

*The water and sanitation sector of Honduras:*

*Coverage and investment needs  
for the decade*



NATIONAL AUTONOMOUS AQUEDUCTS  
AND SEWERAGE SERVICE



UNITED NATIONS CHILDREN'S FUND

1992

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## **ACRONYMS**

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<b>BANMA</b>	Municipal Autonomous Bank
<b>DGEC</b>	General Bureau of Statistics and Censuses
<b>DIAAPS</b>	International Drinking Water Supply and Sanitation Decade
<b>FHIS</b>	Honduran Fund for Social Investment
<b>MSP</b>	Ministry of Public Health
<b>OPS/OMS</b>	Panamerican Health Organization/ World Health Organization
<b>PROPAR</b>	Programme for Rural Wells and Aqueducts
<b>SANAA</b>	National Autonomous Aqueducts and Sewerage Service
<b>SECPLAN</b>	Secretary of Coordination, Planning and Budget
<b>UNICEF</b>	United Nations Childrens' Fund

## SUMMARY

The main objective of this work is to provide planners, project officers and decision makers working in water and sanitation programmes with estimates of the coverage and financial resources required to meet the water and sanitation needs for the Honduran population through the end of this century.

Although important progress has been achieved during the last decade, an analysis of the current situation shows that of a population of 4.8 million, Honduras has 1.7 million people (35% of the population) with no access to safe drinking water, and 1.8 million (36%) with no sanitary means of excreta disposal. Most of this gap is in the rural areas, where 1.4 million people (49% of the rural population) still lack access to clean drinking water and 1.5 million (54%) do not have safe sanitary facilities.

However, these national averages hide significant differences among departments, as shown in the data below:

<i>Departments ordered from low to high coverage</i>	<i>Water %</i>	<i>Sanitation %</i>
Gracias a Dios	7.4	27.2
Valle	35.3	31.3
Intibucá	38.1	28.3
Choluteca	42.5	45.1
Lempira	43.2	30.9
Olancho	46.3	49.2
El Paraíso	49.9	47.4
La Paz	54.4	39.8
Copán	58.0	51.5
Colón	60.6	51.4
Comayagua	67.4	58.7
Santa Bárbara	70.6	51.4
Yoro	71.6	71.5
Atlántida	70.5	76.0
Ocoatopeque	73.5	49.0
Fco. Morazán	69.7	84.5
Islas de la Bahía	82.2	75.2
Cortés	88.4	91.2

*\* Estimates for 1990.*

To ensure the meeting of water supply needs for the 1991-2000 decade, it is estimated that an additional 3.1 million people would need to be reached, of whom 43% are urban and 57% rural. The annual rate of increase in coverage required to meet a 100% access by the year 2000 has been estimated at 4.4%, which implies incorporating 310,000 persons annually throughout the decade. Since the coverage gap is much wider in the rural areas, the estimated coverage rate for this population should be 6.9% which would require benefiting 177,000 persons annually. Urban coverage will need to expand at a considerably slower rate of 1.6%, averaging 133,000 new persons each year. On the other hand, to meet the sanitation needs an annual coverage rate of 4.6% is needed, which means incorporating 3.17 million inhabitants within the decade. Of this total, 1.24 million people, or 39%, are urban and 1.93 million, or 61%, rural. Thus, if the major goal of full coverage is to be achieved by the year 2000, the greatest efforts should be directed to the rural and the growing peri-urban areas of Tegucigalpa and San Pedro Sula.

Because of the wide range of water supply and sanitation systems utilizing different combinations of technologies and managerial organizations, the financial resources required to overcome the above mentioned service gaps have been estimated based on four different scenarios. In scenario I, resource needs are extrapolated to the year 2000, using as a base the evolution of the main delivery systems (household connections, public taps, handpumps/wells and latrines) during the 1974-1988 period, for the urban, rural and metropolitan (Distrito Central and San Pedro Sula) populations. For the rest of the scenarios (II- maximum coverage, III- intermediate coverage, and IV- low coverage), it is assumed that 100% access to safe drinking water and to sanitary means of excreta disposal will be achieved by the year 2000 using different combinations of above mentioned delivery systems.

Results from these estimates indicate that the capital resource requirements for the decade range from US\$ 437 to US\$ 660 million, depending upon the scenario selected. In scenario I, based on historical tendency, the financial resource gap amounts to US\$ 437 million, of which 59% corresponds to water and 41% to sanitation. However, at the expansion rate of the intercensus period (1974-1988), only 82% of the metropolitan population would have access to water supply by the year 2000. An additional US\$ 20 million would be

required to cover this shortfall, for a total of US\$ 457 million for this scenario. The effective allocation of these resources would allow metropolitan, urban and rural populations to achieve water supply coverage of 96%, 96% and 95% through household connections, respectively. For sanitation, this coverage reaches 65%, 65% and 28% for the same population sectors. In both cases, the difference in meeting 100% coverage is made up through public taps, handpumps/wells and latrines. From these estimates one can infer that the smaller amount of capital resources needed for this scenario is due to the low coverage by household connections in sanitation which have a higher cost per user when compared with other categories of coverage.

On the other hand, the financial resources required for scenario II, with high coverage goals of 95%, 95% and 80% by household connections for the metropolitan, urban and rural populations respectively, amount to US\$ 660.5 million for the decade. Of this total, water supply accounts for US\$ 246.1 million (37%) and sanitation for US\$ 414.4 million (63%), averaging US\$ 66 million annually throughout the decade. The amount of financial resources required for the scenarios of intermediate and low coverage goals ranges in between the above figures.

The estimates for the different scenarios were calculated using per capita costs for different delivery systems estimated from a range of water and sanitation projects. These represent a mix of projects implemented in 1991 and to be implemented in 1992, by SANAA, the Honduran Social Investment Fund (FHIS), the Ministry of Public Health (MSP), and the Autonomous Municipal Bank (BANMA). Thus, it can be argued that the per capita costs estimated for each category are both real and representative of a wide spectrum of technologies and conditions. It should be noted that these estimates reflect solely capital investment costs and do not include operational and maintenance costs, which should be covered through tariffs. Neither do they include the costs of reconstruction of completely deteriorated systems nor systems that deliver insufficient service (like the one in Tegucigalpa, parts of which have been in service for 60 years

or more). On the other hand, the base costs do include community contributions in the construction of the system (mainly community labour and materials), which, depending on the project, may vary between 5% and 12%. For public taps community contributions rise to 28%.

It should be noted that the amount invested in the sector during 1991 by SANAA, FHIS and BANMA was estimated to be about US\$ 31 million. Since this amount represents approximately 80% of the total public and external funding applied in the sector, we can arrive at a total capital investment figure of US\$ 39 million for 1991. This amount represents 85% and 59% of what would be required annually to meet the coverage goals through the historical tendency and the maximum coverage scenarios, respectively. For 1992, the above institutions have programmed US\$ 52 million, an annual capital investment level which will have to be sustained in order to achieve the universal coverage goals by the year 2000. However, the resources programmed are not just for the construction of new systems. For instance, US\$ 14.7 and US\$ 9.1 million of the funds programmed by SANAA for 1991 and 1992 are for other activities in the metropolitan areas, such as repairing deteriorated systems and the incorporation of new sources of water supply (both of which are absolutely necessary to extend coverage). Furthermore, the availability of these resources depends heavily on international donor and lender funding, which in 1990/91 accounted for 74% of the total water and sanitation sector capital costs.

The above results indicate that the challenge of keeping funding on a higher level and implementing it efficiently through the decade is a formidable one, since donor and lending institutions are demanding both tariffs tied to the actual costs of producing water and, in some cases, to the financial and economic viability of the projects they finance (including cost recovery).

Along with this effort, it is important to consider ways of optimizing the use of the limited resources. This may be possible through the promotion of low-cost technologies developed in the last decade and through social mobilization and community participation, including decision making and control over project development and systems operations and maintenance.



# 1

## INTRODUCTION

In November 1980, the United Nations General Assembly declared the 1981-1990 period as the International Drinking Water Supply and Sanitation Decade (DIAAPS), establishing a goal of a 100% coverage of these services in developing countries by 1990.

As signatory of the DIAAPS agreement, in 1983 the Honduran Government prepared a National Plan for the sector with coverage goals of 90% for water supply and 78% for sanitation. Although important progress has been achieved in the last decade, the goals of the National Plan have not been fully met. Of a population of 4.8 million, 1.7 million Hondurans (35%) have no access to safe water and 1.8 million (36%) have no basic excreta disposal. By far, this situation is worst among the rural population and for low-income peri-urban areas of Tegucigalpa and San Pedro Sula.

Since the DIAAPS's goals were clearly not achieved, national institutions in association with international agencies have initiated actions towards a new development plan to meet water supply and sanitation needs for the 1991-2000 decade. These actions are encompassed within the outlines proposed in the Social Development Strategies of the Government Plan (1990-1994) and with others initiatives such as: the Conference on Evaluation of the Decade organized by the Panamerican Health Organization (Puerto Rico, September 1990); the "Health for All by the Year 2000" accord; The UN World Summit for Children (September 1990); and the XI Summit of Central America's Presidents on Human Development, Children and Youth (Tegucigalpa, December 1991).

# 2

## OBJECTIVES

Within this context the objective of the present study is to provide planners, project officers and decision makers who work in water and sanitation programmes with estimates of the coverage and financial resources required to meet the water and sanitation needs for the Honduran population through the end of this decade.

With regard to this objective, Section 3 is devoted to analyzing the current water and sanitation coverage at both national and departmental levels, and for the urban and rural areas. This classification is necessary due to the large differences in population growth and coverage among departments. Based on the diagnosis of the current situation and the projected demographic growth rates, Section 4 shows the coverage targets required to attain universal access to water and sanitation services by the year 2000. The estimated coverage indexes (by department and for the rural and urban populations) provide the base to quantify the capital resources required for the decade, which are presented in Section 5. Because of the wide range of water supply and sanitation systems with different combinations of technologies and managerial organizations, these costs are estimated considering four scenarios. In scenario I, costs are quantified (by extrapolation to year 2000) using as a base the historical evolution of the main delivery systems (household connections, public taps, handpumps/wells and latrines) during the 1974-1988 period for urban, rural and metropolitan populations. For the rest of the scenarios - maximum coverage (II), intermediate coverage (III) and low coverage (IV) - it is assumed that access to safe drinking water and to sanitary means of excreta disposal through the year 2000 will vary among the different service categories. Finally, total capital cost needs for each scenario are estimated, using as a base average per capita costs for each type of coverage, calculated from a range of water and sanitation projects implemented by government agencies.

<sup>1</sup> Any of the following categories are considered for water supply: **household connections** which include piped water located inside the property or indoors; **easy access** where the water supply system is delivered through pipes to within 100m. of the house, or more than 100m. for a public tap system. The latter category also includes water supply delivered through hand and electric pumped wells, but excludes systems such as hand-dug wells, rivers, streams and other contaminated or low quality means. In the case of sanitation the categories are: **household connections** which include toilets connected to a sewage network or septic systems, and **other means** where latrines of both the water-seal and simple pit varieties are considered.

## CURRENT WATER AND SANITATION COVERAGE

3

This analysis of the water and sanitation sector uses as a base the standard coverage categories recommended by the Panamerican Health Organization/OMS.<sup>1</sup>

### 3.1 Water Supply

The information provided by the 1974 and 1988 Population and Housing Censuses indicated that the Honduran population increased from 2,656,948 to 4,443,721 inhabitants, (an annual growth rate of 3.7%), in the intercensus period.<sup>2</sup> As reported in Table N°1, the percentage of the population with access to water services also rose significantly, from 43.0% in 1974 to 61.1% in 1988, (an average rate of increase in coverage of 6.2%, which stands 2.5% above the demographic growth rate). This increase represents the incorporation of 1.6 million people into the water supply system, an average of 110,000 persons annually. Nevertheless, these figures must be taken with caution, because there have been important differences in the rate of coverage increases between the rural and urban areas<sup>3</sup>, both at national and departmental level.

According to the figures reported in Table N°1, rural water supply grew at an annual rate of 8.2% in the 1974-1988 period, while the population growth rate was 2.8%. This means extending coverage to 58,000 rural people each year. By contrast, urban water supply coverage decreased in relative terms, falling from 90.1% to 85.9%. This is explained by the accelerated urban population growth of 5.4%, which was concentrated in the cities of Tegucigalpa and San Pedro Sula. Even so, the annual coverage increase of 5.0% allowed the extension of water service to 52,000 people annually through the period.

<sup>2</sup> Population figures for 1974 have not been corrected by census omission. According to the Department of Population Studies (SECPLAN), the population for 1974 (corrected by census omission) would be 2,966,504 inhabitants, giving an annual growth rate of 3.1% and not 3.7% for the intercensus period.

<sup>3</sup> Rural community is that with less than 2,000 inhabitants.

Extrapolated figures from the intercensus trend show that in 1990 there were 3,140,000 people, (65.2% of the country's population), with adequate access to water, of whom 53.4% were urban and 46.6% rural. Of the total population without access, the largest part (83% or 1,391,884 persons) belonged to the rural sector, where they were concentrated in isolated and dispersed communities with less than 500 inhabitants.<sup>4</sup> The remaining 17% was made up of approximately 285,000 people who have migrated to Tegucigalpa and San Pedro Sula from rural areas. They constitute the marginal belt of poverty and deprivation of these cities.

Comparing the extrapolated situation for 1990 with the targets from the National Plan for the sector (1983) in response to the DIAAPS, it can be seen that the 65.2% national coverage attained was well below the desired 90%. This meant that 1,195,446 persons targeted in this plan remained without access to water service. Of this total, 1,106,369 people, or 92.5%, belong to rural populations and the remaining 89,077, or 7.4%, to the urban areas. Although most of the proposed national targets were not met, the programmed 30% of coverage for rural water supply in the category of household connections was surpassed by 12.1%, reaching 45.1%. Because of this, the average national coverage for this household connections was 59.3%, well above the 33.0% set up in the National Plan.<sup>5</sup>

To reach the above mentioned coverage, 2,385 aqueducts had been constructed by 1988. The bulk of this total was implemented by SANAA (68.1%), followed by the Ministry of Public Health (12.5%) and various local municipal governments (19.4%). Also, the Ministry of Public Health had constructed 15,304 handpump wells in rural communities, while the Autonomous Municipal Bank (BANMA) had financed the implementation of 32 water supply systems across the country. On the other hand, an unreported number of systems had been con-

<sup>4</sup> According to a survey carried out in 1987 by the Autonomous National Aqueduct and Sewer Service (SANAA), 70.8% of the rural population with no coverage is located in communities with less than 500 inhabitants.

<sup>5</sup> The reasons underlying the non-fulfillment of the DIAAPS' major goals are analyzed in "OPS/OMS report on the Evaluation of the DIAAPS" (1990), and also in the workshop report (to be published) on "Planning and Development of the Water and Sanitation Sector in Honduras for the 90's" (Tegucigalpa, September 1991; sponsored by the Ministry of Public Health, SANAA and OPS/OMS).

TABLE N°1 WATER SUPPLY COVERAGE FOR 1974/88/90 AND DIAAPS TARGETS					
DELIVERY SYSTEM BY TYPE OF POPULATION	WATER SUPPLY				
	1974*	1988*	1990 + (A)	DIAAPS TARGETS ++ (B)	DIFERENCIA (%) (A) - (B)
<b>A. TOTAL POPULATION (N°)</b>	2,656,948.00	4,443,721.00	4,817,188.00		
a.1 Household connection (%)	32.44	54.79	59.28	33.00	26.28
a.2 Easy access (%)	10.52	6.36	5.90	57.00	(51.10)
<b>Total with access (%)</b>	<b>42.96</b>	<b>61.15</b>	<b>65.18</b>	<b>90.00</b>	<b>(24.82)</b>
<b>Total without access (%)</b>	<b>57.04</b>	<b>38.85</b>	<b>34.82</b>	<b>10.00</b>	<b>24.82</b>
<b>Total without access (N°)</b>	1,515,469.00	1,726,625.00	1,677,165.00	481,719.00	1,195,446.00
<b>B. URBAN POPULATION (N°)</b>	833,179.00	1,751,883.00	1,962,041.00		
b.1 Household connection (%)	75.26	79.62	79.93	90.00	(10.07)
b.2 Easy access (%)	15.25	6.27	5.53	0.00	5.53
<b>Total with access (%)</b>	<b>90.51</b>	<b>85.89</b>	<b>85.46</b>	<b>90.00</b>	<b>(4.54)</b>
<b>Total without access (%)</b>	<b>9.49</b>	<b>14.11</b>	<b>14.54</b>	<b>10.00</b>	<b>4.54</b>
<b>Total without access (N°)</b>	79,069.00	247,191.00	285,281.00	196,204.00	89,077.00
<b>C. RURAL POPULATION (N°)</b>	1,823,769.00	2,691,838.00	2,855,147.00		
c.1 Household connection (%)	12.88	38.64	45.09	33.00	12.09
c.2 Easy access (%)	8.36	6.40	6.16	57.00	(50.84)
<b>Total with access (%)</b>	<b>21.24</b>	<b>45.04</b>	<b>51.25</b>	<b>90.00</b>	<b>(38.75)</b>
<b>Total without access (%)</b>	<b>78.76</b>	<b>54.96</b>	<b>48.75</b>	<b>10.00</b>	<b>38.75</b>
<b>Total without access (N°)</b>	1,436,400.00	1,479,434.00	1,391,884.00	285,515.00	1,106,369.00

**SOURCE:**  
\* 1974 and 1988 Population and Housing Censuses; DIAAPS Evaluation Report OPS/PMS (1990)  
+ Values extrapolated from the 1974 and 1988 census data.  
++ Targets from the Honduras National Plan for the Water and Sanitation Sector (1983)  
Values in brackets are negatives

structed by private development organizations (PDOs), such as Agua Para El Pueblo, CARITAS, Save the Children, Plan in Honduras, Friends of the Americas, World Vision, Catholic Relief Services, and many others.<sup>6</sup>

While the national average indexes do provide a first glance impression of the country's current situation, they also mask important differences that surface when data is analyzed by departments. As reported by the 1988 Population and Housing Census in Table N°2, water supply coverage by department present important differ-

ences. For instance, in the department of Cortés 77.3% of the population had access, (the highest coverage of the 18 departments), followed by the departments of: Islas de la Bahía (71.1%), Francisco Morazán (67.8%), Ocotepeque (62.7%), Atlántida (60.8%), Santa Bárbara (60.3%) and Yoro (62.2%). The lowest coverages were found in the departments of: Gracias a Dios (6.5%), Valle (29.6%), Intibucá (32.6%), Choluteca (36.4%), Lempira (36.4%), Olancho (40.8%), El Paraíso (43.7%) and La Paz (46.9%).

Table N°2 also shows that the largest populations with access were concentrated in the departments of Francisco Morazán (22.1% of the nation's population), Cortés (20.3%), Yoro (8.3%), Santa Bárbara (6.7%) and Atlántida (5.8%). At the same time, Francisco Morazán also had the largest number of people without access in the country (13.6%), followed by Choluteca (7.7%), El

<sup>6</sup> As pointed out in the workshop report "Planning and Development of the Water and Sanitation Sector in Honduras for the 90's" (op. cit.), the number of OPDs working in Honduras ranges from 200 to 250, with probably two dozen of them having some water or sanitation activities. Since there is presently little coordination in the sector, no complete list of these OPDs and no information about them exists (target populations, funding, type of technology, number of systems constructed, etc.).

TABLE N°2 WATER SUPPLY COVERAGE BY DEPARTMENT - 1988

DEPARTMENT	TOTAL POPULATION	POPULATION WITH ACCESS			POPULATION WITHOUT ACCESS		
		N°	% (1)	% (2)	N°	% (1)	% (2)
Atlántida	238,741.00	145,083.00	60.77	5.79	93,658.00	39.29	4.86
Colón	149,677.00	80,257.00	53.62	3.21	69,420.00	46.38	3.61
Comayagua	239,859.00	141,157.00	58.85	5.64	98,702.00	41.15	5.12
Copán	219,455.00	108,279.00	49.34	4.33	111,176.00	50.66	5.78
Cortés	662,772.00	512,455.00	77.32	20.31	50,317.00	22.68	7.74
Choluteca	295,484.00	107,615.00	36.42	4.30	187,869.00	63.58	9.77
El Paraíso	254,295.00	111,101.00	43.69	4.45	143,194.00	56.31	7.45
Francisco Morazán	828,274.00	581,901.00	67.84	22.08	266,373.00	32.16	13.60
Gracias a Dios	34,970.00	2,283.00	6.53	0.09	32,687.00	93.47	1.70
Intibucá	124,681.00	40,596.00	32.56	1.63	84,085.00	67.44	4.38
Islas de la Bahía	22,062.00	15,695.00	71.14	0.63	6,367.00	28.86	0.33
La Paz	105,927.00	49,722.00	46.94	1.99	56,205.00	53.08	2.42
Lempira	177,055.00	64,501.00	36.43	2.59	112,554.00	63.57	5.86
Ocoatepeque	74,276.00	46,571.00	62.70	1.86	27,705.00	37.30	1.44
Olancho	283,852.00	115,840.00	40.81	4.64	168,012.00	59.14	8.74
Santa Bárbara	278,868.00	168,241.00	60.33	6.73	110,627.00	39.67	5.75
Valle	119,965.00	35,522.00	29.61	1.42	84,443.00	70.30	4.39
Yoro	333,508.00	207,609.00	62.25	8.30	125,899.00	37.75	6.55
TOTALS	4,443,721.00	2,514,428.00	56.58	100	1,929,293.00	43.42	100

SOURCE:

Census of Population and Housing (1988).

(1) Percentage calculated in relation to the total population of each department

(2) Percentage calculated in relation to the country's total population.

\* Totals on this table show a slight difference with those of table N° 1, which were taken from the DIAAPS' Evaluation Report, OPS/OMS (op. cit.)

Paraiso (7.4%), Lempira (5.9%), Copán (5.8%) and Santa Bárbara (5.8%). These departments accounted for 1,200,000 inhabitants with no access to the service, or 65% of the country's population without access to adequate water supplies.

The differences found among departments are also observed at municipal level. For example, the Central District municipality - in and around Tegucigalpa - with 75% of the total population of the department of Francisco Morazán had a coverage of 75.0%, which is 8% higher than the average coverage of this department. The municipality of San Pedro Sula, concentrating 49.3% of the population of the department of Cortés, reached 85.1% coverage in 1988, 7.8% above that department's average.

## 23 Sanitation

Table N°3 shows that the population with a safe sanitary means of excreta disposal grew from 849,692 to 2,562,249 people between 1974 and 1988, representing an annual rate of increase of coverage of 8.1%. This growth has made possible the incorporation of 1,700,000 people to sanitary services in 14 years, (120,000 people annually). Although this growth has been significant, there is still a slight difference of 3.5% in favor of water supply at the national level. This difference originates in the rural area, where water coverage exceeds sanitation by 7%. Conversely, for the urban population sanitation exceeds water coverage by 2%.

During the intercensus period, the extension of sanitation services to the rural and urban sectors presented important differences in their rates of increase. The implementation of sanitary facilities in the rural area - through public and private latrine programmes - grew at an annual rate of 12.4%, bringing new service to 830,000 people through the period. Although the rate of increase in coverage for the urban population (6.2%) was nearly half that of the rural service, about 880,000 people were incorporated, reaching an urban coverage of 87.8% in 1988.

Extrapolating from the 1974-1988 intercensus trend, by 1990 3,063,932 people (63.6% of the Honduran population) would have had access to sanitation. Of this total, 1,761,128 people, (57.5%) belonged to the urban sector and 1,303,085, (42.5%) to rural areas. This means that in 1990 there were 1,753,256 people with no access to sanitary excreta disposal, of whom 1.55 million, or 88.5%, lived in the rural sector. As in the case of water supply, the smallest coverage indexes were found in those communities with less than 500 inhabitants. A survey carried out by SANAA in 1987 (op. cit) showed that of the rural houses grouped in populations of fewer than 500 inhabitants, only 2.1% had latrines and sanitary sewerage disposal.

Table N°3 shows that the extrapolated coverage figures for 1990 are far below the targets set in the 1983 National Plan for the sector in response to the DIAAPS

agreement. For instance, the national coverage of 63.6% achieved by 1990 was 15.6% below the projected 79% proposed in the Plan. This result implies that of the 3.8 million people expected to be served under the Plan, 750,000 remained without access. Again, the largest gaps in meeting the goals were in the rural sector, where it had been hoped that a population no larger than 570,000 would remain without sanitary facilities by 1990. As reported in Table N°3, the rural population with no access was significantly larger, reaching 1,552,343 in 1990, which represents 54.4% and 32.2% of the total rural and national populations, respectively. On the other hand, the urban coverage of 89.8% attained by 1990 surpassed the DIAAPS target of 78%. However, this figure must be taken with caution since DIAAPS targets aimed to reduce urban latrine coverage (to 3%) and increase household sewer connections (to 75%). By contrast, the 1990 cover-

TABLE N° 3 SANITATION COVERAGE FOR 1974/88/90 AND DIAAPS TARGETS					
DELIVERY SYSTEM BY TYPE OF POPULATION	SANITATION				
	1974*	1988*	1990 + (A)	DIAAPS TARGETS ++ (B)	DIFFERENCE % (A) - (B)
<b>A. TOTAL POPULATION (N°)</b>	2,656,948.00	4,443,721.00	4,817,188.00	-	-
a.1 Household Connection (%)	14.25	25.70	28.22	39.44	(11.22)
a.2 Others Means (%)	17.73	31.96	35.38	39.75	(4.37)
<b>Total with Access (%)</b>	<b>31.98</b>	<b>57.66</b>	<b>63.61</b>	<b>79.19</b>	<b>(15.58)</b>
<b>Total without Access (%)</b>	<b>68.02</b>	<b>42.34</b>	<b>36.39</b>	<b>20.81</b>	<b>15.58</b>
<b>Total without Access (N°)</b>	<b>1,807,166.00</b>	<b>1,881,593.00</b>	<b>1,753,256.00</b>	<b>1,002,678.00</b>	<b>750,578.00</b>
<b>B. URBAN POPULATION (N°)</b>	833,179.00	1,751,883.00	1,962,041.00	-	-
b.1 Household Connection (%)	41.94	52.69	54.41	75.00	(20.59)
b.2 Others Means (%)	36.85	35.11	35.35	3.0	32.35
<b>Total with Access (%)</b>	<b>78.79</b>	<b>87.80</b>	<b>89.76</b>	<b>78.00</b>	<b>11.76</b>
<b>Total without Access (%)</b>	<b>21.21</b>	<b>12.20</b>	<b>10.24</b>	<b>22.00</b>	<b>(11.76)</b>
<b>Total without Access (N°)</b>	<b>176,717.00</b>	<b>213,730.00</b>	<b>200,913.00</b>	<b>431,649.00</b>	<b>(230,736.00)</b>
<b>C. RURAL POPULATION (N°)</b>	1,823,769.00	2,691,838.00	2,855,147.00	-	-
c.1 Household Connection (%)	1.60	8.13	10.22	15.00	(4.78)
c.2 Others Means (%)	9.00	29.91	35.41	65.00	(29.59)
<b>Total with Access (%)</b>	<b>10.60</b>	<b>38.04</b>	<b>45.63</b>	<b>80.00</b>	<b>(34.37)</b>
<b>Total without Access (%)</b>	<b>89.40</b>	<b>61.96</b>	<b>54.37</b>	<b>20.00</b>	<b>34.37</b>
<b>Total without Access (N°)</b>	<b>1,630,449.00</b>	<b>1,667,863.00</b>	<b>1,552,343.00</b>	<b>571,029.00</b>	<b>981,314.00</b>

**SOURCE:**  
 \* 1974 and 1988 Population and Housing Censuses; DIAAPS' Evaluation Report. OPS/OMS (1990).  
 + Values extrapolated from the 1974 and 1988 census data.  
 ++ Targets set up in the Honduran National Plan for the Water and Sanitation Sector (1983).  
 Values in brackets are negative.

age was made up 35.3% by latrines and 54.4% through household connections.

Similarly to water supply, sanitation coverage presented important differences at the department level. Table N°4 shows that the department of Cortés had the highest coverage (83.8%), followed by Francisco Morazán (77.1%), Atlántida (69.4%), Islas de la Bahía (68.9%), Yoro (65.8%) and Comayagua (54.3%). These departments consisted of 1,724,408 people, or 66.7% of the total Honduran population with access to sanitary facilities. Again, the lowest coverages were found in the departments of: Gracias a Dios (25.3%), Intibucá (25.7%), Lempira (27.8%), Valle (27.8%) and La Paz (36.4%). As observed in Tables N°2 and N°4, there exists a high correlation ( $r = 0.87$ ) among departments with high and low coverage of water supply and sanitation at the same time.

Varying degrees of coverage are also found at the municipal level. For instance, the department of Francisco Morazán is made up of municipalities with high coverage, such as the Distrito Central with only 11.2% of its population lacking access, and municipalities like Alubarén, Curarén and Vallecillo, where most of the population (97.4%, 97.4% and 71.9% respectively) had no access to sanitary means of excreta disposal. The same situation is found in other departments.

In terms of population, the largest contingents of people with access to sanitation were concentrated in Francisco Morazán (with 24.7% of the country's population that had access), Cortés (21.5%), Yoro (8.5%), Atlántida (6.4%) and Olancho (5.0%). At the same time, the department of Francisco Morazán concentrated the largest part of the national population with no access to sewers or latrines (10.2%). It was followed by Choluteca (9.4%), Olancho (8.2%), Santa Bárbara (8.0%), El Paraíso (7.7%) and Lempira (6.9%).

TABLE N°4 SANITATION COVERAGE BY DEPARTMENT (1988).

DEPARTMENT	TOTAL POPULATION (N°)	POPULATION WITH ACCESS			POPULATION WITHOUT ACCESS		
		N°	% (1)	% (2)	N°	% (1)	% (2)
Atlántida	238,741.00	165,710.00	69.41	6.40	73,031.00	30.59	3.93
Colón	149,677.00	72,264.00	48.28	2.79	77,413.00	51.72	4.17
Comayagua	239,859.00	130,219.00	54.29	5.03	109,640.00	45.71	5.90
Copán	219,455.00	101,849.00	46.41	3.94	117,606.00	53.59	6.33
Cortés	662,772.00	555,337.00	83.79	21.47	107,435.00	16.21	5.79
Choluteca	295,484.00	121,178.00	41.01	4.68	174,306.00	58.99	9.39
El Paraíso	254,295.00	112,017.00	44.05	4.33	142,278.00	55.95	7.66
Francisco Morazán	828,274.00	638,351.00	77.07	24.67	189,923.00	22.93	10.23
Gracias a Dios	34,970.00	8,837.00	25.27	0.34	26,133.00	74.73	1.41
Intibucá	124,681.00	32,030.00	25.69	1.24	92,651.00	74.31	4.99
Islas de la Bahía	22,062.00	15,209.00	68.94	0.59	6,853.00	31.06	0.37
La Paz	105,927.00	38,547.00	36.39	1.49	67,380.00	63.61	3.63
Lempira	177,055.00	49,150.00	27.76	1.90	127,905.00	72.24	6.89
Ocatepeque	74,276.00	32,763.00	44.11	1.27	41,513.00	55.89	2.23
Olancho	283,852.00	130,657.00	46.03	5.05	153,195.00	53.97	8.25
Santa Bárbara	278,868.00	130,008.00	46.62	5.02	148,860.00	53.38	8.02
Valle	119,965.00	33,302.00	27.76	1.29	86,663.00	72.24	4.67
Yoro	333,508.00	219,582.00	65.84	8.49	113,926.00	34.16	6.13
TOTALS	4,443,721.00	2,587,010.00	58.22	100	1,856,711.00	41.78	100

SOURCE: Census of Population and Housing (1988).

(1) Percentage calculated in relation to the total population of each department

(2) Percentage calculated in relation to the country's total population

+ Totals in this table show a slight difference with those of table N° 1, which were taken from the DIAAPS' Evaluation Report, OPSOMS (op. cit)

# COVERAGE REQUIRED FOR THE 1991-2000 DECADE

4

This section provides estimates of the coverage required to meet the water and sanitation needs for the whole Honduran population until the end of the decade. The estimated coverage indexes are presented by department and for the urban and rural sectors.

Obviously, the extent of coverage required to attain full access to water supply and sanitation services by the year 2000 will be determined by the population growth through the decade. Due to the relevance of this variable in determining coverage requirements for the Water and Sanitation sector, the most recent and reliable demographic information for Honduras provided by the Department of Population/(SECPLAN), was used. This data incorporates corrections based on the 1988 Population and Housing Census and on the 1983 Demographic Survey (Appendix I).

According to these sources, the Honduran population will rise to 6,237,366 people by the year 2000, an

average annual growth rate of 2.34% throughout the decade. Thus, the estimated 1991 population of 4,946,984 will increase by 26.1%, which represents 130,000 new people annually. At an annual average growth rate of 3.9%, the urban population will account for 48.2% of the Honduran population by the end of the decade. By contrast, the rural population, growing at a slower rate of 1.1%, will reduce its share of the total population, falling from 58.5% to 51.8% in the 1991-2000 period. It is expected that the departments of Cortés and Francisco Morazán, the largest in the country, will expand their population at an annual average of 3.0% and 3.1% respectively, concentrating 35% of the national population by the year 2000.

Based on a diagnosis of the current situation and the projected demographic growth figures (see Appendix I), Tables N°5 and N°7 show the rates of increase in coverage required to achieve full access to water and sanitation services by the end of the decade.

As regards water supply, it can be observed that during the decade a total of 3,097,000 people will need to be served, of whom 1.33 million (42.9%) will be urban and 1.77 million (57.1%) will be rural. Of this total, 1.67 million (54.1%) correspond to that population without access at the beginning of the decade (1990), and 1.43 mil-

TABLE N°5 ANNUAL WATER SUPPLY COVERAGE INCREASES REQUIRED TO SERVE THE HONDURAN POPULATION THROUGH THE YEAR 2000

DELIVERY SYSTEM BY TYPE OF POPULATION	1990	TARGET YEAR 2000	ANNUAL RATE OF INCREASE	ANNUAL COVERAGE INCREASE REQUIRED										TARGET POPULATION TO BENEFIT N°
				1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	
<b>A. TOTAL POPULATION (thous)</b>	4,817	-	-	4,947	5,078	5,212	5,350	5,491	5,636	5,783	5,932	6,084	6,237	3,097,000 (100%)
A.1 With Access (%)	65.18	100.00	4.37	68.03	71.00	74.10	77.34	80.72	84.25	87.93	91.77	95.78	100.00	
(thousands)	3,140	6,237		3,365	3,605	3,862	4,138	4,432	4,748	5,085	5,444	5,827	6,237	
A.2 Without Access (%)	34.82	0.00		31.97	29.00	25.90	22.66	19.28	15.75	12.07	8.23	4.22	0.00	
(thousands)	1,677	0	-	1,582	1,473	1,350	1,212	1,059	888	698	488	257	0	
<b>B. URBAN POPULATION (thous)</b>	1,962	-	-	2,051	2,141	2,236	2,335	2,437	2,542	2,652	2,766	2,883	3,005	
B1. With Access (%)	85.46	100.00	1.58	86.81	88.18	89.57	90.98	92.42	93.88	95.36	96.87	98.40	100.00	
(thousands)	1,677	3,005		1,780	1,888	2,003	2,124	2,252	2,386	2,529	2,679	2,837	3,005	
B.2 Without Access (%)	14.54	0.00		13.19	11.82	10.43	9.02	7.58	6.12	4.64	3.13	1.60	0.00	
(thousands)	285	0	-	271	253	233	211	185	156	123	87	46	0	
<b>C. RURAL POPULATION (thous)</b>	2,855	-	-	2,896	2,937	2,976	3,015	3,054	3,093	3,131	3,167	3,201	3,232	1,769,000 (57.12%)
C1. With Access (%)	51.25	100.00	6.91	54.79	62.82	62.62	66.95	71.58	76.53	81.82	87.47	93.51	100.00	
(thousands)	1,463	3,232		1,570	1,864	1,864	2,018	2,186	2,367	2,562	2,770	2,993	3,232	
C.2 Without Access (%)	48.75	0.00		45.21	37.38	37.38	33.05	28.42	23.43	18.18	12.53	6.49	0.00	
(thousands)	1,392	0	-	1,326	1,112	1,112	997	868	726	569	1,914	208	0	

lion (45.9%) to demographic growth. In other words, the required annual increase in coverage to reach universal access should be of 4.4%, which means providing access to 310,000 more people each year.

Since the current coverage gap is much larger in the rural sector, the challenge of meeting the needs for this population is formidable, demanding an annual rate of increase in coverage of 6.9%, or 177,000 people. On the other hand, to ensure access to the urban population the required annual coverage increase is lower, 1.6%, which is equivalent to extending service to 133,000 people each year.

Obviously, these aggregate coverage estimates correspond to national averages which hide significant differences at the departmental level. As reported in Table N°6, the required coverage increases differ significantly among departments. The ones needing the greatest relative annual increases in water supply are: Gracias a Dios (29.7%), Valle (11.0%), Intibucá (10.1%), Choluteca (8.9%), Lempira (8.8%), Olancho (8.0%), El Paraíso (7.2%) and La Paz (6.3%). These 8 departments account for 1.25 million people, or 40% of the total population that must be reached by the year 2000. Certainly, these coverage increases are quite high, indicating the need to set sectoral priorities in financial planning and programme implementation.

At the other extreme, smaller annual coverage increases for water are needed for the departments of: Cortés (1.2%), Islas de la Bahía (2.0%), Ocotepeque (3.1%), Yoro (3.4%), Santa Bárbara (3.5%), Atlántida (3.6%), Francisco Morazán (3.7%), Comayagua (4.0%) and Colón (5.1%). However, these rates of increase in coverage should be taken cautiously since they are not weighted considering the population of each department. For instance, Francisco Morazán and Cortés, which are departments with low coverage needs, account for a large part of the target population for the decade (16.7% and 10.7%, respectively). In contrast, Gracias a Dios and Valle, with higher coverage needs, concentrate only 4.5% of the target population.

In the case of sanitation, the rate of increase in coverage required to attain the goal of universal access by the year 2000 would be 4.6%, a little higher than the rate needed for water supply. This means meeting the needs of 3.17 million people in the decade, of whom 1.24 million (39.2%) are

**Table N°6 ANNUAL WATER SUPPLY COVERAGE REQUIRED BY DEPARTMENT FOR UNIVERSAL ACCESS BY THE YEAR 2000**

DEPARTAMENTOS	SITUATION IN 1990. POPULATION WITH ACCESS		TARGET YEAR 2000++	ANNUAL COVERAGE REQUIRED	TARGET POPULATION TO BENEFIT		REQUIRED ANNUAL RATE OF INCREASE
	Nº	%			Nº	%	
Atlántida	181,797	70.48	323,326	14,153	141,529	4.57	3.56
Colón	100,789	60.62	236,791	13,600	136,002	4.39	5.13
Comayagua	117,087	67.43	350,265	17,318	173,178	5.59	4.02
Copán	135,955	58.04	272,806	13,685	136,851	4.42	5.59
Cortés	637,702	88.43	970,854	33,315	333,152	10.75	1.24
Choluteca	135,013	42.49	384,800	24,978	249,787	8.06	8.93
El Paraíso	139,723	49.88	381,585	24,186	241,863	7.81	7.20
Fco. Morazán	693,591	69.74	1,212,507	51,892	518,916	16.75	3.67
Gracias a Dios	2,826	7.39	49,721	4,689	46,895	1.52	29.75
Intibucá	51,179	38.12	162,516	11,134	111,337	3.59	10.12
Islas de la Bahía	19,781	82.25	31,045	1,126	11,264	0.36	1.97
La Paz	62,483	54.44	143,892	8,141	81,409	2.36	6.27
Lempira	81,322	43.18	213,331	13,201	132,009	4.26	8.76
Ocotepeque	58,401	73.52	93,043	3,464	34,642	1.12	3.12
Olancho	145,689	46.35	439,724	29,403	294,035	9.49	7.99
Santa Bárbara	211,311	70.61	357,605	14,629	146,294	4.72	3.54
Valle	44,586	35.34	136,771	9,218	92,185	2.98	10.96
Yoro	260,607	71.60	476,772	21,617	216,165	6.98	3.40
<b>TOTALS</b>	<b>3,139,842</b>	<b>65.18</b>	<b>6,237,354</b>	<b>309,749</b>	<b>3,097,513</b>	<b>100.00</b>	<b>4.37</b>

++ Since no data was available at departmental level to extrapolate values for 1990, it was assumed that the national population with access in 1990 has a similar departmental distribution to that of 1988.



**TABLE N° 7 ANNUAL SANITATION COVERAGE INCREASES REQUIRED TO SERVE  
THE HONDURAN POPULATION THROUGH THE YEAR 2000**

DELIVERY SYSTEM BY TYPE OF POPULATION	1990	TARGET YEAR 2000	ANNUAL RATE OF INCREASE	ANNUAL COVERAGE INCREASE REQUIRED										TARGET POPULATION TO BENEFIT
				1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	
<b>A. TOTAL POPULATION (thous)</b>	4,817	-	-	4,947	5,078	5,212	5,350	5,491	5,636	5,783	5,932	6,084	6,237	<b>3,173,000 (100%)</b>
A.1 With Access (%)	63.01	100.00	4.63	66.55	69.64	72.86	76.23	79.76	83.46	87.32	91.36	95.59	100.00	
(thousands)	3,064	6,237		3,310	3,536	3,797	4,078	4,380	4,704	5,050	5,419	5,816	6,237	
A.2 Without Access (%)	36.39	0.00		33.45	30.36	27.14	23.77	20.24	16.54	12.68	8.64	4.41	0.00	
(thousands)	1,753	0.00	-	1,664	1,542	1,415	1,272	1,111	932	733	513	268	0	
<b>B. URBAN POPULATION (thous)</b>	1,962	-	-	2,051	2,141	2,236	2,335	2,437	2,542	2,652	2,766	2,883	3,005	<b>1,244,000 (39.22%)</b>
B1. With Access (%)	89.76	100.00	1.09	90.74	91.73	92.73	93.74	94.76	95.79	96.84	97.89	98.96	100.00	
(thousands)	1,761	3,005		1,861	1,964	2,073	2,189	2,309	2,435	2,568	2,708	2,853	3,005	
B.2 without Access (%)	10.24	0.00		9.26	8.27	7.27	6.26	5.24	4.21	3.16	2.11	1.04	0.00	
(thousands)	201	0.00		190	177	163	146	128	107	84	58	30	0	
<b>C. RURAL POPULATION (thous)</b>	2,855	-		2,896	2,937	2,976	3,015	3,054	3,093	3,131	3,167	3,201	3,232	<b>1,929,000 (60.78%)</b>
C1. With Access (%)	45.63	100.00	8.16	49.35	53.38	57.74	62.45	67.54	73.05	79.02	85.46	92.44	100.00	
(thousands)	1,303	3,232		1,429	1,568	1,718	1,883	2,063	2,259	2,474	2,706	2,959	3,232	
C.2 without Access (%)	54.37	0.00		50.65	46.62	42.26	37.55	32.46	26.95	20.98	14.54	7.56	0.00	
(thousands)	1,552	0.00		1,467	1,369	1,258	1,132	991	834	657	461	142	0	

urban and 1.93 million (60.8%) are rural. Therefore, if full access is to be achieved by the end of the decade the greatest efforts, for both water supply and sanitation, should be directed to the rural areas.

Table N°7 also shows that most of the urban population which needs to be incorporated through the decade will result from demographic growth (83.8%), while a small portion (16.2%) will be from that population having no access at the beginning of the decade. By contrast, the bulk of the rural people that will need coverage during the decade (80.5%), are those with no service at the present moment.

As is true for water supply, the national coverage statistics for sanitation mask important differences between departments. Table N°8 shows the departments that will require accelerated rates of increase in coverage are:

Gracias a Dios (13.9%), Intibucá (13.4%), Lempira (12.5%), Valle (12.3%), La Paz (9.7%), Choluteca (8.3%), El Paraíso (7.8%), Ocotepeque (7.4%), Olancho (7.2%), Colón (6.9%), and Copán (6.8%). Because of the high correlation between the services, all those departments showing the highest requirements for sanitation (except for Ocotepeque) are also the ones with the greatest needs for water supply. The above mentioned departments account for 51.9% of the population expected to be benefitted during the decade. Among those departments that require a less accelerated rate of coverage are: Cortés (0.9%), Francisco Morazán (1.7%), Atlántida (2.8%), Islas de la Bahía (2.9%) and Yoro (3.4%). These departments together make up 35.5% of the target population for the decade, with Cortés and Francisco Morazán alone accounting for 24.2%.

THE WATER AND SANITATION SECTOR IN HONDURAS

<b>Table N°8 ANNUAL SANITATION COVERAGE BY DEPARTMENT REQUIRED FOR UNIVERSAL ACCESS BY THE YEAR 2000</b>							
DEPARTMENTS	POPULATION WITH ACCESS (1990)		TARGET YEAR 2000++	ANNUAL COVER- AGE REQUIRED	TARGET POPULATION TO BENEFIT		REQUIRED ANNUAL RATE OF COVERAGE INCREASE
	N°	%			N°	%	
Atlántida	196,110	76.03	323,326	12,722	127,216	4.01	2.78
Colón	85,491	51.42	236,791	15,130	151,300	4.77	6.88
Comayagua	154,130	58.69	350,265	19,613	196,131	6.18	5.47
Copán	120,730	51.54	272,806	15,208	152,076	4.79	6.85
Cortes	657,886	91.23	970,854	31,297	312,968	9.86	0.92
Choluteca	143,405	45.14	384,800	24,139	241,395	7.61	8.28
El Paraíso	132,680	47.37	381,585	24,890	248,905	7.84	7.76
Fco. Morazán	756,248	84.54	1,212,507	45,626	456,259	14.38	1.69
Gracias a Dios	10,418	27.25	49,721	3,930	39,304	1.24	13.88
Intibucá	37,996	28.30	162,516	12,452	124,520	3.92	13.45
Islas de la Bahía	18,079	75.18	31,045	1,296	12,966	0.41	2.89
La Paz	45,657	39.78	143,892	9,823	98,235	3.09	9.66
Lempira	58,220	30.91	213,331	15,511	155,112	4.89	12.46
Ocatepeque	38,914	48.99	93,043	5,413	54,129	1.70	7.40
Olancho	154,743	49.23	439,724	28,498	284,981	8.98	7.17
Santa Bárbara	153,823	51.49	357,605	20,378	203,782	6.42	6.88
Valle	39,528	31.33	136,771	9,724	97,244	3.06	12.31
Yoro	260,153	71.47	476,772	21,662	216,619	6.83	13.41
<b>TOTALS</b>	<b>3,064,211</b>	<b>63.61</b>	<b>6,237,354</b>	<b>317,312</b>	<b>3,173,142</b>	<b>100</b>	<b>4.63</b>

++ Since no data was available at department level to extrapolate values for 1990, it was assumed that the national population with access in 1990 had a similar departmental distribution to that of 1988.

# 5

## CAPITAL COST REQUIREMENTS

Estimates of the financial resources required to overcome the water and sanitation service gaps are presented in this section. Estimating coverage costs is complicated by the wide range of water and sanitation systems with different technologies and managerial organizations, which in turn are affected by the availability of sources, topographical conditions, population size and demographic growth, availability of funding, management capability of municipalities and community organizations, among others. In some situations, part of the required coverage can be met by the expansion and/or improvement of existing systems, while in other cases, new aqueducts and sewage systems must be constructed. All the above circumstances will obviously affect costs.

At present there is no information or diagnosis to indicate the most efficient and cost effective technologies under each case condition across the country. It is therefore necessary to establish some simplifying assumptions regarding service levels and targets to be achieved through the end of the decade. These assumptions and goals have been established in four scenarios.

### 5.1 Scenarios

The scenarios, as recorded in Table N°9, consider three population segments - Metropolitan (Tegucigalpa and San Pedro Sula), Urban (more than 2000 inhabitants) and Rural (less than 2000 inhabitants) - and four delivery systems or levels of service - Household connections, Public taps, Handpumps/Wells and Latrines, which according to the current situation are the most representative.

In Scenario I, that of historical tendency, it has been assumed that the different delivery systems will maintain their 1974-1988 intercensus trends. If this case were applied, water supply for the metropolitan population (provided through household connections and public taps) would reach a coverage of 82% by the year 2000. Moreover, water supply and sanitation coverage for urban and rural populations would exceed 100%; the urban and rural populations able to be served would be greater than the projected populations for the year 2000. For these categories, 100% coverage could be achieved before the end of the decade.<sup>7</sup>

**TABLE N°9 TARGETS FOR WATER SUPPLY AND SANITATION SERVICES TO BE MET BY THE YEAR 2000 UNDER DIFFERENT SCENARIOS AND DELIVERY SYSTEMS**

SCENARIOS	WATER SUPPLY			SANITATION		
	POPULATION %			POPULATION %		
	METRO.	URBAN	RURAL	METRO.	URBAN	RURAL
<b>I. HISTORICAL TREND</b>						
- Household Connections	79.19	105.03	113.32	65.70	75.21	37.20
- Public Taps	2.81	3.74	-	-	-	-
- Handpumps/Wells	-	-	4.92	-	-	-
- Latrines	-	-	-	35.14	40.24	95.63
<b>Total</b>	<b>82.00</b>	<b>108.77</b>	<b>118.24</b>	<b>100.84</b>	<b>115.45</b>	<b>132.83</b>
<b>II. MAXIMUM COVERAGE</b>						
- Household Connections	95.00	95.00	80.00	95.00	95.00	80.00
- Public Taps	5.00	5.00	5.00	-	-	-
- Handpumps/Wells	-	-	15.00	-	-	-
- Latrines	-	-	-	5.00	5.00	20.00
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>
<b>III. INTERMEDIATE COVERAGE</b>						
- Household Connections	90.00	95.00	75.00	90.00	95.00	75.00
- Public Taps	10.00	5.00	5.00	-	-	-
- Handpumps/Wells	-	-	20.00	-	-	-
- Latrines	-	-	-	10.00	5.00	25.00
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>
<b>IV. LOW COVERAGE</b>						
- Household Connections	80.00	80.00	70.00	80.00	80.00	70.00
- Public Taps	20.00	20.00	5.00	-	-	-
- Household/Wells	-	-	25.00	-	-	-
- Latrines	-	-	-	20.00	20.00	30.00
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

<sup>7</sup> Extrapolation based on census data presents some limitations in the sense that the estimated coverage rate is a geometric mean calculated between two points in time (1974 and 1988), which does not take into account any dispersion that could have occurred in the period. Thus, it is not possible to indicate if coverage levels have an upward or a downward trend. Also, some of the historical rates of increase in coverage are too high to be maintained throughout the decade. For instance, increases in rural water supply coverage, through household connections, averaged 11.02% annually for the 1974-1988 period. Extrapolation using this mean arrives at the year 2000 with a coverage of 118.24%, exceeding the projected rural population. Extending coverage at this geometric rate implies funding increases of a similar magnitude, which in practice has not occurred. Therefore, the estimated coverage rates for the historical scenario must be taken with caution as they do not necessarily represent the results of continuing the present level of activities in the sector.

However, for these estimates coverage trends are adjusted to match full access (i.e. 100%) in the year 2000.

For the rest of the scenarios (II- maximum coverage, III- intermediate coverage, and IV- low coverage), it is assumed that 100% access will be attained by the year 2000 through a different combination of delivery systems for each sector of the population.

In relation to the access conditions, it is important to note that although the official objective is to provide urban water supply and sanitation through household connections, there are various technical and financial limitations that make this solution impractical. For instance, most of the peri-urban population of Tegucigalpa live in "barrios" dug into hillsides. In many cases it is impossible to extend coverage through conventional water and sewerage systems. Furthermore, many of these urban settlements are squatter "invasions" or "recuperations", cases in which it is almost impossible for even paying occupants to get property titles. Without titles there are problems of "eligibility" that makes the provision of pub-

lic services difficult. New solutions for these "barrios" have been successfully implemented with public taps (through communal tanks), the sale of water "in block" by SANAA or the drilling of new wells. This programme, founded by SANAA and UNICEF in 1987, has demonstrated the potential of these alternative urban strategies. In the case of the rural areas, particularly for those dispersed communities with fewer than 200 inhabitants, the recommended solution has been the implementation of wells and latrines.

With the coverage targets reported in Table N°9, the demographic growth projections provided in Appendix II and the 1990 coverage levels presented in Tables N°2 and N°4, it was possible to estimate the target populations for the 1991-2000 decade according to the delivery system for each scenario. As will be explored later, these target population figures, observed in Tables N°10 and N°11, provide the basis for the calculation of the total capital expenditures that would be needed for each scenario.

TABLE N° 10 POPULATION WITH ACCESS TO WATER SUPPLY BY DELIVERY SYSTEM FOR DIFFERENT SCENARIOS (1990 /2000)									
YEAR	1990 (A)			2000 (B)			DIFFERENCE (B-A)		
SCENARIO	METRO.	URBAN	RURAL	METRO.	URBAN	RURAL	METRO.	URBAN	RURAL
<b>I. HISTORICAL TREND</b>									
- Household Connections	698,413	869,845	1,287,386	1,227,352	1,528,616	3,662,992	528,939	658,771	2,375,606
- Public Taps	48,320	60,182	-	43,621	54,329	-	(4,699)	(5,853)	-
- Handpumps/ Wells	-	-	175,877	-	-	158,772	-	-	(17,105)
<b>Total</b>	<b>746,733</b>	<b>930,027</b>	<b>1,463,263</b>	<b>1,270,973</b>	<b>1,582,945</b>	<b>3,821,764</b>	<b>524,240</b>	<b>652,918</b>	<b>2,358,501</b>
<b>II. MAXIMUM COVERAGE</b>									
- Household Connections	698,413	869,845	1,287,386	1,472,329	1,382,571	2,585,758	773,916	512,726	1,298,372
- Public Taps	48,320	60,182	-	77,491	72,767	161,610	29,171	12,585	161,610
- Handpumps/Wells	-	-	175,877	-	-	484,829	-	-	308,952
<b>Total</b>	<b>746,733</b>	<b>930,027</b>	<b>1,463,263</b>	<b>1,549,820</b>	<b>1,455,338</b>	<b>3,232,197</b>	<b>803,087</b>	<b>525,311</b>	<b>1,768,934</b>
<b>III. INTERMEDIATE COVERAGE</b>									
- Household Connections	698,413	869,845	1,287,386	1,394,838	1,382,571	2,424,148	696,425	512,726	1,136,762
- Public Taps	48,320	60,182	-	154,982	72,767	161,662	106,662	12,585	161,610
- Handpumps/Wells	-	-	175,877	-	-	646,439	-	-	470,562
<b>Total</b>	<b>746,733</b>	<b>930,027</b>	<b>1,463,263</b>	<b>1,549,820</b>	<b>1,455,338</b>	<b>3,232,197</b>	<b>803,087</b>	<b>525,311</b>	<b>1,768,934</b>
<b>IV. LOW COVERAGE</b>									
- Household Connections	698,413	869,845	1,287,386	1,239,856	1,184,270	2,262,538	541,443	294,425	975,152
- Public Taps	48,320	60,182	-	309,964	291,068	161,610	261,644	230,886	161,610
- Handpumps/Wells	-	-	175,877	-	-	808,049	-	-	632,172
<b>Total</b>	<b>746,733</b>	<b>930,027</b>	<b>1,463,263</b>	<b>1,549,820</b>	<b>1,455,338</b>	<b>3,232,197</b>	<b>803,807</b>	<b>525,311</b>	<b>1,768,934</b>

+ These figures were calculated based on population data (Appendix I) and coverage targets from Table N°9. Values in parentheses are negatives.

**TABLE N° 11 POPULATION WITH ACCES TO SANITATION BY DELIVERY SYSTEM FOR THE DIFFERENT SCENARIOS (1990/ 2000)**

YEAR	1990 (A)			2000 (B)			DIFFERENCE (B-A)		
SCENARIO	METRO.	URBAN	RURAL	METRO.	URBAN	RURAL	METRO.	URBAN	RURAL
<b>I. HISTORICAL TREND</b>									
- Household Connections	514,474	553,071	291,796	1,018,208	1,094,597	1,202,370	503,734	541,526	910,574
- Latrines	334,253	359,330	1,011,007	544,680	585,545	3,091,158	210,427	226,215	2,080,151
<b>Total</b>	<b>848,727</b>	<b>912,401</b>	<b>1,302,803</b>	<b>1,562,888</b>	<b>1,680,142</b>	<b>4,293,528</b>	<b>714,161</b>	<b>767,741</b>	<b>2,990,725</b>
<b>II. MAXIMUM COVERAGE</b>									
- Household Connections	514,474	553,071	291,796	1,472,329	1,382,571	2,585,758	957,855	829,500	2,293,982
- Latrines	334,253	359,330	1,011,007	77,491	72,767	646,439	(256,762)	(286,563)	(364,568)
<b>Total</b>	<b>848,727</b>	<b>912,401</b>	<b>1,302,803</b>	<b>1,549,820</b>	<b>1,455,338</b>	<b>3,232,197</b>	<b>701,093</b>	<b>542,937</b>	<b>1,923,394</b>
<b>III. INTERMEDIATE COVERAGE</b>									
- Household Connections	514,474	553,071	291,796	1,394,838	1,382,571	2,424,148	880,364	829,500	2,132,352
- Latrines	334,253	359,330	1,011,007	154,982	72,767	808,049	(179,271)	(286,563)	(202,958)
<b>Total</b>	<b>848,727</b>	<b>912,401</b>	<b>1,302,803</b>	<b>1,549,820</b>	<b>1,445,338</b>	<b>3,232,197</b>	<b>701,093</b>	<b>542,937</b>	<b>1,929,394</b>
<b>IV. LOW COVERAGE</b>									
- Household Connections	514,474	553,071	291,796	1,239,856	1,164,270	2,262,538	725,382	611,199	1,970,742
- Latrines	334,253	359,330	1,011,007	309,964	291,068	969,659	(24,289)	(68,262)	(41,348)
<b>Total</b>	<b>848,727</b>	<b>912,401</b>	<b>1,302,803</b>	<b>1,549,820</b>	<b>1,455,338</b>	<b>3,232,197</b>	<b>701,093</b>	<b>542,937</b>	<b>1,929,394</b>

\* These figures were calculated based on population data (Appendix I) and the coverage targets from Table N° 9.

## 5.2 Estimate of Capital Costs

Estimate of the total capital costs for the above scenarios were calculated using the per capita costs for different delivery systems, taken from a range of 65 water and sanitation projects. These represent a mix of projects implemented in 1991 and to be implemented in 1992, by the Autonomous National Aqueduct and Sewerage Service (SANAA), the Honduran Fund for Social Investment (FHIS), the Ministry of Public Health (MSP) and the Autonomous Municipal Bank (BANMA). Thus, it can be argued that the per capita costs estimated (see Appendix II) for each coverage category are both real and representative of a wide spectrum of technologies and conditions. Attention should be given to the fact that these estimates

relate solely to capital investment costs and do not include operational and maintenance cost which are supposed to be covered through tariffs. Neither do they include the costs of reconstruction of completely deteriorated systems nor systems that deliver insufficient service (like the one in Tegucigalpa, parts of which have been in service for 60 years or more). On the other hand, these base costs do include community contributions to the construction of the system (mainly community labour and materials), which, depending on the project, may vary between 5% and 12%. For public taps community contributions rise to 28%.

Then, estimated per capita and total capital costs refer exclusively to "fresh" capital investment required

to provide water and sanitation services to the target populations of the pre-established scenarios.

Based on per capita costs (Appendix II) and the target populations to be benefited (Tables N°10 and N°11), total costs were calculated for each scenario and delivery system. Results from these estimates, reported

in Tables N°12, N°13 and N°14, indicate that requirements of capital resources for the decade range from US\$ 437 million to US\$ 660 million, depending upon the scenario selected. In scenario I, the need for financial resources amounts to US\$ 437 million, corresponding 59% to water supply and 41% to sanitation. However, at the

<b>TABLE N° 12 TOTAL CAPITAL COSTS REQUIRED FOR WATER SUPPLY BY DELIVERY SYSTEM AND SCENARIO</b>				
<b>SCENARIO</b>	<b>TOTAL CAPITAL COSTS US\$ (thousands)</b>			<b>TOTAL FOR DECADE US \$ (thous)</b>
	<b>METRO.</b>	<b>URBAN</b>	<b>RURAL</b>	
<b>I. HISTORICAL TREND</b>				
- Household Connections	40,495.57	41,001.22	176,787.94	258,284.73
- Public Taps	-	-	-	-
- Handpumps/Wells	-	-	-	-
<b>TOTAL</b>	<b>40,495.57</b>	<b>41,001.22</b>	<b>176,787.94</b>	<b>258,284.73</b>
<b>II. MAXIMUM COVERAGE</b>				
- Household Connections	59,251.01	39,254.30	140,418.93	238,924.24
- Public Taps	311.84	134,53	1,727.61	2,173.98
- Handpumps/Wells	-	-	5,005.02	5,005.02
<b>TOTAL</b>	<b>59,562.85</b>	<b>39,388.83</b>	<b>147,151.56</b>	<b>246,103.24</b>
<b>III. INTERMEDIATE COVERAGE</b>				
- Household Connections	53,318.30	39,254.30	122,940.81	215,513.41
- Public Taps	1,140.22	134,53	1,727.61	3,002.36
- Handpumps/Wells	-	-	7,623.10	7,623.10
<b>TOTAL</b>	<b>54,458.52</b>	<b>39,388.83</b>	<b>132,291.52</b>	<b>226,138.87</b>
<b>IV. LOW COVERAGE</b>				
- Household Connections	41,452.88	22,541.18	105,462.69	169,456.00
- Public Taps	2,796.97	2,468.17	1,721.82	6,986.96
- Handpumps/Wells	-	-	10,241.70	10,241.19
<b>TOTAL</b>	<b>44,249.85</b>	<b>25,009.35</b>	<b>117,425.70</b>	<b>186,684.15</b>
+ Estimates based on tables N° 9 and 11.				

TABLE N° 13. TOTAL CAPITAL COSTS REQUIRED FOR SANITATION				
SCENARIO	TOTAL CAPITAL COSTS US\$ (thous)+			TOTAL FOR DECADE US\$ (thous.)
	METRO.	URBAN	RURAL	
<b>I. HISTORICAL TREND</b>				
- Household Connections	50,307.06	39,917.70	61,973.52	151,928.28
- Latrines ++	4,323.71	4,060.12	18,627.99	27,011.82
<b>Total</b>	<b>54,360.77</b>	<b>43,977.82</b>	<b>80,601.51</b>	<b>178,940.10</b>
<b>II. MAXIMUM COVERAGE</b>				
- Household Connections	96,781.67	84,111.30	231,781.92	412,674.89
- Latrines ++	620.31	582.50	517.47	1,720.28
<b>Total</b>	<b>97,401</b>	<b>84,693.80</b>	<b>232,299.39</b>	<b>414,395.17</b>
<b>III. INTERMEDIATE COVERAGE</b>				
- Household Connections	88,951.98	83,812.68	215,452.85	388,217.51
- Latrines ++	1,240.63	582.50	6,468.43	8,291.56
<b>Total</b>	<b>90,192.61</b>	<b>84,395.18</b>	<b>221,921.28</b>	<b>396,509.07</b>
<b>IV. LOW COVERAGE</b>				
- Household Connections	73,292.60	61,755.55	199,123.77	334,171.92
- Latrines ++	2,481.26	2,329.99	7,762.12	12,573.37
<b>Total</b>	<b>75,773.86</b>	<b>64,085.54</b>	<b>206,885.89</b>	<b>346,745.29</b>
+ Estimates based on Tables Nos. 9 and 11. ++ It has been assumed that 50% of the latrines available by year 2000 will have been replaced by the end of the decade.				

expansion rate of the intercensus period (1974-1988), only 82% of the metropolitan population would have access to water supply by the year 2000. An additional amount of US\$ 20.1 million would be required to cover this gap, adding up to US\$ 457.1 million for this scenario. The effective allocation of these resources would allow metropolitan, urban and rural populations to achieve water supply coverage of 96%, 96% and 95% by households connections, respectively. For sanitation, domestic hook-ups reach 65%, 65% and 28% for the same population sectors. In both cases, the difference to meet 100% coverage is filled through public taps, handpumps/wells and latrines. From these cases, one can infer that the lesser amount of capital resources needed for this sce-

nario is due to low coverage by household connections (mainly for sanitation), which have a higher cost per user when compared with other delivery systems (public taps, latrines, etc.).

For the scenarios II, III and IV, the financial resources required for water supply services amount to US\$ 246, US\$ 226 and US\$ 187 million for the decade, of which the rural population accounts for 60%, 58% and 63%, respectively. Obviously, in the three scenarios the lion's share goes to household connections with 97%, 95% and 90% of the corresponding totals. For sanitation, the required total capital investment rises to US\$ 414, US\$ 397 and US\$ 347 million for the scenarios of maximum, intermediate and low coverage, respectively. Again, the

larger amount of resources goes to the rural sector, demanding 56%, 56% and 60% of the estimated totals for the corresponding scenarios.

It should be noted that the amount invested in the sector during 1991 by SANAA, FHIS and BANMA was estimated to be about US\$ 31 million. Since this amount represents approximately 80% of the total public and external funding applied in the sector, we can arrive at a total capital investment figure of US\$ 39 million for 1991. This amount represents 85% and 59% of what would be required annually to meet the coverage goals through the historical tendency and the maximum coverage scenarios, respectively. For 1992, the above institutions have programmed US\$ 52 million, an annual capital investment level which will have to be sustained in order to achieve the universal coverage goals by the year 2000. However, the resources programmed are not just for the construction of new systems. For instance, US\$ 14.7 and US\$ 9.1 million of the funds programmed by SANAA for 1991 and 1992 are for other activities in the metropolitan areas, such as repairing deteriorated systems and the incorporation of new sources of water supply (both of which are absolutely necessary to extend coverage). Furthermore, the availability of these resources depends heavily on international donor and lender funding, which in 1990/91 accounted for 74% of the total water and sanitation sector capital costs.

The above results indicate that the challenge of keeping funding on a higher level and implementing it efficiently through the decade is a formidable one, since donor and lending institutions are demanding both tariffs tied to the actual costs of producing water and, in some cases, to the financial and economic viability of the projects they finance (including cost recovery).

Along with this effort, it is important to consider ways of optimizing the use of the limited resources. This may be possible through the promotion of low-cost technologies developed in the last decade and through social mobilization and community participation, including decision making and control over project development and systems operations and maintenance.

**TABLE N°14. TOTAL CAPITAL COSTS REQUIRED FOR WATER AND SANITATION THROUGH THE DECADE 1990-2000**

SCENARIO	US\$ (thousands)	
	TOTAL	ANNUAL AVERAGE
<b>I. HISTORICAL TREND</b>		
- Water Supply	258,284.73	25,828.47
- Sanitation	178,940.10	17,894.01
<b>Totals</b>	<b>437,224.83*</b>	<b>43,722.48</b>
<b>II. MAXIMUM COVERAGE</b>		
- Water Supply	246,103.24	24,610.32
- Sanitation	414,395.17	41,439.52
<b>Totals</b>	<b>660,498.41</b>	<b>66,049.84</b>
<b>III. INTERMEDIATE COVERAGE</b>		
- Water Supply	226,138.87	22,613.89
- Sanitation	396,509.07	39,650.91
<b>Totals</b>	<b>622,647.94</b>	<b>62,264.80</b>
<b>IV. LOW COVERAGE</b>		
- Water Supply	186,684.90	18,688.49
- Sanitation	346,745.29	34,647.53
<b>Totals</b>	<b>533,430.19</b>	<b>53,343.02</b>
* Since this amount accounts for only 82% of the Metropolitan population needs, an additional US\$ 20 million should be added to obtain a 100% coverage.		



# 6

## CONCLUSIONS

From the data analyzed in the foregoing sections the following conclusions emerge:

- (i) Although important progress has been achieved in response to the International Drinking Water Supply and Sanitation Decade (DIAAPS/1981-1990), the coverage targets set in the National Plan were not achieved. For instance, national water supply coverage of 65.2% attained by 1990 was well below the desired 90%, implying that 1.195 million persons targeted in this Plan remained unserved. In the case of sanitation, the coverage of 64% reached by 1990 was 15% below the 79% proposed in the Plan. This means that of the 3.8 million people expected to be served, 750,000 remained without sanitary facilities. As a result, in 1990 Honduras had 1.7 million (35% of the population) with no access to safe drinking water and 1.8 million (36%) with no sanitary facilities. For both services, the largest part of the unserved population is concentrated in the rural areas (80%) and peri-urban areas of Tegucigalpa and San Pedro Sula;
- (ii) To achieve full coverage of water supply by the year 2000, it will be necessary to incorporate 3,097,000 people by the end of decade, which would require an annual increase in service of 4.4%. Of these, 1,328,000 (43%) will be urban and 1,769,000 (57%) rural. Since the rural coverage gap is much greater, the estimated annual increase for this population should be 6.9%, while urban coverage should grow at a slower rate of 1.6%. Of the rural population to be served within the decade, 79% will correspond to those people without access in 1990 and 21% to the population to be incorporated due to demographic growth. By contrast, 21% of the expanded urban coverage for the decade will reach that population with no service in 1990 and 79% the new population incorporated due to demographic growth and rural migration;
- (iii) To ensure full access to sanitation facilities an annual coverage increase of 4.6% will be required, which will serve an additional 3,173,000 people by the end

decade, of whom 1,244,000 (39%) are urban and 1,929,000 (61%) rural. As with water supply, the greatest efforts should be directed toward the rural sector serving and additional 193,000 people each year, that is, an annual increase of 8.2%. In this case, 80% of the target rural population will be those with no access in 1990, while the remaining 20% will result from demographic growth. Conversely, 84% of the target urban population will be incorporated due to demographic growth and rural migration, and only 16% will represent that population without access in 1990;

- (iv) The 1990 situation analysis shows that there are significant disparities in service coverage and demographic growth rates between departments and municipalities. This implies that attaining universal coverage by the year 2000 presents marked differences at these levels. In water supply, the highest coverage increases should be for: Gracias a Dios (30%), Valle (11%), Intibucá (10%), Choluteca (9%), Lempira (9%), Olancho (8%), El Paraíso (7% and La Paz (6%). Because of the high correlation ( $r=0.87$ ) between the lack of both services at the same time, the above mentioned departments also present the highest needs in sanitation with similar rates of coverage increases. These differences highlight the fact that national averages should be analyzed taking into account departmental and municipal coverage deviations, and the need for setting sectoral priorities in financial planning and programme implementation;
- (v) The need for capital resources to meet a 100% coverage by the year 2000 range between US\$ 457 and US\$ 660 million for the decade, that is, US\$ 46 to US\$ 66 million annually. The scenario of historical tendency would require US\$ 457 million, corresponding 59% to water supply and 41% to sanitation. Effective spending of these resources would allow metropolitan (Tegucigalpa and San Pedro Sula), urban and rural populations to achieve water supply coverage of 96%, 96% and 95% by households connections, respectively. For sanitation, domestic hook-ups reach 65%, 65% and 28% for the same population sectors. In both cases the difference in reaching 100% coverage would be met through public taps and handpump/wells for water supply, and latrines for sanitation. For the scenarios of maxi-

mum, intermediate and low coverage, the financial resources required for both services amount to US\$ 660, US\$ 622 and US\$ 533 million, respectively. The larger amount of these resources goes to the rural population, requiring 57%, 59% and 61% of the estimated totals for the corresponding scenarios.

Finally, it should be noted that the estimated capital investment figures do not include funds for the construction of new sources and treatment plants, which are absolutely necessary to both increase coverage and guarantee certain quality standards. Neither do they include the resources

for the reconstruction of completely deteriorated systems like that of Tegucigalpa, parts of which have been in service for 60 years or more. This requires that planners and decision makers redouble efforts to maintain funding on a higher level and implement it efficiently throughout the decade. Along with this effort, it is important to consider ways of optimizing the use of the limited resources. This may be possible through the implementation of low-cost technologies and active community participation at every stage of each project. A participatory approach maximizes the chance for sustainable programmes and projects.

## BIBLIOGRAPHY

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- FHIS** (1990). Distribución de Recursos. Dirección de Proyectos y Cómputo. Tegucigalpa, M.D.C., Honduras.
- 
- (1991). Presupuesto de Inversión -1991. Dirección de Proyectos. Tegucigalpa, M.D.C., Honduras.
- Gobierno de Honduras** (1983). Plan Nacional de Agua y Saneamiento. Tegucigalpa, M.D.C., Honduras.
- MSP-PROPAR** (1991). Informe Segundo Semestre 1990. Santa Rita, Yoro. Honduras.
- OPS/OMS** (1990). Declaración de Puerto Rico: Conferencia Regional sobre Agua y Saneamiento. San Juan, Puerto Rico.
- 
- (1990). Evaluación del Decenio Internacional del Abastecimiento de Agua Potable y del Saneamiento en Honduras (1981-1990). Tegucigalpa, M.D.C., Honduras.
- SANAA** (1987). Encuesta sobre Agua y Saneamiento en Honduras. Mimeo., sin publicar.
- 
- (1989). "Toda Honduras con Agua en el 2000". Tegucigalpa, M.D.C., Honduras.
- SECPLAN-DGEC** (1978). Censo Nacional de Población y Vivienda-1974. Tegucigalpa, M.D.C., Honduras.
- 
- (1990). Censo Nacional de Población y Vivienda-1988. Tegucigalpa, M.D.C., Honduras.

## **APPENDIX I**

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### ***HONDURAN POPULATION TRENDS FOR THE 1990-2000 PERIOD***

**PROJECTED URBAN AND RURAL POPULATION 1990 - 2000**

YEARS	POPULATION				
	URBAN		RURAL		TOTAL
	N°	%	N°	%	N°
1990	1,962,041	40.73	2,855,147	59.27	4,817,188
1991	2,050,525	41.45	2,896,459	58.55	4,946,984
1992	2,141,431	42.17	2,936,660	57.83	5,078,091
1993	2,236,059	42.90	2,976,201	57.10	5,212,260
1994	2,334,768	43.64	3,015,297	56.36	5,350,065
1995	2,437,117	44.38	3,054,359	55.62	5,491,476
1996	2,542,024	45.11	3,093,565	54.89	5,635,936
1977	2,652,024	45.86	3,130,846	54.14	5,782,870
1998	2,765,588	46.62	3,166,604	53.38	5,932,192
1999	2,883,091	47.74	3,200,664	52.26	6,083,755
2000	3,005,158	48.18	3,232,197	51.82	6,237,355

*SOURCE: Department of Population/ SECLAN (1991).*

**PROJECTED POPULATION BY DEPARTMENT (1990 - 2000)**

DEPARTMENT	YEARS										
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Atlántida	257,843	263,998	270,171	276,454	282,874	289,428	298,724	302,579	309,357	316,271	323,326
Colón	116,243	172,394	178,688	185,188	191,918	198,883	205,963	213,287	220,861	228,693	236,791
Comayagua	262,604	270,538	278,578	286,821	295,300	304,012	312,775	321,774	331,019	340,513	350,265
Copán	234,234	238,060	241,834	245,636	249,491	253,393	257,185	261,022	264,903	268,832	272,806
Cortés	721,128	743,604	766,415	789,827	813,931	838,727	863,706	889,390	915,796	942,945	970,854
Choluteca	317,717	324,172	330,601	337,116	343,748	350,493	357,133	363,882	370,741	377,714	384,800
El Paraiso	280,093	289,167	298,392	307,873	317,645	327,710	337,870	348,328	359,096	370,178	381,585
Francisco Morazán	894,555	923,059	952,017	981,760	1,012,404	1,043,951	1,075,771	1,108,512	1,142,197	1,176,853	1,212,507
Gracias a Dios	38,236	39,291	40,356	41,445	42,562	43,707	44,853	46,026	47,228	48,459	49,721
Intibucá	134,247	136,967	139,645	142,420	145,214	148,056	150,854	153,698	156,590	159,528	162,516
Islas de la Bahía	24,048	24,694	25,345	26,009	26,691	27,389	28,086	28,801	29,532	30,280	31,045
La Paz	114,769	117,506	120,251	123,045	125,901	128,815	131,711	134,665	137,679	140,755	143,892
Lempira	188,327	190,871	193,358	195,853	198,374	200,918	203,359	205,820	208,304	210,807	213,331
Ocotepeque	79,433	80,776	82,103	83,442	84,799	86,175	87,514	88,872	90,245	91,635	93,043
Olancho	314,331	325,372	336,640	348,256	360,263	372,664	385,236	398,216	411,616	425,447	439,724
Santa Bárbara	299,242	304,912	310,543	316,238	322,028	327,907	333,672	339,523	345,491	351,489	357,605
Valle	126,151	127,297	128,391	129,479	130,572	131,668	132,685	133,705	134,724	135,746	136,771
Yoro	363,988	374,306	384,732	395,399	406,349	417,581	428,839	440,380	452,211	464,340	476,772
TOTALS	4,817,189	2,514,428	5,078,090	5,212,261	5,350,064	5,491,477	5,635,936	5,782,870	5,932,192	6,083,755	6,237,355

SOURCE: SECLAN, 1991

## **APPENDIX II**

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### ***PER CAPITA COSTS OF WATER AND SANITATION PROJECTS***

PROJECT	INSTITUTION	TOTAL INVESTMENT COST Lps.	POPULATION TO BENEFIT	PER CAPITA COST Lps.
<b>A. RURAL AQUEDUCTS</b>				
1) El Rodeo, Tela-Atlántida	SANAA	99,495.46	416	239.17
2) Chaperna, Sta. Cruz y Rio Grande, Chol.	SANAA	320,292.89	544	588.77
3) El Chaguito y El Carreto, Choluteca	SANAA	240,641.70	522	460.99
4) Ricardo Mejía, Coop. B. Ventura-Colón	SANAA	299,641.89	673	445.23
5) El Achiote y La Mona - Colón	SANAA	310,275.99	764	406.12
6) Capolito, Comayagua	SANAA	123,851.54	217	570.74
7) Terrenito de las Trancas-Comayagua	SANAA	192,269.69	226	850.75
8) Quebrada honda, Copán	SANAA	474,352.31	744	637.57
9) Colonia Twana, Quebrada Seca, Cortés	SANAA	782,792.41	1,689	463.46
10) Nueva Tulián, Cortés	SANAA	613,844.47	1,354	453.36
11) Arenal, El Paraíso	SANAA	397,411.97	1,132	351.07
12) El Guantillo, Francisco Morazán	SANAA	576,393.32	1,160	496.89
13) El Paraíso y Sn. Francisco, Intibuca	SANAA	223,674.92	514	435.16
14) Sn. José de Guajiquiro, La Paz	SANAA	384,088.83	518	741.18
15) Los Llanos, Lempira	SANAA	378,570.34	524	722.46
16) El Zarzal y La Canadá, Sta. Bárbara	SANAA	455,102.12	546	833.52
17) Quebrada de Minas, Sta. Bárbara	SANAA	148,784.20	161	924.12
18) Las Palomas, Valle	SANAA	128,978.03	300	429.93
19) Centro Poblado, Las Palmas-Yoro	SANAA	851,636.69	1,803	472.74
20) Zamar, Batán, Unión Lucha, Montañita, Los 28 - Yoro	SANAA	2,608,024.39	2,773	940.50
AVERAGE PER CAPITA LPS.573.18; US\$ 108.15				



PROJECT	INSTITUTION	TOTAL INVESTMENT COST Lps.	POPULATION TO BENEFIT	PER CAPITA COST Lps.
<b>B. URBAN AND METROPOLITAN AQUEDUCTS</b>				
1) El Porvenir - Fco. Morazán	FHIS	1,384,177.00	2,040	678.52
2) BANMA - Municipality Project	BANMA	1,200,000.00	5,000	240.00
3) Various Projects (BANMA/Mun.)	BANMA	2,054	4,380	
4) Various Projects 1991 (FHIS)	FHIS	299,641.89	22,000	445.23
AVERAGE PER CAPITA LPS. 405.78; US\$ 76.56				
<b>C. URBAN AND RURAL SEWAGE</b>				
1) San Marcos de Ocotepeque	FHIS	1,742,000.00	5,191	335.58
2) Nueva Ocotepeque	FHIS	2,543,215.00	8,311	306.00
3) Llano de Conejo, Sta. Bárbara	FHIS	1,183,977.00	1,220	970.47
4) San Antonio - Comayagua	FHIS	2,250,000.00	5,679	396.20
5) Salama - Olancho	FHIS	1,561,500.00	2,588	603.36
6) San Francisco - Yojoa	FHIS	1,036,000.00	1,754	590.65
7) Alcantarillado Rio Lindo	FHIS	1,042,000.00	2,913	357.71
8) BANMA PROJECTS - 1992 *	BANMA	21,567,537.00	59,700	361.26
9) BANMA/ Municipality Projects	BANMA	3,600,000.00	4,008	898.20
AVERAGE PER CAPITA LPS. 535.49; US\$ 101.04				
<b>D. PUBLIC TAPS (Tegucigalpa)</b>				
1) Oscar Castro	SANAA/UNICE	11,499.36	365	31.37
2) Carrizal No. 1, Sectores 3-4	SANAA/UNICE	60,100.00	1,050	57.24
3) Villa Delmy	SANAA/UNICE	45,152.40	471	95.86
4) 19 de Septiembre	SANAA/UNICE	61,000.00	1,446	42.18
AVERAGE PER CAPITA COST LPS. 56.66; US\$ 10.69				
<p>* Includes all the projects implemented by the corresponding institution in that year.  + Since these projects were under negotiation there was no way to identify them.  Hand Pumps Wells = Lps. 85.84, or US\$ 16.20/ per capita (PROPAR-MSP);  Latrine (water seal) = Lps. 509.18/6 persons = Lps. 84.86/ per capita (SANAA).</p>				