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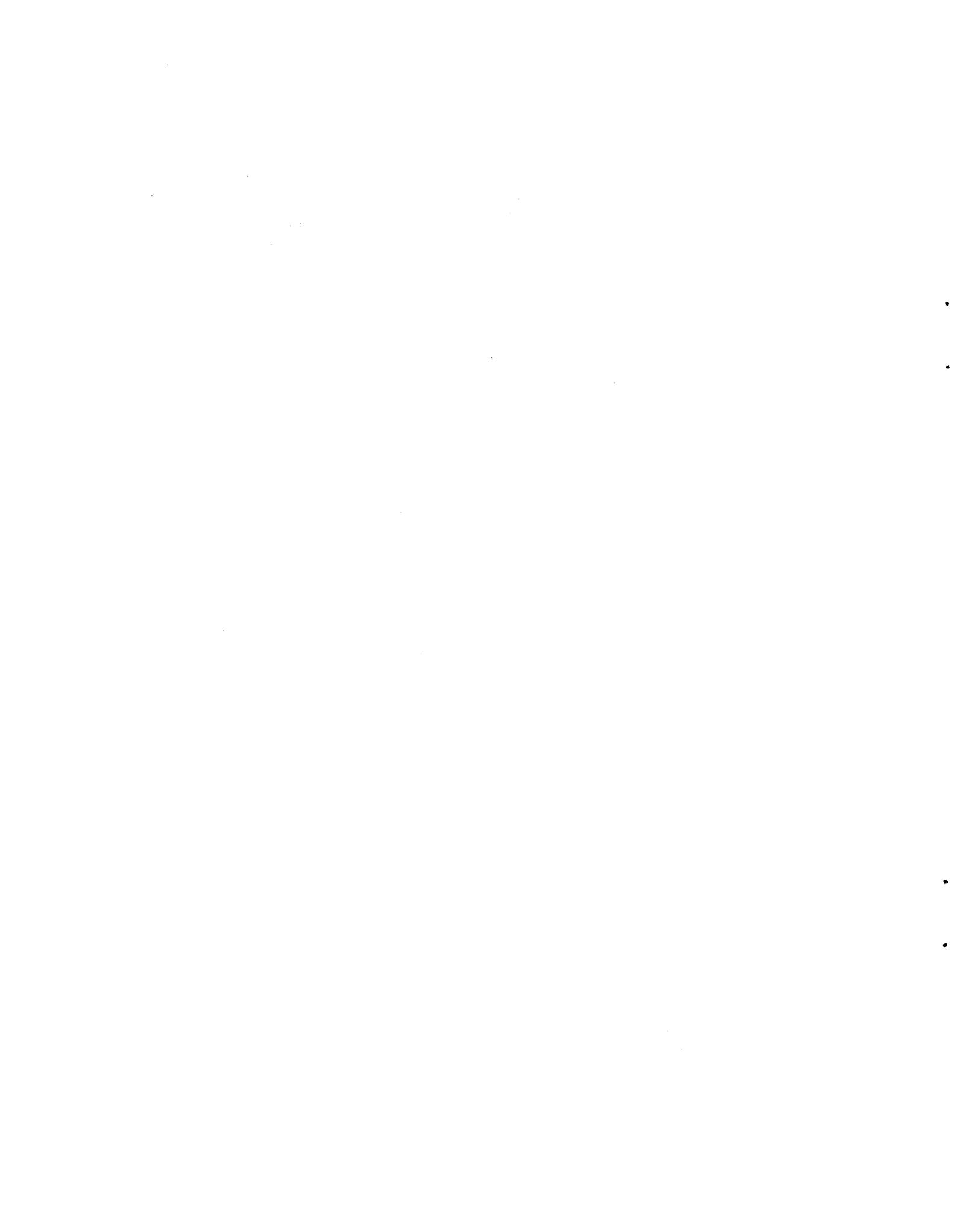
Economic Commission for Latin America

Second Seminar on Horizontal Co-operation
for the International Drinking Water Supply
and Sanitation Decade

Santo Domingo, Dominican Republic, 11-14 January 1982

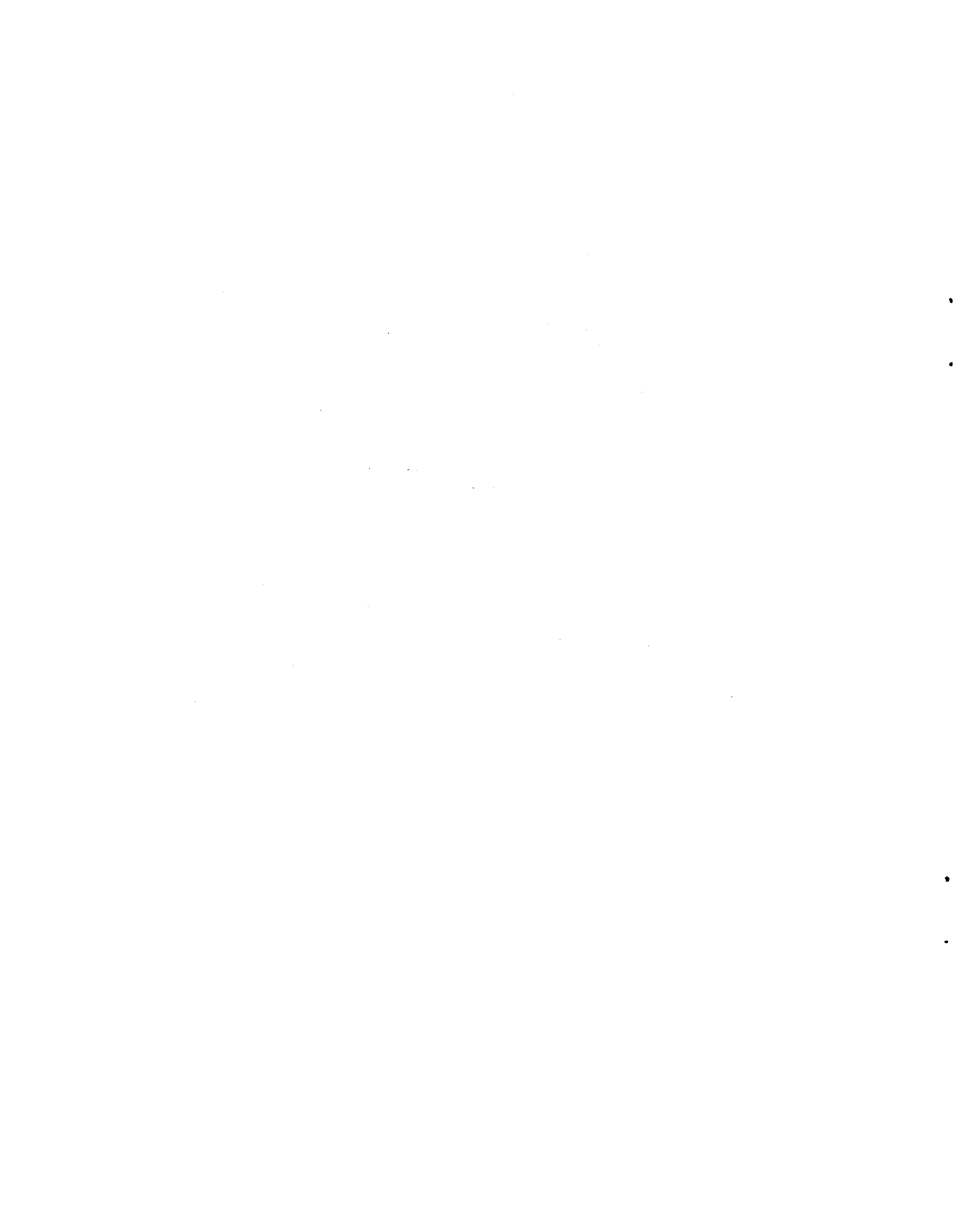
CENTRAL AMERICA: RECENT EXPERIENCE ON HORIZONTAL CO-OPERATION IN
DRINKING WATER SUPPLY AND SANITATION */

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PRESENTATION

The purpose of this document is to give an overview of the present stage of horizontal co-operation with regard to drinking water supply and sanitation in the six Central American countries.

With a view to its preparation, a 2-week tour of the countries was made during which the directors of most of the main government institutions responsible for water supply and sanitation were interviewed. Valuable reference material was provided by some of the offices visited.

The document, which comprises three chapters, begins with a description of the main activities being carried out in the field of horizontal co-operation in Central America with the participation, in varying degrees, of the six countries in the subregion. Activities of a bilateral nature are also described in general terms. In the second chapter, a list is provided of possible fields of action for horizontal co-operation based on proposals made in a recent meeting of sanitary engineers in Central America. The final chapter represents general conclusions on the topics elaborated in the two preceding chapters. Finally, there is an annex containing a resumé of the situation in the six Central American countries in respect of their achievements and the goals they have set for themselves for the International Drinking Water Supply and Sanitation Decade.

I. HORIZONTAL CO-OPERATION ACTIVITIES IN CENTRAL AMERICA

For the purposes of this document, horizontal co-operation is regarded as being the mutual support provided by national institutions of the region working in the field of drinking water supply and sanitation. This co-operation consists fundamentally in bilateral or multilateral exchanges of skills, experiences, resources and equipment available to the institutions. Consequently, consideration will not at this time be given to the many technical-support and economic-financial activities carried out by regional and international bodies in this field.

The various ways and means by which horizontal co-operation may be achieved include technical-professional meetings and associations organized for purposes of mutual co-operation; regional co-operation programmes with common technical, administrative or financial objectives; training courses or programmes; the exchange of human resources, equipment, material and information among institutions; and the provision of advisory services on advantageous terms and of technical-economic support in cases of emergency.

On the basis of the foregoing, some of the most far-reaching activities which have been carried out or on which such progress has been made in Central America are outlined below. Specifically, a brief description is given of professional meetings; the recently established organization of managers and directors of drinking water and sanitation institutions in Central America and Panama; the Programa de Fortalecimiento de la Operación y Mantenimiento de los Servicios de Agua potable y Alcantarillado (Programme to Strengthen the Operation and Maintenance of Drinking Water and Sewerage Services) (FOMSAPE) and the activities carried out by the Escuela Regional de Ingeniería Sanitaria (Regional School of Sanitary Engineering) (ERIS) in connexion with the Decade. Finally, reference is made to a whole range of activities which have been carried out

/sporadically and

sporadically and primarily at bilateral level in the region and in which horizontal co-operation plays an important role.

1. Meetings of professionals

Like professionals in other disciplines, the sanitary engineers in Latin America have an organization which is well-known for its dynamism and competence -the Inter-American Association of Sanitary Engineering (AIDIS). AIDIS has held 17 regional meetings, and the next such meeting will be held in Panama City in August 1982. In these meetings professional and social ties and relationships are established which are bound to provide a solid base for the programming and implementation of joint activities through horizontal co-operation.

The activities mentioned above include the celebration every two years of a Central American sanitary and environmental engineering congress. The most recent one, which was held in Guatemala City from 16 to 20 March 1980 had the following objectives:

- (a) To awaken interest in the International Drinking Water Supply and Sanitation Decade.
- (b) To exchange ideas on strategies, targets and programmes of each country.
- (c) To initiate co-ordination and collaboration among countries of the region.
- (d) To take note of the possibilities and limitations of the countries in order to carry out programmes related to the International Decade.

2. Meetings of institutions

With the intention of fostering collaboration among the national bodies responsible for drinking water supply and environmental sanitation services, meetings of their managers and directors were instituted.^{1/} Some of the objectives of these encounters were: (a) to analyse the policies and strategies needed to improve the services rendered to the community and (b) to identify mechanisms for co-operation among the public institutions of the countries of the region.

So far three meetings -two regular meetings and one special meeting- have been held. In the first meeting, which was held at San José, Costa Rica, in March 1979, a convention of intent concerning interregional technical and economic co-operation was entered into with the following objectives: (a) to rationalize the availability of technical resources in the region; (b) to implement programmes with interregional technical co-operation; (c) to provide emergency supplies and technical assistance in disasters; (d) to promote the standardization of equipment, spare parts and materials in order to facilitate trade, and (e) to study the possibility of creating a rotating fund to finance operation and maintenance requirements through contributions by governments and international credit institutions.

At the special meeting held in Panama in May 1981, it was agreed to establish a permanent secretariat with headquarters at San José, Costa Rica, to which a liaison and co-ordination staff were assigned and whose initial annual budget was

^{1/} Meeting of Managers and Directors of Drinking Water and Sanitation Institutions in Central America and Panama.

established at 85 000 Central American pesos.^{2/} Not only was this secretariat assigned the task of implementing the resolutions adopted at the meetings referred to, in its capacity as regional co-ordinating committee it was made responsible for the following tasks: to ascertain why projects are formulated; to establish links with international organs; to co-ordinate the progress made in special projects and to determine the order of priorities of needs so as to be able to recommend new projects.

At the special meeting at Panama, consideration was given to the following matters among others: (a) programme for strengthening the operation and maintenance of the drinking water and sewerage services of Central America and Panama (FOMSAPA); (b) Preliminary Plan of Action for the training of sanitary engineers submitted by the Regional School of Sanitary Engineering (FRIS) in Guatemala, and (c) Plan for training non-professional technical manpower associated with FOMSAPA.

3. Programme for Strengthening the Operation and Maintenance of the Drinking Water and Sewerage Services of Central America and Panama (FOMSAPA)

The overall objectives of this programme are to facilitate and support the establishment of policies and strategies in technical, administrative and economic-financial fields in order to ensure the optimum use of existing and future installations and an excellent performance on the part of the drinking water and sewerage services of each of the six Central American countries.

The specific objectives of this programme include: (a) the provision of technical assistance to institutions concerned with drinking water and sewerage services in the region so that they may be able to strengthen their technical and administrative capacity and obtain up-to-date information on the topics referred to; (b) to design a general model of the operational system of these institutions and models of the subsystems corresponding to drinking water and sanitation services and services for the maintenance of installations and equipment and to provide technical assistance so that the institutions may prepare their own models; (c) to develop a training programme for a total of 380 non-professional technicians engaged in various aspects of the operation and maintenance of drinking water systems, including 15 instructors per country who can continue to provide training to the rest of the manpower engaged in their respective companies. In addition, 15 operations and maintenance handbooks are being prepared concerning specific aspects of operation and maintenance.

FOMSAPA is divided into the following five stages:

(a) Preliminary stage, in which formulas are to be put together for maintaining information on the operations system and the four systems which interact with it (planning, commercial, financial and administrative and support).

(b) Diagnostic stage, including the collection of basic data and the carrying out of full diagnostic studies of drinking water and sanitation institutions with special emphasis on operations.

(c) Analysis stage, in which the needs and shortcomings of drinking water and sanitation institutions in the sector as a whole would be identified as required for orienting and preparing the models.

^{2/} A Central American peso is a unit of account worth one US dollar.

(d) Model preparation stage, covering the three models mentioned above. The idea is to establish in an outline the form of model design, development, management and plan of operation, in such a way that adaptation to the individual features of each institution is possible.

(e) Application of models, the state in which each drinking water and sewerage institution will develop its own models and put them into practice. With this objective in view, each enterprise has established an internal institutional development project.

The duration of the programme has been estimated to be 36 months, with four of the five stages listed above being carried out during the first nine months. The remaining 27 months would be devoted to putting the models into operation, preparing handbooks and rules of procedure and training.

The total cost of FOMSAPA would be over 4 million Central American pesos of which 1.4 million pesos would be derived from international assistance. It is understood that in connexion with this programme a whole series of contacts with the Technical Co-operation Agency of the Federal Republic of Germany ^{3/} (GTZ) has been made with positive results.

4. Activities of the Regional School of Sanitary Engineering in connexion with the International Drinking Water Supply and Sanitation Decade

In activities related to the teaching of the subject of water and sanitation in Central America, the Regional School of Sanitary Engineering (ERIS), which has been in operation since 1965 in the Faculty of Engineering of the University of San Carlos in Guatemala, is of singular importance.

At present it offers programmes in sanitary engineering and water resources at the graduate level; in water resources, specialization is possible in water quality, hydraulics and hydrology. In sanitary engineering, the Regional School has entered into agreements with PAHO/WHO, the Federal Polytechnic School in Lausanne, Switzerland, and the International Development Research Centre (IDRC) of Canada. The water resources programme is included as one of the international post-graduate courses in engineering and water sciences sponsored by UNESCO.

The Regional School, at the express request of, and in agreement with, the drinking water and sanitation institutions, has been promoting the definition and possible adoption of a regional policy on the manpower required to fulfil the goals which the Central American countries have set for themselves for the International Drinking Water Supply and Sanitation Decade.

As mentioned above, ERIS submitted to the Special Meeting of Managers and Directors of Drinking Water and Sanitation Institutions the preliminary plan of action for the training of sanitary engineers. This plan covers the following topics:

(a) A proposal concerning the subject matter of the courses offered by ERIS, including recommendations made by water supply and sewerage institutions as to the focus and modification of practical courses in operation and maintenance, design and construction and, organization and administration.

3/ Gesellschaft für Technische Zusammenarbeit.

(b) Establishment of an ERIS Advisory Committee modelled after the regional co-ordinating committee of Drinking Water and Sewerage Institutions so as to ensure greater compatibility between the needs of the national institutions and the training offered by the Regional School.

(c) Organization of short ERIS courses which would be rotated among the countries of the region depending on their needs. The topics proposed include project evaluation; design, operation and maintenance of plants for water treatment; evaluation of distribution networks for drinking water systems; small systems for the treatment of waste water and measurement and control of leakage.

5. Other activities

In Central America, in addition to the activities and programmes mentioned above, there are a number of activities involving horizontal co-operation, most of which are carried out bilaterally.

Generally speaking, these activities, which are found in most of the countries of the region, include the following: visits by professionals to observe the development of new techniques or the management of specific situations in countries which are more highly advanced in a given field; attendance by officials from other countries at national training courses and programmes; advisory services on topics in which one country has made more progress and support with material and equipment in emergency situations.

By way of example, there follows a list of recent activities undertaken at national and regional levels to which attention was drawn in interviews carried out with officials from drinking water supply and sanitation companies in the six Central American countries. It should be pointed out that the majority of the co-operation activities enjoy sponsorship or active participation by PAHO, acting through the intermediary of its permanent representative in each country.

(a) Costa Rica

(i) reciprocal technical visits with countries of the area, participated in by one to ten people;

(ii) technical assistance to Honduras in connexion with drinking water and rural sanitation, including establishing standards;

(iii) host country of the Regional Plumbing School which holds 2-month courses attended by technicians from Central America;

(iv) co-sponsorship of the ERIS itinerant regional course on plant design and operation.

(b) El Salvador

(i) visits to Guatemala, Mexico, Venezuela and Peru to study technical aspects related, respectively, to the operation of treatment plants, sanitation control and the treatment of drinking water and sewage;

(ii) reception of Costa Rican technical personnel sent to observe the leak detection programme;

(iii) exchange of chemicals with neighbouring countries in emergency situations;

(iv) advisory services from Peru on technical and administrative matters;

(v) attending postgraduate courses at ERIS in Guatemala.

/(c) Guatemala

(c) Guatemala

- (i) technical visits to Peru, Ecuador, Colombia and Santo Domingo;
- (ii) collaboration with El Salvador and Honduras in the exchange of equipment and materials in times of emergency;
- (iii) co-sponsorship of the subregional course on the appraisal of water treatment plants;
- (iv) personnel sent to courses on ground water in Colombia and on rural aqueducts in the Centro Panamericano de Ingeniería Sanitaria y Ciencias de Ambiente (Pan-American Centre for Sanitary Engineering and Environmental Sciences) (CEPIS);
- (v) advisory services and financial contribution from Canada through the intermediary of the Canadian International Development Agency (CIDA);
- (vi) advisory services from France on the treatment of sewage and from Argentina on the treatment and disposal of solid waste.

(d) Honduras

- (i) technical visits to Costa Rica on the detection of leaks, systems operation and maintenance and commercial matters; to Medellín, Colombia, and to CEPIS on treatment plants; to Argentina on water supply and consumer surveys and to various South American countries on administration and planning;
- (ii) technical personnel sent to the Regional Plumbing School in Costa Rica;
- (iii) exchange of chemicals with Guatemala in emergencies;
- (iv) advisory services from CEPIS on treatment plants;
- (v) postgraduate fellowships at ERIS in Guatemala and in Mexico and Colombia.

(e) Nicaragua

- (i) training project in appropriate technology for treatment plants in conjunction with CEPIS, with the possible participation of other countries of the region (in the programming phase);
- (ii) Mexico-Nicaragua technical co-operation project in various topics related to water and sanitation (now at the management stage);
- (iii) co-sponsor of ERIS itinerant regional course on analysis and development of small basins to be held in 1981;
- (iv) training at ERIS in Guatemala.

(f) Panama

- (i) exchange of technical personnel with neighbouring countries;
- (ii) technical visits to institutions concerned with water and sewerage facilities in Colombia and Venezuela;
- (iii) technical visit to Rio de Janeiro, Brazil, on the collection of solid waste;
- (iv) technicians sent to the Regional Plumbing School in Costa Rica;
- (v) personnel sent to CEPIS;
- (vi) reception of officials from Honduras and Haiti;
- (vii) now engaged in organizing the eighteenth AIDIS Congress, the main theme of which is Sanitary Engineering in the Drinking Water Supply and Sanitation Decade;

/(viii) the

(viii) the statutes of the Instituto de Acueductos y Alcantarillados Nacionales (National Aqueduct and Sewerage Institute) (IDAAI) of Panama was used as model in drawing up the statutes of the Instituto Nicaragüense de Acueductos y Alcantarillado (INAA).

(g) Central America

(i) regular and itinerant postgraduate courses in sanitary engineering and water resources offered by ERIS (Guatemala);

(ii) practical courses in the Regional Plumbing School in Costa Rica;

(iii) study on detection and control of leaks in the six Central American countries and the Dominican Republic (in management stage with support from the Inter-American Development Bank (IDB) and the Technical Co-operation Agency of the Federal Republic of Germany (GTZ)).

II. POSSIBLE FIELDS OF ACTION FOR HORIZONTAL CO-OPERATION

In this chapter an attempt will be made to provide information on the basis of which horizontal co-operation projects in Central America in drinking water and sanitation can be designed and organized. With this in mind, an effort was made to learn about the needs and limitations of the countries of the region in this field and, in particular, about the obstacles they faced in meeting the targets of the International Drinking Water Supply and Sanitation Decade and the progress and positive results experienced by the region which might serve as a basis for bilateral or multilateral co-operation projects. For these purposes, use was made of the documents submitted to the thirteenth Central American Sanitary and Environmental Engineering Congress and of data on national needs obtained during the interviews held at the main water supply and sewerage institutes during a short tour of the region.

1. Availability of projects and capacity for carrying them out

Some of the six countries indicated that they had no capacity for implementing the projects needed to meet the national targets set in the International Decade while others referred to administrative and organizational problems which make it difficult to implement the projects being delineated. One restrictive factor mentioned was the failure to allocate sufficient funds for the health sector in governmental budgets as a direct consequence of a lack of political support for the programmes and resolutions agreed upon in meetings of professionals and managers. It was also pointed out that there was a need to establish design and construction criteria as well as uniform standards and specifications for water and sanitation systems which would accord with the socio-economic development of each country, on the understanding that they could eventually be made uniform throughout the region.

Some national decentralized institutions said they had the resources and machinery needed to keep the portfolio of projects earmarked for their respective programmes up to date. In that respect, attention was drawn to the advisability of employing local advisors for the formulation of projects relating to drinking water supply and sanitation and, especially, for helping urban communities. At the same time, emphasis was placed on the need for pre-investment funds to cover the costs of the relevant studies.

/2. Financial

2. Financial resources

All the countries in the region need financial support from outside to supplement the resources they have on hand or could obtain locally. One of the most important limitations for obtaining funds from abroad is that not enough "soft" loans, particularly for projects located in areas of low purchasing power, are available. In addition, for some countries the negotiation of credit is too complicated, with the result that there are costly delays, whereas for others this kind of problem has already been surmounted.

Limitations on obtaining resources locally are largely due to the fact that water and other rates are too low, not yielding enough in most cases to cover normal operating and maintenance costs. As has already been mentioned, in various countries the health sector is not adequately provided for under the national budget. Nevertheless, it must be pointed out that some countries have rates systems which yield an adequate income, that income usually being supplemented by property taxes, which make it possible to recover the investments required for drinking water and sanitation services.

3. Human resources

In the large majority of countries of the region, it was considered that the shortage of adequately skilled manpower limited the degree to which the targets of the decade could be achieved. In some countries emphasis was placed on the need to define a national policy as described above; in other countries, it was clear that the problems related chiefly to the timely execution of study and training programmes and, secondly, to the fact that there were not enough incentives to ensure that the personnel which have skills remain in their jobs. In some countries, such problems have already been solved or are on their way to solutions.

4. Operational capacity of institutions

The majority of the countries have national agencies which operate as decentralized State enterprises, and, generally speaking, their efficiency may be classified as ranging between excellent and normal. In addition, in a number of these institutions, organization and methods measures designed to maintain or, if necessary, improve their overall operation are being put into practice.

When services are run by institutions falling directly under the purview of the central government (ministries and secretariats), the generalized bureaucracy of such offices usually puts a severe limitation on the prompt handling of programmes and projects.

The limitations on the ability to operate and maintain the existing system on schedule and efficiently are more widespread. Some countries pointed out that they had an inadequate number of personnel and that the staff they had did not possess the requisite skills; others indicated that their problems centred around the acquisition of materials and equipment, in particular when they were not produced in the country itself.

5. Community

5. Community participation

Generally, more emphasis is placed on community participation in semi-urban, peripheral and rural areas since the inhabitants of such areas are encouraged to participate directly in construction and maintenance operations. In urban agglomerations and cities, however, there is also a need for the beneficiaries to contribute to the cost of the services, accepting the water tariffs, the property taxes or any other kind of tax which is used to obtain funds.

In this connexion, it was pointed out that small or sparsely inhabited communities had problems in organizing and training their inhabitants for direct participation in the construction and improvement of facilities to alleviate significantly the deficient in human and financial resources, of which there is usually a shortage. At the same time, it was noted that the facilities are not handled in such a way as to lower their maintenance costs and prolong their usefulness.

On the other hand, some countries have won the support of the communities in outlying areas, which contribute the equivalent of as much as 20% of the cost of the works.

III. SUMMARY AND CONCLUSIONS

The summary and conclusions of the discussion in the two preceding chapters are as follows:

1. Horizontal co-operation in Central America includes any activity in which similar bodies in related fields share knowledge, experience and available resources.
2. In Central America activities of a professional and institutional nature have been carried out at the regional level, and other activities have been initiated in connexion with the provision of services and the training of human resources which are expected to constitute a solid foundation for the development of a variety of programmes in the field of horizontal co-operation.
3. In the same way but to a more limited extent, experience, advisory services and equipment and material have been exchanged in times of emergency -an exercise which might also serve as a model for more formal co-operation projects.
4. In the generation of projects and the management of financial resources, the Central American countries differ in the level of development they have achieved -a situation which might permit horizontal co-operation.
5. Other areas in which horizontal co-operation might help the relatively less developed countries to obtain the targets of the International Drinking Water Supply and Sanitation Decade are manpower training, the improvement of the operational capacity of institutions and community participation in construction and the maintenance of facilities.

In 1980, there were only two countries in which drinking water was provided to over 60% of the population and sewerage for the disposal of excreta were provided for more than 40% of the population. In accordance with the targets set for the International Decade in 1990, 80% of the population of Central America should benefit from both services, except in one country, where a 70% goal has been set for both services. The estimated investment needed to realize the goals set for the Decade in Central America amounts to over 2 100 million Central American pesos at 1980 prices.

Annex

THE CENTRAL AMERICAN COUNTRIES AND THE INTERNATIONAL DRINKING WATER
SUPPLY AND SANITATION DECADE

There follows a summary of the existing situation in Central America with regard to coverage by the basic water supply and sanitation services and the prospects for the decade 1981-1990. Also included are overall estimates of the total investment required for that decade and, in some cases, the estimated needs for human resources. Finally, mention is made of the main governmental institutions responsible for these activities in the region.

It is estimated that the population of the subregion as a whole will rise from 22.1 to 29.5 million inhabitants between 1980 and 1990 and that the urban population will represent between 40% and 45% of the total population. Coverage by drinking water services in 1980 was about 53% for the total population, with 83% of the population of urban communities served and 53% of that of rural communities served; the regional goal for 1990 is to achieve a total coverage of 81%, with 97% of the urban population served and 67% of the rural population served. In excreta disposal, regional coverage for 1980 was estimated at 41%, with 55% of the urban population and 32% of the rural population covered; the target proposed for the decade is based on an estimated regional coverage of 82% of the total population with the urban and the rural population showing the same proportion (see table 1).

The estimated investment needed to achieve the targets of the decade 1981-1990 amounts to over 2.1 billion Central American pesos, of which some 1 391 000 000 pesos would be used for drinking water supply and 843 million pesos for excreta disposal (see table 2).

Information is given below for each Central American country with the objective of providing a rough idea of the order of magnitude of the problems to be solved at both the national and regional levels and to serve as reference material for possible horizontal co-operation activities in the field.

(a) Costa Rica

In 1980 the population of Costa Rica was estimated at 2.2 million, about 46% of whom lived in the cities with the remaining 54% living in rural areas. It is estimated that in 1990 the population will reach 2.6 million.

Early in the 1980s, drinking water was supplied to 83% of the population -100% of the population of the urban communities (95% with home connexions) and 68% of the rural population (also showing a high ratio of home connexions). Services for disposal of excreta covered 83% of the total population, with 96% of the population of the urban communities covered (43% of them by a sewerage system) and 82% of the rural population covered.

The targets proposed for the decade 1981-1990 are: (a) drinking water supplied to 88% of the total population, with 100% coverage in the urban and densely populated rural (200 to 2 000 inhabitants) communities and 50% coverage in sparsely populated rural areas; (b) services for the excreta disposal provided for 97% of the total population, with 100% of the population in the urban centres covered (70% with sewerage services) and 95% of the rural population covered with latrine facilities.

Table 1

CENTRAL AMERICA: COVERAGE BY SERVICES FOR DRINKING WATER SUPPLY
AND DISPOSAL OF EXCRETA IN 1980 AND GOALS FOR 1990

Country or region	Population (in millions)		Coverage by services (%) <u>a/</u>			
	1980	1990	Drinking water		Disposal of excreta	
			1980	1990	1980	1990
<u>Central America</u>	22.11	29.53	53	81	41	82
Urban	9.11	13.20	83	97	55	82
Rural	13.00	16.33	33	67	32	82
<u>Costa Rica</u>	2.20	2.64	83	88	88	97
Urban	1.00	1.14	100	100	96	100
Rural	1.20	1.50	68	78	82	95
<u>El Salvador</u>	4.54	6.00	47	80	36	78
Urban	2.64	2.53	62	85	48	66
Rural	1.90	3.47	36	76	28	88
<u>Guatemala</u>	7.26	9.70	44	70	27	80
Urban	2.65	3.80	89	100	43	80
Rural	4.61	5.90	18	50	13	80
<u>Honduras</u>	3.69	5.11	59	94	34	86
Urban	1.32	2.24	91	100	49	100
Rural	2.37	2.87	42	90	26	75
<u>Nicaragua</u>	2.59	3.85	39	81	26	70
Urban	1.33	2.36	69	100	35	70
Rural	1.26	1.47	7	50	18	70
<u>Panama</u>	1.83	2.23	82	93	89	95
Urban	0.93	1.12	100	100	98	99
Rural	0.90	1.11	65	85	81	90

Source: Final Report of the thirteenth Central American Sanitary and Environmental Engineering Congress.

a/ Percentage of total population.

Table 2

CENTRAL AMERICA: INVESTMENT NEEDED TO REACH THE GOALS OF THE
DRINKING WATER SUPPLY AND SANITATION DECADE, 1981-1990

(Millions of Central American pesos at 1980 prices)

Country or region	Total	Drinking water	Excreta disposal
<u>Central America</u>	2 234	1 391	843
Costa Rica	382	294	88
El Salvador	251	231	90
Guatemala	710	402	308
Honduras	457	235	222
Nicaragua	254	160	94
Panama	110	69	41

Source: Final Report of the thirteenth Central American Sanitary and Environmental Engineering Congress.

It was estimated that such goals can be reached through investments totalling 382 million Central American pesos, 294 million of which would be used for drinking water supply and some 88 million for disposal of excreta. No information was available on the additional human resources requirements.

At the institutional level, there is the Instituto Costarricense de Acueductos y Alcantarillados (Costa Rican Institute for Water Supply and Sewerage (AYA)), an agency which for over 20 years has been responsible for the drinking water and excreta disposal needs of communities with over 200 inhabitants. For their part, the organized municipalities and communities manage a number of urban and rural water systems. Environmental health, which includes the construction of rural latrines and water supply for sparsely populated localities (fewer than 200 inhabitants) is the responsibility of the Ministry of Health.

(b) El Salvador

The total population of El Salvador in 1980 was 4.5 million, of whom 42% were living in cities and 53% in the countryside. The population is expected to be close to 6 million in 1990.

Early in the 1980s, the drinking water supply services reached 47% of the population (62% of the urban population (of which 80% metered) and 36% of the rural population). Sanitation facilities covered 36% of the country's inhabitants, nearly half of whom lived in rural areas. Public garbage collection was provided in only one fourth of the country's municipalities.

The goals proposed by El Salvador for the decade 1981-1990 are the following:

- (a) drinking water supply to 80% of the country's population, with 85% of the urban communities and slightly more than 75% of the rural population covered;
- (b) sanitation facilities for 70% of the population (66% in the urban communities and 88% in the rural communities). It should be noted that this goal is in contrast with those established for other countries in the region, in which urban coverage is always equal to or higher than rural coverage.

A partial estimate of financial resources needed to reach the goals for the International Decade totals 251 million Central American pesos, 231 million for the Administración Nacional de Acueductos y Alcantarillado (National Water Supply and Sewerage Administration) (ANDA) to supply drinking water in urban and rural areas and 20 million for the rural latrine programme. No information could be obtained on manpower needs.

The institutions responsible for water supply and sanitation are the National Water Supply and Sewerage Administration (ANDA), which essentially covers the urban communities; the Rural Water Supply Department of the Department of Health Engineering, and the Environmental Health Division of the Ministry of Public Health and Social Welfare, respectively, responsible for drinking water supply and for the construction of latrines in rural areas. It should be noted that for these areas there is, *inter alia*, a programme known as the Plan Nacional de Saneamiento Básico Rural (National Rural Basic Sanitation Plan) (PLANSABAR) covering the period 1981-1988 at an estimated total cost of 77 million Central American pesos at 1980 prices and staffed by over 1 000 employees.

(c) Guatemala

It was estimated, at the beginning of the 1980s, that the population of Guatemala amounted to 7.3 million inhabitants, 37% of whom were classified as urban and 63% as rural. The estimated population for 1990 is 9.7 million.

In 1980 the levels of coverage were as follows: drinking water was supplied to 44% of the total population (89% of the population of urban communities (50% with home connexions) and 18% of the population of the rural areas); as for excreta disposal, services were supplied to 27% of the inhabitants (43% of the urban population, 34% with sewerage facilities); in the rural areas, 18% of the population was provided with latrines. It should be pointed out that garbage collection and municipal sanitation in general are only found in the largest cities in the country.

The targets for the decade 1981-1990, projected in the country report prepared for the United Nations Economic and Social Council, are the following: (a) drinking water supply for 70% of the total population, corresponding to 100% coverage of the urban population (75% with home connexions and 25% with easy access) and 50% coverage of the rural areas (20% with home connexions and the rest with access to public services); (b) sewerage service provided for 60% of the urban population and latrines for another 20% in peripheral areas; (c) latrines available to 80% of the rural population; (d) collection and disposal of solid waste in all cities with over 10 000 inhabitants (90% of the urban population).

The estimated investment for the period 1981-1990 amounts to approximately 710 million Central American pesos at current prices, 402 million pesos of which would be expended on drinking water supply and 308 million pesos on sewer systems, the construction of latrines and solid waste disposal. It is estimated

that the need for additional human resources would be for approximately 3 300 employees, 35% of them with professional and technical skills.

In the institutional field, Guatemala has a large number of organizations which participate in drinking water supply and sanitation services. These include, in addition to the 327 municipalities, the Empresa Municipal de Agua Potable (Municipal Drinking Water Enterprise) (EMPAGUA); the Unidad Ejecutora del Acueducto Nacional Xayá-Pixcayá (the Executing Agency of the Xayá-Pixcayá National Aqueduct), the Municipal Sewerage Service for Guatemala City, the Municipal Development Institute, the Unidad Ejecutora del Programa de Acueductos Rurales (Executing Agency of the Rural Water Supply Programme) (UNEPAR), the Environmental Sanitation Division (the latter two in the Ministry of Public Health and Social Welfare) and the Banco Nacional de Vivienda (National Housing Bank) (BANVI). The first three of these enterprises are basically for Guatemala City and the others for the rest of the country. To co-ordinate these institutions, in 1979 the Comité Permanente de Coordinación de Agua y Saneamiento (Co-ordinating Committee on Water and Sanitation) (CEPECAS) was established within the Department of Health in the Secretaría General del Consejo Nacional de Planificación Económica (General Secretariat of the National Economic Planning Council) (SGCNPE).

(d) Honduras

In 1980 the population of Honduras reached some 3.7 million inhabitants, 64% of whom live in rural areas and 36% in urban areas. It is estimated that by the end of this decade the total population will be 5.1 million.

In the early 1980s, the situation with regard to the drinking water supply and sanitation services was as follows: drinking water was supplied to about 59% of the total population, representing 91% of the urban communities (50% with home connexions) and 42% of the rural population (17% with home connexions); excreta disposal services existed for about 34% of the total population, representing about 49% of the urban population (43% with sewerage) and about 26% of the rural population was served by latrines; solid waste was collected for 52% of the urban population and there were facilities for the final disposal of sewerage only in the cities of Tegucigalpa and San Pedro Sula.

The targets adopted for the decade 1981-1990 are as follows: (a) drinking water to be supplied to about 94% of the total population of the country, corresponding to 100% coverage of the urban communities (80% with home connexions) and 90% of the rural areas (21% with home connexions); (b) excreta disposal service for 80% of the inhabitants of the country, corresponding to 100% of the urban population (65% with sewer) and 75% of the rural population with sanitary latrines; (c) establishment of efficient solid waste collection services in the 25 largest cities of the country, which now comprise 87% of the urban population.

The needs for financial and human resources to achieve the targets set for the decade as noted above are as follows: investments amounting to 457 million Central American pesos, 235 million pesos of which would be devoted to drinking water supply and 222 million to excreta disposal. The planned increase in manpower is 1 350 employees.

In institutions, Honduras has the Servicio Nacional de Acueductos y Alcantarillados (National Water Supply and Sewerage Service) (SANAA), which is responsible for supplying drinking water to urban communities and to rural communities of over 500 inhabitants and for providing sewerage services in cities

with over 2 000 inhabitants; the Environmental Affairs Department of the Ministry of Public Health and Social Welfare, which supplies drinking water and latrine services in rural areas, and the Municipalities which, with the support of the Dirección de Asesoría y Asistencia Técnica Municipal (Municipal Advisory Services and Technical Assistance Directorate) supply drinking water and sanitation services in co-ordination with SANAA and the Ministry of Public Health.

(c) Nicaragua

At the beginning of 1980 Nicaragua had a population of 2.6 million inhabitants, of which 51% was classified as urban and the remaining 49% as rural. The estimated population for 1990 is 3.9 million.

Coverage by drinking water and sanitation services at the beginning of this decade was as follows: drinking water was supplied to 39% of the population, representing 69% of the population of urban communities and 7% of that of rural areas (almost all with home connexions); excreta disposal was provided for 26% of the population, representing 35% of the population of urban areas (51% with sewerage services) and 18% of that of the rural areas was served by latrines; only in Managua, the capital city, was there an adequate garbage collection service. It should be pointed out that the physical condition of most of the systems at the end of the 1970s was deplorable and that there was an urgent need for new equipment and reconstruction.

The targets considered to be desirable for the decade 1981-1990 are as follows: (a) drinking water to be supplied to 81% of the population, with a 100% coverage of the urban population and 50% coverage of the rural population; and (b) excreta disposal services for 70% of the population, with the same coverage for the rural as for the urban sectors and sewerage services for 50% of the urban population.

The investment required to achieve the target set for the decade has been estimated at around 254 million Central American pesos, of which 160 million pesos would be used for drinking water supply and 94 million for excreta disposal services. No information is available concerning the need for manpower.

With regard to institutions, mention should be made of the Instituto N Nicaragüense de Acueductos y Alcantarillados (Nicaraguan Water Supply and Sewerage Institute) (INAA). The 1979 act establishing this Institute makes it responsible for the systems for water supply and excreta disposal in both urban and rural areas.

(f) Panama

The total population of Panama in 1980 was estimated to be 1.8 million, divided almost equally between urban and rural areas. It is estimated that the total population in 1990 will be 2.2 million.

At the beginning of the 1980s, drinking water was supplied to 82% of the population and to 100% of the urban population (93% with home connexions) and 65% of the rural population (27% with home connexions); with regard to excreta disposal, national coverage was 89%, representing 98% of the urban communities (68% with sewerage services) and 81% of the rural areas, mainly served by latrines. It should be pointed out that all the municipalities are provided with a solid waste collection service.

The targets proposed for the decade 1981-1990 are as follows: (a) to maintain total coverage of the urban sector with regard to drinking water supply (98% with

home connexions) and to ensure 81% coverage of the rural areas; (b) to provide excreta disposal services for 99% of the urban population (90% with sewerage services) and 90% of the rural population.

The estimated investment required to achieve the targets of the Decade is 110 million Central American pesos, 69 million of which would be needed for drinking water supply and 41 million for excreta disposal.

Where institutions are concerned, the Instituto de Acueductos y Alcantarillado Nacionales (National Water Supply and Sewerage Institute) (IDAAN) is responsible for supplying drinking water and excreta disposal services to all the urban communities in the country. It is also responsible for water mains with household connexions in rural areas of 500 inhabitants or more. The Ministry of Health is responsible for drinking water supply and excreta disposal in the smaller rural communities.

