settlements, where infrastructure is practically nonexistent.

(b) Technical aspects:

- The problem of high loss rates, and the underutilization and the decline in installed capacity, is mainly the result of the following factors:

  - lack of maintenance;

  - inadequate planning and management.

- Consequently, before any investment is made, priority must be given to loss reduction, and the following measures are recommended:

  (a) institutional development;

  (b) establishment of consumer registers;

  (c) location of leakages in systems;

  (d) measurement at system and consumer level;

  (e) increased storage capacity.

- Minimizing the cost of water supply projects should be based primarily on the rehabilitation and optimization of existing systems, instead of the construction of new ones.

- Demand, consumption and current services to society as a whole must be coordinated, so as to lay the foundation for providing full services in the future.

- In spite of its indisputable social, economic and health importance, rainwater drainage has been relegated to a subsidiary role in water and sanitation plans, mainly because it is more expensive than water supply and sewerage. Nevertheless, alternative technologies for large and small-scale drainage can reduce costs by between 15% and 20%, thus producing savings that can help finance other components in water and sanitation systems.

- An equally important problem is solid waste management. In addition to national policies and programs, this requires priority to be given to investment in institutional development and vocational training, research and the dissemination of alternative technologies for waste collection, transportation and treatment, and the development of recycling methods.

- One obstacle to solving the sector's problems is the use of technologies that are incompatible with local social, economic and cultural conditions, particularly in poor urban and rural areas. Suitability is an essential consideration in the analysis of technological options, and the mere generalization of solutions must be avoided. "Appropriate technologies" are not the same as "low-cost technologies," because the purpose of an appropriate technology is not only to reduce costs, but primarily to be technically accessible and sustainable, culturally acceptable, and capable of involving the target community in the various stages of its application.

- The health education component is fundamental for low-income groups. It must form an integral part of the planning of water supply and sanitation works, and not be regarded as separate from them.

- Priorities have not been identified for applied research into water and sanitation in the Region. A joint effort must be made to define a regional research policy for Latin America.

- The need for a regional center to provide training in basic water supply and sanitation services was identified.

- The training of higher-level experts specializing in the problems of Third World countries must be reviewed, as part of the UNDP/World Bank training program. The question of the study programs provided by Schools of Engineering must also be examined, and methods sought for adapting them to the needs of each region.

(c) Institutional aspects:

- The most serious constraints on the sector are political and institutional. There is a need for institutional reorganization, because of the economic crisis and the new political balance in society.

- There are organizational limits to the capacity of institutional and legal agencies for implementing more expeditious and efficient programs for optimizing use of existing and potential resources, and responsibilities are fragmented among numerous, and uncoordinated, institutions.

- It is not possible to establish one single model for managing the sector, or for defining the appropriate degree of centralization or decentralization. No single model must be regarded as appropriate for providing access to resources in all circumstances. Municipalities (or whatever level of government is closest to the population groups in question) must have control over water and sanitation systems, whether or not they are responsible for managing them.

- The statistics of coverage increases presented by governments and the various international agencies contain discrepancies. Parameters and data on the sector must be standardized, so that comparisons and evaluations of development can be properly made. Criteria for comparing project costs must also be defined, so that minimum evaluation parameters can be established.

- The programs for the Decade must be expanded and their scope must be increased as the year 2000 is approached. A definite action plan for solving these problems must be prepared, and it should focus on the following points at least:

  (i) increased productivity of installed capacity;

  (ii) billing policies that will rationalize consumption;

  (iii) efficient and rational water use;

  (iv) reduced production costs;

(v) use of technologies that will allow for incremental development;

(vi) the impact of water supply and sewerage systems on public health;

(vii) priority status for urban drainage works and cleaning;

(viii) health education and community participation;

(ix) institutional development and training.

(d) Legal aspects:

The main contributions regarding legal issues were made by the representative of Argentina, which has enacted an advanced form of environmental legislation. The following were the main questions discussed in the plenary session:

- The sector's main legislative concern should be to safeguard water resources against pollution, because the protection of sources and bodies of water reduces production costs and thus increases supply.

- Effective regulation and control of polluting activities depend on the sharing of responsibility for the protection of water resources. Communities must be made aware of the causes of pollution, and mobilized to enforce measures for protecting sources and bodies of water. Naturally, a country's legislation must provide for this form of community participation.

- Specific legal instruments must be enacted to control water pollution. The following aspects of the Argentine model are noteworthy:

  - Centralization of policy-making regarding water use, maintenance of the quality and quantity of water resources, and coordination of the activities of all agencies operating in the sector, even if only incidentally (for example, construction of hydroelectric plants by power agencies).

  - Decentralization at the level of specific projects and the operation of systems, and also in the assigning of responsibilities to the various organizations concerned with the sector.

  - Penalties for the production of pollutants, based on a system of fines graduated according to the quantity and nature of such releases into bodies of water. The system of graduated fines, in contrast to purely punitive systems, forces industries to install treatment systems, and the fines collected are paid into a fund for financing pollution control works and antipollution equipment.

3.1.2 Selected Countries

Although this was a regional Seminar, it was attended by representatives from five countries outside the Region that had been selected because of the priority they assign to the programs of the International Drinking Water Supply and Sanitation Decade, and because of the results they have achieved to date. The most important contributions from the representatives of the People's Republic of China, the Republic of India, the Arab Republic of Egypt, the Federal Republic of Nigeria and the United Republic of Tanzania are presented below:

(a) Socioeconomic and political aspects:

- The lack of resources is not in itself the main obstacle. If the political will exists, much can be done, even with little financing.

- The objectives of the Decade must be rescheduled to the year 2000, and new specific programs must be established.

- A process for evaluating the Decade must be established, so that strategies can be reformulated and new priorities and realistic targets can be defined, because the original targets were too ambitious.

- One of the Decade's main objectives was to make governments more aware of the importance of water supply and sanitation systems to health and to economic and social development.

- Mass adoption of water and sanitation programs produces significant results in the comparatively short term, especially in rural areas. However, suitable technologies must be carefully selected.

(b) Technical aspects:

- It is essential to use an appropriate technology, this being defined as one which is:

  - economically viable;

  - socially and culturally acceptable;

  - institutionally negotiable;

  - suited to the environment.

- As regards water supply, the following issues should receive priority:

- rational use;
- loss control;
- water quality control;
- standardization of components.

(c) Institutional aspects:

- Rural water supply and sanitation programs must be coordinated -- if not linked -- to agricultural, irrigation, health and rural development programs.
- Urban water supply and sanitation programs must be linked to mother-and-child health and welfare programs.
- The success of programs depends not only on resources. It is also essential to develop project preparation and program management capacity.
- Resource allocation for training is essential.
- International agencies have an important role in the following areas:
  - the interchange of experiences (i.e. cooperation);
  - experiments for developing technological models;
  - the supply of essential hardware for project development.

3.1.3 International Organizations

The international organizations with the most active direct and indirect involvement in the water and sanitation sector participated in the Seminar. The following were the main points raised by their representatives in presentations and addresses:

(a) Socioeconomic and political aspects:

- If the Decade is evaluated only in terms of water supply and sanitation coverage, the outcome must be regarded as unsatisfactory. However, the following must be regarded as positive and important results:
  - cooperation between developed and developing countries in tackling the sector's main problems;
  - increased awareness at international level of the scale of the problem, and of the ethical and moral obligations entailed;

- development of technological solutions to the most crucial water supply and sanitation problems.

- Undoubtedly, results have fallen short of the targets for the Decade because of the adverse economic climate and the consequent negative flow of foreign exchange from the developing countries. These factors have also affected the development capacities of local governments. However, it is clear that, even at times of economic growth, the countries concerned have not allocated significant investment to the sector.

- The Decade's programs must be extended to the year 2000, and its objectives must be matched with those of the "Health for All" Program.

- Provision of water and sanitation can be justified only if the target groups adopt sound hygienic practices. Consequently, health education components must be included in all water and sanitation programs. In particular, it is essential to involve schools and mothers in health education, because the initial impact must be made on mothers and children.

- Rural areas require special policies, because of their geographical and cultural characteristics (i.e. the dispersal and isolation of the population). This requires a larger investment in infrastructure, even though the financial return is not always commensurate with costs. In addition, the success of rural programs depends on particular attention being given to factors such as the lack of specialists qualified to operate and maintain such systems.

- In general, planning in the sector must take account of the political dimension (in addition to all other aspects), since this factor can determine success or failure.

(b) Technical aspects:

- The programs for the Decade promoted the development of various technological approaches. Nevertheless, the universities must take account of these approaches and take the lead in changing the attitudes of specialists in the sector. Consequently, university programs must be urgently reviewed.

- Items involved in technology transfer must be directly relevant to the communities benefiting.

- International parameters for performance evaluation and cost comparison must be urgently established, the main objective being to develop the exchange of technical data and technology.

(c) Institutional aspects:

The international organizations identified the following main institutional problems:

- operational and financial inefficiencies in the institutions responsible for the sector;
- the lack of coordination among the various sectors, and among the components of individual sectors, because of a lack of planning and technical standards, and of any attempt (especially of a political nature) to establish links and concentrate (i.e. rationalize) their efforts;
- disequilibria in the allocation of technical and financial resources between central urban areas (where usually the level of service is already high) and periurban and rural areas (where services are deficient and greater technological efforts are required);
- the incapacity of existing institutional arrangements to allow for consumer participation, either in planning, execution (i.e. through participation in the labor force), or in the operation and maintenance of systems;
- the lack of the necessary organizational components to deal with other aspects of water supply and sanitation, such as urban drainage, solid waste management, disease vector control, etc.

- The following measures must be urgently adopted:

At international level,

- improved coordination of activities between the international and the national agencies operating in each country;
- coordinated action on the part of the international agencies in defining their strategies;
- establishment of an international system for disseminating innovative ideas and technologies, based on existing information networks.

At national level,

- efforts on the part of the sector's leaders and specialists to establish more immediate and continuous contacts and communications with political decisionmakers;

- a review of existing institutional arrangements in order to adapt them to current needs, with closer contacts with users, the ideal being to centralize policy-making and the coordination of activities, and decentralize investment and operations;

- preparation by each country of an action plan containing at least the following objectives:

  (i) increased productivity from installed capacity;

  (ii) efficient water use;

  (iii) reductions in water production costs;

  (iv) application of a billing policy designed to rationalize consumption;

  (v) use of appropriate technologies that are capable of incremental development;

  (vi) institutional development and management training;

  (vii) consideration of the impact on health of water supply and sanitation;

  (viii) health education;

  (ix) mobilization of communities;

  (x) integration of solid waste management and recycling, urban drainage, and disease vector control.

3.1.4 Bilateral Assistance Agencies

The representatives of the bilateral assistance agencies attending the Seminar (i.e. CIDA, Canada; DGIS, Netherlands; GTZ, Federal Republic of Germany; SDC, Switzerland; SNI, Sweden; WASH, USA) described their specialized fields and activities, and analyzed and evaluated the results. It is therefore possible to summarize their role as consisting of either direct technical and financial support for developing countries (i.e. bilateral cooperation), or indirect support (through the financing of multilateral programs or NGO activities).

In general, the agencies engage in the following activities, on the basis of guidelines defined by such institutions:

- institutional and human resource development;

- cost-recovery financing and policies;

- operation, maintenance and rehabilitation of existing water supply and sanitation systems;

- community participation and health education;

- technological options and local production;

- coordination and cooperation at international, national and project level;

- technological development of water supply and sanitation systems.

The following opinions and conclusions were drawn from the results so far achieved in the Decade:

(a) Socioeconomic and political aspects:

- Consideration must be given to the economic impact of improved health resulting from the upgrading of water supply and sanitation systems, especially in low-income rural and periurban areas.

- Dissemination of information and health education programs must be given greater priority, in order to achieve high standards of health and hygiene as a result of action on water supply and sanitation.

(b) Technical and environmental aspects:

- Appropriate technology is a fundamental consideration in solving the problems of low-income communities, but its successful application depends on the community's effective participation at all stages of projects.

- Ecological issues, especially the treatment of waste water and the disposal of solid and toxic waste, must be more closely monitored and approached with greater care.

(c) Institutional aspects:

- Unless governments assign due importance to the problem of institution building, they will be unable to implement programs and achieve targets above the current level.

- Technology transfer must be supported by training programs for the target communities and mechanisms for evaluating the efficiency of the methods employed and the degree to which objectives have been achieved.

3.1.5 Non-Governmental Organizations

The presence of representatives of NGOs (Non-Governmental Organizations) such as IRC (Netherlands), SKAT (Switzerland) and CRS (USA) provided an opportunity for participants to find out about the organizations' roles, spheres of activity, methods and activities in support of the Decade's programs.

The NGOs' main role is to provide countries with the following forms of technical support:

- appropriate technologies;
- community participation;
- health education and hygiene;
- financial management;
- operation and maintenance of systems;
- human resource development and training;
- evaluation of results and impacts;
- exchanges of technical information;
- documentation and data bases.

The NGOs' main contributions to the Seminar can be summarized as follows:

- Agencies responsible for water supply and sanitation systems must cooperate as closely as possible with communities at the planning, implementation and management stages.
- In project planning and execution, the degree of incorporation and integration of economic, sociocultural and organizational aspects is an essential indicator in the evaluation of effectiveness.
- The exchange of information and experience through the execution of demonstration projects produces appraisals and data that are more relevant to the particular needs and characteristics of each community.
- An involved community is the best means of promoting the development of the low-cost and self-sustaining technologies available to it.

3.2 SPECIAL SESSIONS

The Seminar's organizers selected four topics for analysis and discussion by all participants at Special Sessions. The topics were as follows: (1) the application of technologies to water and sanitation projects for low-income groups; (2) drinking water demand and asset management; (3) international cooperation in the sector; (4) technological options: planning, use and impact. The main points and conclusions are summarized below.

3.2.1 The Application of Technologies to Water and Sanitation Projects for Low-Income Groups

Discussion at this Special Session concentrated on the socioeconomic and political factors determining the selection and application of technologies. Technical design and execution, operation and maintenance practices and methodologies were considered to a lesser degree. Most participants considered the reason for the greater emphasis on political rather than technical issues to be the belief that the crucial problems in the sector are political and economic, whereas the "technological responses" already developed in the Region itself are adequate to deal with most of the technical problems that arise.

The main issues and proposals (grouped into categories) are summarized below:

(a) Determining the Type of Technology:

Discussion brought to light the great difficulties facing several countries in the Region in applying "appropriate" technologies to "conventional" projects. These problems are apparently caused by both the prevailing political issues and a lack of proper direction and motivation on the part of specialists, administrators and politicians.

(b) The Scale of Technologies:

It was clear from the various reports and opinions that the scale of the technology selected must be such as to result in projects and installations that are economically viable, durable, and appropriate for the income level of the target group. It was also pointed out that most master plans are basically designed for higher-income areas, and are of a scale adapted to such areas and ill-suited to rural and periurban areas.

(c) The Relationship between Technology and Financing:

Several participants asserted that the laws of supply and demand should be followed in all planning and technology selection, because it makes no sense to decide against meeting demand by using low-cost installations. In addition, the selling price of a product (in this case water) should be a factor included in the economic analysis leading up to the selection of an appropriate technology for each project.

Moreover, appraisals should take account of political factors -- in addition to economic issues -- and should also study the anticipated impact of the project, since priority should be given to the use of technologies likely to produce the planned results.

Finally, there was a unanimous consensus that an essential initial step was to change billing and financial practices so as to ensure that large consumers subsidized the provision of services for low-income groups.

(c) Selection of Technologies:

The initial stage of any planning process must consist of a study of all available technological approaches. Low-income areas in urban locations already served by existing installations must certainly be connected to these, regardless of ability to pay, and the existing service standards must be maintained.

Nevertheless, priority must be assigned to low-income rural and periurban groups, where the prospects for providing full coverage depend on very low-cost installations. Because the degree to which the costs of conventional technologies can be reduced is limited, certain situations call for the adoption of alternative technologies.

The following are criteria for technology selection;

- Technologies must be culturally acceptable and compatible with local traditions.

- Social aspects must be taken into consideration in the technical planning of systems.

- Full participation by communities in the planning of systems -- together with training in operating and maintaining them (whenever feasible) -- are essential.

- There must be local capacity for maintaining the system and replacing components.

(d) Additional Recommendations:

It is extremely important to develop planning tools that allow for strategic planning, because of the ever-present problem of limited resources. It has been demonstrated that conventional planning models (such as "master plans") are incapable of coping with a lack of resources and highly dynamic socioeconomic and political changes.

Prompt action is also required on the following three guidelines presented at the 1987 Congress in Bolivia:

(1) University programs should reflect increased expertise and interest in low-cost technologies, through initiatives such as the UNDP/World Bank "International Training Network."

(2) External assistance organizations (whether international, bilaterial, or other) should increase their encouragement and support for the interchange of experiences.

(3) Methodologies for operating and maintaining existing installations and systems should be introduced, organized and developed.

3.2.2 Drinking Water Demand and Asset Management

This Special Session was dedicated to Enzo Fano, Chief of the UNDTCD Water Resources Division. Most emphasis was given to the legal and administrative aspects of water resource management, and to the importance of technology as a basic instrument for balancing demand and assets. The issues and proposals presented fell into the following categories:

(a) Legal Aspects:

- The most effective legal instruments for managing and controlling water resources are the declaration of public domain and regulatory enforcement.

- Another important element consists of user registration and records.

- Legislation must be sufficiently flexible to allow for the rules governing resource use in regulated areas to be adapted to economic and social changes.

- Balancing assets and demand requires -- in addition to measurements of volume and control of consumption -- strict legislation to combat waste (including deterrent penalties) and protect aquifers and recharge areas.

(b) Economic Aspects:

- Water is only one input serving the productive system and social development, and its use in relation to the other resources (i.e. human, financial and material) involved in production and services must be optimized.

- No investment should ever be made until an assessment has been made of the alternatives, including a cost-benefit analysis and environmental impact appraisal.

- The fundamental element in balancing demand and assets is billing, which must be on a progressive scale based on consumption.

(c) Technological Aspects:

- Technology is the link between demand and assets, and its impact plays a decisive role in balancing these two factors.

- Technological impact in a particular investment area must be appraised mainly according to population density and the opportunity costs for that population.

3.2.3 International Cooperation

This Session evaluated the activities of the bilateral and multilateral assistance agencies in the developing countries, in light of: (i) the difficulties encountered; (ii) the advantages to the host countries; (iii) recommendations made by the agencies for optimizing investment.

(i) The following difficulties were identified:

- The proliferation and diversity of projects and agencies seeking different objectives and engaging in unconnected and uncoordinated activities;

- the insufficient involvement of local authorities and organizations, even when there is an explicit community participation component and/or health education is included (the latter element is constantly forgotten);

- lack of planning and coordination between the agencies and governments, or among the agencies, which, in certain cases, are in competition;

- limits to the duration of projects, caused by the interruption of financing, preventing effective technology transfer;

- the technological standards of the proposed solutions often fail to match the absorption capacity of the host countries, or else the technologies are regarded as too simple.

(ii) The following were identified as the main advantages to the host countries:

- The opportunity for investing in less privileged sectors or areas;

- provided that they are well planned and coordinated, these activities can lead to technology transfer not only from the developed to the developing countries, but among developing countries, thus accelerating the process of providing services;

- the opportunity for beneficiary countries to influence the agencies in adapting technologies;

- the opportunity for the beneficiary countries to receive essential equipment that is not locally available.

(iii) As a result, the bilateral assistance agencies could provide the following conclusions and recommendations:

(a) Priority must be given to increasing coordination among the agencies, and in their activities in the host countries.

(b) Agreements must contain undertakings to provide effective technology transfer.

(c) Government financial and human resources must be committed to projects in order to guarantee their continuity.

(d) The problems of equipment maintenance (i.e. lack of services) must be solved through agreements between governments and bilateral assistance agencies.

(e) Priority must be given (and international and national resources should be allocated) to the national and international dissemination of information on successful projects, for the purpose of both attracting additional resources and also analyzing, evaluating and publicizing any mistakes made in order to prevent repetitions.

(f) It is essential that the host countries encourage the use of more efficient low-cost technologies in order to find solutions for the problems of low-income groups as speedily as possible. In this way, they will exercise a more decisive influence over the assistance agencies and, consequently, increase their support.

3.2.4 Technological Options: Planning, Use and Impact

This Special Session consisted of a discussion of the following concepts and issues raised by the international organizations:

(a) Basic Concepts:

For the sake of terminological simplicity, the following three types of technology were proposed: (i) conventional; (ii) simplified; (iii nonconventional. These three standards can be applied to water supply and sanitation services in the following way:

(i) "Conventional technologies" include the following:

- Water supply: large dams, long-distance pumping and transmission, complex treatment, distribution systems, and high-consumption house services;

- Sanitation: individual residential connections, large-bore deep sewerage systems, pumping stations, interceptors, complex treatment plants, offshore outfalls, etc.

(ii) "Simplified technologies" include the following:

- Water supply: tapping of nearby sources, gravity transmission or use of simplified pumping processes, simplified treatment, low-consumption house services (with water-saving devices).

- Sanitation: collective (co-owned) residential connections, shallow small-bore sewerage systems, use of inspection covers instead of manholes, local treatment (or use of small pumping facilities) in stabilization ponds.

(iii) Nonconventional technologies include the following:

- Water supply: water sources (i.e. dug wells or tubewells, with hand pumps), tapping of protected rainwater or other natural sources, gravity transmission (in pipes or canals), untreated or with simplified treatment (slow sand filtration).

- Sanitation: in situ disposal systems (VIP latrines or pour-flush latrines).

In addition, the following basic principles were proposed for programs and projects:

- Basic service standards, assuming full services for the population (i.e. 100% coverage), with at least minimum service standards (nonconventional technologies for water supply and sanitation);

- incremental service, providing for additional future investment, and using technologies capable of incremental development;

- sustainability, including such minimum items as capacity for the maintenance and extension of services, community management capacity, and provision for efficient cost recovery.

(b) Issues of Strategic Importance:

Also presented at this Session were the following issues of great strategic importance, requiring the consideration of governments of the Region:

(i) Although the cases of the People's Republic of China, India, Nigeria and Tanzania were considered as examples of how large-scale services could be provided for underprivileged groups, policies for the mass application of nonconventional technologies to Latin America must be urgently defined.

(ii) Even if the necessary political decisions are taken, the large-scale application of simplified or low-cost technologies will depend on the dissemination and promotion of such technologies among the population groups in question. The following are some of the basic activities that will be necessary:

- training of professional staff for the sector;
- a review of technical standards, operating manuals and university programs;
- promotional activities directed toward component manufacturers;
- definition and promotion of the role of the private sector (particularly the informal sector);
- encouragement to NGOs to act as intermediaries in the process;
- financing of applied research;
- use of public relations resources and the media.

(iii) The governments in the Region must also recognize the macroeconomic effects that providing water supply and sanitation services for low-income groups can have (as occurred in the People's Republic of China and India), whatever a particular country's political system may be.

(c) Economic Aspects:

In light of the following economic, population and cost data:

- Total population to be provide with basic water and sanitation services 160 million
- Region's total external debt US$300 billion
- Per capital cost of available technologies:

  Conventional: US$300

  - Water supply: US$120
  - Sanitation: US$180

Simplified: US$150

- Water supply: US$ 60
- Sanitation: US$ 90

Low-Cost: US$50

- Water supply: US$20
- Sanitation US$30

Consequently, the following would be the costs of meeting total demand (160 million persons) for water supply and sanitation services, at the per capita costs of the various standards of technology:

(i) Conventional systems: 160 million x US$300 = US$48 billion (i.e. 15% of the external debt).

(ii) Simplified systems: 160 million x US$150 = US$24 billion (i.e. 7.5% of the external debt).

(iii) Low-cost systems: 160 million x US$50 = US$8 billion (i.e. 2.5% of the external debt).

The obvious conclusion to be drawn from this Special Session is that financial constraints cannot be regarded as the reason why the Decade's objectives are not being achieved in Latin America and the Caribbean.

3.3 FIELD VISITS

During the Seminar, two field visits were organized. The first was to the Passira community sanitation pilot project, located in a small city in the rural area of Pernambuco. The second was to the Ilha de Santana integrated favela urbanization project in the city of Olinda (Recife Metropolitan Region).

3.3.1 The Passira Pilot Project

The Passira Pilot Project consists of a co-ownership water and sanitation experiment involving the local manufacture of components, and is being applied in a small city in the interior of the State of Pernambuco. Passira has about 20,000 inhabitants, and the urban area has a water supply, although there is no sanitation service.

The co-ownership sanitation system was originally planned by the sanitarian José Carlos Melo (currently Secretary of Water and Sanitation to the State of Pernambuco), and it has been successfully applied for some years in several cities in Brazil. The co-ownership plan, as applied to sewerage systems, combines simplified small-bore sewerage systems with community participation in the form of co-ownership "condominiums," allowing for the collective use of privately owned parcels for the installation of jointly owned branch collector pipes. In addition, the inhabitants of a block (the basic unit of the co-ownership system) take responsibility for operating and maintaining the infrastructure installed on their particular block (i.e. the collector branches and manhole units).

The innovative aspect of the Passira Pilot Project is the local manufacture of sanitary components (e.g. ceramic pipes, inspection covers, bowls, etc.) using artisanal methods and a labor force organized cooperatively in order to keep costs very low and generate employment and income for the groups benefiting from the water and sanitation project.

The pilot project serves about 2,500 people (i.e. 54 families) and includes installation of collector systems (270 m of jointly owned branch connections and 180 m of street collector systems), primary and secondary treatment in a collective septic tank connected to a simplified upflow anaerobic filter plan, the effluent being subjected to subsurface filtering in order to irrigate fruit trees.

Per capita costs of the project are as follows:

-	Jointly owned branches	US$2
-	Street collector system	US$1
-	Treatment (including irrigation)	US$11
	Total	US$14 per inhabitant

In addition to the sewerage system, the project includes plans for upgrading water and sanitation installations in the beneficiaries' homes, since these are inadequate and sometimes even nonexistent.

3.3.2 The Ilha de Santana (Olinda) Project

The Ilha de Santana Project consists of the integrated urbanization of the favela of that name in Olinda, which UNESCO has declared a "heritage city," and which has about 400,000 inhabitants, 38% of whom live in the 48 favelas in the municipality. In addition, about 34% of the population lives in areas lacking water and sanitation infrastructure. Because of these problems, the municipal council launched a favela urbanization program five years ago using low-cost technologies and community participation. The original initiative was self-funded, and consisted of a pilot experiment (the Triângulo de Peixinhos Project) for the research and development of appropriate urbanization technologies (i.e. drainage, surfacing, sewerage, and decentralized urban cleaning), and the training of the necessary teams. It was to serve as a demonstration project for communities and financing institutions. The experiment was successful and the results made it possible to obtain resources from financing organizations interested in supporting the development of the experiment up to municipal level. The following are the four main projects:

- Water and sanitation for the Sítio Histórico, with services provided for 2,500 homes and 12,000 inhabitants in the historic preservation area, by means of the co-ownership system.

- The Pé no Chao project, consisting of earthworks and drainage (both large and small-scale) over an area of 90 ha that was subject to flooding, benefiting a population of 30,000 inhabitants.

- Urban cleaning for the Sítio Histórico, with the establishment of a daily door-to-door collection system using a small agricultural tractor and cart with a capacity of 2 m^3, with local treatment in a simplified recycling and composting unit, and benefiting 15,000 persons living in the historical preservation area of Olinda.

- The Ilha de Santana Project, with the integrated urbanization of a settlement located within a high-income area, with a population of 6,000 inhabitants. The project consists of the following components:

  (a) Legalization of land occupations (the community's basic demand, and the main instrument for securing its mobilization and commitment). Occupation of the land was legalized through a CDRU (Real Right-of-Use Concession), under which the occupants pay the municipality a form of rent for the parcels they occupy. This continues for 20 years, after which they receive the right to obtain titles of ownership.

  (b) The street system, with three categories of street: main access, local access and pedestrian access. The design of the system was based on the existing network, with small adaptations designed to minimize the need for removing homes. The main streets were surfaced with paving blocks, and the surfaces of others were mechanically compacted.

  (c) Drainage, with gutters and "vias-canal" (channels providing for drainage over street surfaces) feeding the main drainage system consisting of a large channel.

  (d) Water supply, with one water supply connection per home, projected per capita consumption being 150 l/day.

  (e) Co-owned sanitary sewer systems, with the construction of co-owned branch collectors within blocks, street collector systems connected to the block branches, with a final connection to a main collector located on the edge of the area.

  (f) Urban cleaning, with daily door-to-door trash collection using a small agricultural tractor and a cart with a capacity of 2 m^3, with local treatment in a simplified composting and recycling unit.

  (g) Community facilities, including construction of a school, day care, health post, and a center for the Ilha de Santana Residents' Council.

  (h) A production center and unit for manufacturing precast construction materials for infrastructure and buildings. This is intended to produce most materials used in the works, using the community's own labor force.

Project resources were obtained on a grant basis from BNDES (the National Bank for Economic and Social Development), which used resources from FINSOCIAL (the Social Investment Fund) to support this project, which was to serve as a favela urbanization demonstration model for the whole country.

The per capita costs of all physical and social project activities totaled US$350.

ANNEXES

ANNEX 1

LIST OF PARTICIPANTS

Country	Name of Participant	Name and Address of Organization	Telephone No.
Federal Republic of Germany	FYLERS, Heinrich	GTZ	
	KRESSE, Klaus	GTZ	
	KNIPSCHILD, Werner	DMZ (Ministry of Cooperation)	
		Karl Marx Str. 4-6, Bonn	(49) 228535748
	JOERESSEN, Karl	GERMAN TV, ZDF	
		Sudring 183 - 6500 Mainz	61311/33599
Argentina	KATTAN, Alberto E.	SUB.SEC. DEC REC.HID. DE LA NACION	
		Avda. 9 de Julio y Belgrano - Buenos Aires	38-5250
Aruba	EDUARDO, Favio		
	GUZMAN, Nelson	EDF. COMANI FERNANDO GUACHALLA - La Paz	
	CARASCO, Johnny Cuéllar	ANESAPA - Casilla 4101	37-1519
	MEDINA, Jorge Heinrich	DIRECCION NAC. SANEAMENTO AMBIENTAL - C. Cap. Ravelo, 2129	(591) 39-0679
Brazil	SANTOS, F. L. Castro	FUNDACAO SESP	
		Av. Rosa e Silva, 1489-Aflitos - Recife/PE	(081) 241-8000
	GUTIERREZ, Eduardo	UNDP	
	BARROS, Alfonso	CIA RIOGRANDENSE DE SAN.-CORSAN	
		R. Caldas Junior, 120 - 18 - Porto Alegre/RS	(0512) 283015
	FILHO, A Martins Leitao	FUND. SERVICOS DE SAUDE PUBLICA	
		Av. Rosa e Silva, 1489-Aflitos-Recife/PE	(081) 241 8000
	NEGRELLI, Júlio	UNDP	
		Sq. 203, 81 Apto. 101 - Brasília/DF	(061) 225 2570
	BARROS, H. Cordeiro	SPESP	
		R. Fernando Vieira, 600/1307B, Boa Vista - Recife/PE	(081) 241 8000
	ANDREWS, A.	BRITISH COUNCIL	
		Domingos Ferreira, 4150 Recife/PE	(081) 326 6640
	SANTOS, L.H. Rodrigues	FUND. SESP	
		Av. Rosa e Silva, 1489-Aflitos - Recife/PE	(081) 241 8000
	ARAUJO, F. de Souza	DEP. NAC. DE OBRAS E SAN.	
		Av. Agamémnon Magalhaes, 2999 - Recife/PE	(081) 241 3901
	AZEVEDO NETO, J.M. and Spouse	USP (working for World Bank)	
		Av. P. Pereira Andrade, 545/330 - Sao Paulo	(011) 261 0043
	ALONSO, Lineu Rodrigues	ABES/NACIONAL	
	PINTO, Paulo Cesar	ABES/RJ	
	PALMEIRA, Delson José	CARITAS INTERNACIONAL	
		Sq. 301 81 1 - Brasília/DF	(061) 226 0696
	ABUASSI, Roberto	PAHO (Pan American Health Organization)	
		Largo de Sao Francisco, 42/8o. - Rio de Janeiro/RJ	(021) 292 3113
	LIMA, Nelson Roberto P.	CERB (CIA DE ENG. RURAL DA BAHIA)	
		Gaspar Sadock, 40 1PT. 103 - Salvador/BA	(071) 230 9245
	LOPEZ, Joao	GOV. DO EST. DA BAHIA - CERB	
		R. Eng. Jose M. Rodrigues, 13 - Salvador/BA	(071) 231 0137
	VAN DE GRAFF, Hans	CERB/CITEC	
		Cx.P. 9086 - Salvador/BA	(071) 232 8141

Country	Name of Participant	Name and Address of Organization	Telephone No.
	COSTA E SILVA, Rodolfo J.	CETESB/RJ	
	TORRES, Antônio Sérgio	COMPESA	
		R. Joaquin Nabuco, 507/306 - Recife/PE	(081) 223 1347
	CAYON, Edgardo	UNICEF	
		Av. Boa Viagem, 4660 Apt. 1001 - Recife - PE	(081) 325 3260
	MELO, Deofrio da Costa	COMPESA	
		Av. Shedim Brasília - Peixinhos - Recife/PE	(081) 222 2136
	SILVA, Cleodon V. L.	COMPESA	
		Recife/PE	(081) 231 7711
	NUCCI, Nelson Rodrigues	ABLS/USP	
		R Murupi, 67 Cid. Univ. - Sao Paulo/SP	(011) 831 6592
	NORONHA, Luiz Correa and Spouse	OMAE/PORTO ALEGRE	
		Plinio Brazil Miland, 158 - Porto Alegre/RS	(0512) 31 0756
	PETERSEN, Carlos A. B. V.	DEP. M. AGUA ESGOTOS (DMAE)	
		Fernando Gomes, 183 Porto Alegre/RS	(0512) 22 1533
	SOUZA, Carlos Alberto C.	EMOPER	
		Av. Boa Viagem, 5600 Recife/PE	(081) 341 3812
	BALTAR, Luis Antônio	EMOPER	
		Av. Cruz Cabuga, 1111 Recife/PE	(081) 222 1890
	RIBEIRO, Fernando	FINEP/RJ	
	PAZERO, Luis Andrea	FUND. EST. PLAN. AGRIC. CEPA - SAG	
		R. José Maria, 453 - Recife/PE	(081) 268 4119
	MOITTA, Froylan	R. SESP/RJ	
	PEREIRA, Paulo Miranda	F. SES/RJ	
	PAIM, Paulo Renato	METROPOLAN	
		R. Sao Vicente, 362/17 - Porto Alegre/RS	(0512) 30 063
	MESH, Jose	MIN. HAB. BEM ESTAR SOCIAL	
	CARVALHO, José Luiz Santan	MIN. HAB. BEM ESTAR SOCIAL	
	SILVA, Ricardo Toledo	MIN. HAB. BEM ESTAR SOCIAL	
	FONSECA, Ruben	MIN. HAB. BEM ESTAR SOCIAL	
	COUTINHO, Sadi	FUND. SERV. DE SAUDE PUBLICA	
		Espl. dos Min., B11, Prédio Anexo - Brasília/DF	(061) 226 3277
	LIMA, Garry Soares	MRE	
	OLIVEIRA, Osvaldo	CEF - Caixa Econômica Federal	
		Largo Sao Francisco, 42/3o. - Rio de Janeiro/RJ	(021) 292 3133
	SOUZA, Amarilio P.	PAHO (Pan American Health Organization)	
		Largo Sao Francisco, 42 - 8o. - Rio de Janeiro/RJ	(021) 292-3133
	SA, Manuel	SESP/PNSR	
		SBS-Edf BNDES, 18o. Brasília/DF	(061) 241 8948
	VIANA DAVI, Arnobio	PNSR - PROJ NAC. DE SAN. RURAL	
		Sen 116-BLK/401 Brasilia/DF	(061) 273 2740
	PARREIRA, Sérgio Pinto	SABESP	
		R. Costa Carvalho, 300 - Sao Paulo/SP	(011) 210 9688
	BARROS, Joaó Guimaraes	SANEAGO/GO	
	NERI, Antônio Carlos	SANEPAR/PR	
	PONTES, Adolfo de Marinho	SEC. DES. URB/CE	
	COSTA, Edson Bossay	SEC. OBR /RS	
	TORRES, Glenio Oliveira	SEC. DE PLAN., OBRAS E MEIO AMB.	
		Av. Cruz Cabuga, 111 - Recife/PE	(081) 231 4899
	KIPERSTOK EDRST, Asher	SEC. DE DESENVOLVIMENTO URBANO-BA	
		Cx. Postal 7429 - Itapoa 41615	(071) 358 2810
	FREITAS, Isabel Cristina	SEC. SAUDE/BA	
	PROENCA, Cláudio	SEC. SAUDE/PA	
	ARAUJO, Herman	SEC. DE SAUDE - PE	
		Pc Oswaldo Cruz, s/n - Recife/PE	(081) 231 0380
	GUIMARAES, Augusto Sergio	SERLA - ADM. EST. DE RIOS E LAGOAS	
		Campo de Sao Cristovao, 138 3o. andar - Rio de Janeiro/RJ	(021) 580 0048

Country	Name of Participant	Name and Address of Organization	Telephone No.
	SEABRA, Alexandre	TRANSLATOR	
	SOBRAL, Suzanne	TRANSLATOR	
	MALDONADO, Simone	TRANSLATOR	
	ROCHA, Luzmaria	TRANSLATOR	
	MAURER, Juan	TRANSLATOR	
	GUSMAO, Paulo Tadeu	CENTRO DE TEC. DA UFPE R. Rev. Samuel Falcao, 44 ap 301, Madalena - Recife/PE	(081) 228 3443
	REGO, Rui Gomes	MOGNO ENG. TEC. ALTERNATIVA R. Tito Livio Soares, 240-D, Poço da Panela - Recife/PE	(041) 242 6571 (081) 268 3381
	COSTA, Stael	URBEL - COMP. URB. de B. HORIZONTE Av do Contorno, 6664/4o. andar - Belo Horizonte/MG	(031) 223 8366
	ALVES, Ivan	URBEL - CIA URB. DE BELO HORIZONTE Rua Nicaragua, 275/704 - Belo Horizonte/MG	(031) 227 8314
Canada	ALVES, Hospice	CANADIAN INTERN. DEVELOPMENT AGENCY 200 Promenade au Portage - Hull - Canada - Kia 001	(819) 997 1431
	SHARP, Don	LDAC P. O. Cox 8500, 250 Albert St. - Ottawa, Ontario - Canada	(613) 598 0546
Chile	LEE, Terence	ECLAC (Economic Commission for Latin America and the Caribbean) Casilla 179-D Santiago, Chile	485051
People's Republic of China	CHONG-HUA, Zhang	NATIONAL EVTRON. PROTEC. AGENCY No. 15 Xizhcmen Mei Nanxcaojte Beijing	6015639
Colombia	RODRIGUEZ, Ligia	DEP. NAC. DE PLANEACION Calle 26#13-19 Piso 117 Bogotá	2340855
	CRUZ, Maria Helena	PLANEACION NACIONAL - COLOMBIA Calle 147#30-45 A208 Bogotá	2593330
Costa Rica	BRENES, Carlos	AJA/CAPRE Aptdo. 5120 - 1000 San José	57-01-96
	CALDERON, Yesenca	INST. COSTARRICENSE ACUOTOS Y ALC. San José, Av. Ctral, Calle	57-04-58
	MENDEZ, Gerardo		
	CHACON, Olman		
Cuba	MONTEIRA OJEDA, Osvaldo	INST. DE HIDROTECNIA Edf. B44, Apto. 18 Zona 25 Alamak - Habana	614671
Arab Republic of Egypt	EL-SABA, Olfat	HIGH INST. OF PUB. HEALTH 165, El Horrgia Avenue, Alexandria	(03) 421 5575
El Salvador	OCHOA, Carlos Roberto	ADM. NAC. DE ACUEDUCTO Y ALC. ANDA San Salvador	210622
Ecuador	SALVADOR, Rodrigo		
	RIBADENEIRA, Patricio	EMP. MUN. DE AGUA PORTABLE QUITO Marina de Jesús Entre Alem. e Ita. - Quito	527-911
	ALVAREZ, Julio	EMP. DE ALCANTARILLADO DE QUITO García Moreno y Espejo (2o Pisco) - Quito	215366
Guatemala	PAIZ, Alfredo Vidal	MIN. DE DESARROLLO URBANO Y RURAL 15 Av. 9-69 Zona 13 Guatemala	311005-9
	ENGEBAK, Per	UNICEF (CENTRAL AMERICA) Postado 625 - Guatemala	315511
	FERRARI BONO, Bruno	UNICEF Federico Lacroze, 2040 (1426) Buenos Aires - Argentina	54 1 7719915

Country	Name of Participant	Name and Address of Organization	Telephone No.
Guyana	RAJNARINE, R.		
Haiti	JEAN-BAPTISTE, Luc		
	SEVERE, Ludovick		
Netherlands	VAN SCHAIK, H.	MIN. OF FOREIGN AFFAIRS P. O. Box 2300 E8 The Hague	(070) 485751
	VISSCHER, Jan Teun	IRC 98X 93190 2509 AB THE HAGUE	(070) 814911
	GALVIS, Geraldo	UNIVERSIDAD DEL VALLE Calle 13B - No. 8457 - Cali, Colombia	392345
Honduras	SANTOS, Amelia	MINISTERIO DE SALUD PUBLICA Tegucigalpa	327919
	RIVERA, Garay Javier	SERV. AUT. DE ACUEDUCTOS Y ALC. Apartado Pos. 437, Tegucigalpa	32-9003
India	GHOSH, Gaurishanka	LIOVKONG INEST Krishi Bhanar, N. Delhi 110001	381104
England	WISEMAN, R.	WORLD WATER 4 Water St. - Liverpool	744(51)2361155
Lima	FLOREZ, Alberto	CEPIS/PAHOLOPS Casilla, 4337 Lima 1000	354135
Mexico	ROMAN, Luis Manuel López	INST. MEXICANO DEC TEC. DEL AGUA Paseo Cuduhnah - Progreso Mpio. de Jiutepec, Morelos Mexico	(73) 15 3251
	ALVAREZ, Humberto Romero		
	LOMNITZ, L.		
Montserrat	BRAMBLE, Milton		
Nicaragua	SEQUEIRA MARTINEZ, Siprino		
Nigeria	ROOY, Carel	UNICEF Ilaa Osborne Rd., Ikogi - Lagos	603540-9
	ALLAN, Akin		
Panama	ARIAS, Rodolfo J.	NATIONAL WATER AND W. INSTITUTE - I. D. A. A. N. Via Brasil, No. 18	642882
Paraguay	GUERRERO, Carlos	SEMASA Mariscal Estiarrisia y Tecuary - Asunción	94-399
	RIVEROS, P. Rivarloa	MIN. DE SALUD PUB. Y B. ESTAR SOCIAL Mariscal Estigarrisia y Tecuary - Asunción	444182
Peru	SANCHEZ, Polo Aguero	DIR. DE SAN. BAS. RURAL MIN/SALVO Av. Republica de Chile, 549-203 - Jesús Maria-Lima	2490-85
	MENDONZA, Sonia León	SEDAPAI Almagro, 744 - Trujillo	254856
Dominican Republic	SANCHEZ, M. O. Rodríguez	INAPA Calle Presa de Toveroi El Millón-Santo Domingo	5671241

Country	Name of Participant	Name and Address of Organization	Telephone No.
Sweden	OLSSON, Eskil	THE NAT. SWEDISH INST. FOR BUILDING Studsvik - 5 - 61183 - Nykoping	0155 21000
	NILSSON, P.	UNIVERSITY OF LUNAL, DEPT. of ENV. ENG. Box 118 - 22100 Lund	046 107000
Switzerland	DALIMAN E.	SKAT Varnbuelstr, 14 - St. Gallen	(71) 302590
	HARTMANN, ARMON	SWISS DEVELOPMENT COOP. AGENCY Eigerstrasse, 73 - 3003 Berne	(031) 613407
	ROTIVAL, Alexamore	UNDP NY UNDP Headquarters - Geneva	913578
Suriname	GOEDHART, Theo	N.V.S.W.M. Gravenstr - Paramaribo	71414
Tanzania	MSIMBIRA, K.	MINISTRY OF WATER Box 9153 - Dar-Es-Salaam	25935
Trinidad and Tobago	AWAI, Jesse	WATER AND SEWERAGE AUTHORITY Valsayn, St. Joseph	18096622902-7
Uruguay	RASZAP, Ariel Julio	WORLD BANK Dublin, 2137 - Montevideo	519552
Venezuela	GONZALEZ, Herberto	MIN. DEL AMB., DE LOS REC. NATURALES Centro Simón Bolivar, Torre Sur - Caracas	(02) 4081601
U.S.A.	KINLEY, D.	UNDP I UN Plaza - New York, NY	(212) 906 5319
	BEYER, Martin	UNICEF 3 United Nations Plaza (II-11F) - New York, NY 10017	(212) 236 7120
	GUBLER, Daniel	WORLD BANK 1818 H St., N.W. - Washington, DC 20433	(202) 473 3473
	ARLOSOROFF, S.	THE WORLD BANK 1818 H St., N.W. - Washington, DC 20433	(202) 473 5557
	GREY, David	WORLD BANK 1818 H St., N.W. - Washington, DC 20433	(202) 473 7082
	WRIGHT, Albert	WORLD BANK 1818 H St., N.W. - Washington, DC 20433	(202) 473 2705
	WHITE, G.	CATHOLIC RELIEF SERVICES 1011 1st Ave. - NY, 10022	

ANNEX 2

SEMINAR PROGRAM

September 29, 1988

Morning

OPENING SESSION

General Committee:

Chairman: Miguel Arreas de Alencar - Governor of the State of Pernambuco

- Ricardo Toledo da Silva - Secretary, Ministry of Housing and Social Welfare (Brazil)
- Terence Lee - Water and Sanitation Programs, ECLAC
- Eduardo Gutiérrez - Representative of Brazil, UNDP
- Alexandre Rotival - Coordinator, UN International Drinking Water Supply and Sanitation Decade
- Saul Arlosoroff - Chief, World Bank/UNDP Water and Urban Technology and Assessment Unit
- Jose Carlos Melo - Secretary, Water, Sanitation and Public Works, State of Pernambuco
- Nelson Nucci - President, ABES (Brazilian Sanitary Engineering Association)
- Claudio Marinho - Secretary of Planning, State of Pernambuco
- Silke Weber - Secretary of Education, State of Pernambuco

OPENING ADDRESSES

- Saul Arlosoroff (World Bank)
- José Carlos Melo (Government of Pernambuco)

Afternoon

SESSION I - PLENARY

Coordinator: Augusto Sérgio Pinto Guimares - Brazil

Panel: Terence Lee - ECLAC

Nelson Nucci - Brazil

Alberto Kattan - Argentina

Johnny Cuéllar y Jorge Enrich - Bolivia

Alexandre Rotival - UNDP/WHO

Ligia Rodríguez and María de La Cruz - Colombia

Yesenia Calderón Solano - Costa Rica

September 30, 1988

Morning

SESSION II - PLENARY

Coordinator: Johnny Cuéllar - Bolivia

Speakers: Augusto Sergio Pinto Guimaraes - Brazil
Alberto Flórez - CEPIS
J. Visscher and G. Galvis - IRs
Heinrich Eylers - GTZ
Carlos Ochoa - El Salvador
H. Van Schaik - DGIS

Afternoon

SESSION III - PLENARY

Coordinator: Ligia Rodriguez - Colombia

Panel: A. Allan - Nigeria
A. Hartmann - SDC/Switzerland
R. Arias - Panama
A. Ghosh - India
Amelia Santos - Honduras
Ivanildo Hespanhol - WHO
L.M. López - Mexico
K. Msimbira - Tanzania

October 3, 1988 *

Morning

SESSION IV - PLENARY

Coordinator: R. Rajnarine - Guyana

Panel: J.M. Azevedo Neto - Brazil
M. Solanes - UN/DICD
Martin Beyer - UNICEF
A. Raszap - Uruguay
Sonia Leon - Peru

Afternoon

SESSION V - PLENARY

Coordinator: Amelia Santos - Honduras

Panel: A. Doucet - UN/PROWESS
H. Alves - CIDA
E. Baumann - SKAT
T. Goedhart - Suriname
J. Awai - Trinidad and Tobago
P. Engebek - UNICEF
E. Olsson / P. Nilsson - Sweden

* Evening Session: The Application of Technology to Water and Sanitation Projects.

October 4, 1988 *

Morning

SESSION VI - PLENARY

Coordinator: Yesenia Calderón Solano - Costa Rica

Panel: P. Ribadeneira and J. Avarez - Ecuador

F. Eduardo - Aruba

Ramírez Ocampo - Colombia

O. Montero - Cuba

J. Ellis Turner - USAID

Afternoon

SESSION VII - PLENARY

Coordinator: Alberto Kattan - Argentina

Panel: C. Guerrero - Paraguay

G. White - CRS

A. Vidal - Guatemala

O. El-Sabal - Arab Republic of Egypt

M. Rodríguez - Dominican Republic

F. Hartveld - DGIP/UNDP

Special panel on appropriate technology

* Evening Session: Discussion of draft Recife Statement.

ANNEX 3

DOCUMENTS PRESENTED AT PLENARY SESSIONS

Country/Source	Title	Author/Agency
ARGENTINA	Plan Nacional de Saneamiento (1988 - 2003) (National Water and Sanitation Plan: 1988 - 2003)	Alberto Kattan
	Resolución Ministerial Argentina que hace depender todas las empresas estatles de la Secretaría de Recursos Hídricos en cuanto utilicen agua (energía, transporte residuos etc.) (The Ministerial Order making all government enterprises accountable to the Water Resources Secretariat with respect to their use of water resources for energy, transportation, waste disposal, etc.)	—
BOLIVIA	Situación del Saneamiento Básico en Bolivia (Basic Water and Sanitation Services in Bolivia)	Min. of Urban Affairs Min. of Social Welfare and Public Health National Association of Drinking Water and Sewerage Enterprises
BRAZIL	Situcao do Saneamento no Brasil (Síntese da Exposiçao) (Survey of Water and Sanitation Services in Brazil)	Nelson Nucci
	Drenagem Urbana: Aspectos da Situacao atual no Brasil e Atucao da Superintendencia Estadual de Rios e Lagoas - SERLA (Urban drainage: aspects of the current position in Brazil, and the activities of the State Superintendency of Rivers and Lakes: SERLA)	Augusto Sérgio Pinto Guimaraes (SERLA)
	O Saneamento no Brasil - Situaçao Actual e Propostas de Soluçoes (Water and Sanitation in Brazil: Current Position and Proposed Solutions)	Augusto Sérgio Pinto Guimaraes Fernando Carvalho Seixas Filho
	Simplified Sewerage System (Technical Aspects)	José M. Azevedo Neto
COLOMBIA	El Sector de Agua Potable y Saneamiento en Colombia (The Drinking Water and Sanitation Sector in Colombia)	National Planning Department
COSTA RICA	Sector de Agua Potable y Saneamiento Básico (The Drinking Water and Basic Sanitation Sector)	Yesenia Calderón Solano

Country/Source	Title	Author/Agency
CUBA	El programa Cubano para el Abastecimento de Agua y Saneamiento para Poblaciones de Bajos Ingresos. (The Cuban Program for Providing Water Supply and Sanitation for Low Income Groups)	Osvaldo Montero Ojeda Institute of Water Resource
EL SALVADOR	Resumen de Situación en El Salvador (Survey of the Position in El Salvador)	Carlos Roberto Ochoa - Water Supply and Sewerage Administration
ECUADOR	Situación de Abastecimento de Agua y Saneamiento en Quito, Ecuador (Water Supply and Sanitation in Quito, Ecuador)	Patricio Ribadeneira Julio Alvarez
GUATEMALA	Direction General de Infrastructura Física (Directorate General of Physical Infrastructure)	A. Vidal - Ministry of Urban and Rural Development
HONDURAS	Informacion General sobre el Sector de Agua y Saneamiento (Overview of the Water and Sanitation Sector)	Amelia E. Santos - Ministry of Public Health
MEXICO	Situacion del Agua Potable y Alcantarillado en México (Water Supply and Sewerage in Mexico)	Luiz Manuel Lopes Rowan - Urban and Industrial Water Technology Coordination, Mexican Institute of Water Technology
PANAMA	Situación del Sector Agua Potable y Saneamiento en el contexto del Decenio Internacional del Abastecimiento del Agua Potable y del Saneamiento (The Water and Sanitation Sector in the context of the International Drinking Water Supply and Sanitation Decade)	—
PERU	Sistema de Agua y Saneamiento: Peru (The Water Supply and Sanitation System in Peru)	Sonia León Medonza - SEDAPAT Polo Agüero Sanchez - DISABAR
URUGUAY	Situación del Sector en Uruguay (The Sector in Uruguay)	A. Raszap
VENEZUELA	Resumen sobre la situación del sector Agua Potable y Saneamiento en Venezuela (Survey of the Water and Sanitation Sector in Venezuela)	Herberto Gunzalez

BILATERAL AGENCIES

Country/Source	Title	Author/Agency
Federal Republic of Germany	GTZ - German Agency for Technical Cooperation	Heinrich Eylers - GTZ
Canada	Water, Sanitation and Development - Water and Sanitation Sector Development Issues Paper	Canadian International Development Agency - CIDA
USA	The WASH Experience - Water and Sanitation for Health Project	WASH
NETHERLANDS	Netherlands Support to Drinking Water Supply and Sanitation	H. Van Schaik - DGIS
SWEDEN	Low-Cost Sanitation - Transport and Treatment	Peter Nilsson - Lund Institute of Technology. Sweden
SWEDEN	Low-volume WC SYSTEMS: A Development Project in India	Eskil Olsson SNI/Sweden
SWITZERLAND	The Swiss Development Cooperation Agency - The Sectoral Service for Water Infrastructure - SDC Activities in Latin America - Activities in the Water Sector	Armon Hartmann - SDC - Switzerland

SELECTED COUNTRIES

Country	Title	Author/Agency
PEOPLE'S REPUBLIC OF CHINA	Development of Water and Sanitation in China	Zhang Chonghua - National Environmental Protection Agency
INDIA	The International Drinking Water Supply and Sanitation Decade in India - Case Study of the Policies and Problems	Gourisankar Ghosh
NIGERIA	Policies Followed and main issues Nigeria is facing in the wide coverage goal providing water supply and sanitation to its rural communities	E.O. Okeke
TANZANIA	Water Supply and Sanitation Sector, Situation in Tanzania	Ministry of Water - United Republic of Tanzania

INTERNATIONAL ORGANIZATIONS

Country/Source	Title	Author/Agency
CEPIS	Agua y Saneamiento en Areas Urbanas Marginadas. Una oportunidad de Acción (Water and Sanitation in Underprivileged Urban Areas: An Opportunity for Action)	Alberto Flórez Muñoz
UNITED NATIONS	Abastecimiento de Agua, Saneamiento y Salud para todos en el ano 2000: Medidas del UNICEF para los próximos años (Water Supply, Sanitation and Health for all by the Year 2000: Measures Adopted by UNICEF for the Coming Years)	UN Economic and Social Council
UNDP	UNDP Progress Report	

Country/Source	Title	Author/Agency
UN/DTCD	Factores Legales e Institucionales que afectan la implementación del decenio internacional de agua potable y Saneamiento en America Latina y el Caribe (Legal and Institutional Factors Affecting Implementation of the International Drinking Water Supply and Sanitation Decade in Latin America and the Caribbean)	UN Department of Technical Cooperation for Development
UNICEF	Abastecimiento de Agua, Saneamiento y Salud para todos en el año 2000: Medidas del UNICEF para los próximos años (Water Supply, Sanitation and Health for All by the Year 2000: Measures Adopted by UNICEF for the Coming Years)	M. Beyer
UNICEF	Posición y Experiencias del UNICEF en augua y saneamiento en la región de América Latina y el Caribe para poblaciones rurales y periurbanas de bajos ingresos - Documento Suscinto - Estudios de Casos: Guatemala, Haiti, México (Position and Experiences of UNICEF in the provision of water and sanitation for low-income rural and periurban groups in Latin America and the Caribbean; Survey Document; Case Studies on Guatemala, Haiti and Mexico)	UNICEF Regional Office for Latin America and the Caribbean
WHO	International Drinking Water Supply and Sanitation - Consultation	I. Hespanhol

NON-GOVERNMENTAL ORGANIZATIONS

Country/Source	Title	Author/Agency
SKAT	Technology Transfer in Handpump Production	E. Baumann
CATHOLIC RELIEF SERVICES	Catholic Relief Services/Latin America and the Caribbean and the Water Decade	Gary White and Raymond Victurine
IRC	The Work of the IRC - Making Information Exchange Work	Jan T. Visschen

ANNEX 4

SURVEY OF THE WATER AND SANITATION SECTOR
IN LATIN AMERICA AND THE CARIBBEAN

COUNTRY	POPULATION (in thousands of inhabitants)			DEFINITION OF RURAL POPULATION GROUP	% OF POPULATION WITH WATER SUPPLY			% OF POPULATION WITH SEWERAGE SERVICES			GOVERNMENT POLICIES	MAIN ISSUES AND PROBLEMS
	TOTAL	URBAN	RURAL		TOTAL	URBAN	RURAL	TOTAL	URBAN	RURAL		
ARGENTINA (1967)	31,075	26,219	4,856	Fewer than 2,000 inhabitants	59	67	13	33	39	0 2	o National Water and Sanitation Plan 1988-2001 Objectives. o reorganize the sector, upgrading management tools, o extend services; o mobilize increased financial resources, o adopt appropriate technologies matching the technical, economic and cultural characteristics of each community	o Serious economic problems resulting from revenue losses, late billing and waste o Poorly planned decentralization has resulted in impaired operation and maintenance of existing systems o Entire existing system is based on conventional technologies that are often inappropriate. o Decline in water supply and sanitation coverage during the first half of the decade o Industrial pollution control through a system of progressive fines and community participation
BOLIVIA (1987)	6,797	3,244	3,553	Fewer than 2,000 inhabitants	44	67	23	23	35	11	o Establishment of the National Basic Water Supply and Sanitation Sector Coordinating Council by the Ministry of Urban Affairs, the Ministry of Social Welfare and Public Health, and the Ministry of Planning and Coordination o Establishment of ANFSAPA (the National Association of Drinking Water and Sewerage Enterprises), providing for coordination and cooperation among the enterprises o Establishment of the Appropriate Technology Dissemination Program.	o Before 1980, water supply and sanitation investment was concentrated on cities, and rural and periurban areas were neglected o There is currently a trend toward making cooperatives responsible for water supply and sanitation services, both in rural and urban areas o Only three water supply and sanitation enterprises routinely carry out quality control and disinfection, and a permanent program must be launched at national level.
BRAZIL (1984)	138,374	92,862	41,512	-	80				34		o The SFS (Water Supply and Sanitation Financial System) was launched in 1968 o The PLANASA (National Water Supply and Sanitation Plan) was established in 1971 o The PROSANEAR (Water Supply and Sanitation Program for Low-Income Groups) was established in 1986 o The PNSR (National Rural Water Supply and Sanitation Plan) was established in 1985	o SFS/PLANASA restrict access to resources to those States that have followed the prescribed institutional model (i e State Water Supply and Sanitation Companies) o The model has favored high-income urban areas (i e with a greater ability to pay) and the application of conventional capital-intensive technologies o Positive results have been the installation of industrial facilities (for equipment and works) capable of supplying the country's needs, together with technical and management development

ANNEX 4

SURVEY OF THE WATER AND SANITATION SECTOR
IN LATIN AMERICA AND THE CARIBBEAN

COUNTRY	POPULATION (in thousands of inhabitants) TOTAL	URBAN	RURAL	DEFINITION OF RURAL POPULATION GROUP	% OF POPULATION WITH WATER SUPPLY TOTAL	URBAN	RURAL	% OF POPULATION WITH SEWERAGE SERVICES TOTAL	URBAN	RURAL	GOVERNMENT POLICIES	MAIN ISSUES AND PROBLEMS
EL SALVADOR	4,944	2,072	2,862	-	42	91	7	59	94	34	o National Emergency Plan, 1980 Three-Year Plan (1981-83), particularly concentrating on low-income groups through policies for: - job creation, - environmental health; - establishment of Management Councils, - introduction of a billing system providing for progressively increasing charges by level of consumption Institutions responsible for the sector: MIPLAN (Ministry of Planning and the Coordination of Economic and Social Development) ANDA (the National Water Supply and Sewerage Administration, responsible for water supply and sanitation planning in urban areas) MSPAS (Ministry of Public Health and Social Welfare, with activities in rural areas performed through PLANSABAR).	o Increasing population movement to periurban areas as a result of socio-political conflicts, the 1986 earthquake and rural migration o A large population occupying marginal areas with poor water supply and sanitation o In spite of the National Plans undertaken after 1980 in order to assist low-income groups, the operations of the government and the institutions concerned are hindered by considerable financial problems o The demand for services exceeds the funds available for investing in water supply and sanitation systems o The need for increased alternative technology development and research o Both internal and external bureaucratic problems delay the execution of works, and these time overruns increase costs
COLOMBIA (1985)	29,500	19,800	9,700	Fewer than 12,000 inhabitants	57	72	27	44	59	13	o Sector Adjustment Program (PAS) Objectives: - rationalization of investment policy; - institutional reorganization; - reduction of per capita costs, - improved performance through personnel training Targets: - extend water supply systems to serve 74% of the population (from 63%) - extend sewerage system to serve 62% of the population (from 50%) Basic Water Supply and Sanitation Program for Rural Areas (PSBR)	o In the 1970s and the first half of the 1980s, the water and sanitation sector stagnated, and received an average of only 2.5% of public-sector investment o The PAS forms part of the government decentralization process, which makes municipalities responsible for urban infrastructure and basic services, in exchange for increased resources o The resources for water supply and sanitation (in addition to other basic services) are provided by the Integrated Rural Development Fund o The National Federation of Coffee Growers is making significant efforts to provide basic services in rural areas
COSTA RICA (1987)	2,790	1,490	1,300	-	92	100	83	94	99	93	o Water supply and sanitation policy for urban areas and population centers is determined by the Costa Rican Institute for Water Supply and Sewerage (established in 1961), and the Ministry of Health is responsible for rural areas	o The high levels of water supply and sanitation service are the result of a health policy that provided investment in water and sanitation services in the 1970s o On average, community participation in the construction of water supply systems totals between 30% and 40% of capital costs

ANNEX 1

SURVEY OF THE WATER AND SANITATION SECTOR
IN LATIN AMERICA AND THE CARIBBEAN

COUNTRY	POPULATION (in thousands of inhabitants)			DEFINITION OF RURAL POPULATION GROUP	% OF POPULATION WITH WATER SUPPLY			% OF POPULATION WITH SEWERAGE SERVICES			GOVERNMENT POLICIES	MAIN ISSUES AND PROBLEMS
	TOTAL	URBAN	RURAL		TOTAL	URBAN	RURAL	TOTAL	URBAN	RURAL		
CUBA (1987)	10,101	7,479	2,822	2,000 inhabitants, or 200 in special cases	68	80	37	27	36	3	o The country's development strategy up to the year 2000 has already been formulated by the government in cooperation with the following institutions in the sector: - the Institute of Water Resource Management, - JUCEPLAN (the Central Planning Board), - the Ministry of Public Health; - the Institute of Housing. o The 1986 Water Resource Program includes the following activities: - diagnostic studies, and action on the water supply and sanitation systems; - production of water supply equipment; - training of specialized technical personnel.	o Government priorities include the maintenance of the progress already achieved in health, education and nutrition indicators. o The water supply and sanitation program has produced significant reductions in the morbidity and death rates. o The Water Resource Program has had little impact on water supply and sanitation in rural areas. o The targets for the five-year period from 1986 to 1990 included duplication of water supply and sanitation coverage: however, only the water supply objective will be achieved. o People's brigades are playing an important part in rural areas, cooperating with the population in solving problems relating to construction and upgrading works.
ECUADOR (1988)	1,492	1,220	272	-	74	84	29	-	-	-	o FONASA (the National Environmental Health Fund) was established in 1974 and is managed by IEOS (the Ecuadorian Institute for Sanitation Works) o Government promotion of credit for investment in projects for rural and low-income areas, through various Ecuadorian credit organizations o The Papallacta (Quito) Project is intended to double current water supply, and is mainly intended for low-income groups (currently in process of implementation) o The Water and Sanitation Plan for Rural Parishes and Poor Areas of the City of Quito (1988)	o Quito's water and sanitation problems have become more serious since 1972, with the increase in population movements resulting from oil development. o A high infant mortality rate caused by gastrointestinal diseases resulting from consumption of contaminated water. o Government policy on water supply is focusing on the development of the rural sector, in order to improve health and reduce the death rate o Use of external loans for the provision of drinking water and other infrastructure services for low-income groups. o Use of low-cost technologies for obtaining and supplying drinking water to low-income groups
GUATEMALA (1986)	8,709	3,100	5,609	2,000 inhabitants, or 200 (sic) in special cases	44	71	26	45	78	28	o Programs: - water supply for the capital, - sewerage for the capital, - drinking water and sewerage systems for secondary cities, - special water supply and sanitation projects for rural areas, - drinking water supply and sanitation for rural areas (provision of latrines), - noninfrastructure projects (i.e. research)	o Only the capital has chlorine-treated drinking water o 19% of deaths are due to intestinal infections, the rate being 33.6% for children under four o Little use of low-cost technologies o Investment in the water and sanitation sector has been provided by the Pan American Sanitary Bureau (PAHO/WHO) as part of its Plan for Central America (1985) o From 1980 to 1986, sewerage coverage in urban areas declined from 88% to 70%

ANNEX 1

SURVEY OF THE WATER AND SANITATION SECTOR
IN LATIN AMERICA AND THE CARIBBEAN

COUNTRY	POPULATION (in thousands of inhabitants)			DEFINITION OF RURAL POPULATION GROUP	% OF POPULATION WITH WATER SUPPLY			% OF POPULATION WITH SEWERAGE SERVICES			GOVERNMENT POLICIES	MAIN ISSUES AND PROBLEMS
	TOTAL	URBAN	RURAL		TOTAL	URBAN	RURAL	TOTAL	URBAN	RURAL		
HONDURAS (1987)	4,656	1,881	2 775	Fewer than 2,000 inhabitants	50	51	49	32	22	38	o Institutions responsible for the sector - the Secretariat of Public Health; - the Secretariat of the Interior and Justice	o A decline in living conditions, particularly among low-income groups because of the high population growth rate. o Health indicators show high infant mortality rates (62 4 per thousand resulting from infectious, parasitic and nutritional diseases (38%). o Health problems are aggregated by the following factors: (a) deficient or nonexistent basic sanitary infrastructures in rural and poor urban areas, (b) inadequate coordination and contacts among institutions providing services, manufacturing units, and target areas and groups; (c) insufficient community participation; (d) the lack of an external financial and technological cooperation structure. BANHMA (the Autonomous Municipal Bank) has insufficient financial capacity to meet requirements. o Out of a total of 283 municipalities, 155 manage their own water supply systems, and 33 manage their sewerage systems. Operation and maintenance are unsatisfactory
MEXICO	81,000	54,000	27,000	-	-	78	45	-	60	15	o Water supply and sanitation policy is implemented by the Federal and State Governments in accordance with the PRONEFA (the National Program for Water Loss Control and Efficient Use in Cities) and the National Program (or Waste Water Use, coordinated by the Secretariat of Agriculture and Water Resources. o In accordance with the International Decade's targets for 1990, it was intended to provide drinking water supplies for 80% of the population and sanitation services for 60%	o 27 million people are without water supply and sanitation services. Only 67% have water supply and 45% have sanitation services. o Water supply administration and management is deficient o Infrastructure has deteriorated and is in need of repair and extension. o The processes of disinfecting water and making it potable must be upgraded and expanded. o The following three lines of action have been defined for water resource policy, in light of the economic crisis and the need to provide increased and improved services: (a) improvements in supply, through construction of priority works, (b) optimum use of existing infrastructure and rationalization of water consumption, (c) incentives for technological development, and optimization of the use of human resources o NECESSARY CHANGES IN THE EXISTING SYSTEM RESULTING FROM THE PROPOSED ACTION: (a) structural changes to increase financial efficiency and technological, institutional and human resource decentralization and development; (b) coordination of State and Municipal Governments in water supply and sanitation programs; (c) establishment of financial mechanisms to ensure the informed participation of consumers, through billing systems that discourage excessive consumption and provide support for the poorest social groups.
PANAMA (1987)	2,230	1,093	1,137	Fewer than 1,500 inhabitants	83	100	66	83	99	68	o IDAAN (the National Water Supply and Sewerage Institute) plans to provide rural communities of over 500 inhabitants and all urban communities with drinking water and sewerage systems o The Ministry of Health plans to supply drinking water to rural communities with fewer than 500 inhabitants.	o Conventional technologies predominate in sewerage works, making the installation of systems expensive. o The Ministry of Health has insufficient resources to provide investment or counterpart funds for external financing. o Untreated household and industrial waste is discharged into water courses, without any controls over quantities or chemical composition o Training is needed for operators of water supply and sanitation systems o There is no coordination among the main institutions responsible for the sector

ANNEX 1

SURVEY OF THE WATER AND SANITATION SECTOR IN LATIN AMERICA AND THE CARIBBEAN

COUNTRY	POPULATION (in thousands of inhabitants) TOTAL	URBAN	RURAL	DEFINITION OF RURAL POPULATION GROUP	% OF POPULATION WITH WATER SUPPLY TOTAL	URBAN	RURAL	% OF POPULATION WITH SEWERAGE SERVICES TOTAL	URBAN	RURAL	GOVERNMENT POLICIES	MAIN ISSUES AND PROBLEMS
PERU (1987)	20,727	13,473	7,254	2,000 inhabitants	56	75	21	50	69	15	o PLANSAB (the National Basic Water and Sanitation Plan 1986-95) Objective: to provide service for rural and low-income urban groups o Establishment of SENAPA (the National Drinking Water Supply and Sewerage Service: 1981) and DIGEHA (the Directorate General of the Environment, 1982) Objective: to facilitate achievement of the PLANSAB targets.	o Current service levels have been achieved through various investment programs for the sector: the Serviced Lots Program and the Program of Technical Cooperation with the Governments of the Federal Republic of Germany and Canada o Water supply and sanitation has been made a priority for the 1986-95 period, and PLANSAB has been incorporated into the National Development Plan, with investment allocated to the Works Program and the Support Program. The latter is intended to increase the system's productivity and enable communities to participate in problem solving
DOMINICAN REPUBLIC				-								o A high rate of population growth, and low health indicators o Water supply and sanitation services are showing a serious deficit, and depend on government subsidies o The government is making efforts to execute water and sanitation works in urban and rural areas. o There is a need for increased cooperation on the part of the Government, communities, the organizations providing services and financial agencies, in order to make a development strategy possible.
URUGUAY	2,870	2,500	270	1,000 inhabitants							o Municipal Works Plan, financed by IDB and executed by OSE (State Water and Sanitation Works). This is particularly intended for low-income groups. o The Emergency Plan for Drinking Water Supply to Montevideo (intended to increase services to low-income groups).	o Shortcomings in the 1952 Organic Law. Government regulations hinder the execution of works. o Problems in OSE's organizational structure; shortcomings in planning and coordination among departments and services. o The need to rehabilitate and extend treatment and disposal units. o Cost reduction, in order to extend water supply to low-income groups through the use of low-cost technologies.
VENEZUELA (1987)	18,000	14,000	4,000	-	70	89	70	45 (1986)	-	-	o The Water Supply and Environmental Health Program, implemented by INOS (the National Institute for Sanitation Works) o IDB financing for programs to extend the water supply system in the central area of the country. o The Lago de Valencia Water and Sanitation Program (beginning 1989)	o Large concentrations of population in areas with limited water resources o Water supply is regarded as a priority o The main water supply problems are in the central areas of the country, where light industry is concentrated. o A high rate of river and water course contamination from urban, agricultural and industrial sources).