



WOMEN AND THE INTERNATIONAL DRINKING WATER SUPPLY AND SANITATION DECADE

BIBLIOGRAPHY



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**BIBLIOGRAPHY OF THE INSTRAW
INTER-REGIONAL SEMINAR ON WOMEN AND THE IDWSSD
Cairo, 12-16 March 1984**



**UNITED NATIONS INTERNATIONAL RESEARCH
AND TRAINING INSTITUTE FOR THE ADVANCEMENT OF WOMEN
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UNITED NATIONS INTERNATIONAL RESEARCH
AND TRAINING INSTITUTE FOR THE ADVANCEMENT OF WOMEN
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WOMEN AND THE INTERNATIONAL DRINKING WATER SUPPLY AND SANITATION DECADE

BIBLIOGRAPHY OF THE INSTRAW INTERREGIONAL
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PREFACE

Among the pressing problems facing many developing countries is that of water supply and sanitation. In an effort to alleviate the problems in this area, the United Nations declared the period 1981-1990 as the International Drinking Water Supply and Sanitation Decade (IDWSSD), with the target that, to the extent possible, the world would have access to safe water and proper means of sanitation by 1990.

By its mandate, the United Nations International Research and Training Institute for the Advancement of Women (INSTRAW) has a long-term commitment to the implementation of the objectives of the IDWSSD.

To this end, an Interregional Seminar on Women and the IDWSSD was organized by the Institute and hosted by the Government of Egypt in Cairo from 12-16 March 1984.

The objective of the Seminar was to identify the problems encountered in the various areas related to drinking water supply and sanitation,

particularly in the areas of socio-economic development, health and sanitation and science and technology. The meeting also aimed at seeking possible solutions to those problems based on the successful experiences of experts from different countries and regions. This was accomplished by drawing upon the diverse expertise of the participants, particularly as they represented a tripartite participation scheme of social scientists, medical doctors and health specialists, and engineers/scientists.

Sixty participants from various countries and regions attended the meeting. Included were representatives of United Nations specialized agencies and organizations, donor agencies, non-governmental and other international organizations.

Thirty-one papers were submitted to the seminar, covering the issues within water supply and sanitation from the various perspectives. The following are abstracts of the papers submitted to the INSTRAW Interregional Seminar on Women and the IDWSSD.

THE RIVER NILE AND ITS IMPACTS ON EGYPTIAN AGRICULTURE

BY MAHMOUD ABU-ZEID
(EGYPT)

1

The perspective of this paper is national with certain regional implications. Its approach is governmental and policy oriented and deals with the socio-economic aspect of water supply and sanitation.

The principal factor which has enabled the development of Egypt is the River Nile, which brings water and fertility into a country which otherwise would be entirely desert land. Egypt has practically no rain and its agriculture therefore depends on irrigation from the Nile.

Despite advances in industrialization and increased urbanization agriculture still accounts for 50% of the total population, 47% of employment, about 30% of gross national product, and 80% of

export earnings. Now, in order to generate and meet its future food requirements to cope with a very high annual rate of population growth, Egypt faces a major challenge to increase the rate of growth in agriculture production.

Engineering efforts to control the Nile started as long ago as the Pharaonic epoch, when King Mina, who ruled Egypt in the first Dynasty, constructed the left bank to protect urban areas. He then went on to establish canals and bridges to carry the Nile water to lower land behind the newly constructed bank.

Since then focus on the development of the Nile as a resource has continued. These developments, however, began to bring about regional im-

plications affecting countries through which the Nile and its tributaries ran, leading to the necessity to discuss arrangements between countries in the region for optimal utilization of the Nile. The

agreement reached between Sudan and Egypt has become a successful model of cooperation, encouraging more African Nile Basin countries to join in technical cooperation.

2

WOMEN'S ROLE IN WATER SUPPLY, WASTES DISPOSAL AND SOLID WASTES MANAGEMENT

BY MARIA HELENA DE ANDRADE ORTH
(BRAZIL)

The perspective of this paper is international, though citing often Brazil as an example. Its approach is non-governmental and academic, but with policy implications, and it focuses on the health and sanitation aspect of water supply and sanitation.

Since the beginning of civilization man has set himself close to sources of water supply in order to meet his bio-physico-chemical and economical requirements. It is assumed though that the water from this source should serve as an instrument for health and not cause diseases transmitted by micro-organisms through water such as cholera, typhoid fever, paratyphoid fever, diarrhoea and hepatitis.

In order to guarantee water quality in accordance with standards, a sanitary survey of the operational conditions of public water supply systems should be made in order to detect the causes that would endanger water quality and propose adequate preventive and remedial measures. In so doing, human resources should be mobilized. Sanitary affairs should be conducted by qualified technicians and in this area women should be suitably trained.

One of the reasons responsible for poor quality of operation of services is lack of control or continuous supervision of water supply quality.

In this respect, women can perform an essential role, namely, as users of traditional water services, as introducers of new services, as managers of

water resources of the family and community, as agents of hygienic conditions and trainers of proper use of services.

Waste disposal is essential to protect public health. Typhoid fever, cholera, enteric diseases, infectious hepatitis, and a number of verminose cases are some of the diseases that can be transmitted through sewage discharge.

In small, medium or large towns public cleansing is a basic municipal service and it usually requires from 10 to 15% of the town's budget. These services must be accomplished according to existing conditions in each municipality and include the following activities: collection and transport of wastes; maintenance of the cleanliness of streets, public parks and communal areas; complementary services, such as, cleaning of gully-holes, cuverts, trenches and canals; cleaning of monuments, tunnels, staircases and street markets; and final disposal of all solid wastes produced in town.

Regarding the role of women in the community, the essential task is to teach them the basic hygienic practices about the use of technical services concerning waste disposal. Women's training as users and managers of sanitation services should include the following: adequate utilization and care of the use of latrines; basic instruction in disposal of feces and how to wash hands after defecating and before preparing food; adequate recovery of wastewater and excreta; adequate maintenance of sewage systems; and inspection of domestic, regional and municipal systems.

3

THE ROLE OF CHINESE WOMEN IN THE "INTERNATIONAL DRINKING WATER SUPPLY AND SANITATION DECADE" IN CHINA

BY CHEN CHANGJIE
(CHINA)

The perspective of this paper is national, focusing on the situation of China. Its approach is governmental and policy oriented and notes particularly the health and sanitation aspect of water supply and sanitation.

China is a vast country with a large population and complicated natural conditions. According to the distribution of the population and situation of water resources, a programme for improving drinking water supply has been set up, the

emphasis of which is on the rural areas.

In order to carry out the programme, the National Patriotic Health Campaign Committee of China (NPHCC) has been designated by the State Council of China as the leading body. NPHCC had already decided to establish the Technical Advisory Center (TAC) for rural water supply techniques in the Institute of Health, in the China National Center for Preventive Medicine.

For the implementation of water supply and sanitation activities in China, manpower training is considered to be very important. For this reason two training centres are being built.

In China, women enjoy equal rights with men.

They can choose any job without discrimination, and enjoy equal pay for equal work. Many women are in leading positions in scientific research institutes, hospitals and colleges. More than half of the teachers in elementary and middle schools are women.

Within the activities for improved water supply and sanitation, women have an important role in China. At present, a number of women have been working in the NPHCC. At the Technical Advisory Center nearly 50% of the skilled staff are women.

Women also make up 50% of the staff, at the regional and country level, in the Patriotic Health Campaign Committees, Sanitary and Antiepidemic Station.

THE INDIAN DILEMMA: WOMEN AND THE INTERNATIONAL DRINKING WATER SUPPLY AND SANITATION DECADE

4

BY BANOO COYAJI
(INDIA)

The perspective of this paper is national, focusing on the situation in India. Its approach is non-governmental and academic, though highlighting policy, and deals with the health and sanitation, and science and technology aspects of water supply and sanitation.

In India, as of March 1981, protected drinking water was available to 80 percent of the urban and 30 percent of the rural population. Sanitation figures though were dismal. In urban areas 34 percent, but only two percent in rural areas.

The Government of India has thus taken up its commitment to the IDWSSD very seriously and drawn up a national plan of action. The successful implementation of the plan calls for sound policies, such as priority for the underserved population, appropriate technology, intersectoral coordination and efficient implementation and management to reduce wastes. The link of these policies with those in related sectors like rural development, health, industries, education and social welfare is expected to contribute in great measure to the achievement of the Decade goals. Health educational and community participation will be crucial inputs.

India's population is over 700 million. Of this, 48 percent are women of which nearly half are girls. While India has battled successfully against some of its major killer diseases, the greatest failure of the present health system is the unacceptably high female, infant and child mortality. This is an indictment of society's failure to provide not only medical care but food, shelter, water and sanitation to its mothers and children.

The two major factors contributing to child mortality and morbidity are under-nutrition and infections from unsanitary environment, principally diarrhoea.

Women in general and pregnant and lactating women in particular tend to be undernourished. Iron deficiency anemia is present in 70 percent of pregnant women and is responsible for 20 percent of maternal deaths with an adverse effect on the well being of their unborn children.

Apart from the reality of poverty which daunts the majority of the people, women bear the burden of child bearing, child rearing, care of the ill, infirm and older members of the family. This in addition to supplementing the family income through hard work in the fields, construction sites and factories. A major activity that saps women's energy is fetching heavy loads of water and fuel from long distances. Overwork, lack of time and perpetual fatigue with the resultant stress undermine her physical and mental well being.

Clean water and environmental sanitation, is it hoped, will be provided to India's underserved population by 1990. This will not necessarily bring about eradication of water borne diseases unless women, who are the main users of water, are involved in a massive health education programme. The water from newly installed taps, for example, may be clean and safe but it will not remain so, unless women are taught that the containers in which that water is collected are clean, that the environs are clean and animals are not washed at the same source.

India is a signatory of the Alma Ata Declaration of 1977 and has decided to make the primary health care approach the main focus of its health services to fulfill its commitment to Health for All by 2000. It has thus initiated four important programmes: the Integrated Child Development Service, the Health Guide Scheme, the Trained Birth Attendants Scheme and the Non-formal Adult

Education Programmes. All four schemes incorporate women and will be of great use in the implementation of Decade strategies.

Women in India are thus being trained to fulfill their multiple roles as members of the family and

of the community, as health guides, trained birth attendants, child minders, and as agents for change. There is still a long way to go. The process, however, has started.

5

THE DRINKING WATER SUPPLY SITUATION IN AFRICA AND THE ROLE OF WOMEN

BY THE ECONOMIC COMMISSION FOR AFRICA

The perspective of this paper is both international and regional. Its approach is governmental and Policy oriented and deals with the socioeconomic and science and technology aspects of water supply and sanitation.

The countries in Africa like all developing countries are suffering the impact of global economic recession, growing production costs, high interest rates and the escalating price of oil. A WHO study in 1980 reports that 87 per cent of the countries are in need of some form of technical and capital assistance. Sixty per cent of the countries reported serious problems with inadequate revenues for internal cash generation. Uneven distribution of population and differences in socioeconomic structure of different segments mitigates against economic investments. Because of this uneven distribution of population and economic activity, it becomes very difficult to provide adequate water and sanitation in the areas of sparse population and low economic yield.

The development of water supply sources to communities is often from very few main sources, namely surface water in rivers, streams and springs and ground water. Often depending on the type of the system and local conditions, mixed technologies have been adopted in many countries. For better success, there is a fundamental need to consider the building up of technological capacity within the countries in Africa to solve real national problems without undue dependence on imported technology or raw materials. Self reliance is the catchword in all the countries of the region. The difficulty in this sphere is that this technological capacity is not evenly distributed over the region and there are many countries in which lack of personnel and institutional weakness of the basic infrastructure have no alternative but to seek ex-

ternal aid to solve some of the pressing problems like the provision of drinking water. Action should be considered for: a) greater standardization of equipment among possible suppliers; and b) the promotion of the manufacture of spare parts; leading in due course to the manufacture of an increasing number of types of equipment in the countries of the region.

The task of fetching the family's water needs, gathering firewood and, looking after the health and welfare of the family are almost exclusively the responsibilities of women in rural parts of Africa. Women in rural areas are caught up in the routine of fetching water from distances of 3 to 6 kilometers. The women's contribution to socioeconomic development, should be acknowledged by society as a whole and the means of enhancing their productivity and effectiveness in constructing and operating water supply systems should be sought. They should be mobilized as agents of change concerning the proper use of water and sanitation for improved health. It is necessary to recognize that, in the past, many schemes failed partly because women were not integrated in the development process and had not been consulted. The effort should be carried out cautiously in different environments so that the participation of women may develop into a coherent programme of action through a step-by-step process. For effective involvement of women and for their integration as promoters of drinking water programmes in rural areas, governments, United Nations agencies, bilateral agencies, non-governmental organizations and other institutions and individuals active in water supply and sanitation, should seriously consider and examine ways and means to ascertain their interest and potential consideration.

WOMEN AND THE INTERNATIONAL DRINKING WATER SUPPLY AND SANITATION DECADE IN LATIN AMERICA

6

BY THE ECONOMIC COMMISSION FOR LATIN AMERICA

The perspective of this paper is both international and regional. Its approach is governmental and policy-oriented and deals with the socio-economic and health and sanitation aspects of water supply and sanitation.

A recent survey conducted by the Pan American Health Organization (PAHO) provides estimates for some twenty countries in which strong institutions are organized in the region to provide water supply and sanitation services at the national level but are concerned only with urban supply. The rural population is in no case provided with a specific institution for water supply and sanitation services and falls under the responsibility of the ministries of health where they have to compete for funds with many other health programmes. This competition is not always favourable. Evidence also shows the failure of one-third of the countries surveyed by PAHO to have established targets for the provision of adequate water supply and sanitation to the rural population.

The creation of uniform national services to replace and supplement existing municipal or state water supply and sanitation companies has been a central part of the policies adopted towards the sector in almost all countries of Latin America. The particular form has varied but the reform has possessed a common set of characteristics, the amalgamation of the provision of water supply and several services under the responsibility of one institution, and the adoption of more rigorous management criteria with an emphasis on self-

financing. The policy did, initially, lead to an increase in both the quantity and quality of services and in some countries led to the creation of continuing efficient institutions.

The present policies have improved and increased both the access of the population to protected water and sanitation. The most eloquent proof lies in the reduction in the occurrences of diarrhoea among young children, thus lessening the number of deaths. The work of fetching water in Latin America as elsewhere is always women's work and the difficulties of living with limited water fall on women as it is considered a household task.

The expansion of services planned for the IDWSSD will still leave at least two-thirds of rural women and children without clean water and sanitation in 1990. It is only in the provision of drinking water in urban areas that a significant reduction in the members without service is planned.

The targets, themselves, give rise to doubts whether country plans for the IDWSSD actually focus on provision for the urban and rural poor. A means must be found to redress the balance and, it is suggested, that here is perhaps where women's organizations, both national and international, could direct their efforts. Without an appropriate institutional framework it cannot be anticipated that any change will be achieved in the present focus of water supply and sanitation policies.

INTERNATIONAL DRINKING WATER SUPPLY AND SANITATION DECADE AND WOMEN IN THE ECWA REGION

7

BY THE ECONOMIC COMMISSION FOR WESTERN ASIA

The perspective of this paper is both international and regional. Its approach is governmental and policy oriented and deals with the socio-economic aspect of water supply and sanitation.

The Economic Commission for Western Asia (ECWA) undertook a review of the drinking water supply and sanitation activities of its member states in 1981-1982, in co-operation with the United Nations Development Programme (UNDP) and in consultation with the World Health Organization Eastern Mediterranean Office (WHO/EMRO) in Egypt.

By the early 1980's well over 90 percent of the urban and over 50 percent of the rural population in the ECWA region were supplied with safe water.

Priority has mostly been given to the expansion and restoration of the urban water supply systems, preferably in the capital cities, which are severely affected by high population densities and high population growth rates, partly due to rural emigration. Efforts are being made in all countries to set up closed distribution systems between the place of extraction and the consumer. Efforts are also being exerted by water authorities to provide enough safe water at all times with adequate service pressure. Such systems are operating in all ECWA countries. However, they are located mainly in cities and do not always serve the whole metropolitan area.

Sanitation, though, is not usually assigned the

same importance as domestic water supply in the region and is neglected in the rural areas, mostly due to: sanitation being given very low priority by the rural population; lack of basic health education; lack of public awareness and proper institutional framework. Many rural areas also are isolated and have poor accessibility. Moreover, often no allowance has been made for sanitation facilities in the construction of dwellings, making subsequent installation difficult.

Other factors that affect the development of water supply and sanitation in the region have been identified as: the high rate of population growth and accelerated rate of urbanization; lack of water resources, which affects about 30 per cent of the population in the region, and inadequate knowledge about the water potential in most of the countries; lack of qualified manpower at all levels; insufficient local capacity for sector construction and installation work; lack of basic data and basic

planning; lack of adequate information systems for effective sector planning; insufficient awareness of the importance of safe water and adequate sanitation for health; difficulties in adjusting water tariffs to reflect rising costs and to achieve a balance between costs and revenues.

The countries in the ECWA region still have a hard task in securing safe water supplies for all their population, and in providing adequate sanitation systems.

ECWA submitted a set of proposals to the Voluntary Fund for the UN Decade for Women in September 1978, and project implementation began in 1975. All regional projects, which are either training workshops, seminars, case studies, or need identification research are implemented by ECWA. National projects extending from one to three years are executed either by UNDP or ECWA.

8

WOMEN'S PARTICIPATION IN THE INTERNATIONAL DRINKING WATER SUPPLY AND SANITATION DECADE

BY THE ECONOMIC AND SOCIAL COMMISSION FOR ASIA AND THE PACIFIC

The perspective of this paper is both international and regional. Its approach is governmental and policy-oriented and deals with the socio-economic aspect of water supply and sanitation.

The paper examines the practical aspects of involving women at the policy making management and technical levels for programming, monitoring and evaluation of existing or planned IDWSSD activities, with the view to providing realistic recommendations as to how women's participation could be enhanced in the Decade programme.

The main activities involved with respect to the provision of water supply are: drawing up of national Decade plans; field investigations and formulation of project plans; preparation of designs and corresponding cost estimates; fund raising, construction; operation and maintenance. Training and information activities have been going on simultaneously.

Field investigations and formulation of project plans requires the determination of the number of people to be served, an assessment of the per capita requirement per day, an investigation of various alternative sources of water supply, formulation of alternative schemes and, selection of the most economical schemes which would supply the necessary requirements.

Preparation of designs and corresponding cost estimates involves the preparation of the final design plans of the scheme selected in the preceding activity. The difficulty of this activity would vary depending on the type of scheme selected and

its complexity. Only after the final designs are completed would it be possible to make a detailed estimate of the cost of the system. It is assumed that fund raising could be carried out simultaneously while the final design of the scheme is being prepared based on preliminary cost estimates of the selected scheme. This activity involves discussion with budget officials of the local and/or national governments and persuading them to allocate necessary funds for the construction of the scheme.

Once the funds are provided, the scheme can be constructed under the supervision of either the national or local governments depending on the source of funds. Depending on the systems used, the construction could be awarded to a contractor or to the administration using government workers.

The realization of proposed strategies, though, requires the participation of women with the appropriate technical background and experience to contribute usefully to policy making, management and technical activities in this regard. In China, Burma, Indonesia, India, Malaysia, Philippines and Thailand, to cite a few countries, women engineers are actively participating in such activities.

The elements of training should be drawn from an analysis of the activities involved in the provision of a water supply system. They will be composed of those tasks not requiring a technical background and which could be learned by simple demonstration and examples.

BY THE EGYPTIAN ACADEMY OF SCIENTIFIC
RESEARCH AND TECHNOLOGY

The perspective of this paper is national, focusing on the situation in Egypt. The approach is governmental and policy oriented and deals with all aspects of water supply and sanitation.

Obtaining water and making it more readily available for domestic use is recognized as one of the major elements of physical labour imposed upon women and children in Egypt. Women's role as household managers means that in food preparation, washing and bathing, they are the primary users and mediators between the water source and the household. Water is generally carried on the head in a plastic container. Young girls carry smaller containers. In some villages, women generally make two trips a day to the public water system.

It has been observed that the idea of limited quantity of water supply or the unavailability of water was greatly reflected on people's practices with respect to water consumption. Multiple water uses were directly related to scarcity of water and to the hard task of transporting it. Water for laundry is saved for later use to clean floors. Water used to wash dishes or clean vegetables or soak corn is used to feed poultry and other domestic animals. It is not surprising, therefore, that abundance and proximity are the two factors most appreciated in a source of water supply.

Many field studies undertaken in rural Egypt have indicated that the majority of villagers in different rural communities associate disease with water quality. This awareness is reflected in people's widespread willingness to pay for improved and reliable water supply.

Villagers in Egypt, however, fail to grasp the relationship between specific sanitation problems and disease. In some rural communities, people could not perceive health problems resulting from contact with feces, flies, or water contaminated with human water waste.

To improve the situation of drinking water in Egypt, the National Five-Year Plan (1981/1982-1986/1987) aims at increasing the capacity of water works and distribution systems to achieve an average national coverage of 85% of the population. Long-term plans are that 100% of the population would have access to clean drinking water by the year 2000.

To improve the deteriorating situation of sanitation, the Five-Year Plan has established a number of targets, the most important of which are: renovation and extension of existing sewerage systems in main urban centres, rehabilitation and expansion in sewage treatment works, and more important not to discharge any sewage in surface waters or on land without adequate treatment.

What clearly emerges, though, is that water and sanitation technology in Egyptian rural communities cannot be considered in isolation from the social, organization and cultural modes within which the village technology is introduced. In looking at the impact of introducing water and sanitation equipment, prime consideration must be given to women since they play an important role in production and use. Planners, therefore, should incorporate and consider women's priorities, needs and wishes.

PERTINENT RESEARCH: GENERALIZATIONS AND LINKAGES DRAWN FROM A PRELIMINARY REVIEW OF THE LITERATURE ON WOMEN IN WATER AND SANITATION

10

BY MARY ELMENDORF
(UNITED STATES OF AMERICA)

The perspective of this paper is international. Its approach is non-governmental and academic and touches on many different aspects of water supply and sanitation.

During the preparatory phase of the United Nations Development Programme's project INT/83/003, "Promotion and Support for Women's Participation in the IDWSSD", a collection of relevant material especially in community participation and health education was carried out.

Since the project is based on the premise that

increased involvement of women will improve the impact of IDWSSD activities on the health and welfare of families in the more disadvantaged sectors of the population (and by implication, the well-being of women themselves), a broader focus is needed. What is required is to identify linkages between women, water and sanitation with other sectors of wider interest; to look to existing studies and reports to recognized women's actual problems and see how women's participation has been obtained, can be increased, and how to measure

beneficial impacts to women and their communities.

Among the fields of women's studies review in relation to water supply and sanitation were women and development; women and health; women and technological change; women and education/communication, and women, health and development.

It was found that among the most important relevant sectors with strong linkages to water and sanitation are housing, nutrition, food and agriculture, irrigation, human welfare, employment/income generation, technology, and education.

The thrust of the literature selected and suggested methodology was to enable women to identify needs, surmount problems and make decisions based on information about choices. By an integrated approach to community-defined needs, women, in groups and singly, will be motivated to adopt new patterns of behaviour and attitudes so that the active and passive layers of women's participation in various sectors will be strengthened. Peer support will serve to help establish new attitudes and behaviours/activities which synergistically will improve the health and welfare of women and their families in the most disadvantaged sectors of the population.

11

WOMEN AND THE IDWSSD — SRI LANKA

BY R.P.H. FERNANDO
(SRI LANKA)

The perspective of this paper is national, focusing on Sri Lanka. Its approach is governmental and policy oriented and deals mainly with the socio-economic development aspect of water supply and sanitation.

The programme for improved water supply and sanitation in Sri Lanka aims to provide 100 percent coverage in water supply for the urban sector by 1990 and 50 percent for the rural sector; it is expected to achieve 100 per cent in the case of sanitation for both urban and rural toilet facilities. While working on this plan, however, emphasis has been placed in the first few years of the Decade on the supporting programmes and coverage programmes have been largely limited to on-going construction projects, with the exception of the community well construction programme in the rural areas and the toilet construction programme. Thus, areas such as operation and maintenance, human resources development and community participation are receiving special emphasis now. The involvement of women in sector work through the promotion of community participation is a clearly visible feature in this sector programme.

Through their representation in village level organizations called Gramodaya Mandalaya (GM), or village Re-awakening Councils, women have the opportunity of getting closely involved in the planning and implementation of programmes. This opportunity has been used well in several areas where women have been involved, such as conducting base-line surveys, site selection for community wells, providing voluntary labour in construction of small water supply schemes and community wells, serving as voluntary well caretakers and serving as health volunteers.

Although the impact of these activities has not

been fully studied, the following observations were made:

- in the water scarce rural areas of the country the construction of tube wells has had a significant impact on water supply and on the time of the water collectors, namely women;
- in urban areas having piped water supply with standpost supply for the poorest sections of the community, there are several schemes having a restricted supply, and this restriction causes much hardship mainly to the women who queue up at the time water comes, and have often to make radical adjustments in management of affairs at home, with bathing and washing, often being done at very inconvenient times;
- consultation with voluntary organizations, particularly women's organizations prior to commencement of any sector programme has yielded encouraging results in proper siting, participatory construction, and handling of maintenance responsibilities;
- involvement of women as well as caretakers has yielded desired results, most eminently in some cases;
- involvement of women for collection of base-line data and other regular information concerning the sector is yielding very attractive results, and further inputs on training here appear to be fully worthwhile;
- involvement of women as health volunteers appears to hold out the best prospects. Women have been able to create awareness about health needs, to provide information on health and sanitation, to handle family

health matters with care, to mobilize women's participation in various sector activities and to integrate sector activities with primary health care.

When examining the involvement of women in activities it is essential to consider their cultural background and the effect of their values

and attitudes in respect of their involvement.

It should be noted that a Bureau for Women's Affairs was set up in the Ministry of Plan Implementation within the last five years. This Bureau has now graduated into a part of a new Ministry called the Ministry of Teaching Hospitals and Women's Affairs.

WOMEN AND THE IDWSSD: A DONOR COUNTRY PERSPECTIVE

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BY JONATHAN FLETCHER
(NEW ZEALAND)

The perspective of this paper is regional focusing on the Asia and Pacific region, as given by a regional bi-lateral assistance agency. The approach is both governmental and non-governmental and policy oriented. It deals mainly with the socio-economic aspect of water supply and sanitation.

This paper draws on the experiences of the author in his connection with various water supply and sanitation projects in Asian and Pacific countries, including Indonesia, the Cooks Islands, Western Samoa, Solomon Islands and North East Thailand.

One matter of concern because it effects costs is the question of design standards. Particularly when dealing with urban areas, western consulting engineers and western trained engineers design to standards that have been developed for use in affluent western urban areas and even include the requirement that they be capable of meeting firefighting demand. In reality, though, the cost of treatment and reticulation to this standard means that only the lucky few ever get a supply at all.

Even in those areas where reticulation is available only the better off are able to connect because only they can afford the water charges. Moreover, the requirement for firefighting capability increases the size and cost of the minor reticulation significantly and often money shortages, problems with chemical supply or a lack of skilled staff mean that the relatively sophisticated and expensive treatment plant is not operated as it should be. So the quality of the water supplied is variable and often not up to design standard.

Another area of concern is the relative importance given to designing and constructing facilities as distinct from training and education. It appears that countries, aid agencies and others are much more willing to spend money on engineering projects than they are on training and education, yet it

has been shown that dollar for dollar the latter yields the better return.

In one project, training given informally on-site, concentrating on practical demonstrations with assistance from carefully prepared construction manuals aimed to leave the villagers with sufficient skill to repair their weirs and tanks. The villagers were clearly well motivated and learned fast.

It seems unfortunate that even after such experience, there is reluctance to put more effort into involving women in the implementation and operation of water supply and sanitation projects. In most societies labour is so divided that women benefit most from improved water and sanitation services and it therefore makes sense to involve women more in such projects. Moreover, given the social conditioning that occurs in most societies, if women are expected to be involved at the local level it is essential that women are seen to be more prominent throughout the decision making and training structure.

There is an acute shortage of women in decision making positions or with advanced technical training. While it would be a mistake to see more women in influential positions as a cure-all, it is important that more women climb through the ranks to positions of influence.

In trying to assess and gather women user's opinions to help in system design it is essential that women be used to do the field work. However, it is not adequate simply to slot in a few women to do the social survey, as that sort of tokenism will deliver only token improvements.

To gather women's opinions by surveys linked to a particular project may, in many cases, be next to impossible and it may be more productive to encourage existing women's and research organizations to research and articulate women's views on a wide range of development issues including water and sanitation requirements. This data could then be used to assess how a project can best be designed to meet women's needs.

THE PROBLEM OF WATER SUPPLY AND SANITATION AND THE ROLE OF WOMEN IN KENYA IN TACKLING THIS PROBLEM

BY EDDAH GACHUKIA
(KENYA)

The perspective of this paper is national focusing on the situation in Kenya. It has both governmental and non-governmental aspects and deals with the socio-economic, health and sanitation and science and technology areas of water supply and sanitation.

In Kenya, as in many other third world countries, where clean piped water to the home has yet to become a reality women continue to bear the greatest burden of providing water for domestic use.

In 1977, the UNICEF/NGO Water for Health Programme was initiated by Kenyan Women under the auspices of the National Council of Women of Kenya. The programme, incorporating the major non-governmental agencies led by the women's organizations, and with UNICEF acting as the coordinator of assistance outside Kenya, was designed in an integrated manner combining water activities with sanitation, health, water-related economic activities and appropriate technology.

The specific objectives of the programme varied according to the localized needs for each of the seven pilot projects established. They included: assisting in the completion of community water projects especially those initiated by women's groups; motivating interest in the initiation of water projects in communities where none existed; assisting in the improvement of water sources with regard to quality and quantity; promoting the use of safe water by providing clean storage containers and tanks; holding demonstrations and educational programmes for women in practical hygiene, improvement of diet and on maintenance of clean

and healthy environments; holding educational and workshop programmes on maternal and child health, and family planning; mobilizing and coordinating the activities of NGOs engaged in programmes relating to water and health at grassroots level so that community goals can be achieved sooner; improving the quality of local leadership thereby helping women to become self-reliant.

Since the inception of the programme, it was monitored carefully with on-going evaluation. It was shown that: a total of 82 community water projects spread all over the country have been supported by this programme in varying degrees; health centres and clinics have been initiated, completed or equipped and staffed; the health education component has frequently resulted in increased immunization, digging up and construction of pit latrines and their use, greater appreciation of prenatal and postnatal services, and family planning; a number of women's groups now run demonstration farms where they practice what they learned at seminars and workshops relating to improved food quality; community participation in decision making and project implementation has been greatly enhanced; leadership training has had a real impact on the development of local leadership especially among women.

Although the entire operation was hampered by lack of funds and lack of knowledgeable personnel, the UNICEF/NGO Water for Health Programme nevertheless remains an outstanding example of what can be achieved in meeting the most basic human needs and in achieving integrated and balanced development.

PILOT TRAINING PROGRAMME — WOMEN AND THE IDWSSD

BY AHMED AMIN EL-GAMAL
(EGYPT)

The perspective of this paper is national focusing on a programme in Egypt. Its approach is governmental and it deals with training in fields mainly related to health and sanitation and science and technology.

In 1981, a pilot training programme designed to further the aims of the IDWSSD in Egypt was developed jointly by the Ministry of Health, WHO, UNICEF and UNDP.

Initial activity consisted of a survey of training needs and facilities, to serve as a guide in the devel-

opment of course curricula and the selection of prospective trainees.

The training, utilizing different curricula, was to be provided for three different levels of personnel; professional (e.g., engineers, chemists), technical (e.g., plant operators), and administrative or accounts staff. The personnel selected for training were to be drawn from staff engaged directly or indirectly in the community water training would allow them to carry out their respective functions more efficiently and with a better understanding of

the mechanism of programme preparation and implementation and the relationships between community health, hygiene promotion and the provision of sanitary facilities.

The initial intended attendance of 200 trainees was 84.5 percent fulfilled and generally speaking all participants showed great interest and satisfaction.

The Ministry of Health, WHO, UNICEF and UNDP have entered into a new agreement to extend the training project for four more years with a total budget of \$300,000 equally shared by the international organizations. The Ministry of Health will provide the training centre and supporting staff and facilities.

ENVIRONMENTAL SANITATION AND DRINKING WATER SUPPLY IN THE DOMINICAN REPUBLIC

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BY MARTHA OLGA GARCIA
(DOMINICAN REPUBLIC)

The perspective of this paper is national, focusing on the Dominican Republic. The approach is governmental and covers all aspects of water supply and sanitation.

The Dominican Government is carrying out great efforts through an integrated development programme to improve general services in relation to women, which is being carried out in the south-west region of the country. The programme is

sponsored by UNICEF and is being conducted in accordance with the work of government ministries and agencies in different sectors, including public health, agriculture, education, energy and the Office for the Advancement of Women.

The goal for the year 1990 is to provide 52% of the population with drinking water through domestic connections, thereby serving approximately 3.7 million people.

WOMEN AND THE IDWSSD: WATER SUPPLY AND SANITATION IN EGYPT

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BY AHMED FOUAD EL-GOHARY
(EGYPT)

The perspective of this paper is national, focusing on the situation in Egypt. The approach is governmental and policy-oriented and deals with all aspects of water supply and sanitation.

Regarding water supply in Egypt, potable water is drawn from two sources: artesian wells or directly from the Nile and irrigation canals. About 80 to 90 percent of the urban population is adequately served with safe drinking water. In rural areas, however, the percentage is only 50 per cent. Potable water distribution systems, though, are often old and underdesigned and there are heavy losses because of leakage as well as poor plumbing and waste due to irrational use. The total waste has been estimated at 40 percent.

To improve the situation of drinking water in Egypt, the National Five-Year Plan (1981/1982-1986/1987) aims at increasing the capacity of water works and distribution systems to achieve an average national coverage of 85 percent of the population. Long-term plans are that 100% of the population would have access to clean drinking water by the year 2000. There are also plans to reduce the losses of water through

adequate maintenance schemes and through increased public awareness. In this respect, the public should be made to understand the difficulties and the costs involved in providing safe drinking water, to appreciate the meaning of water conservation and to participate fully and cooperate in the efforts made by the Government to improve the situation. The understanding and full cooperation of housewives is, therefore, of extreme importance since they are the main users of water within the households.

Regarding the state of sanitation in Egypt, it is far worse than that of the water supply situation. In urban areas, not more than 60 percent of the houses are connected to sewerage systems, and even in these cases, most sewerage systems are aged and cannot cope with the increasing load. In rural areas, there are no sewerage systems. Each rural dwelling has its own method for sewage disposal such as rural latrines, septic tanks, seepools, etc. inadequate sanitation and the near lack of health awareness in rural areas has caused the incidence of a great number of health problems.

To improve the deteriorating situation of sani-

tation, the Five-Year Plan has established a number of targets, the most important of which are: renovation and extension of existing sewerage systems in main urban centres, rehabilitation and expansion

in sewage treatment works, and most important not to discharge any sewage in surface waters or on land without adequate treatment.

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WOMEN AND THE IDWSSD: HEALTH AND ENVIRONMENTAL ASPECTS

BY FATMA A. EL-GOHARY
(EGYPT)

The perspective of this paper is national, focusing on Egypt but giving an international overview. Its approach is non-governmental and academic and deals mainly with the health and sanitation aspect of water supply and sanitation.

Although Egypt's water resources management policy has developed dynamically, water quality management received little attention. A large proportion of the population of Egypt still lacks access to safe water and adequate latrine facilities. In many areas of the country, families still utilize open irrigation canals adjacent to the Nile, or the Nile itself, for their daily needs for washing, bathing, cooking, drinking and disposal of wastes.

Pollution of the Egyptian water sources is now becoming a grave problem, not only because it poses a danger to health, causes imbalance in delicate ecological cycles, and destroys aesthetic and recreational opportunities, but also because it will drastically reduce the supply of usable water required by nearly every segment of the Egyptian economy.

The general inadequacy of water supply and sanitation services results in a high incidence of water-borne and death throughout Egypt.

Since water which is unusable because of pollution represents a partial loss from the water resources of a country, the management of water

pollution is closely related to that of resources, whether these be surface or groundwaters.

In many countries, including Egypt, urban expansion and industrial development have been more rapid than the development of public health engineering. It is now urgently necessary to consider how to meet present and future needs for water.

In this respect, the following recommendations are put forth: (i) Extend the supply of safe potable water to as many people as possible. It is very important to make water palatable and good in appearance so that people are encouraged to use it. In addition, it is important that water should be available when required and at a pressure adequate to reach all consumers on the system. (ii) Most water treatment processes in use today were not designed to remove toxic substances. However, due to increasing concentrations of organic and inorganic micropollutants or owing to the development of more stringent standards it is of significance to realize what removal might be expected through existing treatment facilities. (iii) Increase the access of households to acceptable sanitary facilities. (iv) Create parallel programmes of training and health education to accompany improvements in water supply and sanitation facilities.

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WOMEN AND THE IDWSSD: PERCEPTIONS AND ATTITUDES

BY ESSAM EL-HINNAWI
(EGYPT)

The perspective of this paper is international, though mentioning Egypt as an example. The approach is non-governmental but policy-oriented and deals mainly with the health and sanitation aspect of water supply and sanitation.

Central to the entire IDWSSD programme are the issues of education and training, public awareness and participation. Major capital investments in water and sanitation systems in developing countries are frequently wasted because of inappropriate

system designs, lack of trained personnel to operate and repair such systems and because of inadequate public awareness and participation. The decision-makers have long been working in isolation from the public; their decisions seldom meet the basic requirements of the people.

Illiteracy, lack of health education and public awareness are the main causes of the vicious circle of poor conditions of health and environmental degradation in developing countries. Illiteracy is

much more widespread among women than among men, and the rates are generally higher in rural than in urban areas. This constitutes one of the main difficulties in achieving the goals of the IDWSSD.

Family members are often the main providers of health care. In most societies, women play an important role in promoting health, particularly in view of their central position in the family; this means that they can contribute significantly to primary health care, specially in ensuring the application of preventive measures. Educating girls is, therefore, one of the best investments a country can make in future economic growth and welfare, even if they never enter the formal labour force.

The problems pertaining to water supply and sanitation are every day problems. No one realizes the magnitude of these problems unless he or she is directly affected; the housewife complains when there is water shortage, but the media never give

attention to the problem unless some major event occurs. Even in such cases, the focus is usually on the event and its emotional nature, rather than on the substantive aspects of the problem.

Of the mass media, the radio and television are the best to increase public awareness, because of the high percentage of illiteracy — especially among women. Unfortunately, this is far from being achieved, especially in the context of water supply and sanitation.

There is an urgent need in developing countries for well-formulated mass media programmes to address the goals of the IDWSSD, and in particular the role of women. Focus should be made on the following main issues: awareness of the relationship between unhygienic practices and ill-health, avoiding wastage of clean water, avoiding contamination of clean water, appropriate and safe disposal of wastes, and primary health care.

AQUEDUCT SYSTEM OF THE REPUBLIC OF PANAMA

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BY ELVIA JARAMILLO DE GUZMAN
(PANAMA)

The perspective of this paper is national, focusing on the situation in Panama. Its approach is governmental and policy oriented and deals mainly with the science and technology aspect of water supply and sanitation.

The first aqueducts in Panama were built according to the treaty between the United States and Panama signed in 1903 and began operating in 1905. They provided drinking water for people working on the construction of the canal.

In 1945, the aqueduct network was legally handed over to the Panamanians, but administration and maintenance remained the responsibility of the Americans until 1952. By then, however, it became apparent that the capacity of the network would not respond to the demand beyond 1970.

A French company, Chavel, stepped in to advise the Panamanian Government in coping with the problem and the broadening of the network was designed.

Inland aqueducts were built between 1914 and 1920. Public health and social affairs offices were placed in charge of the systems until an aqueduct commission was established in 1956 and began operating in 1962.

In 1965, authorities in the Canal Zone warned that they would not be able to supply Panama City with more than 30 million gallons a day and so a study was undertaken to establish an autonomous station which was inaugurated in 1974.

The population rate, however, is 2.25 percent a year, increasing the demand for water accordingly. Thus, due to the dispersion of the population, the situation has been met by constructing different drinking water sources for different numbers of inhabitants, 200-500 and 500-2,000. Communities with 200 inhabitants or less, get their water from wells by means of mechanical pumps. It is estimated that 47.5 percent of the rural population has access to water supplies.

THE IDWSSD: A MEDIATION OF INCONSISTENCIES

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BY METTE JORSTAD
(NORWAY)

The perspective of this paper is international. The approach is governmental and policy oriented and deals with all aspects of water supply and sanitation.

This paper is concerned with the water supply and sanitation projects undertaken by various national and international development agencies in cooperation with governments in developing coun-

tries; and seeks to outline some of the major constraints on the promotion of communities and women's participation.

There are many reasons why water supply and sanitation projects have had little effect in improving the health situation of target groups, but constraints to an improvement in health can be reduced or removed through various measures. There is consensus among most of the major development aid agencies that more emphasis must be put on the inclusion of software components, and that unless community participation and involvement becomes a reality, water supply and sanitation projects will continue to fall short of reaching their objectives. Moreover, there is even reason to believe that unless women's participation is specifically outlined in project documents, they will continue to be "invisible" and the Decade objectives of better health for all will suffer additional reductions in their chances of being reached.

Why was the assumption that the IDWSSD would automatically lead to better health disproved? Probably because the logic behind the assumption was weak: it did not distinguish between necessary and sufficient conditions for change in the desired direction. Whereas improved water supplies and sanitary measures are necessary conditions for improved health, they do not constitute sufficient conditions.

There have been attempts over the past few

years to tinker with the components of projects in order to increase the involvement of local communities. This tinkering, however, has been aimed at the lower administrative and implementing levels of projects, which implies that possible positive effects will be limited. Instead, it can be argued that planning, design and evaluation procedures as formulated by the highest administrative and monitoring levels is where the tinkering must start. There is an inter-relationship and mutual reinforcement between the criteria for evaluation. As long as the criteria are the installation of hardware components, the lessons learned about the crucial importance of including software components in water supply and sanitation projects may have no practical effects, and the projects may continue to have little or no adverse effects on the populations they are meant to assist.

In order to obtain the necessary communication with local communities and women in project areas, resources are presently being invested in search of innovative methods for the sensitization and motivation of all levels of personnel involved in the projects in recipient countries, from government to village level. In order to remove some of the major framework constraints to promoting software components on a par with hardware ones, it is the designers, planners and evaluators in the donor countries that must become sensitized and motivated for a new approach.

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WATER, HEALTH AND WOMEN IN TANZANIA

BY FATMA H. MRISHO
(TANZANIA)

The perspective of this paper is national, focusing on Tanzania. Its approach is non-governmental and academic, but with policy indications, and deals mainly with the socio-economic and health and sanitation aspects of water supply and sanitation.

The paper gives a great deal of statistics illustrating the situation in Tanzania with regard to, *inter alia*: literacy rate, economically active population by sex and occupation, water supply and sanitation status, sources of water available, causes of admission to hospitals, causes of death.

Regarding the statistics, water-related diseases do contribute to high rates of illness and death. It should be pointed out, though, that when water supply and sanitation are considered, it is often limited to strictly water-related diseases. Certain diseases, though, could be avoided if women and mothers were availed of more time, when freed from the responsibilities of inadequate water supply and sanitation. The provision of adequate water as near to the house as possible, frees the time of women and creates the possibility for the women to involve herself in preventive aspects of

health as well as development activities. Moreover, it can be considered that all childhood immunizable diseases as well as conditions associated with child-bearing and pregnancy can be reduced when time is made available to the mother so that she can attend maternal and child health clinics where immunizations are carried out and the risk factors identified.

Because women are the major beneficiaries of water and sanitation programmes, it is important that they be involved in the whole process of siting, technology used and maintenance. Such a change can best be achieved if integrated with a general uplifting of women's status through education, employment and to a certain extent, change in the role of women as family members.

Governments and women's organizations should make a conscious effort to link water with the development of women. Activities should be generated which, when coupled with water supply and sanitation programmes, would result in a more sustained and greater survival and betterment of women and children.

BY OLAKOTUMBO A. OGBE
(NIGERIA)

The perspective of this paper is national, focusing on the situation in Nigeria. Its approach is mainly governmental and academic and deals with all aspects of water supply and sanitation.

In Nigeria, in both urban and rural areas it is the woman's duty to collect water for the family's use and ensure that the environment of the home is clean. Less than half of the cities and towns have regular water supply to the homes.

In most rural areas there is no pipe-borne water for several kilometers around the villages. The women in both urban and rural areas therefore have to walk several kilometers daily in search of water.

Although the goal of the IDWSSD is to provide water supply and sanitation to all the world's population by the year 1990, the role of women in achieving these goals have not been fully considered.

There are, however, projects and programmes in Nigeria which involve women and include water supply and sanitation. There are projects on the

integrated development of rural areas which aim toward making rural areas attractive in terms of job opportunities and social services so that migration to urban areas is reduced and ultimately ceases. Women in rural communities are taught basic home economics and are encouraged and trained to take up small-scale income generating activities. They are also taught about proper nutrition, the importance of consuming only clean water and ensuring proper sanitation in the home and its environment.

Enhancing the role of women in activities of the IDWSSD must start at both the community and national levels. At the community level, the women have to be properly educated on the benefits to be derived from the achievement of goals of the IDWSSD and how they can be involved in ensuring that the goals are achieved. At the national level, the policy making and project planning bodies should be committed to the involvement of women and make adequate provision in this regard.

WATER SUPPLY AND SANITATION IN CALIFORNIA, U.S.A.

BY CAROLE ONORATO
(UNITED STATES OF AMERICA)

The perspective of this paper is subnational, focusing on the situation in California, U.S.A. Its approach is governmental and policy oriented and deals with all aspects of water supply and sanitation.

The State of California has a highly developed water system; most of the population lives in the southern portion of the state, while most of the water supply can be found in the north. Agriculture uses 85 per cent, industry and population use the remainder. Major sources include ground water rivers, over 1000 dams, extensive aqueducts and pipelines.

Regarding wastewater disposal and sanitation, 95 per cent of the population is served by sewage treatment plants; five percent are served by septic tank systems.

In California, major threats with respect to water quality are from toxic chemicals such as pesticides and industrial solvents. There are few cases of waterborne bacterial contamination.

Strong federal control programmes exist for surface waters, but ground waters are not covered. Although state programmes exist to cover ground waters, aquifers serving almost one million (of 25 million) Californians have been polluted.

Other programmes include extensive public health programmes at the local level, regular testing of drinking water by service districts, hazardous waste disposal regulation, pesticide regulatory programmes and water quality planning.

The paper identifies and discusses such current issues as: toxics in ground waters, adequate sewage treatment, wastewater reclamation, sea water intrusion, trihalomethanes, setting standards, non-toxic substances, and alternative wastewater systems.

Regarding the role of women, many hold official positions and serve on regional boards and water and sanitation district boards; many also serve as public interest advocates.

INFRASTRUCTURE FOR FORMAL AND INFORMAL HOUSING SECTORS IN EGYPT

BY ABOU ZEID RAGEH
(EGYPT)

The perspective of this paper is national, focusing on the situation in Egypt. Its approach is governmental and policy oriented and focuses mainly on the science and technology aspect of water supply and sanitation.

In Egypt, with the remarkable rise in the standard of living and increase in urban growth and population, water supply plants have become insufficient for the essential needs of the citizens. Potable water stations exceeded their design capacity to face pressing needs. This caused damages in these stations, which led to areas in the ends of the networks receiving very little water, low pressure, deprivation of water in some areas, damages in stations accompanied by shortage in spare parts and trained labour.

Regarding sanitary drainage, it is available only in about 20 cities. Cities with sanitary drainage, however, suffer from sewerage repletion, which threatens public health and helps the spreading of epidemics among more than half the population. Cities without sanitary drainage, though, suffer from repletion of trenches especially after the raise of ground water level, continuous expenditure on sweeping processes and the lack of sewerage sweeping trucks.

The problem has been studied by different con-

sulting firms which have agreed on the need for: starting repairs, innovation and rehabilitation to restore design capacity; providing treatment, purification and measurement equipment in order to control production's quantity and quality; support to existing plants either by enlarging them or by establishing new ones in order to face population increase in consumption ration and urban expansion.

Based on these studies, plans were made for Greater Cairo, Alexandria and the governorates.

The on-site availability of water seems to be the single most important precondition for settlement because it is a necessity both for sustenance and for construction of homes.

The problems of sewage and other water disposal do not appear to be major factors in the site selection process for informal housing as does water Septic or holding tanks can be constructed in most areas and/or waste can be dumped into canals. Furthermore, waste water is kept to a minimum in many settlements because of the limited availability of piped water.

Still, the high infant mortality rates and health risks are partly attributable to sewerage inadequacies and these problems remain formidable in informal areas.

WOMEN, WATER SUPPLY AND SANITATION: SOCIO-CULTURAL AND ECONOMIC ASPECTS

BY ZEINAB M. SHAHIN
(EGYPT)

The perspective of this paper is national, focusing on the situation in Egypt. Its approach is non-governmental and policy oriented and deals mainly with the socio-economic and health and sanitation aspects of water supply and sanitation.

The main objective of the study is to change the basic socio-cultural and behavioral parameters to be taken into consideration, while developing the appropriate alternative technological packages for water supply and sanitation in small Egyptian rural communities.

The appropriateness of a technology involves an understanding of the system, a possible change in the social relationships within and outside the family and a full awareness of the technological impact on the lives of the people.

Obtaining water and making it more readily available for domestic use is recognized as one of

the major elements of physical labor imposed upon women and children in Egypt. It can also be observed that the idea of limited quantity of water supply or the unavailability of water was greatly reflected on people's practices with respect to water consumption. A general attitude, that nothing should be wasted, was observed in many Egyptian rural communities. It can be seen, therefore, that abundance and proximity are the two factors most appreciated in water supply.

World-wide cross-cultural studies on water supply and sanitation in rural sectors reveal that women do understand the need for improved water for domestic consumption. Women may not be aware of the direct relationship between improved water supply and health, but once water is more available, they tend to evaluate the benefits in terms of improved health.

Women seemed in general to be aware of the time and energy spent in obtaining water, and thus the majority identify water pumps as one of their top development priorities. The provision of piped water though, does not form the priority needs in many other developing countries when it comes to actual allocation of resources. The reason is that priorities are defined in terms of the prevailing power structure in which the needs of women are often disregarded because men usually make the decisions. Thus, introducing water and sanitation technologies requires full awareness of the social

background of the people and their attitude towards water.

Any planned change in water or sanitation practices should be based on sufficient information about villagers' beliefs and practices. Lack of communication and absence of trust between development agencies and community members, due to past experience with abortive attempts to introduce new technological packages or compulsory programmes, make people less willing to accept new technologies.

THE ROLE OF WOMEN IN WATER SUPPLY AND SANITATION: INDONESIA

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BY TITI SAMBUNG
(INDONESIA)

The perspective of this paper is national, focusing on Indonesia. Its approach is governmental and policy oriented and deals with the socio-economic and health and sanitation aspects of water supply and sanitation.

The paper focuses on the provision of drinking-water supply and sanitation in rural areas, since 80% of the Indonesian population lives in these areas, with special emphasis on women's role in it.

At the end of 1978 only 18% of the rural population had reasonable access to drinking water. By the year 1982 this figure rose to 25% and, by the end of 1984 it is expected that about 30% of the rural population will have access to clean water and sanitary facilities. During the Decade 1981-1990 it is targeted that 60% of the rural population will have reasonable access to drinking-water services and 40% of the rural population with environmental sanitation facilities.

Water supply and sanitation improvements are closely linked to reducing the workload of women. Quantitatively, women in Indonesia constitute 50.3% of the total population (about 160 million) but the development efforts have not fully included women, nor equitably distributed the benefit of development for all. To expand measures for effective involvement of women in the planning, implementation, maintenance and utilization of water supply and sanitation systems the framework has been designed as follows: women as acceptors of new technologies, consideration for project planning; women as users of improved facilities; factors in project implementation; women as

managers of water supply and sanitation programmes, including them in training; women as agents of behavioral change in the use of facilities, implications for project evaluation.

WHO estimates that 80 percent of all diseases in the world are associated with poor personal and household hygiene and inadequate water supply and sanitation. All the health problems are brought on by too little water and lack of sanitation. The provision of clear water, therefore, should place emphasis on the accessibility in a large enough quantity as a precondition of healthy living. The most significant effect with the provision of a sufficient quantity of water is that women will also be released from water-related diseases.

In Indonesia, the women's voluntary organizations have long played the rôle of pressure group and the most effective type of movement that exists is the family welfare movement (PKK), a village based self-help movement to promote the welfare of the family.

The government of Indonesia is carrying out a project in co-operation with UNICEF in water supply and sanitation. It is taking place in 9 (out of 27) provinces. Indonesia also has many direct-financed, co-financed and non-governmental water supply projects in the country. Cooperation has been made in the provision of water-supply and sanitation with bilateral and United Nations agencies. Most foreign aid is in the form of construction, technical assistance and manpower investment/training fellowships.

BY HAICHA TRAORE
(UPPER VOLTA)

The perspective of this paper is national, focusing on the situation of Upper Volta. Its approach is non-governmental and academic and deals mainly with the health and sanitation aspect of water supply and sanitation.

The scarcity of water in rural areas poses real problems in terms of inconvenience but more importantly of hygiene and health. Great preoccupation exists over the problem of water contamination, even more than water scarcity.

Of all basic commodities, water in sufficient quantity, adequate quality and easy accessibility, represents the singularly most pressing need of village populations in developing countries and most particularly Upper Volta. It can be estimated that even today more than 40 percent of the rural population still does not have access to even a few litres a day.

In the past, there were years when rains were frequent and abundant and the traditional wells, streams and rivers overflowed with water during most of the year.

Fetching water did not pose any particular problem. On the contrary, it was an occasion for women and young girls to meet at the wells and streams to socialize and forget their isolation.

Now, however, it seldom rains in Upper Volta. The streams and wells are drying up and the few wells are insufficient to meet the demands of the population. It has become real labour to fetch water and no longer a social event.

It has been recognized worldwide that the improvement of living conditions and health is based on the improvement of water supply and quality. Furthermore, it is recognized more and more that the direct effects of potable water on reducing illnesses will result in many advantages for social and economic development.

At the village level, it frees women from undue drudgery so that she can dedicate more time to taking care of her children and to activities which will permit her to increase her, and the family's, income.

WATER, SANITATION AND VILLAGE HEALTH: A COMMUNITY ORGANIZATION AND PARTICIPATION APPROACH IN TANZANIA

BY UNITED REPUBLIC OF TANZANIA, PRIME MINISTER'S OFFICE
AND THE INTERNATIONAL REFERENCE CENTRE
FOR COMMUNITY WATER SUPPLY AND SANITATION

The perspective of the paper is national, focusing on Tanzania. Its approach is governmental and policy oriented and deals with the health and sanitation aspect of water supply and sanitation.

From 1981 to 1983 a project was carried out by the Prime Minister's Office of Tanzania in cooperation with the International Reference Centre to determine a) the need for an additional community participation component in the Tanzanian rural water supply programme and b) the national organizational set-up and general framework in which such a programme could operate. The project included a study on environmental health conditions and behaviour in eight villages. This study showed that with the existing technical and health education procedures only a limited impact on village health could be expected.

A follow up programme with greater com-

munity involvement in planning and maintenance of the village water supplies and a more participatory and locally-specific approach in health education were therefore tried out. In both activities, women were actively and successfully involved as managers and target groups. Small group discussion were in particular successful for the realization of hygiene improvements. However, too much emphasis was still placed on women's issues at the household level. It was felt that in future programmes, women must be made more aware of village-level issues for joint village action. An important condition for further experiments with the present approach was deemed to be the establishment of a national policy for a greater village self-reliance in water and the creation of feedback channels from the field to policy makers in the concerned departments.

WOMEN AND THE IDWSSD: FOCUS ON TECHNICAL SYSTEMS AND TRAINING

29

BY SAYED EL WARDANI
(UNITED STATES OF AMERICA)

The perspective of this paper is international. Its approach is non-governmental and policy oriented and deals with the science and technology aspect of water supply and sanitation.

Women are not only an integral and essential human resource for active participation in the development of water supply and sanitation projects, but also a compelling force for the development of simple water supply and sanitation systems for nations with little or no technology.

Practical solutions of issues related to women and water supply and sanitation are complex and multi-faceted. It is therefore essential to define and comprehend the critical and controlling issues in order to shrink the problem to a size that responsible agencies can control and manage. It is necessary to focus on and isolate common denominators to the many and varied components making up the overall system.

The scientific and technical basis of water supply and sanitation systems are broad in scope and lend themselves to accommodating specific local planning, design and operational requirements. Water supply and sanitation systems vary from sim-

ple to complex, depending upon application and the level of technology available. To simplify dealing with a large and varied array of technical considerations, and their plausible systems, they can be grouped into two categories, namely: **family systems**—systems that can be developed and operated by one or a few women; and **cooperative systems**—systems to be developed by joint efforts of women in villages.

None of the existing systems or others yet to be developed, however, would function properly or be effective unless women are made aware and developed a minimum of consciousness regarding the seriousness of public health issues. Experience indicates a high level of willingness and healthy attitudes by women and youth to learn and developed at least awareness and recognition of what is clean and what is infested. Developing awareness and consciousness of water supply and sanitation aspects is one area where women can excel and be most effective within the family and community. Training for developing a critical level of consciousness concerning issues of women and water supply and sanitation must be a primary target.

A REPORT FROM JAPAN ON WOMEN AND THE IDWSSD

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BY RYUTARO YATSU
(JAPAN)

The perspective of this paper is national, dealing with the situation in Japan. The approach is governmental and academic and covers mainly the health and sanitation and science and technology aspects of water supply and sanitation.

It has long been realized in Japan that a water supply system served as an essential element in infrastructure for the development of a modern nation. Japan's waterworks, therefore, have been given great attention and are expected to play an increasingly important role in the future. The waterworks policy in Japan thus includes: reduction of areas where public water supply is not available; securing the safety of supplied water; development of new water resources; minimization of the regional differences in water rates.

Regarding health, it is well known that safe water supply can reduce the incidence of water-borne diseases. Although this is greatly attributable to medical progress and the development of new medicines, the biggest contributing factor is be-

lieved to be the supply of safe water, on a continuous basis, by an advanced water supply system.

In Japan, the Ministry of Health has the responsibility to establish the drinking water quality standards which are applied to all water supply systems throughout the country. Design criteria is prescribed in the Water Works Law. As for the water purification process, the criteria for selection of the suitable purification process is set in the design criteria.

Before the construction of water supply systems, conveyance of water was one of the heaviest duties for women. However, through the rapid development of water supply systems during the past three decades especially in rural areas, this burden has been greatly reduced.

One of the voluntary organizations in each rural community is a women's "social". These "socials" play an important role in improving lifestyle. Regarding water supply and sanitation, in the development of public water supply systems, as

the community shares in construction costs, women's "socials" have often organized water-works funds through systematic savings by all the

community members. They are also often responsible for environmental sanitation, in cooperation with local governments.

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WATER IN ANCIENT EGYPT

BY AHMED ABDEL HAMID YOUSSEF
(EGYPT)

The perspective of this paper is national, focusing on the situation in Egypt. The approach is non-governmental and academic and deals mainly with the socio-economic aspect of water supply and sanitation

For Egypt, the Nile was its source of life and its chief means of communication and transport. The waters of the Nile have always been of deep concern to the Egyptians. The annual inundation that took place between June and September was considered a matter of life and death to them. The dissolution of the central governmental and order was always connected with the failure of the Nile waters to come.

The Nile flood determined the farmer's season. The year began with its use and is divided into three seasons: the inundation, the cultivation and the harvest. The Egyptian calendar has been therefore a direct outcome of the Nile flood.

The measurement of the height of the inundation every year became of vital importance to the central government so as to be able to estimate on a just basis the crops expected to be harvested in the coming season and the rate of taxation to be fixed accordingly. It was also the annual inundation that suggested to the central government and the local authorities the foundation of a national labour service. In the early periods of Egyptian history, during the three month flood season when agriculture was at a stand still, and the peasant idle, many activities were organized.

Drinking water was no problem in the Nile Valley in Ancient Egypt. Water since prehistory was first kept in water skins then later in jars.

Cleanliness and purification were indispensable in every day life in Ancient Egypt. The hard-working Egyptian in the hot climate of Egypt appreciated washing himself after a hard day's work.

Copies of the bibliography of the :
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are available upon request from The International Research and Training Institute for the Advancement of Women (INSTRAW)
Calle César Nicolás Penson, 102-A, P.O. Box 21747, Telephone and Facsimile 685-2111,
Santo Domingo, Dominican Republic

INSTRAW is an autonomous institution within the framework of the United Nations
to serve as a vehicle at the international level for the purpose of undertaking research and establishing training programmes
to contribute to the integration and participation of women in development.
In pursuit of its objectives, the Institute acts in close co-ordination with institutions and other bodies within
and outside the United Nations system.

CORRIGENDUM TO:

WOMEN AND THE INTERNATIONAL DRINKING WATER SUPPLY AND SANITATION DECADE
BIBLIOGRAPHY OF THE INSTRAW INTER-REGIONAL SEMINAR ON WOMEN AND THE IDWSSD
CAIRO, 12 - 16 March 1984

Page 2. - "INSTRAW's Headquarters: Avenida César Nicolás Penón 102-A
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Page 4. Item 13. - "THE PROBLEM OF WATER SUPPLY AND SANITATION AND THE ROLE OF WOMEN IN KENYA IN TACKLING THIS PROBLEM: By Eddah Gachukia (Kenya)."

Page 4. Item 17. - "WOMEN AND THE IDWSSD: HEALTH AND ENVIRONMENTAL ASPECTS. By Fatma A. El-Gohary (Egypt)."

Page 4. Item 21. - "WATER, HEALTH AND WOMEN IN TANZANIA. By Fatma H. Mrisho (Tanzania)."

Page 4. Item 26. - "THE ROLE OF WOMEN IN WATER SUPPLY AND SANITATION: INDONESIA: By Titi Sumbung. (Indonesia)."

Page 4. Item 31. - "WATER IN ANCIENT EGYPT. By Ahmed Abdel Hamid Youssef. (Egypt)."

Page 5. PREFACE. Paragraph 4. Line 7. - "...solutions to those problems based on the successful..."

Page 6. WOMEN'S ROLE IN WATER SUPPLY, WASTES DISPOSAL AND SOLID WASTES MANAGEMENT. Paragraph 3. Line 7. "...ures. In so doing, human resources should be..."

Paragraph 6. Line 2. - "...health. Typhoid fever, cholera, enteric diseases..."

Paragraph 8. Line 7. - "...culverts, trenches and canals; cleaning of mon..."

Paragraph 9. Line 10. - "...recovery of wastewater and excreta; adequate..."

Page 7. THE INDIAN DILEMA: WOMEN AND THE INTERNATIONAL DRINKING WATER SUPPLY AND SANITATION DECADE. Paragraph 3. Line 12. "...of the Decade goals. Health education and com-..."

Paragraph 8. Line 1. - "...Clean water and environmental sanitation it is..."

Page 9. WOMEN AND THE INTERNATIONAL DRINKING WATER SUPPLY AND SANITATION DECADE IN LATIN AMERICA. Paragraph 5. Line 3. "...women and children without clean water and san-..."

Page 11. THE EGYPTIAN CONCEPT. Paragraph 8. Line 4. - "...the social, organizational and cultural modes within..."

Page 11. PERTINENT RESEARCH: GENERALIZATIONS AND LINKAGES DRAWN FROM A PRELIMINARY REVIEW OF LITERATURE ON WOMEN IN WATER AND SANITATION. Paragraph 3. Line 10. "...and reports to recognize women's actual problems..."

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Page 12. WOMEN AND THE IDWSSD - SRI LANKA. Paragraph 2. Line 10. "...grammes which have been largely limited to on-going con-..."

Paragraph 4. Item 4. Line 1. - "...involvement of women as well caretakers..."

Page 13. WOMEN AND THE IDWSSD: A DONOR COUNTRY PERSPECTIVE. Paragraph 3. Line 1. "...One matter of concern because it affects costs..."

Page 14. PILOT TRAINING PROGRAMME-WOMEN AND THE IDWSSD. Paragraph 4. "...The training, utilizing different curricula, was to be provided for three different levels of personnel; professional (e.g., engineers, chemists),

technical (e.g., plant operators), and administrative or accounts staff. The personnel selected for training were to be drawn from staff engaged directly or indirectly in the community water supply and sanitation sector in rural and fringe urban areas. Their training would allow them to..."

Page 16. WOMEN AND THE IDWSSD: HEALTH AND ENVIRONMENTAL ASPECTS: Paragraph 4.

"...The general inadequacy of water supply and sanitation services results in a high incidence of water-borne and water related diseases, which are still the cause of illness and death throughout Egypt."

Paragraph 7. Line 18. - "...education to accompany improvements in water..."

Page 19. WOMEN AND THE IDWSSD. Paragraph 4. Line 4.-"...achieving these goals has not been fully consid-..."

Page 20. INFRASTRUCTURE FOR FORMAL AND INFORMAL HOUSING SECTORS IN EGYPT. Paragraph 7. Line 4. "...water. Septic or holding tanks can be constructed in..."

Page 21. THE ROLE OF WOMEN IN WATER SUPPLY AND SANITATION: INDONESIA.

Subtitle. "By Titi Sumbung"

Paragraph 3. Line 9-10.

"...ing-water services and 40% of the rural population to environmental sanitation facilities."

Paragraph 5. Line 3. "...household hygiene and inadequate water supply and..."

Page 23. WOMEN AND THE IDWSSD: FOCUS ON TECHNICAL SYSTEMS AND TRAINING: Paragraph 5. Lines 3-4. "...be effective unless women are made aware and develop a

minimum of consciousness regarding the..."

Lines 7-8. "...titudes by women and youth to learn and develop at least awareness and recognition of what is..."

Page 24. WATER IN ANCIENT EGYPT. Paragraph 2. Line 7.

"...dissolution of the central government and order..."

