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THE PROVISION OF DRINKING WATER AND SANITATION TO THE RURAL
POPULATION IN LATIN AMERICA ★

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In respect of access to safe drinking water and adequate sanitation, as in respect of access to all social services, the rural population of Latin America is in general much worse served than the urban population. Not only is access to adequate service more restricted but policies and programmes are less defined and institutional support less well mobilized for the rural population. The remedying of this situation of relative neglect of the rural population is perhaps the greatest challenge faced in Latin America in developing strategies for the achievement of the goals of the International Drinking Water Supply and Sanitation Decade. It was estimated in the late seventies that only 16 percent of the rural population of Latin America had a house connection to a water supply system compared with over 70 percent of the urban population.^{1/} Sewerage systems are so rare in rural areas that statistics on connections are not available, but in general it can be stated with little fear of contradiction that sanitary facilities are inadequate in rural areas.

This situation continues to prevail despite long recognition of the importance of the provision of a protected drinking water supply and adequate sanitary excreta disposal as a basic contribution to public health. In Latin America the occurrence of colitis and other diarrheas is endemic. These diseases as shown in Table 1 are a major reason for the continuation of high infant mortality rates in most of the region, and a principal cause of death among infants in 19 of the 34 countries belonging to the Pan American Health Organization. There appears to be little doubt that this situation can be directly related to the existence of deficiencies in water supply and sanitation.^{2/} Other

^{1/} A house connection to a water supply system is not necessarily indicative of access to a protected safe source of water.

^{2/} The Pan American Health Organization study of childhood mortality demonstrates "the lack of water services has a direct relationship to excessive postneonatal mortality and is an important measure of unfavourable environmental conditions", Pan American Health Organization, "Patterns of Mortality in Childhood", Scientific Publication No 262, Washington, 1973, p. 314.

Table 1

DEATHS FROM ENTERITIS AND OTHER DIAHRRHOETIC DISEASES, 1973-76

(rates per 100,000/Age group a/)

Country	Less than 1 year b/		1 to 4 years	
	Rate	% all deaths	Rate	% all deaths
Argentina	832,5	14.1	38,2	11.5
Barbados	65,3	2.3	-	-
Belice	1 076,7	28.0 <u>‡</u>	-	-
Colombia	no rate given	19.8	105,0	21.5 <u>‡</u>
Costa Rica	677,5	18.3	36,4	17.7 <u>‡</u>
Cuba	247,2	9.0	-	-
Chile	709,8	12.8	18,6	8.5
Dominican Republic	793,3	18.2	89,5	18.6 <u>‡</u>
Ecuador	1 556,9	22.2 <u>‡</u>	302,7	21.8 <u>‡</u>
El Salvador	1 276,1	23.9 <u>‡</u>	192,9	29.9 <u>‡</u>
Guatemala	1 789,7	22.2 <u>‡</u>	726,0	30.0 <u>‡</u>
Honduras	829,0	24.6	251,4	27.2 <u>‡</u>
México	1 079,3	23.1	125,1	27.4 <u>‡</u>
Nicaragua	1 509,2	40.8 <u>‡</u>	200,6	37.5 <u>‡</u>
Panamá	306,5	9.3	75,0	16.5 <u>‡</u>
Paraguay	1 664,1	19.6	183,3	32.6 <u>‡</u>
Peru	1 500,4	20.7	164,6	21.8
Trinidad and Tobago	803,4	31.3	43,2	26.7 <u>‡</u>
Uruguay	363,3	8.9	7,3	5.5
Venezuela	711,0	16.3	45,8	12.1

Source: OPS/OSP, Las condiciones de salud en Las Américas, 1973-76.

a/ Rates only given if diarrheas amongst 5 principal causes of death in age group.

b/ Converted from rate per 1000 live births.

‡/ The principle cause of death in the age group.

/waterborne diseases

waterborne diseases that can be related to such deficiencies are also significant in the region, particularly other forms of dysentery, amoebic and bacillus, which are found in all the tropical countries, infectious hepatitis, even more widespread in occurrence, and the typhoid and paratyphoid fevers. The latter is particularly prevalent in continental South America although it has tended to decline in recent years.

The recent evolution of water supply and sanitation
in rural Latin America.

Water supply programmes and, to a somewhat lesser extent, programmes for improved sanitation have received considerable attention in the development efforts of the countries of Latin America.

At the beginning of the Alliance for Progress, in the Charter of Punta del Este, it was proposed that during the decade 1960-1970 "drinking water and drainage should be made available to at least 70 percent of the urban population and 50 percent of the rural population". These objectives were reaffirmed at the Third Special Meeting of Ministers of Health held in Santiago, 1972, which raised the goal of extending home supply of water to 80 percent of the urban population or, as a minimum, to reducing the population currently without service by half. At the same time the goal of supplying a protected water supply and adequate sanitation to at least half of the rural population was reiterated, but achievement had lagged far behind.^{3/}

Despite the statement of intent through the establishment of goals for water supply and drainage at Punta del Este and Santiago and the relatively successful achievement of the targets established for urban

^{3/} Only a quarter of the rural population had access, by 1974 according to the Pan American Health Organization, to a safe and reliable source of water.

/areas,

areas, the rate of expansion in the provision of water supply and sanitation services has tended to stagnate in recent years. This is despite the large deficiencies in service that remain. Only in some of the smaller countries, for example, Costa Rica and Panama, is the supply of water universal to the urban population. In rural areas, it is rare that the proportion of the population with house connections to a water supply system reaches half. (Table 2.) In a few countries, the existence of house connections in rural areas is virtually unknown, Haiti, Paraguay and Guatemala, for example, although access to a protected supply of water is often provided. This, however, does not bring all the benefits of a house connection.

Few countries have managed as yet to provide sewerage to more than ten percent of the rural population. It has to be borne in mind that a large proportion of the rural population lives dispersed at low densities, for example some 80 percent of the rural population in Chile. In consequence, centralized piped water supply systems are not always a feasible means of providing a protected water supply. Even in villages, conventional waterborne sewerage systems may be difficult to justify economically and other means of sanitary excreta disposal are required. This situation as well as complicating the provision of services raises problems of definition which bulk large in interpreting all statistics on rural water supply and sanitation. This is particularly the case with the information available on the type of sanitary devices used in rural areas. Normally, information on sanitation is only available from the census. The restriction of the census is its limited periodicity. The most recent information available for the countries of Latin America from this source is given in Table 3. The census data suggests that the use of sanitary devices is more widespread than is generally reported. Suspicion of the reliability of the data is strengthened by the lack of any obvious relationship between the reported use of the latrines and other improvements in the provision of water supply and sanitation.

Table 2

LATIN AMERICA, RURAL WATER SUPPLY AND SANITATION,
SELECTED STATISTICS

Country	Water supply			Sanitation	
	% Access to piped water 1965	% Access to piped water 1973	% House connections 1977	% Sewerage 1977	% Other sanitary devices 1977
Argentina	5.5	20.0	26.0	-	66.0
Barbados	100.0	99.0	47.0	-	-
Bolivia	0.8	5.0	2.0	0	4.0
Brazil	-	30.0	10.0	9.0	31.0
Colombia	23.2	34.0	29.0	7.0	81.0
Costa Rica	42.8	66.0	60.0	4.0	79.0
Cuba	2.0	5.0	10.0	6.0	-
Chile	1.8	8.0	8.0	9.0	81.0
Dominican Republic	-	19.0	12.0	6.0	41.0
Ecuador	1.8	9.0	6.0	3.0	7.0
El Salvador	1.5	35.0	3.0	-	21.0
Guatemala	0.6	2.0	6.0	-	17.0
Guyana	32.0	71.0	-	-	-
Haiti	-	2.0	0	0	5.0
Honduras	3.2	12.0	13.0	1.0	10.0
Jamaica	62.0	84.0	12.0	-	95.0
Mexico	3.5	36.0	32.0	0	35.0
Nicaragua	1.3	11.0	9.0	0	18.0
Panama	2.1	51.0	12.0	6.0	41.0
Paraguay	-	6.0	0	0	92.0
Peru	7.3	10.0	3.0	1.0	1.0
Suriname	-	-	21.0	-	-
Trinidad & Tobago	95.0	95.0	-	-	-
Uruguay	8.4	31.0	24.0	21.0	55.0
Venezuela	8.5	42.0	31.0	15.0	73.0
Belice	-	-	21.0	-	-

Source: Data for 1965 and 1973, from CEPAL.

Data for 1977, from CEPAL, An Inquiry into the Financial Demands of the International Drinking Water Supply and Sanitation Decade.

/Table 3

Table 3

WATER SUPPLY AND SANITARY FACILITIES BY TYPE, RURAL AREAS OF LATIN AMERICA,
PERCENTAGE AVAILABILITY REPORTED IN LAST HOUSING CENSUS

Country	Year	Water Supply									Sanitation					
		Piped System				Self-Supply					Water Closet			Others		
		Inside house	Within lot but outside house	Within 100 metres	Sub-total	Well	Rain water	Rivers	Others or unknown	Sub-total	Sewerage	Septic Tank	Sub-total	Latrine	None or unknown	Sub-total
Argentina	1960	7.4	2.3	4.4	14.1	68.9	-	-	16.9	85.9	-	-	21.1	44.7	34.2	78.9
Bolivia	1976	-	-	-	7.9	34.9	0.7	53.7	2.8	92.1	0.4	0.4	0.8	3.1	96.1	99.2
Brazil	1970	-	-	-	2.5	26.3	-	-	71.2	97.5	0.5	1.6	2.1	22.8	75.1	97.9
Colombia	1973	28.8	-	1.4	30.2	28.4	3.2	34.2	3.9	69.8	6.8	5.6	12.3	12.7	75.0	87.7
Chile	1970	4.9	4.1	-	9.0	62.8	-	-	28.2	91.0	3.3	4.8	8.1	81.2	10.7	91.9
Cuba	1970	3.8	3.6	-	7.4	68.2	-	21.1	3.3	92.6	-	-	6.0	55.1	38.8	93.9
Ecuador	1970	3.0	3.2	8.9	15.1	41.5	1.1	37.3	5.0	84.9	3.2	-	3.2	5.9	90.9	96.8
El Salvador	1971	2.8	15.7	-	18.5	21.7	4.3	53.9	1.6	81.5	0.0	1.7	1.7	10.6	87.8	98.4
Guatemala	1973	4.2	2.1	12.6	18.9	37.8	-	41.1	2.2	81.1	0.6	1.3	1.9	14.6	83.5	98.1
Honduras	1974	4.4	8.5	8.4	21.2	40.8	-	37.0	0.9	78.8	1.2	0.4	1.6	9.0	89.4	98.4
Jamaica	1970	2.8	9.0	40.0	51.8	-	-	-	48.2	48.2	-	-	5.5	89.2	5.3	94.5
Mexico	1970	17.1	3.4	13.3	33.8	-	-	-	66.2	66.2	-	-	13.8	86.2	-	86.2
Nicaragua	1971	1.6	0.2	2.5	4.4	43.3	-	47.3	5.1	95.6	0.2	1.1	1.3	16.1	82.6	98.7
Panama	1970	-	-	-	11.9	20.2	-	-	67.9	88.1	1.5	5.2	6.7	40.0	53.3	93.3
Paraguay	1972	0.0	0.0	0.0	0.0	89.2	-	9.1	1.7	100.0	0.0	1.3	1.3	89.9	8.8	98.7
Peru	1972	1.3	0.0	3.5	4.8	13.6	-	79.6	2.0	95.2	0.5	0.0	0.5	0.8	98.6	99.4
Uruguay	1975	-	-	-	3.6	58.4	32.3	-	5.8	96.4	0.9	-	0.9	74.6 ^{a/}	24.5	99.1

Source: National Censuses.

^{a/} Includes septic tanks.

/Some policy

Some policy issues

It is clear that in the past, despite the progress made, investments in rural drinking water supply and sanitation have been too low in relation to most definitions and estimates of need and, in many countries of the region, have not kept pace even with the growth of population. In part, this is a reflection of the relatively ineffective policies and programmes that have been applied to the problem of rural poverty in general, and, specifically to sanitation. The absence of adequate water supply and sanitation services is, perhaps, not as significant for public health in rural areas of low population density as in the densely packed marginal housing of the metropolitan regions. At least, the lack of services is less noticeable.

The lack of attention given to rural sanitation can also be related to the weakness of the institutional base in many countries of the region upon which programmes for the provision of adequate facilities to the rural dispersed population could be built. Provision of water supply and sanitation in rural areas has largely been limited to that part of the rural population living in villages and hamlets. It is this population which has been the beneficiary of most recent activities in the sector. In this one area the basis for a successful policy solution appears to have been found, at least for those countries with greater resources, based on community assumption of all responsibility for the operation of a centralized piped system once the initial capital investment has been made. In some countries, specialized institutions, such as the Servicio Nacional de Agua Potable y Saneamiento Rural in Argentina, have been created to manage village water supply. In some other countries village water supply has been included within the responsibility of the institution charged with providing urban sanitation, as in Panama and Chile.

/For the

For the provision of adequate sanitation to all the rural population and for the protected sources of drinking water to the dispersed population no such clear institutional framework has been established. In many countries of the region, rural sanitation has been left to Ministries of Health where it has to fight for resources with other public health programmes. On occasion the outcome has been successful programmes, as in many countries of Central America, but too often the lack of a specific institution has simply led to neglect. In some countries there are proposals, in conjunction with agrarian reform, to move the dispersed population into new concentrated settlements and provide centralized piped water supply and waterborne sewerage systems. At best, however, this would only be a solution in the longer term, due both to the physical difficulty of moving large numbers of people and the scale of investment required. It would still only be feasible in areas of relatively high population density. There remains, therefore, an institutional gap which must be filled if successful solutions are to be found to the rural sanitation problem. It may not be appropriate, given the very different needs of the rural dispersed population, to include them within the existing water supply and sanitation institutions. This is particularly true where these institutions have a municipal basis as the dispersed population tends to live outside municipal boundaries. At the same time, despite some successful experiences, Ministries of Health do not appear to be the most adequate location for rural water supply and sanitation programmes. Perhaps a new hybrid institution is required which would have some budgetary autonomy, greater public experience and local participation, as well as technical and institutional support from Ministries of Health, Public Works and Agriculture.

The rural water supply and sanitation situation in Latin America cannot, however, be treated in a homogeneous fashion. In confronting the current situation the countries of the region can be characterized

/as falling

as falling into three distinct categories according to the proportion of their total population which lives, and will continue to be found living, in rural areas in 1990 (Table 4). The three groups are,

- (i) Countries with less than twenty percent rural population in 1990;
- (ii) Countries with between twenty and thirty five percent rural population in 1990; and
- (iii) Countries with over thirty five percent rural population in 1990.

Each of these groups possesses quite different pertinent economic and social characteristics.

The members of the first group, Argentina, Chile, Uruguay and Venezuela have high incomes, the largest proportion of the rural population already served with adequate water supply and sanitation and a relatively small share of the total rural population of the region. The second group, Brazil, Colombia, Cuba, Mexico and Peru have moderately lower incomes, a slightly smaller proportion of the rural population with services, but considerably over half the total rural population of the region at the end of the Decade, some 88 millions out of the Latin America total of 134 millions. The third and final group consists of the smaller countries with large proportions of their population living in rural areas. With certain exceptions, Costa Rica and Panama, incomes are low and the proportion of the population served by water supply and sanitation also low.

The last group is that which will face the most difficult problems in improving provision of services, with the exceptions of Costa Rica and Panama. The extent of the severity of the problem can be seen in some measure through the proportion of gross fixed capital formation that would have to be devoted to supplying the rural population if the whole population were to be served by 1990 (Table 4). In the extreme case of Haiti, depending on the type of service, the required level of

/investment could

investment could reach fort five percent of gross fixed capital formation. In contrast, in the first two groups the level of investment required is relatively modest although in the second group of countries any suggestion that expansion of service coverage to the whole rural population would therefore be easy has to be modified by consideration of the numbers involved.

Policy proposals must reflect the importance of differences between countries in the severity of the problem and in their capacity to respond. Innovation in institutions may provide a sufficient stimulus in the countries of the first group. Elsewhere, by itself, this may not be sufficient as current technology applied to the provision of services may not permit the rapid expansion of services. Innovation may be required in both small scale protected water supplies and individual sanitary excreta disposal. The availability of resources both human and physical are not immediately apparent to support such a process of innovation.

The opportunities offered by the International Drinking Water
Supply and Sanitation Decade

It would be exceedingly optimistic to assume that the IDWSSD, of itself, will bring about any radical change in the water supply and sanitation situation of rural areas in any country in Latin America. The experience of the last two decades has established that, even when priority is given to the sector, rural areas can be neglected. In general, the rural population falls within that part of the population that historically has needed more and received less of public expenditures. The Decade may, however, provide the opportunity for a reconsideration of the direction of policies, given the relatively higher provision of water supply and sanitation to the urban population already achieved, and a focussing, therefore, of attention on the satisfying of the necessities of the rural population.

Table 4

COUNTRIES GROUPED BY EXPECTED PROPORTION OF POPULATION LIVING IN RURAL AREAS, 1990^{a/}

Proportion population living in rural areas 1990	Rural population 1990 (thousands)	Percentage total population	Water supply rural population served 1977 (thousands)	Sanitation rural population served by sewerage or latrines 1977 (thousands)	Per capita GNP, 1977 (US\$ 1970) ^{b/}	To achieve complete coverage rural population, 1990. Range of investment required as percentage gross capital formation, ^{c/} 1977-1990 ^{d/}
<u>Less than 20%</u>						
Argentina	4 173	13.8	675	3 184	1 343	0.27 - 0.63
Chile	1 858	14.2	174	1 954	829	1.07 - 1.58
Uruguay	380	12.0	112	356	1 026	0.19 - 0.51
Venezuela	3 188	15.8	969	2 750	1 340	0.20 - 0.34
Average	9 600	14.4	18.2%	77.8%	1 223	
<u>Between 20-35%</u>						
Brazil	42 892	28.3	4 362	17 447	705	0.95 - 1.10
Colombia	8 661	25.2	2 522	7 653	667	1.49 - 3.43
Cuba	3 462	30.4	354	212	-	
Mexico	26 256	26.9	7 257	7 937	980	0.61 - 0.95
Peru	6 523	27.9	180	119	577	2.23 - 4.06
Average	87 794	27.5	17.4%	39.5%	771 ^{e/}	
<u>More than 35%</u>						
Bolivia	3 972	54.3	63	126	362	4.81 - 24.83
Costa Rica	1 315	47.4	696	963	839	0.70 - 1.53
Dominican Republic	3 373	44.8	365	1 216	474	2.60 - 2.91
Ecuador	5 565	50.8	251	418	509	3.51 - 10.24
El Salvador	3 277	50.5	75	527	451	4.12 - 5.31
Guatemala	5 475	56.6	251	711	505	5.31 - 7.25
Haiti	5 182	69.0	0	207	125	22.93 - 44.92
Honduras	2 668	52.2	267	226	288	5.36 - 8.53
Nicaragua	1 455	38.5	107	213	461	2.29 - 2.43
Panama	915	39.0	101	395	921	0.84 - 1.18
Paraguay	2 099	52.9	0	1 508	469	1.63 - 8.36
Average	35 296	52.3	8.9%	26.6%	448	

a/ CELADE, Boletín Demográfico, Año XII, No 23, January 1979; CELADE, Boletín Demográfico, Año XIII, No 25, January 1980.

b/ CEPAL, based on official sources.

c/ CEPAL, An Inquiry into the Financial Demands of the International Drinking Water Supply and Sanitation Decade.

d/ The range is given by cost of the type of service provided.

e/ Excluding Cuba.

/If this

If this opportunity is to be grasped, then serious reconsideration must be achieved of the common perception held within both governments and international organizations of the nature of the water supply and sanitation problem. Specifically, it is necessary to rethink the framework, with its heavy emphasis on efficiency in system operation, within which water supply and sanitation policies have been developed in the recent past. This emphasis on efficiency, coupled with the concept that charges for water supply and sanitation should be equal to the marginal cost of provision, may be appropriate for large metropolitan water systems where the use of meters is possible. Such considerations are irrelevant, unless they release resources, for those not supplied through large centralized water supply or sewerage systems. The attention given to efficiency of system operation has perhaps obscured the more basic question of how to achieve maximum coverage with adequate facilities for the whole population.

The overall trends in the discussion of water supply and sanitation issues have put little stress on means of achieving maximum coverage through improving the access of the poor. Yet the absence of adequate sanitation is a commonly employed indicator of poverty. Inversely, the provision of adequate sanitation could be an effective means of redistributing income in itself, but too often it seems that the provision of services must await rather than contribute to the redistribution of income. Specific programmes to improve sanitation have not been themselves conceived of as a device to alleviate poverty.

There is evidence, however, of change in attitudes. This change can be seen, for example, in the emphasis placed on the exploration of new cost-reducing non-conventional sanitation technology in the World Bank, experimentation with the provision of a basic sanitary unit as a basic plank in programmes for the alleviation of extreme poverty in Chile, in the small community water supply loans of the

Inter-American Development Bank, in the consideration being given in many countries of the region to the problem of the provision of facilities to the dispersed rural population amongst other initiatives. The Decade provides the opportunity to harness these into an organized whole for a reorientation of priorities, not away from satisfying the needs of the urban population, but to the full consideration as well of rural necessities.