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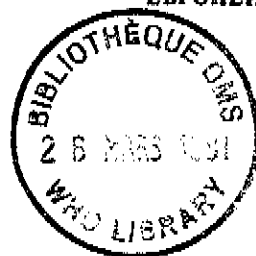


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INTERNATIONAL DRINKING-WATER SUPPLY AND SANITATION DECADE

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This document describes in outline a programme for the European Region in support of the International Drinking-Water Supply and Sanitation Decade, a strategy which represents a major enterprise of the international community until 1990 and an important input to the achievement of WHO's objective of health for all by the year 2000.

There is a review of the background to the present situation, which has resulted in a commitment by governments and the international community to the attainment of the Decade's goals of "adequate and safe water supply and an appropriate means of sanitation for all by 1990".

The activities leading up to the launching of the Decade at a special session of the United Nations General Assembly on 10 November 1980 are described. This is followed by an account of variations in sectoral conditions in the European Region and a review of the priority actions identified during the preparatory period (1978-1980).

The approach to the Decade in the European Region will to some extent vary from country to country and from north to south; however, the key to WHO's activities in all cases will be support to governments in their efforts to attain identified national goals, and collaboration with and through UNDP as the established focal point for efforts relating to the Decade.

A number of elements of the work are already at the preparatory or implementation stage at country or intercountry level, but it will be necessary for efforts to be substantially increased if the Decade targets are to be reached. The problems within the European Region are major ones, but success should be much more readily achievable here than in most other parts of the world. The great and lasting reduction in diarrhoeal and other diseases which would result from the attainment of the Decade objectives presents a stimulating challenge to governments and the international community.

1. Introduction

The purpose of this paper is to describe in outline the role of the WHO Regional Office for Europe within the framework of the International Drinking-Water Supply and Sanitation Decade.

Waterborne diseases, especially diarrhoea, are the major cause of morbidity and mortality in young infants and children throughout the world, and the main contributory factor to this state of affairs has been clearly identified as inadequate water supply and sanitation. There are also other water-associated diseases whose incidence would be greatly reduced by improved water supply and management.

Realization of the potential impact of improved water supply and sanitation on health and the important role of this, within the framework of primary health care, in attaining the broader objective of health for all by the year 2000 has become clear; this has been spelt out in the document "Regional strategy for attaining health for all by the year 2000" (EUR/RC30/8).

Some countries in the southern part of the Region have experienced outbreaks of cholera and typhoid during the last few years, and a number of diarrhoeal diseases frequently affect both residents and tourists. The provision of safe water supplies and better waste disposal facilities would lead to a dramatic reduction in the incidence of these diseases and would enable considerable improvements to be made in both personal and food hygiene.

In all countries of the Region, the proliferation of potentially harmful chemicals in the environment is leading to new threats to drinking-water quality through the pollution of surface and groundwater sources. This necessitates careful surveillance by water supply and public health authorities.

2. Background

The recommendations of Habitat: United Nations Conference on Human Settlements (Vancouver, 1976) and their endorsement by the United Nations Water Conference (Mar del Plata, 1978), resulting in the proposal that 1980-1990 be designated as the International Drinking-Water Supply and Sanitation Decade, created the necessary basis for the United Nations system to offer governments significant support in their efforts to attain the Decade goals.

As the main United Nations specialized agency active in and responsible for the water and basic sanitation sector, the World Health Organization has been assigned a leading role and responsibility for planning and supporting activities related to the Decade at country and regional levels. As a result, during the period 1979-1980, the Regional Office for Europe was involved in the preparatory activities for the Decade, and the proposed programme is intended to provide the necessary support to Member States of the Region during the 10 years ahead.

Perhaps the most important preparatory activity has been the rapid assessment exercise, performed country by country to determine the present sectoral situation and, hence, to establish a concrete quantified base from which to proceed. Not only has it provided an analysis of sectoral status and of the shortcomings which need to be rectified if the Decade goals are to be achieved, but it has also provided an initial estimate of the order of magnitude of the investment required at both regional and global levels and has enabled the national authorities to identify their main concerns and priorities for action before 1991.

3. European preparations

The rapid assessment exercise, perhaps for the first time, made it possible to obtain a general overview of the state of water supply and waste disposal for the whole of Europe and resulted in a realization that a great deal of effort had to be expended if the Decade objectives were to be attained.

Undoubtedly the countries of Europe are being, and will be, looked to by the developing world as a pool of potential donors who can contribute to the global Decade efforts, but there is also much to be done by the European countries themselves to put their own house in order as far as the water supply and sanitation sector is concerned. By undertaking this challenging task, the European Region, with its resources and its long experience, has a unique opportunity not only to set an example to others, but also to provide support to the countries of the developing world by collaborating with them in some of the Decade activities, particularly in the field of training and manpower development.

4. The European situation

There are wide differences in quality of service in the water supply and sanitation sector throughout the European Region. In general terms, there is a need for a more concentrated effort to increase coverage and continuity of service in Algeria, Morocco and Turkey, while in other Member States of the Mediterranean basin there are specific areas where deficiencies have to be rectified or where seasonal population fluctuations, due mainly to tourism, put strains on systems not originally designed to cope with the recent upsurge in international travel, something which only a few years ago could not have been predicted.

In other parts of the Region, there are also specific localities where supply and disposal deficiencies exist, and these will have to be tackled; often these are in rural or otherwise geographically isolated locations, including islands. Conditions in the arctic regions present special difficulties. A more general need in the northern, central and western parts of Europe, however, is to improve the quality and reliability of services.

The variety of approaches to the Decade throughout the Region should result in a broadly based approach with a wide spectrum of activities proceeding along gradually converging paths as the sectoral differences are reduced and all Member States draw closer to 1990 and the attainment of the established goals. In this respect, the European Region has an advantage over the other regions, where efforts will have to be concentrated mainly on increasing the coverage provided by services.

4.1 Southern countries

4.1.1 Urban water supply

Although in countries around the Mediterranean basin the water supply to urban areas never serves less than around 60% and in some instances serves up to 98% of the population, there are wide variations in the quality of service. In some cases, large areas are served by standpipes, disinfection is uncertain, supplies are intermittent because of mechanical failure or, in cases where the coverage is almost total, the supply is not continuous.

4.1.2 Urban waste disposal

The number of urban dwellings connected to sewerage systems is often much lower than the number of houses connected to water distribution systems, with only 20% of the population connected in some instances. This means that a large proportion of the inhabitants have means of excreta disposal that are completely inappropriate for locations of high population density. This is where the greatest urban effort will have to be made during the Decade within the European Region.

4.1.3 Rural water supply

The proportion of rural inhabitants connected to a central water distribution system is, not surprisingly, lower than that of the urban population because of the economic and technical difficulties associated with supplying widely scattered individual dwellings. Under such conditions, there will always be houses for which an individual private supply will be the appropriate solution. However, under such situations, it is essential that the systems be properly designed to prevent and safeguard against contamination and that a system of surveillance be introduced and effectively operated.

According to the data collected during the rapid assessment exercise, the proportion of rural inhabitants connected to a distribution system constructed and operated by the responsible authorities is as low as 10% in several countries, while up to 30% are connected to individual supplies which, although they may be satisfactory, are always suspect without appropriate monitoring. This leaves at least 60% of the rural population who are supplied with unsafe water in those countries.

An analysis of the results of the rapid assessment indicates that this represents the situation in one third of the countries of the Region and that 70 million of the rural population in these countries are served by unsafe water.

4.1.4 Rural sanitation

A study of the rural sanitation situation in a number of countries indicates that little attention has so far been paid to the problem; in some instances, no national authority has been given specific responsibility for waste disposal in rural areas. The statistical information on adequate sanitation coverage in these areas is as yet extremely limited, partly because of the difficulty in establishing criteria for what is actually "adequate" under such conditions.

4.2 Northern countries

Although in general the level of water supply and sanitation services tends to improve as the level of industrial and economic development of countries improves, there are still significant defects to be overcome.

It is estimated that around 5% of the total urban population are not connected to a public authority water distribution system. Some of these, of course, may be connected to satisfactory alternative supplies; however, it is to be expected that some of the systems are unsatisfactory or at best suspect and surveillance of private supplies is often virtually nonexistent.

The percentage of the urban population not connected to a sewerage system is in all cases found to be somewhat higher than that not connected to water supplies; between 10% and 25% of the population have alternative means of disposal.

5. Priorities within the European Region

5.1 Reduction of incidence of waterborne disease

A principal objective of providing safe and adequate water and hygienic methods of excreta disposal is the reduction of the incidence and, so far as is possible, the prevention of waterborne communicable diseases. The importance of waterborne disease in Europe, in particular in the southern part of the Region, was stressed at the WHO Intercountry Meeting on the Surveillance and Control of Acute Diarrhoeal Disease, Rome, April 1980, which was convened in response to resolution WHA31.44 of the Thirty-first World Health Assembly.

Recognizably, diarrhoeal diseases are the major cause of morbidity and mortality in young infants and in children in all Mediterranean countries, and the growing influx of tourists from northern and central Europe has created a situation which can facilitate the transport of infections internationally. In fact, in some countries in the south and south-east of the European Region, as many as 25% of all paediatric beds are used for diarrhoeal cases, while 90% of all cases are children under two years. Moreover, in 1980, at least six countries in the Mediterranean area were affected by cholera.

The main factor contributing to this state of affairs has been clearly identified as inadequate water supply and sanitation and the discharge of raw sewage. To combat this situation, the control of diarrhoeal diseases in most countries is based on improving environmental sanitation, with food hygiene also playing a role. In this effort, steps are normally taken to increase the coverage provided by safe water supply and excreta disposal systems, particularly in areas of extensive tourist activity, because of the economic damage resulting from publicity related to widespread illness amongst visitors.

Exposure to waterborne disease can also occur through inadequate sanitation in coastal areas, resulting in the uncontrolled discharge of largely untreated faecal matter to the sea. Land-based pollution sources of this type are a major concern, and this question is currently being studied within the Mediterranean Action Plan in which the Regional Office for Europe is participating.

Thanks to their efforts in improving environmental sanitation, some countries have already demonstrated gradual decreases in the incidence of enteric disease; although this does not mean that the problem has been solved, it at least indicates the direction to be taken if a solution is to be reached.

It is estimated that the provision of safe water supply in areas where enteric disease is prevalent would, by itself, have dramatic results; for example, instances of cholera would be reduced by 90%, typhoid by 80% and bacillary dysentery, amoebic dysentery and gastroenteritis by 50%. These figures clearly demonstrate the anticipated impact of improved water supply on the incidence of these diseases, the most marked benefit being in relation to cholera and typhoid.

A contrast between alternative strategies for the prevention of enteric infections and diarrhoeal diseases is shown in the table.

5.2 Operation and maintenance of systems

The rapid assessment exercise revealed that one of the difficulties facing many countries of the world, including Europe, was a shortage of adequately trained personnel to operate and maintain water supply and liquid waste disposal systems. Too often new plants or complete schemes are built and commissioned, only to be operating below capacity or irregularly soon after because of a lack of regular planned maintenance, a shortage of spare parts or a lack of operational experience on the part of the responsible personnel.

Table. Alternative approaches in the use of various control measures to prevent enteric infections and diarrhoeal diseases

Criteria for comparison	Sanitation	Health education	Vaccination	Combined measures ^a
Effectiveness	Protection about 50% against all enteric infections Long-lasting effect Cumulative effect in time	Protection varies according to epidemiological conditions and people's motivation and cooperation	Protection 50%-80% against typhoid, paratyphoid B and cholera Short duration of protection Declining in time	High if well time-scaled, e.g. begin with health education and vaccination while beginning preparations for long-term sanitation Low if improperly combined
Cost	Relatively high in the beginning Low cost of maintenance Cost-effectiveness high	Relatively low Cost-effectiveness high	Relatively low in the beginning Very costly in the long run because of need for repeated vaccination Cost-effectiveness doubtful	High Cost-effectiveness usually lower than when only one method is used
Advantages	Effect gradually forthcoming ^b Long-lasting effect Cumulative effect Supports economic development	Effect rapidly forthcoming Lasting effect If provided as support to vaccination and/or sanitation, renders these more effective	Immediate effect ^b Low initial cost	Effect rapid and complete Effect immediate and lasting Effect cumulative Supports economic development
Disadvantages	High initial investment Risk of becoming ineffective if not supported by health education and people's cooperation	Low effectiveness if not properly carried out and without people's participation Low effectiveness if specific message is not included	Short-lasting effect Gives false sense of security High cost of maintenance of the level of immunity Only a few specific infections are prevalent	Very high cost Very high initial investment Likely to fail if not sustained by continuous efforts

^a Combined measures in various mixes should be well planned according to the local epidemiological situation and available resources

^b The only sanitary measure which is immediately effective is drinking-water chlorination in waterborne epidemics and food control measures in specific foodborne infections

Although this problem tends to be more serious in the less industrially developed countries where rapid socioeconomic development is taking place, it is a difficulty faced by almost all countries to some extent. In some countries with a long tradition in the water industry, the training of operational personnel has often relied on a practical inservice approach, and formal training courses for middle-grade personnel have only recently been established.

There is also a general tendency for the operation and maintenance of waste treatment facilities to be at a lower level of efficiency than that of water supply systems. This appears to be partly due to the longer experience and history of water supply, while waste treatment tends to be a more recent innovation of a technically complicated nature. However, there seems also to be a social stigma attached to waste treatment plant operation as well as some cultural taboos; this often results in lower-grade staff, who do not have the necessary education or experience, being assigned to take responsibility for installations.

Only through the training of personnel of an adequate calibre can these problems be overcome, and only through public education will the necessary status be given to these key public sector employees. If these difficulties are surmounted, proper maintenance rather than repairs will ensure the continuous effective operation of the systems.

5.3 Institutional framework

Two factors must exist if satisfactory sanitary services are to be provided to a community. They are the supply and collection systems in terms of structures, networks, equipment and staff, and the organization to plan, manage and operate the systems. The organization created to take responsibility for the systems must be developed or created at the appropriate level of each country's administrative structure, with control over the appropriate geographical areas, supported by the necessary legal provisions and endowed with the necessary powers.

It has become clear that, in many instances, little progress will be made towards the goal of safe water and sanitation for all by 1990 unless the appropriate institutional arrangements are developed in parallel with the planning of capital investment and the training of the necessary personnel. Too often responsibility is fragmented or responsibilities are allotted without being backed up by the necessary legislation and/or means of implementation.

The review of existing management structures has been identified as an important activity and one in which agencies of the United Nations system, and WHO in particular, have past experience and will be able to provide support if required.

5.4 Rural water supply and sanitation

In all parts of the Region, the provision of water and sanitary facilities in rural areas presents greater problems than it does in urban areas because of wide scatter of individual dwellings and topographical considerations. It is seldom possible to connect isolated dwellings to a central water distribution system and impractical to connect them to a sewerage network.

Therefore, individual systems of supply and waste disposal will always have a role to play. This being so, means must be found to ensure that private supply and sanitation systems are properly designed and maintained so as to prevent any health risks.

Since in most cases rural water supplies are operated of necessity by untrained staff, there is a need for a system of regular surveillance by public health or other trained personnel.

While individual water and sanitation systems have always been necessary for the residential rural population, there is now a growing demand for facilities in recreational areas due to the increased number of hotels and weekend or holiday homes. As these are often located near lakes, rivers or coasts, they require special consideration, since the waste disposal systems adopted have to be appropriate for intermittent utilization, and the improper functioning of these systems can seriously endanger the water resources of their environs, i.e. groundwater, rivers and bathing areas. The problem compounds the difficulties related to waterborne diseases and fluctuating tourist populations, especially in Mediterranean coastal areas.

5.5 Groundwater pollution

The uncontrolled discharge of wastes, whether from domestic, commercial or industrial premises, creates a serious danger of pollution, particularly of unconfined aquifers. This pollution can also result from the deposit of solid wastes on surfaces overlying aquifers when adequate protection measures have not been taken. Not only does such pollution create a health risk, since often the unconfined aquifer is the cheapest and most accessible local water supply source, but it can result in the aquifer becoming completely unsuitable for potable supply purposes.

This problem becomes particularly serious when the need to dispose of toxic wastes is considered. In the past, such wastes have often been dumped on designated tipping areas or even indiscriminately on undeveloped or derelict land, with potentially disastrous consequences for the soil and for groundwater aquifers. These problems are currently being considered by the Regional Office and a Code of good practice for the control of toxic and other hazardous chemical wastes will be issued as a Decade input. The adoption of this Code by governments would be an important step towards protecting water resources.

Careful attention must, of course, also be paid to the possibilities of contamination of surface supplies, particularly lowland rivers, due to pollution from communities, industries and agricultural activities further upstream.

In view of the importance of safe and adequate water, not only for health reasons but also for overall economic and social development, sources must be safeguarded not simply for the needs of today but for the requirements of the years ahead.

5.6 Geographical areas requiring special consideration

Within the European Region, there are many areas where, because of climate or geographic situation, the provision of water supply and sanitation facilities appropriate for good health will be difficult. These include mountain areas, islands, arid and semi-arid regions and arctic areas. Suitable means, including desalination, waste effluent reuse, etc., have to be found to provide the necessary services to populations in these areas.

Activities related to these problems have already been initiated. A Seminar on the Health Implications of Treated Sewage Reuse was held in Algiers in June 1980, and a workshop is being convened in Copenhagen in August 1981 to consider environmental health problems in arctic and subarctic areas.

5.7 Treated sewage reuse

As water resources become scarce and more remote from centres of consumption, the need to treat and reuse waste effluents for domestic, industrial and agricultural use will become increasingly important. Treated waste reuse in itself is not new, since as long as man has existed settlements have used watercourses for the removal of waste, while their downstream neighbours have used the same stream. With scattered populations, relatively small towns, low per capita water consumption, an agriculture-based economy and abundant water sources, the self-purification of lakes, groundwater and watercourses has in most cases adequately coped with the problem. Now the situation is completely different: populations are becoming more concentrated in large towns and cities; per capita water consumption is increasing; economies are more industrial and based less on agriculture. As a result, the gap between water requirements and source capacity has narrowed to a point where in many areas grave shortages exist, the lack of water is identified as a constraint to development, and the self-purifying capacity of the water cycle has long been overtaxed. These difficulties are greatly amplified in arid and semi-arid regions.

The study of the technology and health problems involved in the reuse of wastewaters forms part of the Regional Office's intercountry programme.

5.8 Improvement of water quality standards

The chemical safety programme currently being conducted within the Regional Office's programme has highlighted the proliferation of both inorganic and organic chemicals, many of which are potentially toxic to man. To date, in some potable water supplies, the presence of over 600 individual organic compounds has been reported, many of which are known to possess carcinogenic or other adverse health effects.

In an effort to exercise adequate control over the presence of such materials in drinking-water supplies, guidelines for drinking-water quality are at present being formulated as an integral part of the International Drinking-Water Supply and Sanitation Decade to supersede the existing WHO International and European Standards for Drinking-Water, which are now 10 years old.

The commercial use of inorganic substances has created problems in the environment, including the pollution of rivers and waterways, many of which are used as sources of public water supply. Present-day farming activities, necessary in improving crop yields, result in the pollution of underground water supplies, as evidenced by the increasing levels of nitrate from fertilizer application found in such supplies. In addition to establishing recommended limit values in drinking-water for such toxic substances as mercury, lead and cadmium, undue contamination by

nitrate must also be limited in order to safeguard the health of children. In an endeavour to protect children's health and to assuage a substantial body of public opinion, the present WHO standard for fluoride in drinking-water has been readopted.

Today, industry discharges as effluent a range of organic waste materials which have quite objectionable characteristics as far as health is concerned. Frequently such substances gain access to public water supplies via rivers and streams used as source water. To safeguard public health, quantitative recommendations for limiting the extent of such contamination have been proposed.

Cardiovascular diseases and their social implications are being investigated in relation to the characteristics of drinking-water supply, and attempts are being made to correct recognized deficiencies.

Thus, to coincide with the commencement of the Decade, a completely new concept in drinking-water control will be available as guidance to the various countries concerned, not only enabling them to adopt a criterion of acceptable drinking-water quality, but also advising them how to achieve their goal.

6. Approach to the Decade in the European Region

Much progress has been made in the European Region towards providing safe and adequate water supply and sanitation facilities to the population. However, the rapid assessment exercise has clearly shown that a considerable amount remains to be done.

The International Drinking-Water Supply and Sanitation Decade presents a challenge which has been accepted by the world community, and here Europe has a special role to play. Participation is expected to take the form of efforts at the national level to attain the Decade goals, together with support to developing countries, both through technical and financial cooperation and through assistance in manpower development and training at the global level.

During the past 10 years, the Regional Office has been involved in a continuing programme of pre-investment studies undertaken within the framework of the UNDP country programmes in Algeria, Morocco, Portugal, Turkey and Yugoslavia. Through an investment from UNDP/IPFs of around US \$5 500 000, a total World Bank follow-up of approximately US \$278 000 has been secured or is currently in the course of negotiation, and as a result around 6 million people have had their water supply or excreta disposal facilities upgraded to the level of "safe and adequate". However, this only represents about 10% of the total problem to be faced.

The efforts directed towards attaining the Decade goals have already gathered some momentum, and a sound basis exists for continuing and accelerating the work, the rapid assessment exercise having produced the data base from which to plan and prepare a detailed strategy.

During the Decade, WHO will support Member States' efforts, on the basis of its past experience, and will assist in the task of securing sources of funds for project implementation. It will also help governments in their own planning activities and, on request, will assist the appropriate organizational and administrative infrastructure in developing strategy.

During the collection of data on the current status of water supply and waste disposal during the rapid assessment exercise, it was possible to ascertain from the various countries concerned their priorities for action during the Decade. The information so obtained will enable the basic sanitation programme of the Regional Office to be further developed. Among the various aspects mentioned, the following have received consideration and at present work is progressing in these areas: development of training programmes, improvement/expansion of water quality guidelines, health aspects of treated sewage reuse, provision of basic sanitation to isolated communities and dwellings, basic sanitation services in climatically and geographically difficult regions, protection of water resources, and monitoring of quality of water supply and excreta disposal in rural areas. In particular, help will be provided to governments in the preparation of pre-investment proposals supporting applications to lending or donor agencies.

It is clear that much of the effort will have to be undertaken in southern parts of the Region, where the largest deficiencies in services exist.

A large proportion of the work is closely related to the intergovernmental and interagency Mediterranean programme, in which the Regional Office has, and will continue to play, a major role.

7. Conclusions

A unique opportunity clearly exists to develop a political momentum in relation to the Decade within the European Region as a means of securing major and lasting reductions in diseases which affect a considerable proportion of its people. Success will depend on the degree of commitment of governments, the mobilization of financial and human resources, and the design and implementation of carefully considered projects utilizing appropriate technology. WHO, in close cooperation with UNDP and other international organizations, stands ready to support these efforts.