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# WATER SUPPLY AND SANITATION SECTOR MONITORING REPORT 1996

(Sector status as of 1994)



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# FOREWORD 1

Two of the major causes of mortality and morbidity in the developing countries are unsafe water supplies and the absence of appropriate means of handling and disposal of human excreta. The poor – especially infants and young children – in rural and urban slums suffer most from these inadequate services and from the misery and death resulting from diarrhoeal disease.

The outbreaks of cholera in countries of Central and South America are an ample reminder of how quickly the adverse health impacts of unsatisfactory water supply and basic sanitation appear and accelerate. The question is not only one of providing facilities, although it is of prime concern in the first instance, but also of sustaining them through adequate provision for operation and maintenance of systems, and ensuring their proper utilization through adequate health and hygiene education.

Under such conditions, a large proportion of the population in these countries has little if any chance for social and/or economic development, and a poverty spiral is established for which poor basic sanitation conditions are one of the main foundations.

If the focus for development is to be the people we serve, and if a specific role is to focus on the poor and the groups most vulnerable and least able to protect themselves, then the provision of water to satisfy domestic and personal needs as well as its safe disposal must be the first priority in planning water-resource allocation, and must be at the forefront of water resources planning at community, national, and international levels.

Adequate planning is essential for the implementation of effective programmes to expand water supply and sanitation services to the unserved. The ultimate goal of universal coverage enshrined in the goals of the “Child Summit” Plan of Action is a prerequisite to the attainment of health for all.

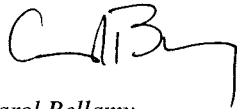
To plan and manage programmes, reliable, up-to-date information is essential. Without this, activities can only be ad hoc, and a rational approach targeting priorities such as geographic location, disease-affected communities, and high-risk population groups is impossible. The foundation for obtaining such information is a monitoring system established as an integrated component of the national institutional framework with responsibility for the provision of services. This is something which most, if not all, developing countries lack. As a result, various international fora, including the United Nations General Assembly, the Ministerial Conference on Water Supply and Sanitation, Noordwijk, the Netherlands, May 1994, the International Conference on Water and the Environment, Dublin, Republic of Ireland, January 1992, and the United Nations Conference on Environment and Development, Rio de Janeiro, Brazil, June 1992, endorsed the need to provide support to countries in strengthening their water supply and sanitation monitoring capabilities. It was in response to these that UNICEF and WHO joined forces to pool their experience and resources by establishing their Joint Water Supply and Sanitation Monitoring Programme.

Advocacy at national, regional, and global levels will have an important role to play in encouraging that more funding be directed to the sector, and in promoting adjustment of attitudes and behavioural changes. The International Drinking Water Supply and Sanitation Decade (1981-1990) adequately demonstrated the power of advocacy through the ability to

focus on the magnitude of the task and through reporting at national and international fora. To strengthen this during the remainder of the millennium, a regular supply of up-to-date and reliable data on sector status, which can only be produced through national monitoring systems, will be essential.

Already the WHO/UNICEF Joint Monitoring Programme has provided support to over 20 countries in Africa, Asia, and Latin America and the Caribbean. The demand for collaboration from countries is increasing. UNICEF and WHO hope that in order to respond to the desire of countries to strengthen their monitoring capabilities, improve the planning and management of their programmes, and accelerate the expansion of water-supply and sanitation coverage toward the ultimate goal of universal coverage, other external support agencies will join in taking up the challenge through collaborative efforts in partnership with governments.

Water-supply and sanitation development cannot continue in a haphazard manner if the lofty goals we have all set for ourselves are to be achieved. Rationalization of support to national programmes can come about only through harmonized effort.



*Carol Bellamy*  
*Executive Director, UNICEF*



*Hiroshi Nakajima*  
*Director-General, World Health Organization*



## FOREWORD 2

Lack of adequate and safe water supply and sanitation remain two of the main transmitters of disease in the world's developing countries. Those most afflicted are the poor living in the rural areas, rapidly expanding urban slums, and squatter settlements. Particularly at risk are children, while women bear the brunt of the labour associated with inadequate services, i.e. carrying the water required for family and household needs over long and often arduous distances. We should remember that water supply and sanitation are components of the primary health care approach to Health for All.

Water and sanitation inadequacies also hinder economic and social development, constitute a major impediment to poverty alleviation, and inevitably lead to environmental degradation. If governments are to implement programmes intended to accelerate reasonable access to safe-water supply and sanitation services, reliable and adequate information is required as the basis for planning, decision-making, and management of services. Such management information must be available within the institutional framework responsible for the sector. In recognition of this, the Third Global Forum of the Water Supply and Sanitation Collaborative Council, 30 October to 3 November 1995, included a special mandate to review progress made to date by the WHO/UNICEF Joint Monitoring Programme, taking note of the lessons learned to develop a strategy to accelerate progress. Emphasis is needed on strengthening community-based information rather than centrally gathered information. Governments must continue to develop and initiate a clear policy on collection and collation of management information, and on systems development not only for sector planning and management, but as an important support for advocacy and as a tool for improved collaboration among the different government and non-government agencies active in the water-supply and sanitation sector.

Many countries have developed national plans of action responding to the goals established at the World Summit for Children, which include universal access to adequate and safe water and appropriate means of excreta disposal. Such plans, when based on reliable management information, will be the cornerstones of coordination of both internally and externally supported programmes on sector development. They need to be continuously reviewed through the development of reliable community-based management information data. They encourage support and collaboration. We believe that the resources needed are available within ongoing programmes but need to be harnessed and focused. Countries need partners from within and without for this effort, the products of which would be of mutual interest and value. I would like to thank UNICEF and WHO for having sustained their efforts to promote and support the development of management- information bases at country level, as an essential tool for water-supply and sanitation development.

Clearly this is an area for strong partnerships within countries and among the external support agencies. The Council calls upon all its members to collaborate in this endeavour by incorporating management-information collection and collation at the country level as part of institutional capacity-building in their sector-development programmes. I trust that all developing countries will call on the external community for assistance if needed and the external community will stand prepared to respond to their call.



*Margaret Catley-Carlson,  
Chair, Water Supply and Sanitation Collaborative Council*





## PREFACE

This is the third report since the start of the WHO/UNICEF Joint Monitoring Programme (JMP). The previous ones were published in November 1992 (reporting on the water supply and sanitation situation at the end of 1990 – the Baseline Year) and August 1993 (recording the situation at the end of 1991).

This document contains maps, charts and tables developed from data on sector coverage, management and funding received from a total of 84 developing countries during the period September 1994 to June 1995. The figures supplied relate in the main to the years 1993 and 1994, though in some cases, countries were only able to supply data from earlier years.

The new information can be compared with data provided in the first and second reports. In that way, the data can help to indicate trends and developments during the first half of the 1990s. The comparisons must necessarily be treated with some caution as, in some cases, there are evident inconsistencies in the data reported in the different years. Also, the formats used by governments in their latest reporting differed somewhat from those used for the previous two reports. This document takes account of these changes and points out the effects of these variations in the reported data where relevant.

WHO and UNICEF thank the countries for their continued efforts in improving the monitoring, accuracy and reporting of data, and thereby helping to fulfil the goal that by the end of the decade a reliable system will have been fully implemented.



# 1. ABOUT THE JMP

The WHO/UNICEF Joint Water Supply and Sanitation Monitoring Programme (JMP) began in November 1990. Its aim is to support individual countries in strengthening their water supply and sanitation monitoring capability – an essential tool for improved sector planning and management.

The need for better national monitoring has been widely recognized by the countries themselves and implementation of the JMP is beginning to correct acknowledged deficiencies in quite a number of them. Following a series of workshops in 1992 and 1993, more than 20 countries in Africa, Asia, Latin America and the Caribbean began immediate follow-up programmes. Others have followed, with the result that JMP activities are now in various stages of implementation in more than 40 countries. Table 1.1 shows the levels of implementation in different regions.

Table 1.1 Implementation of JMP-supported activities (no. of countries)

<i>Level of Implementation</i>	<i>Africa</i>	<i>Latin America &amp; Caribbean</i>	<i>Western Asia</i>	<i>Asia &amp; Pacific</i>	<i>TOTAL COUNTRIES</i>
Monitoring concepts introduced	11	15	0	11	37
National monitoring unit established or requested	15	8	3	11	37
Monitoring operations initiated	14	9	3	10	36
Monitoring fully operational	2	1	0	2	5

The experience in these countries, and from the three global data gathering exercises undertaken by the JMP, has revealed wide disparities in the types of monitoring and in the consistency of monitoring data, both within countries and from country to country. As the influence of the JMP spreads, these disparities are narrowing. At country level, it is apparent that joint monitoring activities are having a positive impact on inter-agency coordination and collaboration. More could have been done if additional financial and manpower resources had been available and if a higher priority had been given to monitoring, but there is cause for confidence that by the end of the 1990s there will be a reliable global monitoring system in operation.

The JMP has also been instrumental in strengthening operational collaboration between UNICEF and WHO at country, regional and global levels. Its results are being shared with other international support agencies, leading to a marked improvement in the consistency of coverage data used for planning and policy making.

## 1.1 DATA GATHERING AND ANALYSIS

Data on the status of water supply and sanitation in developing countries were collected and published regularly by WHO during the International Drinking Water Supply and Sanitation Decade (1981-1990). Since the end of the Decade, the JMP has assembled data in three global efforts, determining the status of the sector in 1990 (the baseline year), 1992, and, in the case of the data analysed in this report, 1994.

The data gathered, the form of reporting and the responding countries have varied in the different exercises. It follows that any analysis of trends needs to be treated with some caution. Nevertheless, the data are valuable on several fronts. At the national level, they highlight achievements and shortcomings over a number of years, helping agencies to set priorities and plan programmes to meet their coverage targets – in many cases universal coverage of urban and rural populations by set dates. Globally, the improving monitoring data helps external support agencies and sector professionals to identify countries and regions where approaches to sector development are proving successful, and others where different approaches may be needed. In all cases, the information is valuable as a way of targeting resources and setting priorities.

**Table 1.2 Countries providing data**

<b>AFRICA (38 countries)</b>	Angola	Guinea	Niger
	Benin	Guinea Bissau	Nigeria
	Burkina Faso	Kenya	Senegal
	Burundi	Lesotho	Sierra Leone
	Cape Verde	Liberia	South Africa
	Central African Republic	Madagascar	Sudan
	Chad	Malawi	Swaziland
	Côte d'Ivoire	Mali	Togo
	Djibouti	Mauritania	Tunisia
	Egypt	Mauritius	Uganda
	Equatorial Guinea	Morocco	Zaire
	Gambia	Mozambique	Zambia
	Ghana	Namibia	
	<b>ASIA &amp; PACIFIC (23 countries)</b>	Afghanistan	Iran
Bangladesh		Kiribati	Philippines
Bhutan		Lao PDR	Sri Lanka
China		Maldives	Tokelau
Fed. States Micronesia		Myanmar	Tonga
Fiji		Nepal	Tuvalu
India		Niue	Vietnam
Indonesia		Pakistan	
<b>WEST ASIA (5 countries)</b>		Iraq	Lebanon
	Jordan	Oman	
<b>LATIN AMERICA &amp; CARIBBEAN (18 countries)</b>	Belize	Cuba	Honduras
	Bolivia	Dominican Republic	Mexico
	Brazil	Ecuador	Nicaragua
	Chile	El Salvador	Panama
	Colombia	Guyana	Peru
	Costa Rica	Haiti	Venezuela

The data used in this report were provided by participating governments in a global reporting exercise undertaken from September 1994 to June 1995. The survey was confined to developing countries; it does not include data from Eastern Europe, Central Asia or countries classified by the UN as *developed* countries. Questionnaires sent to a total of 130 countries focused on three aspects:

- definition of access to safe drinking water and sanitation
- water supply and sanitation coverage
- investment in the sector.

The questionnaire had been amended from those used in earlier surveys, following suggestions from many of the UNICEF and WHO field offices assisting national governments. The new form was simpler and less detailed than earlier versions, reducing the scope for year-on-year comparisons, but making it easier for governments to collect and report data.

A total of 84 countries responded (Table 1.2), 33 (39%) of them providing (coverage) data for the end of 1994, 30 (36%) for the end of 1993, and the others for 1992 (17%), 1991 (6%) and 1990 (2%).

As in the past, definition of what constitutes "access" to safe water has been determined by the reporting countries. While this again makes direct comparisons difficult, it is the only way that countries can provide the data (externally imposed definitions simply add an unjustifiable burden to the monitoring process). Of the 84 reporting countries, 54 (64%) provided a definition of access to safe drinking water. Walking distance or time from household to water source was the principle criterion, particularly in rural areas. In all, 45 countries included this in their definition for rural access and 40 countries for urban access (Table 1.3). Water quantity was included in the definition for rural areas by 38 countries (Table 1.4), with the acceptable quantity ranging from 15-20 litres per person per day (lppd) in one case to 50lppd or more in three cases. Just 31 countries set a quantity minimum for urban access, with the average value being 50lppd. For sanitation, countries in general regard excreta disposal facilities which break the faecal-human transmission route as "adequate".

**Table 1.3 Definitions of "Access to Safe Drinking Water Source"**

	<i>Number of countries defining access as: "Water source at a distance of less than ..."</i>								
	<i>50m</i>	<i>100m</i>	<i>250m</i>	<i>500m</i>	<i>1000m</i>	<i>2000m</i>	<i>5 mins</i>	<i>15 mins</i>	<i>30 mins</i>
Urban	20	6	3	8	1	-	1	-	1
Rural	10	1	6	17	4	4	-	1	1

**Table 1.4 Definitions of acceptable water quantities for rural areas**

<i>Number of countries defining the minimum quantity per person per day as</i>				
<i>15-20 litres</i>	<i>20 litres</i>	<i>20-30 litres</i>	<i>30-50 litres</i>	<i>&gt; 50 litres</i>
1	19	5	10	3

## 1.2.2 Water supply and sanitation coverage

Throughout the 1980s and the early 1990s, it has been apparent that most countries do not have adequate systems for collection, compilation and analysis of water supply and sanitation coverage data. The JMP is starting to change that, but it remains the case that historical data will be inconsistent and unreliable. In the analyses in this document, data used is primarily from the JMP global surveys in 1991, 1993 and 1995, taking account also of WHO figures for the end of the IDWSSD, which were revised in 1995 on the basis of JMP data.

Within these constraints, it is possible to develop a reasonable picture of progress achieved during the early part of the 1990s. From that picture, projections can be made of the challenge facing countries and external support agencies seeking to achieve universal coverage. Maps 1.1 and 1.2 and Table 1.5 summarise the statistics globally and by region.\*

Some general conclusions can be drawn:

- A large number of countries have reported through the JMP
- Water supply coverage is generally superior to sanitation coverage
- Coverage in Asia and the Americas is better than in Africa
- In the most populous countries of Asia (India and China), the disparity between water supply coverage and sanitation coverage is substantial.

More detailed conclusions are set out in Sections 2 (Global), 3 (Africa), 4 (Latin America and the Caribbean) and 5 (Asia).

## 1.2.3 Sector investments

Although 67 countries reported on their investments in water supply and sanitation, in the case of 49 countries the data was either incomplete or very weak. The analysis is therefore restricted to information provided by 18 countries and clearly only very restricted conclusions can be drawn. It is apparent that investments are still concentrated on water supply at the expense of sanitation and in favour of urban rather than rural populations.

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\* *The analyses and projections involve a number of assumptions:*

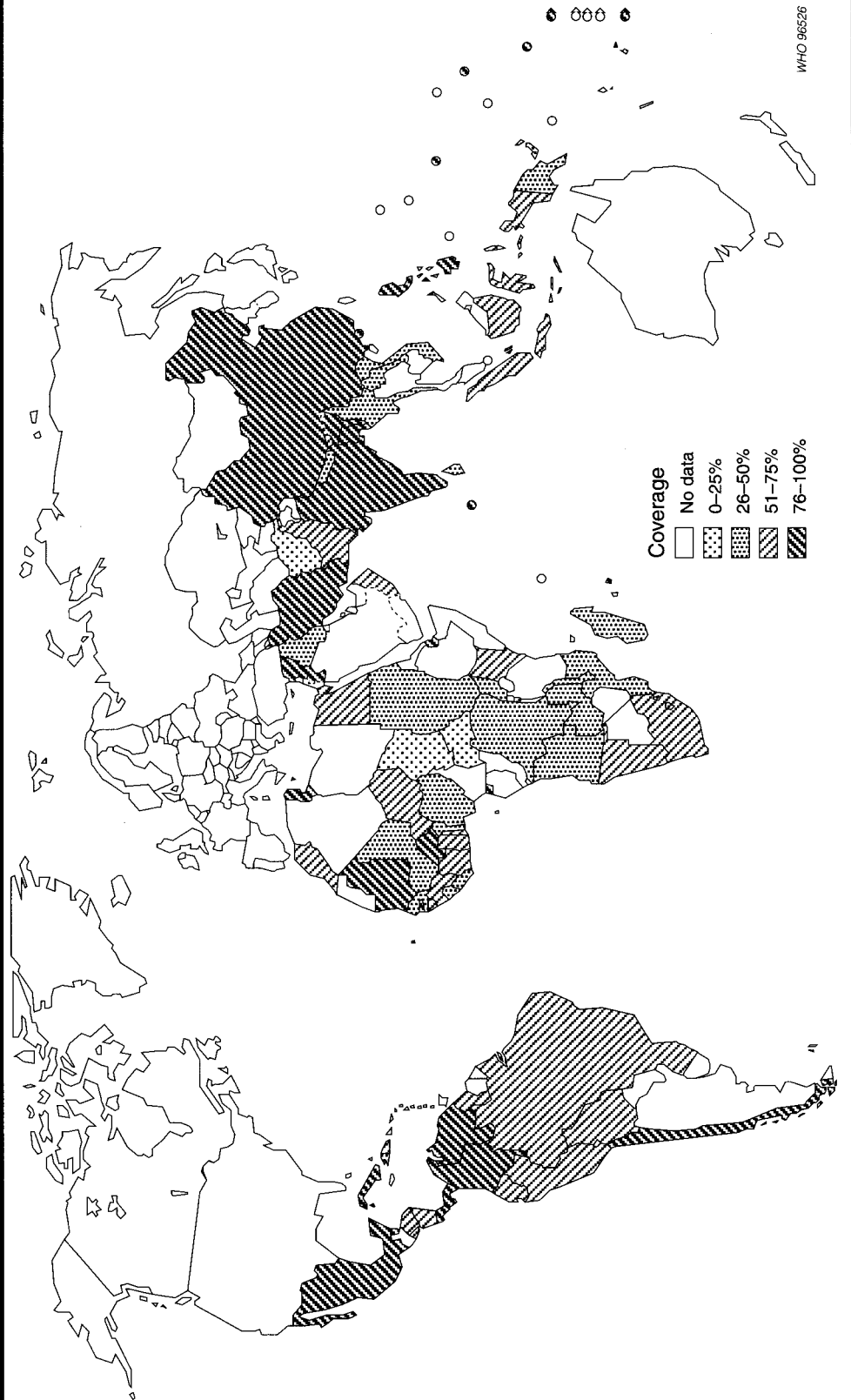
- *The number of reporting countries represents an acceptable sample at global and regional levels. Overall, the reporting countries represent 87% of the population of all developing countries. They cover 75% of the population of Africa, 91% of Asia and the Pacific, 94% of Latin America and the Caribbean and 27% of Western Asia.*
- *Population data are based on the United Nations World Population Prospects – 1994 Revision*
- *For countries which reported data for years earlier than 1994, coverage is assumed to have kept pace with population growth, so that the % coverage for the reporting period has been applied to 1994.*
- *All installations are assumed to be operational and serving the intended population. The projections do not therefore take account of the fact that many water and sanitation systems operate erratically, that services are sometimes suspended, and that some systems are non-operational.*

This tendency is made to look worse because of a lack of reliable information on community investments, particularly for sanitation. The country reports also show a high dependency on external support. Based on studies during the IDWSSD which suggested that governments and communities provided almost two-thirds of sector investments, one could speculate that government investments have been under-reported. If that is not the case, there is an increasing trend towards governments being unable to finance the sector fully, forcing them to rely almost completely on external support agencies.

**Table 1.5 Water and sanitation coverage by region 1990-1994**

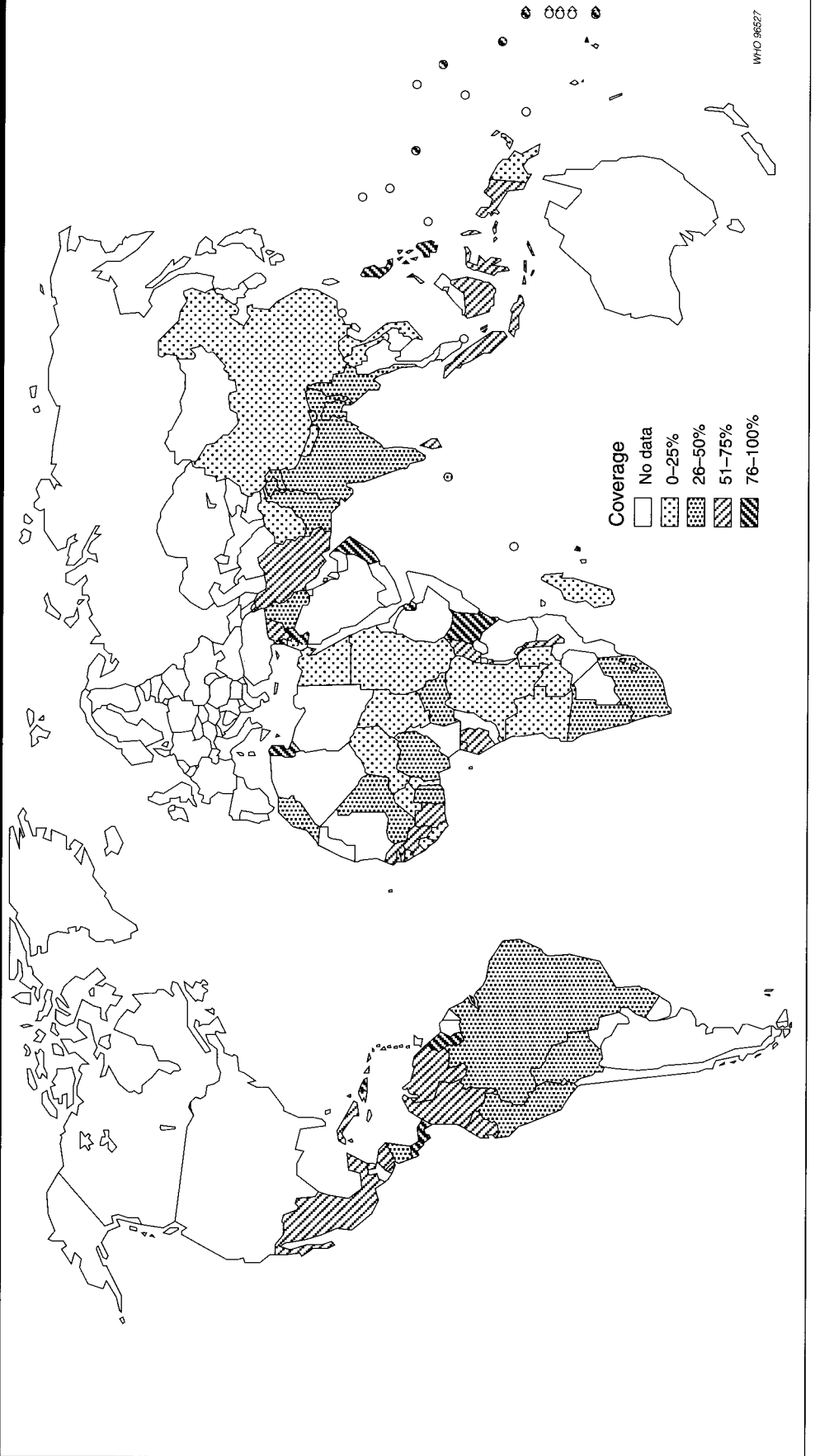
	<i>1990 (population in millions)</i>				<i>1994 (population in millions)</i>			
	<i>Total pop</i>	<i>Pop served</i>	<i>Pop unserved</i>	<i>% coverage</i>	<i>Total pop</i>	<i>Pop served</i>	<i>Pop unserved</i>	<i>% coverage</i>
<b>GLOBAL</b>								
Urban water	1389	1145	244	<b>82</b>	1594	1315	279	<b>82</b>
Rural water	2682	1342	1340	<b>50</b>	2789	1953	836	<b>70</b>
Total water	4071	2487	1584	<b>61</b>	4383	3268	1115	<b>75</b>
Urban san	1389	936	453	<b>67</b>	1594	1005	589	<b>63</b>
Rural san	2682	536	2146	<b>20</b>	2789	505	2284	<b>18</b>
Total san	4071	1472	2599	<b>36</b>	4383	1510	2873	<b>34</b>
<b>AFRICA</b>								
Urban water	201	135	66	<b>67</b>	239	153	86	<b>64</b>
Rural water	432	153	279	<b>35</b>	468	173	295	<b>37</b>
Total water	633	288	345	<b>45</b>	707	326	381	<b>46</b>
Urban san	201	130	71	<b>65</b>	239	131	108	<b>55</b>
Rural san	432	99	333	<b>23</b>	468	112	356	<b>24</b>
Total san	633	229	404	<b>36</b>	707	243	464	<b>34</b>
<b>LATIN AMERICA AND THE CARIBBEAN</b>								
Urban water	314	282	32	<b>90</b>	348	306	42	<b>88</b>
Rural water	126	64	62	<b>51</b>	125	70	55	<b>56</b>
Total water	440	346	94	<b>79</b>	473	376	97	<b>79</b>
Urban san	314	262	52	<b>83</b>	348	254	94	<b>73</b>
Rural san	126	42	84	<b>33</b>	125	42	83	<b>34</b>
Total san	440	304	136	<b>69</b>	473	296	177	<b>63</b>
<b>ASIA AND THE PACIFIC</b>								
Urban water	829	689	140	<b>83</b>	955	805	150	<b>84</b>
Rural water	2097	1108	989	<b>53</b>	2167	1690	477	<b>78</b>
Total water	2926	1797	1129	<b>61</b>	3122	2495	627	<b>80</b>
Urban san	829	513	316	<b>62</b>	955	584	371	<b>61</b>
Rural san	2097	379	1718	<b>18</b>	2167	332	1835	<b>15</b>
Total san	2926	892	2034	<b>30</b>	3122	916	2206	<b>29</b>
<b>WESTERN ASIA</b>								
Urban water	45	39	6	<b>87</b>	52	51	1	<b>98</b>
Rural water	27	17	10	<b>63</b>	29	20	9	<b>69</b>
Total water	72	56	16	<b>78</b>	81	71	10	<b>88</b>
Urban san	45	31	14	<b>68</b>	52	36	16	<b>69</b>
Rural san	27	16	11	<b>60</b>	29	19	10	<b>66</b>
Total san	72	47	25	<b>65</b>	81	55	26	<b>68</b>

Map 1.1 Water supply service coverage (% of population served) at the end of 1994





Map 1.2 Sanitation service coverage (% of population served) at the end of 1994





## 2. GLOBAL ANALYSIS

### 2.1 WATER SUPPLY

Between 1990 and 1994, the population of the developing countries rose by 312 million to 4,383 million. In that same period, based on the data reported through the JMP and extrapolated for non-reporting countries, a total of 781 million people gained access to safe water. The total number of people still lacking access therefore reduced by 469 million. That still left a total of 1,115 million people unserved in 1994 – 25% of the population of the developing countries.

With an average of 195 million people gaining access to safe water every year (over half a million people every day!), the number of people served was growing at approaching 8% per year – a marked acceleration over the rate of progress achieved during the 1980s. These figures need to be treated with some caution, however, particularly as there have been substantial differences in the coverage increase in different regions and between urban progress and that in rural areas.

In fact, despite the apparent overall achievements, the available data indicate some alarming trends. The improvement in water supply coverage occurred overwhelmingly in Asia and the Pacific where about 700 million people have been served in the four years. Indeed, the Asia and Pacific countries account for nearly 90% of the progress achieved in water supply and for 95% of rural water supply increases. Increases achieved in other regions are far more modest. In Africa, 38 million people gained access, while in Latin America and the Caribbean, the extra 30 million people were served, representing respectively 5% and 4% of the total number who gained access to safe water during the period.

The figures show that the greatest water supply progress from 1990 to 1994 was in rural areas. The 611 million extra rural people served during the four years raised rural water supply coverage from 50% to 70%. In urban areas, the extra 170 million people served was offset by a 205 million increase in the urban population, leaving the percentage coverage unchanged at 82%. Clearly the effects of high population growth and accelerating urbanization are proving a formidable challenge.

Analysis of the global sanitation figures leaves the unavoidable impression that sanitation has been almost totally neglected in the four years from 1990 to 1994. While the application of tighter definitions as to what constitutes “adequate” sanitation has evidently had some impact (the number of rural people deemed to be adequately served actually fell by 31 million), the comparison with water supply progress makes it all too clear that investment in sanitation improvements remains a low priority for many governments and communities.

Overall, the number of people deemed to be lacking adequate sanitation rose by 274 million in the four years, with percentage coverage falling in both urban and rural areas. At the end of 1994, a mere 18% of rural people could be said to have access to adequate sanitation services, leaving some 2,284 million rural dwellers unserved. A further 589 million urban residents also lack proper sanitation, 146 million more than in 1990. Only Western Asia bucked the trend of decreasing coverage, and even there the population unserved rose by a million in the four years.

**Table 3.1 Water supply and sanitation coverage (% of pop served) – 1994**

<b>AFRICA</b>								
<i>Country</i>	<i>1994 pop ('000)</i>	<i>Reference year</i>	<i>Water supply coverage (%)</i>			<i>Sanitation coverage (%)</i>		
			<i>Urban</i>	<i>Rural</i>	<i>Total</i>	<i>Urban</i>	<i>Rural</i>	<i>Total</i>
Angola	10,674	1994	69	15	32	34	8	16
Benin	5,096	1993	41	53	50	54	6	20
Burkina Faso	9,772	1993	NA	NA	78	42	11	18
Burundi	5,847	1992	92	49	52	60	50	51
Cape Verde	350	1991	70	34	51	40	10	24
Cent African Rep	3,001	1991	18	18	18	NA	NA	46
Chad	6,183	1994	48	17	24	73	7	21
Côte d'Ivoire	13,780	1994	59	81	72	59	51	54
Djibouti	557	1993	77	100	90	77	100	90
Egypt	60,319	1993	82	50	64	20	5	11
Equatorial Guinea	389	1994	88	100	95	61	48	54
Gambia	1,042	1993	NA	NA	76	83	23	37
Ghana	16,944	1994	70	49	56	53	36	42
Guinea	6,501	1994	61	62	62	NA	NA	70
Guinea Bissau	1,050	1994	38	57	53	32	17	20
Kenya	26,391	1993	67	49	53	69	81	77
Lesotho	1,996	1994	14	64	52	1	7	6
Liberia	2,941	1994	58	8	30	38	2	18
Madagascar	14,303	1994	83	10	29	50	3	15
Malawi	10,843	1994	52	44	45	70	51	53
Mali	10,135	1993	36	38	37	58	21	31
Mauritania	2,106	1992	84	69	76	NA	NA	NA
Mauritius	1,057	1990	95	100	98	100	100	100
Morocco	26,945	1993	98	14	52	69	18	40
Mozambique	15,527	1994	17	40	32	70	NA	NA
Namibia	1,385	1991	87	42	57	77	12	34
Niger	8,846	1994	46	55	53	71	4	15
Nigeria	105,264	1993	63	26	39	61	21	36
Senegal	7,902	1993	82	28	50	83	40	58
Sierra Leone	4,402	1994	58	21	34	17	8	11
South Africa	40,555	1994	NA	NA	70	79	12	46
Sudan	26,641	1993	66	45	50	79	4	22
Swaziland	809	1993	41	44	43	36	37	36
Togo	3,763	1992	74	58	63	57	13	26
Tunisia	8,407	1992	100	89	99	100	85	96
Uganda	20,621	1994	47	32	34	75	55	57
Zaire	39,939	1992	37	23	27	23	4	9
Zambia	9,198	1994	64	27	43	40	10	23

### 3. REGIONAL ANALYSIS – AFRICA

#### 3.1 SUMMARY

The percentage of Africa's population having access to water services rose a modest 1% during the 1990-1994 period. This increase represents the incorporation of 38 million people into the water supply systems, an average of 9.5 million people annually. According to the figures reported for Africa, coverage in urban areas has slipped from 67 to 64% while rural coverage has risen from 35 to 37%, remaining still by far the lowest in the world.

During the reporting period, the population having access to safe sanitary means of excreta disposal grew by only 14 million, a growth far lower than that of the population, resulting in a reduction in level of coverage from 36% in 1990 to 34% in 1994. These results however mask the disparity in trend between the rural and the urban settings. The real set back was in the urban setting where coverage level during the period decreased from 65% to 55%. Indeed, of the people who gained access to sanitation, 13 million or 93% live in the rural areas.

Of the 38 countries in Africa for which information on water supply was available, only 7 (18%) had a coverage level over 75%, while 14 (37%) had less than 50% coverage. With regard to sanitation, of the 36 countries providing data, 4 countries (11%) have coverage levels higher than 75%, while 16 countries (44%) have coverage of less than 25%.

The period 1994-95 has been a watershed for the JMP with the thrust shifting from promotion of monitoring as a mechanism for improving sector efficiency and programme acceleration to implementation of programmes to improve monitoring and sector- information capabilities in individual countries. The following examples illustrate programme activities in Africa

Following the hosting of a Regional Water Supply and Sanitation Monitoring Workshop in September 1992, the government of Benin reviewed the sector situation and its information requirements for planning and management. Included in this review was an assessment of hardware and software needed for the establishment of a national monitoring unit.

A national workshop was convened in February 1995 to review the situation analysis, identify requirements, and prepare a programme for the development of the national monitoring system. The workshop participants came from all ministries, departments, and agencies with responsibilities for water supply and sanitation. There was also representation from the departmental as well as the central level of government.

The final output of the workshop was a programme for the development of the monitoring network and the strengthening of the National Monitoring Unit, including resource requirements. The objective is to have available, on a routine basis, reliable country-wide data for decision-making, planning, and management, while strengthening coordination

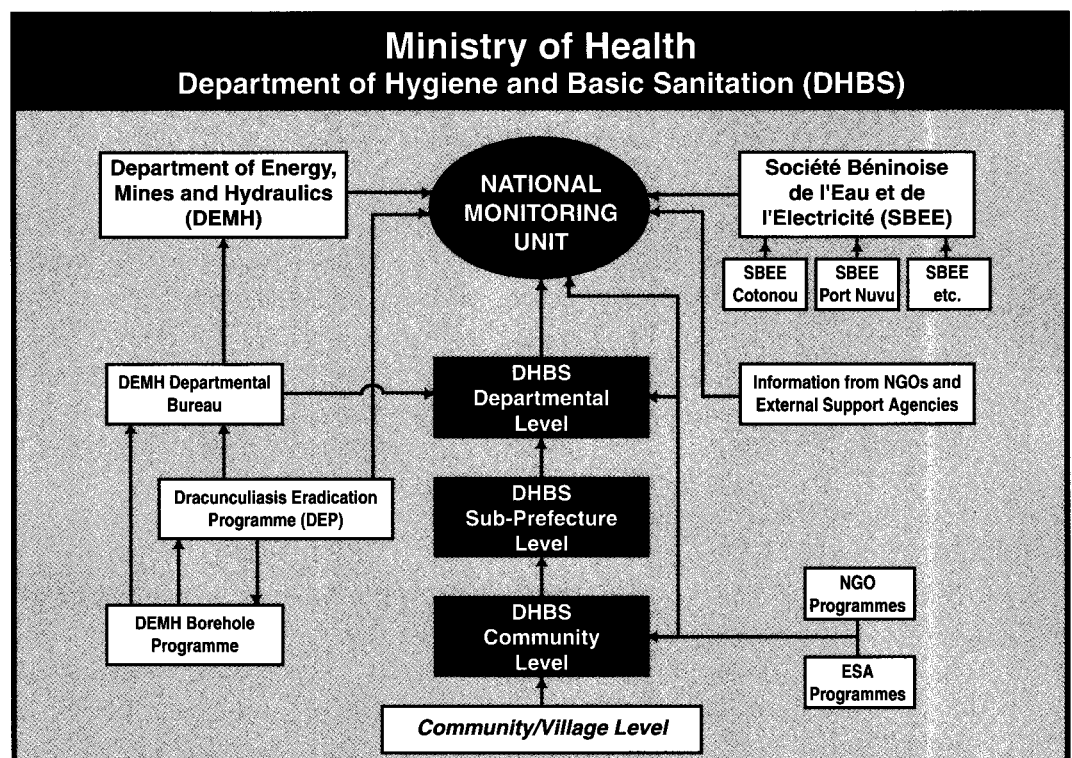
among the Ministry of Health, the Ministry of Energy, Mines and Hydraulics, and the Société Béninoise de l'Electricité et de l'Eau (SBEE), the three main bodies with sector responsibility. WHO followed up by providing the computer hardware and software identified as necessary to make the National Monitoring Unit operational.

The programme makes the Ministry of Health responsible for collection of data at rural community level and its transmission upward through the sub-prefecture and departmental levels to the National Monitoring Unit within its Department of Hygiene and Basic Sanitation. SBEE has responsibility for collection of information from the 54 urban centres and its transmission to the National Monitoring Unit, while the Ministry of Energy, Mines and Hydraulics will provide information to the National Monitoring Unit from its borehole drilling programme and from the Dracunculiasis Eradication Programme being implemented in collaboration with the Department of Hygiene and Basic Sanitation.

The role of non-governmental and external support agencies in the monitoring network is also important in ensuring that their activities are included. The monitoring network being developed is presented schematically below.

The programme of work developed for 1995/1996/1997 has been presented in two phases, at the end of which a sustainable national monitoring network will be in place as an institutionalized component of the sector-management structure. To achieve this end, the large part of funding would have to come from government resources. However, significant assistance will be required from ESAs, and already WHO and UNICEF together have provided the seed money to initiate the monitoring unit and convene the first planning workshop. Efforts to identify necessary funding are in hand.

FIGURE 1. THE NATIONAL MONITORING NETWORK



### 3.2.2 Malawi

Malawi is a country going through a period of profound change. As part of this, an assessment is being undertaken of past performance in the development of water-supply and sanitation services. During the International Drinking Water Supply and Sanitation Decade, and even before, Malawi was at the forefront in Africa in the development of technologies and new approaches to expand water-supply coverage in rural areas. The rural sector is a natural priority for water-supply and sanitation development in Malawi with 85% of the population rural, and of that, 57% estimated to be unserved by an adequate and safe water supply, and 40% estimated to be without access to an appropriate means of excreta disposal. This represents 4.5 million rural residents at health risk and seriously socially constrained due to inadequate services.

The coverage achievement over the past 20 years has proved technically and financially unsustainable without large donor assistance. As a result, combined with the impact of drought, many of the boreholes and wells in rural areas are nonoperational and gravity systems are working below capacity. The government of Malawi therefore decided, in 1994, to initiate its water supply and sanitation monitoring system development in the rural water supply subsector in the first instance, addressing water supply with the objective of supporting the planning and management of a well and borehole rehabilitation programme.

To develop effective rehabilitation it was necessary to have a country-wide database on the status of all rural water supply systems. Details of non-functioning boreholes, dried up wells, and broken pumps and taps are required if remedial actions are to be planned and implemented. The absence of a monitoring system to respond to this need has been identified as contributing to the progressive deterioration of systems and as a major constraint to the implementation of the rehabilitation programme.

Appreciating this need, the government approached UNICEF to provide support in developing a National Monitoring System within the Water Department of the Ministry of Irrigation and Water. The objective was to establish a sustainable management and monitoring system to enhance service delivery to beneficiaries and recoup past capital investments in the sector through a rational systems rehabilitation programme, thereby improving overall health and well being.

During 1994, the JMP approaches were introduced to the authorities during joint UNICEF/WHO missions. Among priority planned activities are: formulation of a national plan; establishment of a functional monitoring unit; and training of staff. Two professional staff in the monitoring unit and 52 monitoring assistants at district level (two per district) will be required. Methodologies will have to be developed to respond to specific needs based on the WHO/UNICEF JMP approaches, parameters identified, and monitoring guidelines prepared.

The monitoring system will be multifaceted and involve collaboration and cooperation among all government, parastatal, and other bodies with sector responsibilities. As such it will play an important role in harmonizing and coordinating the plans and activities of sector agencies (Ministry of Irrigation and Water Development, Ministry of Health and Population, Ministry of Local Government Rural Development, Ministry of Women and Children, Community Services and Social Welfare, Blantyre and Lilongwe Water Boards,

etc.), with flexibility to respond to needs at the central, regional, district, project, and community levels for monitoring and evaluation.

An inventory of borehole supplies, hand-dug shallow wells, and gravity-fed rural water supplies on a community by community and district by district basis has been initiated.

UNICEF has already provided seed funding to initiate the development of the planned activities and it is hoped that this will act as a catalyst for other external support agencies to join in partnership to strengthen the monitoring efforts.

### 3.2.3 Mauritania

During 1994 the government of Mauritania reviewed the status of water supply and sanitation and the mechanisms for establishing sector priorities in the context of decentralization through working with communities to increase participation. Mauritania is committed to the goal of universal coverage of safe drinking water and basic sanitation, as reflected in the National Health Policy which recognized the need for an accelerated effort to make facilities available to the population at large. In this regard, a Guinea Worm Water Unit has been specially set up to address water needs of the infected zones.

To support these efforts, the government has prepared a plan and programme to develop a national water supply and sanitation monitoring system to improve sector planning and management. The objective is to improve the long-term health and well being of the population by providing support for suitable decentralized management that will contribute to enhanced services to the beneficiaries. The programme includes: identification of basic monitoring needs; establishment of norms and standards; strengthening of Child Summit progress reporting; and design of water supply and sanitation parameters in cluster survey methodologies, random sampling, and other approaches. The water supply and sanitation monitoring system will be coupled with the guinea-worm eradication programme village-based surveillance system, including GIS linkage.

At the end of the programme, a sustainable, functional monitoring unit will have been established, manned by trained staff at the national and subnational levels, and data will be collected in a routine manner for application in sector planning and management.

### 3.2.4 Kenya

WHO and UNICEF, working with the Kenya Ministry of Health, have developed, field tested, and found to be appropriate in seven districts, a rapid survey methodology on water supply and sanitation coverage for the district level. The results have been found useful as a basis for district planning activities, evaluation, and support documentation for attracting donor funding to needy districts.

Special attention was paid during the development of the monitoring system and its parameters to ensure compatibility with the existing Ministry of Health health-information system. The 1989 census report, which gives data on subdivision (the smallest administrative unit), location, division, district, and province, was used as the sampling basis in the cluster sampling methodology applied using 100 randomly selected households in a district of 400,000 approximate population.

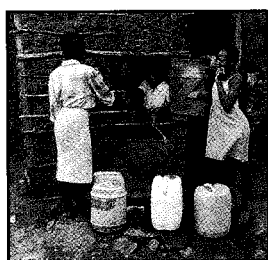


Photo credit: UNICEF:  
Jorgen Schytte



About one week after completion of the interviews, a dissemination workshop was organized in the district and attended by participants from ministries concerned with water supply and sanitation, NGOs, and international organizations.

The results of the work to date have indicated that the approach gives accurate information on water supply and sanitation with a confidence level of 95 to 99%, with an error margin less than 2.7%, a remarkable achievement in comparison with the observed reliability and consistency of past information.

During 1995, a plan for further development of the sector-wide monitoring system was prepared by the Ministry of Health.

**Table 4.1 Water supply and sanitation coverage (% of pop served) – 1994**

<b>LATIN AMERICA AND THE CARIBBEAN</b>								
<i>Country</i>	<i>1994 pop ('000)</i>	<i>Reference year</i>	<i>Water supply coverage (%)</i>			<i>Sanitation coverage (%)</i>		
			<i>Urban</i>	<i>Rural</i>	<i>Total</i>	<i>Urban</i>	<i>Rural</i>	<i>Total</i>
Belize	210	1994	96	82	89	23	87	57
Bolivia	6,893	1992	78	22	55	58	16	41
Brazil	146,825	1991	85	31	72	55	3	44
Chile	13,600	1992	94	37	85	82	NA	NA
Colombia	33,985	1993	88	48	76	76	33	63
Costa Rica	3,192	1992	85	99	92	85	99	92
Cuba	10,960	1994	96	85	93	71	51	66
Dominican Rep	7,543	1993	74	67	71	76	83	78
Ecuador	10,980	1993	82	55	70	87	34	64
El Salvador	5,517	1993	78	37	55	78	59	68
Guyana	808	1992	90	45	61	82	80	81
Haiti	7,035	1994	37	23	28	42	16	24
Honduras	5,493	1994	81	53	65	81	53	65
Mexico	90,027	1993	91	62	83	81	26	66
Nicaragua	4,255	1994	81	27	61	34	27	31
Panama	2,491	1992	NA	NA	83	NA	NA	86
Peru	22,886	1993	74	24	60	62	10	44
Venezuela	19,502	1990	80	75	79	64	30	58

## 4. REGIONAL ANALYSIS – LATIN AMERICA AND THE CARIBBEAN

### 4.1 SUMMARY

In Latin America and the Caribbean, about 71% of the reporting countries have over 50% service coverage with appropriate sanitation while all but one country reported having over 50% service coverage with adequate and safe water.

Information on water supply coverage indicates that in 1994 the rural population with access to safe drinking water numbered close to 70 million (56%) of the rural population compared with 64 million (51%) in 1990. Sanitation coverage remains practically unchanged in absolute terms, with 42 million people served (34% of the total rural population), an increase of 1% compared with the 1990 level. It should be noted that the number of rural inhabitants during this period declined fractionally from 126 million in 1990 to 125 million in 1994.

In urban areas the total unserved population as of 1994 is estimated at 42 million for water supply and 94 million for sanitation for a total urban population of 348 million. In absolute terms the sizes of the unserved populations, 97 million for water supply and 177 million for sanitation, are modest compared with the size of Latin American economies or with past achievements, particularly in water provision. Nevertheless, providing access to safe drinking water and sanitation for urban populations remains a challenge and will not be achieved unless there is a strong political commitment to tackle the many related issues to the provision of basic service for the poor (cost sharing and cost recovery schemes, migration, poverty, unlawful land occupation and land title).

Indeed it is heavy migration which has resulted in the reduction of the rural population. Rapid urbanization, with Latin American cities' average growth rate being 33% faster than total population growth, is increasing the clustering of poor masses on the fringes or in inner pockets of large cities. These unplanned, underserved or neglected marginalized urban areas, now accounting for 40% of the total urban population, are expected to absorb 80% of the urban population growth.

In the Americas, the Regional Conference for the Evaluation of the International Drinking Water Supplies and Sanitation Decade (San Juan, Puerto Rico, 1990), which resulted in the Declaration of Puerto Rico, among others, identified the lack of proper information systems as a main constraint to sector development, and further emphasized the need for countries in Latin America and the Caribbean to develop programmes for the systematic monitoring of water and sanitation. The introduction of cholera in countries of the region of the Americas in 1991 also raised the consciousness of national and international health authorities to the need for increased surveillance of the sector.

Experience in monitoring water and sanitation in Latin America has indicated some persistent problems, such as inconsistencies in data, variable definitions of adequate service, poorly defined responsibility for monitoring, and available information not matching planning and management needs.

The Joint Monitoring System was introduced in Latin America and the Caribbean in two successive workshops, one in Guatemala (December 1991) for Spanish-speaking countries, and the other in Jamaica (March 1992) for Anglophone countries. The countries' reactions to the programme were positive; however, some specific requirements were considered important in view of the special characteristics of the region, including existing relatively high levels of service coverage. It was clear that the system must respond to specific countries' needs, and must allow for the generation of information required for subregional, regional, and global-level analysis. It was also indicated that a more comprehensive environmental system that would take into consideration solid and industrial wastes and other environmental parameters would eventually be required.

It was recognized that the system will be sustainable only to the extent that it is useful to the users at all levels of operation. Therefore, an objective was the integration of the system with existing systems in the countries, considering that several countries were in the process of developing their own information systems. The objective was then to assist and influence countries in the development of their own information system instead of promoting specific approaches and/or methodologies.

Close collaboration between WHO and UNICEF at the regional and country level was emphasized in a joint letter signed by the regional directors of PAHO/WHO and UNICEF and addressed to the country representatives of the two organizations, requesting their joint collaboration in the implementation of this programme. Collaborating centres have an important role in the implementation of the JMP in the Americas. Those participating in the programme include:

- Mexican Institute for Water Technology (IMTA), Mexico City, for Mexico and Central America;
- Pan American Sanitary Engineering and Environmental Centre (CEPIS), Lima, Peru, for Andean Countries;
- Caribbean Environmental Health Institute (CEHI), Castries, St. Lucia, for Caribbean Countries.

The success of the JMP depends on its acceptance by countries and on the countries' abilities to proceed with programme implementation. The results to date have been encouraging. In June 1995, with support from PAHO/WHO and UNICEF, a subregional workshop was convened and held in San Jose, Costa Rica, on training and experiences exchange in the use of the WASAMS computer programme and on data collection systems design. The workshop also provided an opportunity to review progress to date among the 10 participating countries (Nicaragua, Honduras, Salvador, Costa Rica, Dominican Republic, Panama, Mexico, Peru, Belize, and Guatemala) and had the potential of establishing a monitoring network.

The following examples illustrate programme activities in the region.

Bolivia does not have a good enough information system to provide an adequate flow of information for decision-making. Following the recommendations of the Water and Sanitation Sector Monitoring Workshop (Guatemala, December 1991), attended by representatives from the Bolivian National Association of Drinking Water and Sewage Services Enterprises, UNICEF/Bolivia offered, in 1992, to support the National Direction of Basic Sanitation—DINASBA, in promoting, with the support of ANESAPA, the development of a system to respond to national requirements more effectively.

In May 1992, the government officially presented the Drinking Water and Sanitation National Plan 1992-2000, and having established the need to implement the sector-monitoring system to evaluate the development of this plan, carried out negotiations to obtain UNICEF's cooperation to establish the basis of a national programme. The project, which started in June 1992, aimed at the introduction of a sector-monitoring system for the handling of information, based on the methodologies developed within the framework of the JMP.

The overall objectives of the programme are to monitor implementation of the Drinking Water and Sanitation National Plan, to support negotiations for funding projects, to reorient the policies and strategies of the plan, to increase the coverage of drinking water and sanitation, to accelerate pre-investment and investment; and to plan the sector's integral development taking into consideration institutional and managerial aspects.

More specifically the programme aimed to establish the country's levels of drinking water supply and sanitation coverage in order to be able to define a baseline to allow the measurement of increase in population served.

The major problem encountered in programme implementation was lack of historic information, due to the fact that adequate capacity for the storage and/or update of information did not exist. To overcome this problem, personnel needed to be trained to understand the significance of information for decision-making and its handling. Another problem was associated with the need to adapt to the new administrative structures established by the Bolivian government at central and lower administrative levels.

The main programme strategies comprised:

- completion of the establishment of monitoring in the departments of Tarija and Pando within the Regional Development Corporation and local service enterprises;
- establishment of an organizational structure for sector monitoring and the collection of information at the departmental and local levels throughout the country;
- training of staff in the handling, use, and application of the sector monitoring system;
- provision of the Departmental Basic Sanitation Units to facilitate the introduction of the monitoring information system;
- improvement of inter/intrasectoral coordination;
- installation of the initial database in sector institutions and entities;
- production and distribution of coverage reports.



*Photo credit: UNICEF:  
A. Graciano*

To date, the following programme implementation actions have been taken:

- production of the proposal to develop and implement the Drinking Water and Sanitation Sector Monitoring System;
- establishment of the geographical base of localities and populated centres;
- data collection from sector institutions and entities in the interior of the country;
- entry and processing of coverage information;
- promotion of computer applications as data management tools in the Regional Development Corporations of seven departments;
- collection of information on regional and local coverage in the seven departments visited;
- convening of a National Seminar/Workshop, Cochabamba, 29-30 April 1993, to present the National Action Plan for Sector Monitoring;
- creation of regional committees for sector monitoring.

The project will directly support the formation of activities of the Regional Monitoring Committees which will coordinate with the National Administration of Basic Sanitation (DINASBA), established in 1992 as head organization with a coordinating role among the national agencies active in the sector.

### 1.3.3 Costa Rica

Costa Rica is fortunate, in that the country does not have problems relating to lack of water-supply service coverage. A problem does however exist with water quality in the systems managed by the Costa Rican Institute of Water Supply and Sewage (ICAA), which supplies 40% of the population with non-disinfected water.

In May 1993, the Department of Environmental Control initiated the Drinking Water Quality and Rural Water Supply Disinfection Monitoring Project as part of the rural Basic Sanitation Programme SANEBAR, with the collaboration of AyA and the PAHO. It was then discovered that an up-to-date and reliable inventory of water systems did not exist. At the same time, UNICEF initiated support for development of a water and sanitation monitoring system with the general objectives of improving the environmental health of the country through better planning of the water and sanitation sector and supporting the work of the Ministry of Health related to surveillance and inspection of water-supply and sanitation systems.

Under these general objectives, specific goals were established including the provision of a permanent and updated water and sanitation sector database, generation of basic information, the provision of information to support requests for international cooperation and financing, the provision of a basis for comparative analysis of sector progress, and the evaluation and implementation of projects.

The main problems encountered during the implementation of the monitoring programme to date have related to the need to upgrade the regional laboratories of the Ministry of Health, a certain resistance at the local level to be involved in the project, and serious delays in the programme implementation because of the changes of government in May 1994. Despite these constraints, much progress has been made, including:

- creation of a national distribution system database;
- identification, location, and collection of existing information;
- surveying of 350 out of approximately 1,500 systems;
- selection of sampling points in about 50 rural systems;
- initiation of the rehabilitation of the regional laboratories of the Ministry of Health;
- receipt and installation of two water quality surveillance computer programmes, AGUAS (for the supply sources) and REDES (for the distribution networks), developed by the National Institute of Hygiene and Epidemiology of Cuba (two training courses on their use were held). This was an excellent example of monitoring being a vehicle for inter-country collaboration;
- design of a computer programme for the processing of the sampling point surveys;
- preparation of computerized maps for the location of rural systems;
- convening of regional workshops on sampling routines;
- implementation of a consultancy entitled 'Control System of the Ground Water Quality for Human Consumption in Costa Rica';
- preparation of a proposal on Regional Drinking Water Quality Norms;
- creation of a Technical Advisory Committee for the implementation of the monitoring programme and the establishment of the National Monitoring Unit..

UNICEF has collaborated in efforts to date, through the provision of office space and computer equipment as well as technical support to national coordination. PAHO/WHO has collaborated by contracting a full-time sanitary engineer to coordinate the Basic Rural Sanitation Programme (SANEBAR), a full-time civil engineer to collaborate with the Drinking Water Monitoring Project, and a systems engineer for the design of a computer programme for the processing of data. WHO has also financed several regional water supply training workshops, the acquisition of the AGUAS and REDES computer programmes, two regional courses on their application, and the consultancy referred to above.

Closer coordination between PAHO, UNICEF, and other international organizations such as CAPRE/GTZ is foreseen so that monitoring parameters are developed simultaneously.

#### 4.2.4 Mexico

Before the establishment of the National Water Commission (CNA), there was no organization responsible for the surveillance and collection of water supply and sanitation data in Mexico. Even now there are still difficulties in concentrating and integrating information because of the past years of inefficiency and institutional underdevelopment in water supply and sanitation at the local level. The need for a programme to strengthen sector information is therefore widely acknowledged.

A monitoring system is required to form the basis for developing strategies to prevent health hazards and for the standardization and certification of equipment and materials; for the establishment of tariffs and concessions; for the identification of training and educational material requirements; for the dissemination of information on technology development;

and for the establishment of criteria for control of the quality of services and the introduction of emergency prevention criteria.

One of the past problems encountered was the absence of an institutional tradition, resulting from decades of frequent and major institutional changes in the sector. If the position of organizations such as CNA and other regional and state agencies responsible for information can be strengthened, it should be possible in a short period to develop a reliable monitoring system.

A report entitled 'Situation of the Drinking Water, Sewerage, and Sanitation Subsector' is published every year by the CNA. This report presents statistical information on water-supply coverage, water disinfection, sewerage, wastewater treatment, tariffs, non-accountable water, investments, studies, and projects. The information in the report comes from the information collected by the 32 CNA state offices throughout the country. It brings together information collected from the urban centres of the country containing approximately 73% of the national population. The information for the rural areas is obtained indirectly. This information is compiled and processed at the central level using a computer programme specially designed for the purpose. The system is continuously being consolidated and expanded to include new parameters and information sets to increase its usefulness for planning and management. It handles approximately 20% of the parameters proposed by the JMP methodology; however, it also includes additional parameters which are important for the CNA functions.

The Mexican Institute for Water Technology (IMTA) developed and is disseminating the extensive information system 'SeeA' (Evaluation System of Water Enterprises Efficiency) which is very similar to WASAMS/SIMAS, which it complements. SeeA contains several specialized modules in support of decision-making for the programming of investments and a facility for sharing and exchanging information between both systems.

Since it is now possible to exchange information between WASAMS, SeeA, and the CNA systems, it is planned to intensify and establish pilot programmes for the dissemination of, and training in the use of SeeA at local level and WASAMS and CNA at the state or regional levels.

The objective is to have progressively more reliable information, starting at the base of the pyramid formed by hundreds of local agencies which generate the data directly, going through state level and up to CNA at the central level.

A mission was undertaken by AMRO/PAHO in November 1994 to introduce the concepts of water-supply and sanitation monitoring as a planning and management tool, while UNICEF followed up at country level by promoting the approaches as priorities for sector development. To develop ideas further an initial review of existing sector information activities is planned, together with a national workshop to review the situation and assess needs.

In Honduras there is a Water and Sanitation Collaborative Group (CG), comprising 30 public, private, and international organizations including PAHO/WHO and UNICEF, which has existed since 1991. The CG was given official status in 1994. In March of that year it



established a commission to implement the Water and Sanitation Information System of Honduras (SINFASH), with the purpose of a) establishing an information system based on the different existing databases; b) implementing a database of agencies and projects to coordinate sector investments better; and c) establishing a database on the coverage and other information on distribution systems, wells, sewerage systems, and drinking water treatment. The system is designed to facilitate the formulation of policies, plans and projects, through routine monitoring and evaluation. It will also facilitate the periodic exchange of information on sector projects and activities and will disseminate reports generated by the data bank.

One of the main problems in programme implementation has been the lack of effective coordination for timely and reliable information collection and handling. The diversity of institutions and units responsible for water supply and sanitation has resulted in each one having an individual database with different formats in several computer languages which are incompatible. This separate development has led to a built-in reluctance to share data.

In October 1994, the Deputy Manager of the National Autonomous System Service of Water Supply and Sewage (SANAA) was nominated as Commissioner of SINFASH, a function taken up in April 1995. PAHO/WHO, UNICEF, and the UNDP Regional Network for Water Supply and Sanitation in Central America (RWSN) are all giving technical support for the initial phase of SINFASH operations. The Swiss Development Corporation (SDC) has also indicated an interest in supporting the programme.

One of the main accomplishments to date has been the opening of inter-institutional dialogue and collaboration, while a revision of existing project databases has been undertaken.

The Pan-American Sanitary Engineering and Environmental Centre (CEPIS), a PAHO/WHO Regional Centre, has been instrumental in providing technical support to the JMP in the Americas in relation to computer programming, promotion, and training. These efforts have been varied because of the different approaches to the collection of data.

The WASAMS software programme was reviewed by CEPIS and was upgraded on the basis of various countries' experience with and comments on its use. The programme WPLUS was developed from the original WASAMS to include facilities for multi-user application and networking with different levels of access according to user category. It was developed to be user friendly with facilities for interphasing with other programmes while functioning on 386SX or superior computers. This concept not only allows the user to have a tailored configured environment but, through a macro system capability, makes available integrated systems which allow, on a day-by-day basis, consolidation of data which have already been entered from other subsystems. In addition, a facility has been added to enable the export of information to other programmes so that it can be printed in graphic or other formats. Thus, WPLUS is easier to use, facilitating application by countries that wish to implement it. Significant progress has been made with support from CEPIS in the development of systems for Ecuador and Peru.

### 4.3.1 Ecuador

In Ecuador, the WPLUS system was introduced by the Sub-Secretary of Environmental Sanitation, which collects information in the rural area. To obtain information from the urban area, coordination with the Municipality Association of Ecuador (AME), ANESAPA, and the Bank of Ecuador was necessary. AME as well as the Bank of Ecuador have taken concrete steps to introduce the system, while AME is training staff on the use of information tools, and is providing computers to municipalities and the bank. Jointly with GTZ, a data-collection exercise is being implemented. These institutions, as well as some NGOs which work in the sector, have held meetings with a view to standardizing approaches.

### 4.3.2 Peru

In Peru, courses have been held in several national institutions to disseminate information on the WPLUS system and to identify the possible focal point for its application. Because of sector reorganization, no institution has been designated as lead agency; therefore, CEPIS has initially assumed this responsibility. CEPIS has also worked with the National Superintendency of Sanitary Services to explore the possibility of introducing the WPLUS system. In spite of the difficulties that the reorganization has represented, there has been good progress in taking advantage, in the first instance, of the existing information collected through the Technical Inventory System, introduced earlier with support from PAHO.

At a meeting of national environmental health focal points in Cuzo, 5-7 October 1994, a presentation of WPLUS was made and experience in its application was reviewed with a view to its introduction country-wide. The work of CEPIS in support of the strengthening of national monitoring capability will continue. As part of this effort, a meeting of the Andean countries is planned to review present national monitoring and information systems and to consider the harmonization of criteria and indicators.

## 4.4 Other Latin American and Caribbean countries

Brief reports on monitoring activities in other countries are included in Annex 1.

## 5. REGIONAL ANALYSIS – ASIA

### 5.1 SUMMARY

#### 5.1.1 Asia and the Pacific

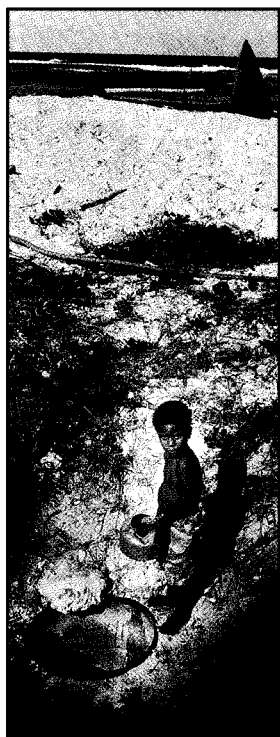


Photo credit: UNICEF:  
Carolyn Watson

In Asia and the Pacific region 13 countries (56%) reported a level of water supply service coverage of more than 75% and 2 countries (9%) a level of less than 25%. As for sanitation coverage, only 8 countries (35%) have reported a level higher than 75% while 7 (30%) reported coverage levels of less than 25%.

On the basis of the reported data, considerable achievements took place during the 1990-1994 period, in relation to the provision of water supply. Overall, (urban/rural) water supply service coverage increased from 61% to 80% through the expansion of services to an additional 698 million people – an average increase of 175 million per year, 90% of the average global population served per year during that period. The major achievements have been in rural areas, where the level of water supply service coverage has risen from an estimated 53% to 78%. To attain this level a total of 582 million rural people were served, representing 83% of the extra people served in the region.

In comparison, in the urban setting, water supply coverage rose only by 1%, (from 83% to 84)% following provision of water supply to an additional 116 million people. As a result the number of unserved people grew by 10 million bringing to 150 million the number unserved in 1994.

Overall, the level of sanitation service coverage decreased from 30% to 29%, with nearly 2,206 million people without adequate services in 1994, 172 million more than in 1990. But this apparent decrease in coverage for Asia and the Pacific is mostly due to the adoption of a more stringent criteria of what constitutes an adequate means of excreta disposal by some of the larger countries in the region, particularly China. The sharpest decline appears to have occurred in the rural settings where in absolute terms the number of people with sanitation service decreased by 47 million due to a drastic change in criteria. In the urban settings although an additional 71 million people gained access since 1990, because the population grew by 126 million during that same period, in terms of coverage the level slipped from 62% in 1990 to 61% in 1994, leaving some 371 million people without access to sanitation services as of 1994.

#### 5.1.2 Western Asia

Of the five reporting countries, only one country has achieved a level of less than 50% for both water coverage and sanitation; two of them show coverage above 75%.

If the relatively small sample of reporting countries, representing 27% of the region's overall population is indicative of the achievements in the region as a whole, considerable progress was made during the course of the 1990-1994 period in expanding water supply and sanitation services in urban and rural areas. As of 1994 only 10 million and 26 million people remain to be served respectively for water supply and sanitation.

**Table 5.1 Water supply and sanitation coverage (% of pop served) – 1994**

<b>ASIA AND PACIFIC</b>								
<i>Country</i>	<i>1994 pop ('000)</i>	<i>Reference year</i>	<i>Water supply coverage (%)</i>			<i>Sanitation coverage (%)</i>		
			<i>Urban</i>	<i>Rural</i>	<i>Total</i>	<i>Urban</i>	<i>Rural</i>	<i>Total</i>
Afghanistan	18,870	1994	39	5	12	38	1	8
Bangladesh	117,787	1994	100	97	97	77	30	35
Bhutan	600	1994	75	54	64	66	18	41
China	1,196,360	1993	93	89	90	58	7	21
Fiji	758	1993	100	100	100	100	85	92
India	918,570	1994	85	79	81	70	14	29
Indonesia	191,671	1993	78	54	62	73	40	51
Iran	62,507	1992	89	77	83	89	37	67
Kiribati	76	1993	100	100	100	100	100	100
Lao PDR	4,605	1993	40	39	39	70	13	24
Maldives	238	1993	98	86	89	95	26	44
Micronesia, Fed. State of	118	1993	100	100	100	100	100	100
Myanmar	44,596	1993	36	39	38	42	40	41
Nepal	19,755	1991	66	41	44	51	16	20
Niue	2	1993	100	100	100	100	100	100
Pakistan	136,645	1994	77	52	60	53	19	30
Papua New Guinea	4,110	1993	84	17	28	82	11	22
Philippines	63,427	1992	93	77	85	87	67	77
Sri Lanka	17,671	1992	43	47	46	33	58	52
Tokelau	2	1993	100	100	100	100	100	100
Tonga	98	1993	100	100	100	100	100	100
Tuvalu	9	1993	100	95	97	90	85	87
Vietnam	72,931	1994	53	32	36	43	15	21
<b>WESTERN ASIA</b>								
Iraq	19,925	1994	NA	NA	44	NA	NA	36
Jordan	4,443	1991	NA	NA	89	NA	NA	95
Lebanon	3,700	1994	100	100	100	100	100	100
Oman	1,909	1992	NA	NA	63	NA	NA	76
Syrian Arab Rep	13,696	1993	92	78	85	77	35	56

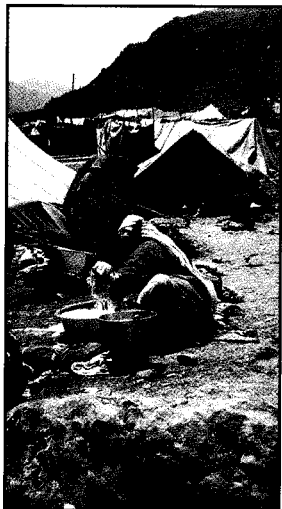


Photo credit: UNICEF:  
Braeckman

In urban water supply provision, nearly full coverage has been achieved, from 87% coverage in 1990 to 98% in 1994, leaving only about 1 million people without access to safe water supply. In the rural settings, in raising water supply coverage level from 63% to 69%, an estimated 12 million extra people were served.

By extending sanitation services to a total of 8 million people, overall coverage rose from 65% to 68%. However in absolute terms, while in the rural areas the number of people without adequate sanitation service decreased from 11 million in 1990 to 10 million in 1994, in the urban settings 16 million people remained without service, an increase of 2 million people from 1990.

## 5.2 WWP EXPERIENCES IN ASIA

### 5.2.1 Papua New Guinea

In Papua New Guinea, a programme to develop a water supply and sanitation monitoring system was initiated in 1993. In April of that year, a workshop was conducted by UNICEF and WHO in Port Moresby in support of government efforts to establish the system and hence strengthen national capacity in planning and managing the sector. A modified software application was adopted as a standard system to support the monitoring process and was later adapted on the basis of experience in initial application.

The structure of the monitoring network was accepted, as was the composition and role of a National Monitoring Unit, and a draft memorandum of agreement among the national sector agencies was prepared with a two-year plan of action.

With support from WHO and UNICEF, initial training of the staff of the National Monitoring Unit was undertaken and data collection was initiated in November 1993. The monitoring system is a network using an existing system of regional support units. Data collection and entry is undertaken by Regional Health Inspectors.

A three-phase planning programme was developed for data handling and reporting, training courses were initiated, and a work plan for proposed future support to the strengthening of the monitoring system was prepared. The importance of having a focal point at the national level to play a leadership role was stressed since coordination at and support to the regional level is crucial to the success of the system.

### 5.2.2 Sri Lanka

The government of Sri Lanka directed its attention to the question of water supply and sanitation monitoring in 1990, in recognition of the fact that decision makers, planners, and engineers often encountered problems in performing their tasks effectively and efficiently, particularly if their responsibilities were related to strategic planning. Steps to overcome this deficiency were initiated in 1991 with assistance from UNICEF. In December 1993, UNICEF and WHO supported a national monitoring workshop.

Following that workshop, ministerial approval was received for the establishment of a monitoring system and a National Monitoring Unit. In addition, an agreement was reached among the national agencies with responsibility for water supply and sanitation on the

provision of data to the NMU, and a budget for the operation of the system was allocated. Collection of existing data has been initiated by the NMU and full routine monitoring is under way.

All leading agencies in the sector shared responsibility for establishing the monitoring system. The Ministry of Health and Women's Affairs contributed significantly in collection of population coverage data, while the Plantation, Housing and Social Welfare Trust provided information on the estate sector, and the National Water Supply and Drainage Board provided data on piped water supply. The Mahaweli Authority, local authorities, NGOs, and the Water Resources Board assisted in data collection within their areas of operation. The focal point for data collection, collation, and analysis, the National Monitoring/Coordination Unit, was established in the Management Analysis Unit of the National Water Supply and Drainage Board.

Reporting is by province and is summarized nationally. Within provinces reporting is by district.

### 5.2.3 Lao People's Democratic Republic

In March 1995, the concepts contained in the JMP were introduced to the Lao Ministry of Health during a mission to Vientiane by the WHO Regional Office for the Western Pacific. A series of proposed actions for the strengthening of monitoring was prepared. These included the drafting of a memorandum of agreement to formalize collaboration among the concerned national agencies to strengthen collaboration on development of the monitoring system.

A national workshop to develop a national plan was convened. An agreement has been reached among the national agencies with responsibility for water supply and sanitation on the provision of data to the National Monitoring Unit (NMU). Collection of existing data has been initiated by the NMU, and a monitoring plan has been developed. Technical inputs have been provided toward the development of a management information system in the urban water supply and sanitation subsector for *Nam Papa Lao* (Water Supply Authority of Lao People's Democratic Republic) which will be funded through an Asian Development Bank Technical Assistance Project. This will form a component of the national monitoring system.

Discussions on collaboration and support for the development of a sustainable monitoring capability were also held with the UNDP/World Bank Programme in Lao and at the Committee for Planning and Cooperation.

The first activity in implementing JMP in the Philippines was the introduction of Water and Sanitation Monitoring System (WASAMS) by WHO and UNICEF in 1992 through a workshop of the Inter-Agency Committee on Environmental Health (IACEH) chaired by the Department of Health.

The output of the workshop was a draft memorandum of agreement among IACEH members and an action plan on how to operationalize WASAMS in the Philippines. The complete agreement was signed by the government in 1993.

Part of the action plan was the conduct of a rapid assessment in 1993 on how to adapt WASAMS in the Philippines. Findings of the assessment showed that there will be difficulties in gathering all the WASAMS indicators due to issues concerning definition of terms, existing monitoring systems of each agency, devolution, and lack of ready information on some indicators.

Recommendations of the assessment included the phasing of indicators so as not to overload the start-up, consensus on common definition of terms, conduct of a baseline survey, piloting WASAMS in selected areas, definition of institutional responsibilities at different levels, and an integration of health-related indicators. Considering the results of the assessment, the Philippine version of WASAMS will be different from the WASAMS designed globally.

A National Monitoring Unit (NMU) was organized in 1994 with the National Economic Development Authority as the lead agency. Member agencies are the Departments of Health (DOH), Interior and Local Government (DILG), Public Works and Highways (DPWH), Environment and Natural Resources (DENR), Metropolitan Waterworks and Sewerage System (MWWSS), Local Water Utilities Administration (LWUA), National Water Resources Board (NWRB), National Statistics Office (NSO), and National Statistical Coordination Board (NSCB). Though the National Monitoring Unit has been established, previous consultation with Local Government Units (LGUs) in 1994 revealed that there will be problems in replicating NMU composition at LGU level due to devolution of sector responsibilities from national to LGUs.

A series of workshops was conducted in 1993 and 1994 to come up with a consensus on the common definition of terms for indicators used in the sector. The common definition of terms was finalized and approved by the government in the second quarter of 1995. A series of workshops was also conducted in 1994 to design a piloting scheme for WASAMS at provincial and city levels. WASAMS was piloted in one province, one city, and two municipalities using the recommended Phase 1 indicators (access to safe water and latrines, incidence of diarrhoea, and hygiene practices).

Preliminary results of piloting revealed that data can be easily gathered on access to safe water and latrines and incidence of diarrhoea due to the availability of barangay health workers and barangay captains as potential sources of data. However, difficulty is encountered in gathering indicators related to hygiene. It was suggested that hygiene surveys be conducted at least every five years and that information be gathered in sample respondents only and not on total population. Moreover, problems were identified that will hamper national implementation of WASAMS, like the necessary funding required for data gathering and consolidation at different levels. LGUs are not yet convinced of the importance of monitoring as compared to other priority activities on water and sanitation. Thus, LGU counterpart funding for WASAMS is not yet assured.

During the third quarter of 1995, a workshop between the NMU-WASAMS and the DILG-based Database Sector Monitoring Project (World Bank-assisted project in 1995) was conducted to find ways of integrating WASAMS indicators with the indicators of Database. The Database objective is to establish a sector-planning approach on WATSAN at provincial level with a computer software programme. Most of the indicators of WASAMS are in the Database programme. A resolution was made by workshop participants to incorporate WASAMS indicators in the Database and to use Database as an entry point for WASAMS application at provincial level in the mainland of Luzon.

In the last quarter of 1995, the development of an operational manual for WASAMS was initiated. This manual is planned to be applied in 1996 in Luzon provinces where the Database programme will be installed by DILG for its first phase of operation. Strong advocacy and orientation activities are planned to be conducted in the Visayas and Mindanao areas to convince the LGUs on the importance of sector monitoring as well as to orient them on the WASAMS package.

### 5.3 Other Asian countries

Brief reports on monitoring activities in other Asian countries are included in Annex 1.



## 6. TOWARDS THE YEAR 2000 CHILD SUMMIT GOALS

The overall child summit goal for water supply and sanitation is universal coverage, i.e. all people should have access to adequate, appropriate and safe service by the end of the year 2000. To come close to that goal, many developing countries would require an unprecedented acceleration in the level of investment in improved water supply and sanitation facilities in the remainder of the decade.

If the 1990-1994 trends remain unchanged, by the year 2000 some 755 million people will remain without access to safe drinking water supply. Of these unserved, 51% will be in urban areas, mostly in Latin America and the Caribbean, Asia and the Pacific and Western Asia regions. Nearly 86% of the unserved rural population will be in Africa, where 59% of the total unserved will be living. Some 3.3 billion people will be without access to appropriate sanitation by the year 2000, with 74% in the rural areas. With almost 60% of the rural unserved and three-quarters of the total unserved population, Asia and the Pacific region faces the greatest challenge.

### 6.3.1 WATER SUPPLY TO THE END OF THE CENTURY

#### 6.3.1.1 Urban water supply

Except for Western Asia, where the current rate of increase in coverage, if continued, would provide water supply to all urban dwellers by the year 2000, a continuation of the trend in the provision of services witnessed between 1990 and 1994 would not be enough to prevent an increase in the number of people without access to safe water – a long way from the goal of achieving full coverage by the year 2000. In the case of Africa, the rate of service provision would need to be more than twice the current rate in order to keep pace with urban growth. More than a fivefold increase would be required to achieve full coverage. In Latin America, the rate of progress would need to be as much as 2.6 times higher in order to achieve full coverage by 2000, and a 2.12 times acceleration is needed in Asia and the Pacific.

Within a longer time-frame, the continuation of the current rate of progress in Latin America and the Caribbean would yield full urban water supply coverage by the year 2020. However, Africa would need to treble its current rate and Asia and the Pacific would require a twofold increase to reach that target.

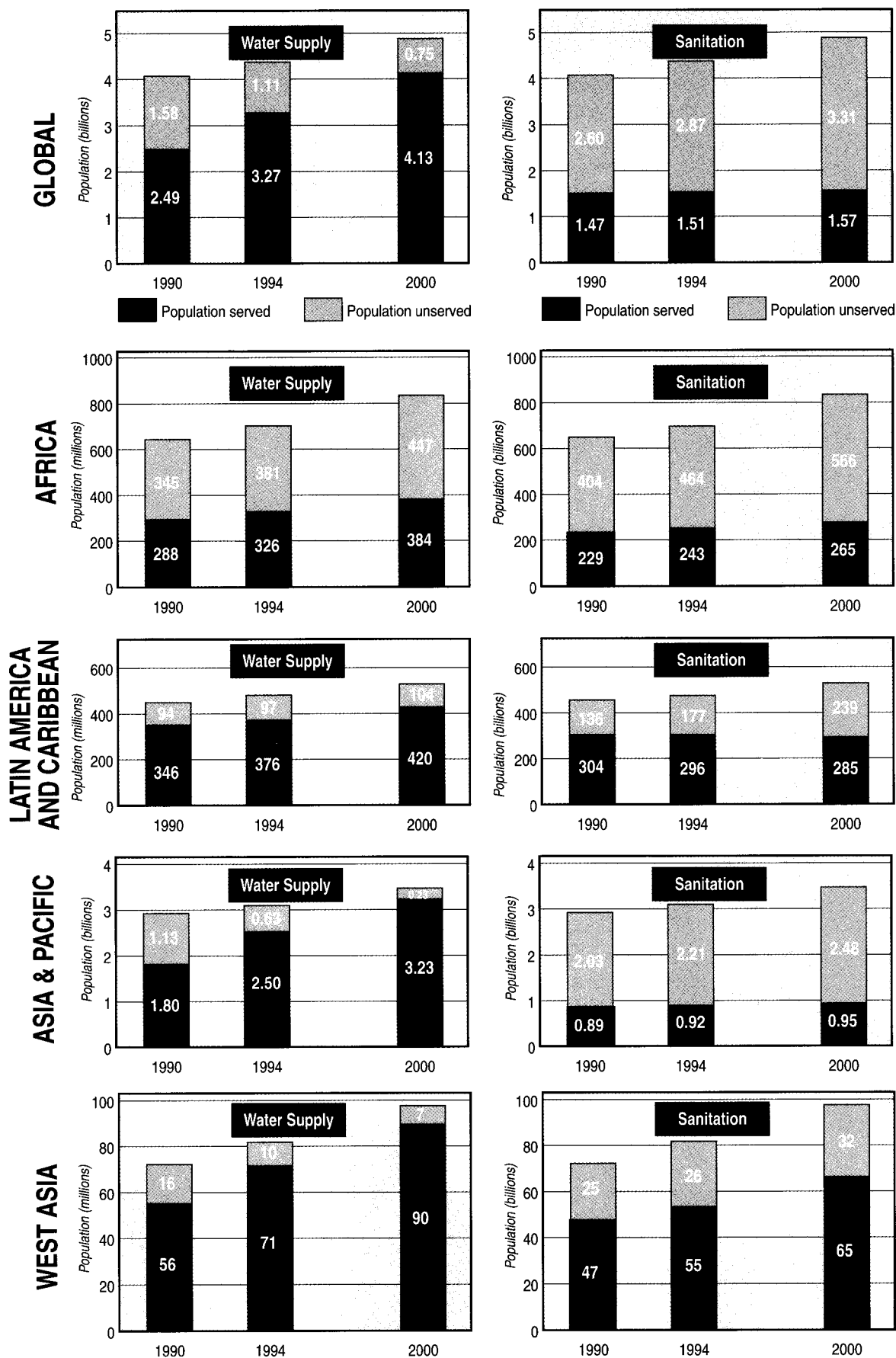
#### 6.3.1.2 Urban sanitation

The situation in urban sanitation gives serious cause for concern in all regions and, in the case of Africa, for outright alarm. In all regions, the current rate of service provision is insufficient to prevent an increase in the number of dwellers without access to at least minimum standards of sanitation. Both Asia and the Pacific and Western Asia need to more than double their current progress rate to maintain the current levels of unserved. A rate of increase nearly 33 times higher will be required in the African region to achieve this objective.

\* This analysis is based on information contained in the report of the Secretary General to the Fiftieth Session of the UN General Assembly: Progress made in providing safe water supply and sanitation for all during the first half of the 1990s (A/50/213). The JMP was the source of data used in the preparation of this report.

Figure 6.1 Coverage perspectives to the Year 2000

Note: Projections based on the assumption that 1990-1994 trends remain unchanged



In Asia and the Pacific, service coverage would need to be provided to an additional 99 million people per year in order to achieve full coverage by the year 2000, representing an increase as much as 5.6 times the current rate. A fourfold increase would be needed to achieve the same objective by 2020. Latin America and the Caribbean would need to add some 24.5 million people per year, and a fourfold increase would be required for Western Asia to achieve full coverage. In Africa, the rate of expansion would need to be 80.6 times higher to the end of the century. The region would need to provide services to an additional 29.8 million people per year – a patently impossible task..

To achieve full coverage by 2020, Asia and the Pacific would require a rate of progress more than three times higher than the current rate, and Africa 46 times higher. The Latin American and Caribbean region would need to add some 9.9 million people per year to those served in order to achieve full coverage.

### 6.1.3 Rural water supply

Under the current criteria regarding suitability in terms of quality and distance to water supply sources, a continuation of the rate of progress that has been reported to have taken place in the provision of safe water to the rural populations of Asia and the Pacific would yield full coverage in the region before the end of the century. This is not the case for any of the other regions. In Africa, a continuation of the current pace of providing safe water to rural dwellers would be insufficient to maintain the number of unserved people at the 1994 level. An increase of 58 million people per year would be required in order to supply every person with safe water. This would require nearly a twelvefold increase in the current rate of progress.

With a longer-term objective of providing full service coverage by the year 2020, the region would need to provide safe water to an additional 19 million people per year. The rate of increase would need to be 6.5 times higher in Latin America and the Caribbean, where nearly 9 million people per year would need to be added to those having access to safe water. In spite of the projected decrease in rural population, the current rate of expansion in services would be insufficient to achieve full coverage by 2020. The rate of progress in Western Asia would need to be 2.6 times the current rate in order to achieve full service coverage by the end of this decade.

### 6.1.4 Rural sanitation

In view of the stagnation in providing sanitation services to the rural population, a solution to the problem is unlikely to be at hand in the near future. In Africa, a rate of progress nearly three times higher than the current trend would be required simply to keep pace with increases in the rural population. A rate of progress nearly 21 times higher than the current one would be required to achieve full service coverage by the end of the century. Given the projected rate of growth in population, an expansion in the time-horizon to the year 2020 would not make the solution any easier.

Nearly a fourfold increase in the current rate would be needed in Western Asia. The Latin American and Caribbean region would need to provide sanitation to 13.4 million rural dwellers each year to the end of this century. Asia and the Pacific would have to provide sanitation to an additional 320 million rural dwellers per year to achieve full coverage by the year 2000. An increase of 75.5 million per year would achieve this objective by 2020.

## 7. MONITORING METHODOLOGIES AND APPROACHES

Measuring progress towards universal access to safe drinking water and a sanitary means for excreta disposal is a complex task, which is reflected in the multipart indicators adopted in the Joint Monitoring Programme. For water supply, the indicator is specified in terms of safe drinking water, convenient distance and adequate amount. For sanitation, the indicator includes an appropriate sanitary facility and convenient distance.

In most developing countries, water and sanitation coverage is monitored through routine reporting, as part of the management of installed systems. Most systems are government run, or run by very large organizations. If these organizations kept complete and up-to-date records, one might expect to obtain good indications of water and sanitation coverage of national populations. In many developing countries, though, record keeping is deficient. Also, where facilities are constructed by individuals or small private companies, records are usually not available through routine reporting. This is particularly the case for sanitation, where considerable private construction takes place. Hence, routine monitoring systems generally report only on a subset of the national population.

A further limitation encountered in many routine reporting systems is data on the *functioning* of systems. Record keeping may well be fine as far as construction of new water and sanitation facilities is concerned – partly because external funders require results to be documented. On the other hand, follow-up record keeping may be close to nonexistent, providing few data on whether systems continue to function.

Household surveys, being user-based, have particular strengths in reporting on a wide variety of population groups. They are not affected by whether a water or sanitation facility is new or old, or whether it was constructed by a large organization or an individual. For this reason, household surveys are increasing in popularity as a way of monitoring water supply and sanitation progress.

The first major internationally-sponsored collection of water and sanitation data via household surveys is under way through Demographic Health Surveys (DHS). These surveys have already proved very useful in providing the basis for comparative studies of routine and household survey systems. Unfortunately, only a few are so far carried out each year, which makes them inappropriate on their own for monitoring progress.

A more recent innovation is currently being implemented in 60 or more developing countries. This is the Multiple Indicator Cluster Surveys (MICS) methodology. It is being used nationally to fill data gaps for reporting on the mid-decade status of health and education goals related to National Plans of Action for children and the World Summit for Children. The MICS is specifically a lower-cost survey methodology and is manageable by countries using local resources.

While water and sanitation data from household surveys are increasingly available, their use as a complement to routine reporting systems has some way to go. Part of the difficulty

relates to the very different groups of people involved in the two data collection systems. These groups can sometimes have difficulty in understanding that the other(s) have something valuable to offer.

Another difficulty has been the lack of comparative studies for results from the two systems. This is being remedied. A comparison has been made of data from routine reports and from household surveys undertaken at about the same time (plus or minus two years). In the case of water supply, comparisons are possible for 44 countries and one third (15) have very different values. In only two of those cases (Bangladesh and Rwanda) do the survey data indicate lower coverage. When considering sanitation, comparison can be made for 40 countries, of which 24 show differences of more than 10% in the apparent coverage, with only three survey results being lower than the routinely reported coverage.

### *Looking ahead*

Individual country comparisons of the two data systems need to be carried out jointly by national representatives associated with each system. Water and sanitation data from 60 or more national MICS should be available in the next year.

The aim must be to synthesize the results from the two systems into a reasoned set of commonly supported estimates. A key consideration in this process is development of a common understanding of strengths and weaknesses of the data systems and how they might be improved to complement each other.

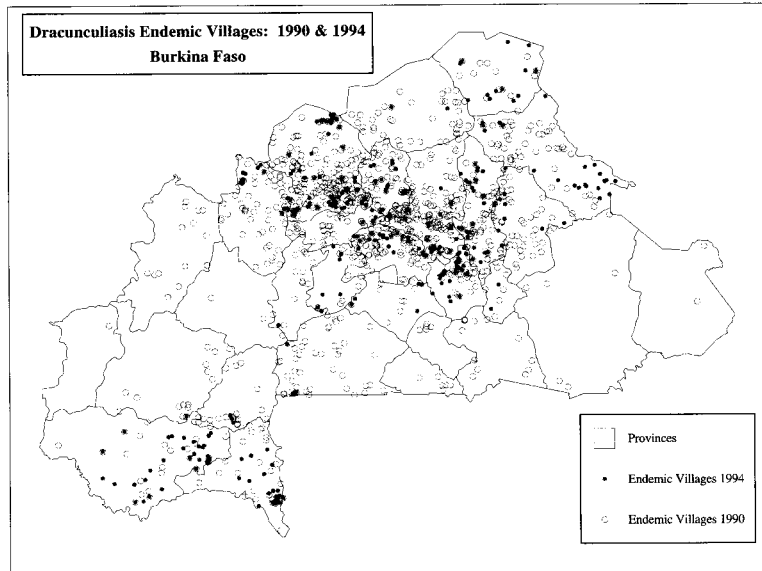
Successful merging of the two systems would not only mean better estimates of water and sanitation coverage, but also better targeted intervention programmes and hence improved coverage. Better information on water supply and sanitation progress will also improve the confidence and support of potential donors.

## 7.2 GEOGRAPHIC INFORMATION SYSTEMS (GIS)

Geographic Information Systems (GIS) use satellite technology to obtain a fast and accurate positional fix of the observer, enabling locations to be mapped accurately with a minimum of ground surveying. When attaching a GIS to a database such as the Water and Sanitation Monitoring System (WASAMS), it is possible at the national level to:

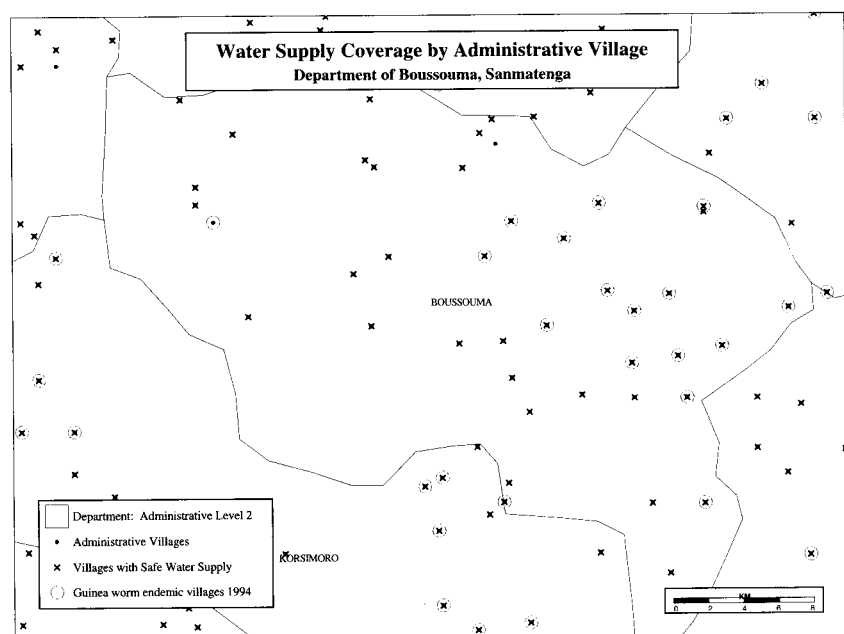
- manipulate and visualize data to present a general overview of the situation occurring in the country
- track and evaluate the situation in time and space
- take informed decisions to ameliorate apparent problems
- model the impact of alternative interventions
- programme and coordinate follow-up activities once decisions have been taken

The GIS has been used by the Water and Sanitation section of UNICEF Burkina Faso since 1991 to map villages identified as having endemic dracunculiasis in the 1990 national survey. Cases had already been reported to administrative villages and a monitoring system was in place at the village level.

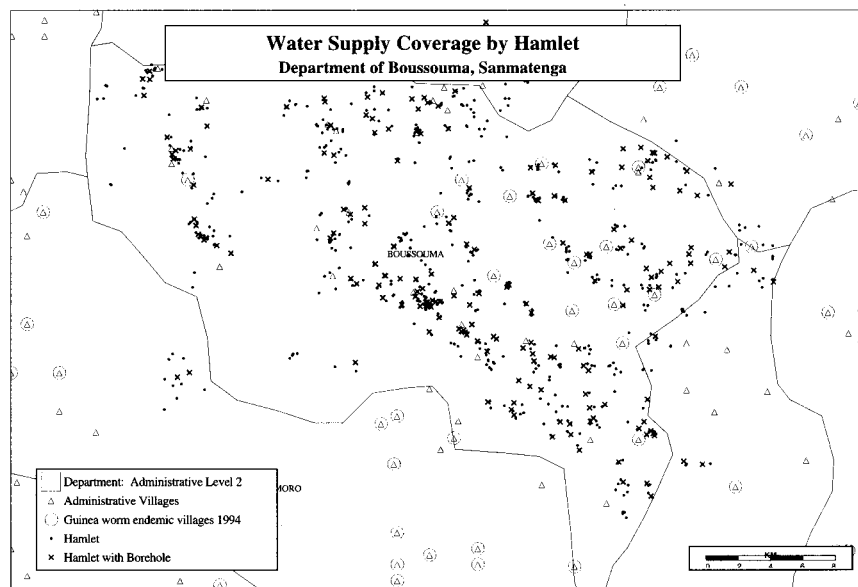


Map 7.1 shows the evolution of the disease between 1990 and 1994. It can be clearly seen that the disease has totally disappeared in some areas; some remain infected; and in some cases new villages have been identified near the old ones. What is also clear is that Sanmatenga Province and in particular the department of Boussouma has the greatest concentration of endemic villages.

Maps 2 and 3 reveal an interesting dichotomy in reporting of water supply coverage. Map 2 shows data at the level of the administrative villages (49 of them) in Boussouma and indicates an apparently very good coverage rate. On the other hand, Map 3 extends the data to hamlet level (825 hamlets in the 49 administrative villages). Only boreholes have been



Map 7.3 Boussouma water supply coverage by hamlet



mapped, but the data show that only 210 of the hamlets (25%) are covered. In national terms, the recorded coverage will depend entirely on whether the population covered is assessed by administrative village or by hamlet. Dracunculiasis cases in Boussouma are still reported at the administrative village level, so the reporting does not make it possible to target safe water supply towards affected hamlets.

Nationally, routine monitoring underestimates the coverage, because borehole drilling is under-reported for a variety of reasons, including:

- many boreholes are implemented by NGOs in agreement with the communities but without informing the central authorities
- central agencies only register works in which they are directly implicated
- regional-level water ministries, even when they are informed, do not pass the data on to the centre.

The use of GIS allows a much better evaluation of situations. Local monitoring requires surveys from which results can be mapped. Data are collected at field level, which means contact is made with all the locally involved entities in the water supply sector. This partnership fosters effective programming and means more efficient use of available resources.

GIS is part of the tools made available to regional water ministries by UNDP. Its use has enabled UNICEF in Burkina Faso to reformulate its activities with a focus on neighbourhoods or even families. A survey undertaken in 1993 and 1994 will now be repeated, with the data clearly linked to the neighbourhood. Dracunculiasis has served as an important entry point for the use of GIS in a public health context. With the assistance of the WHO/UNICEF Joint Programme on Data Management & Mapping for Public Health (Healthmap) based in Geneva, the system established for dracunculiasis is being extended to monitor other water-borne and tropical diseases.

# ANNEX 1: SUMMARY OF NATIONAL MONITORING PROGRESS

To supplement the more detailed descriptions of national JMP activities included in the regional reviews (Sections 3-5), this annex summarises monitoring progress achieved by a number of other countries.

## Asia

### Bangladesh

Although a significant amount of work has been undertaken related to water supply and sanitation monitoring in Bangladesh, and UNICEF and WHO have been involved in supporting these activities, they have not been identified as forming a component of the JMP.

### Bhutan, Indonesia, Maldives, Myanmar, Nepal

In each of these countries, a national monitoring workshop has been convened, and ministerial approval for the establishment of a monitoring system and a National Monitoring Unit has been received. In addition, an agreement has been reached among the national agencies with responsibility for water supply and sanitation on the provision of data to the NMU. Collection of existing data has been initiated.

### Cambodia

In December 1993, during a mission to Phnom Penh by WPRO, discussions were held with UNICEF staff regarding introduction of the JMP in Cambodia. In the meantime, a reorganization of the sector responsibilities started in early 1994 and water supply and sanitation were made the responsibility of the Ministry of Rural Development. Later, dialogue was restarted with UNICEF to organize broad-based meetings on water and sanitation, at which the JMP approaches and methodologies will be introduced. This is scheduled tentatively for November/December 1995. The standard three-step approach, similar to the one used in Viet Nam, will be utilized to introduce the JMP to Cambodia.

### China

During a mission by WPRO in the first quarter of 1994, discussions were held with UNICEF staff in Beijing regarding the introduction of the JMP approaches in China. It was agreed, in principle, that UNICEF would take the lead and organize a briefing meeting for the Chinese authorities. Unfortunately, to date the meeting has not been organized and no tentative dates have yet been identified.

### Thailand

A fully operating monitoring system already exists.

### Viet Nam

In May 1993, the concepts contained in the JMP were introduced briefly to the sector agency representatives in an ad hoc meeting organized by the Ministry of Health during a mission to Hanoi by the WHO Regional Office for the Western Pacific (WPRO). It was agreed in principle that the information presented would be considered among the agencies involved and further action would be formulated by the Ministry of Health. In March 1995, the Ministry of Science, Technology and Environment (MOSTE), which has a broader responsibility for science and technology information and documentation, was approached during another mission to Hanoi by WPRO. There was much interest and enthusiasm, resulting in agreement to introduce the JMP under the auspices of the MOSTE, Viet Nam. Two workshops have been scheduled for mid 1996 in which national agencies and UNICEF will participate. The first one of these is expected to result in the establishment of a national monitoring unit, a draft memorandum of understanding among national sector agencies, a plan of action for the next two years, and designation of agencies' focal person(s) who will coordinate JMP activities. The second workshop will train the agency focal points on the capabilities and use of the JMP methodologies which will enable them to initiate field implementation.





## Latin America and the Caribbean

- Argentina** In 1994 a project proposal for the development of a monitoring system was prepared, and a letter of understanding for its implementation was signed between the Federal Council of Drinking Water and Sanitation and UNICEF. A national workshop was convened in May 1994 with support from WHO and UNICEF. The project management unit is being transferred to a new sub-secretariat of Water Resources within which a National Data Base on Basic Sanitation will be developed. Continued external support for this programme is foreseen as necessary till the end of 1997.
- Belize** Belize initiated the development of a monitoring system in response to a perceived need during the 1980s. This work was supported by CARE but was suspended on the closure of its activities. The Public Health Bureau, with support from UNICEF and AMRO/PAHO, decided to restart the work. In November 1994 a plan of action for the development of a national monitoring system was prepared through a coordinated effort of all sector agencies. This plan, which will require external support for implementation, comprises refinement of a detailed work plan, a national seminar and training courses, the adaptation of software to respond to national requirements, and the initiation of systematic data collection.
- Chile** AMRO/PAHO briefed the Ministry of Health, the Sanitary Inspection Service, and the National Commission for Environmental Health on the various water-supply and sanitation monitoring concepts and approaches. A need has been identified for capacity-building to facilitate monitoring at the local health service level, as well as at the regional and national levels. A monitoring programme is proposed including the evaluation of existing information activities, a national workshop, and the development of a country-specific monitoring module. Support from AMRO/PAHO for this is foreseen.
- Dominican Republic** During 1994 a seminar, funded by UNICEF and supported by PAHO, was convened to introduce the JMP methodologies and approaches. On the basis of this, a work plan entitled 'Integrated Monitoring Programme for Water and Sanitation for the Dominican Republic' was drawn up. Part of this plan includes the establishment of a National Water and Sanitation Commission, and other steps to integrate and/or coordinate the different sector institutions. The software developed within the JMP has been identified as an appropriate management and planning tool. International technical and financial assistance in this effort are being sought.
- Ecuador** The Under-Secretariat for Environmental Sanitation has designated priority to the development of a national water-supply and sanitation information system. UNICEF and AMRO/PAHO are playing a coordination role in this effort, and the JMP approaches and methodologies have been adopted. To date, an inventory of existing systems has been prepared, and parameters for the monitoring system have been determined. Plans for the future include the introduction of solid-waste management into the system, with a consultancy on the further development of the system having been identified as a necessary external input.
- El Salvador** UNICEF has provided support to the government in strengthening computer capability, while AMRO/PAHO has assisted in the collection of data in 19 of the country's municipalities, and has provided computer equipment. A need has been identified to strengthen the capabilities of the Ministry of Health and Social Welfare at the regional level for data collection and handling. During 1995, efforts focused on the establishment of a network covering the different sector agencies and NGOs, updating and improving the service coverage database, and the preparation of the first project report. Staff have also been recruited for data collection. Support is foreseen for the provision of computer equipment and training. A regional meeting is recommended for exchange of information among countries of the region.
- Guatemala** The development of a national monitoring system is at the preliminary planning stage. The diversity of institutions responsible for water-supply and sanitation management has been identified as a major constraint. As a result, monitoring is viewed as a mechanism for the promotion of improved coordination. The need for a monitoring system is recognition of the fact that at community level there is a lack of appreciation of sector status. To effectively implement a monitoring programme, training will be required to develop the necessary capacity at all administrative levels in the country.
- Nicaragua** In 1994 UNICEF provided the Department of Rural Aqueducts with computer software to assist in the development of monitoring capability together with training in its use for headquarters staff. Software is currently being adapted to meet the needs for handling the data generated by the ongoing rural water supply and sanitation development programme. External support for this work is foreseen in the form of consultant missions to review the work and documentation prepared, while financial assistance for the design of software and its application to the regional level would assist in expediting the work.
- Surinam** Earlier efforts to strengthen monitoring through the application of the JMP approaches were impeded when the trained staff left the Department of Water, without any breaking in of successors. A general lack of data was also found to be a problem. The first priority was therefore to establish a system for data collection. The data known to exist were scattered through many departments and institutions. The first need has been identified of a coordinator to bring together the various sector agencies as well as the establishment of a coordination group. AMRO/PAHO has offered support to these efforts through the provision of equipment to the Surinam Water Company for establishing a national sector database. It has also been proposed that this work could benefit from a coordinating mechanism among the countries of the Guyanas, i.e., Guyana, French Guyana, and Surinam. This could be expanded into a Caribbean entity at a later date.
- Trinidad & Tobago** In 1994, the Water Resources Agency of the Water and Sanitation Authority (WASA) embarked on the development of a Water Master Plan aimed at quantifying water requirements. To facilitate this it has initiated a water resources and environmental database, containing information on water supply and quantity and quality of water resources throughout the country. The main constraints to the development of the water-supply component have been lack of commitment, lack of technical and human resources, and instability in sector management, involving frequent changes. In this context, the JMP approaches and methodologies were introduced to the WASA executive management as planning and management tools. It has been proposed that UNICEF and AMRO/PAHO liaise with the Ministry of Public Utilities and act as the facilitator for the formation of a National Joint Monitoring Programme Committee with multi-institutional membership. One requirement is to train at least five WASA staff, and to provide accommodation for the monitoring unit.
- Uruguay** Since being introduced to the JMP approaches and methodologies, and having been provided with software, the Nation Directorate of Environmental Health of the Ministry of Housing, Territorial Affairs and Environment was briefed and contacts were made with the Technical Department of the State Sanitary Works Department which has indicated interest in the development of a monitoring system. The need now is to identify the initial activities and the support required. The initial focus will be the municipality of Montevideo where data collection and analysis will be introduced. A workshop is planned after a six-month operation period to review the experience and assess the outcome. Support for the work in the form of consultancies is foreseen.

## WHO/UNICEF Joint Monitoring Programme

The Water Supply and Sanitation Sector Monitoring Report 1996, the third to be produced since the start of the WHO/UNICEF Joint Monitoring Programme in 1990, reviews progress made during five years of implementation of the programme and assesses some of the lessons learned. Its maps, tables and commentaries permit an assessment to be made of the status of water supply and sanitation services in the world's developing countries. Examples are included to illustrate how sector monitoring capacity has been strengthened in a number of countries in Asia, Africa, Latin America and the Caribbean.

The document contains data on the levels of water supply and sanitation service coverage provided by 84 governments out of a total of 130 who were invited to participate. This compares with 63 countries reporting in 1991 and 82 countries in 1993.

Based on the data provided, this report offers an analysis of progress achieved in expanding service coverage during the first four years of the 1990s, globally and regionally. The analysis is then extended to relate the progress achieved to the goal of universal coverage set by the 1990 World Summit for Children.

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