WOMEN, WATER SUPPLY AND SANITATION
- a national training seminar -

Mogadiscio, Somalia
13 - 18 February 1988

sponsored by

the United Nations International
Research and Training Institute
for the Advancement of Women

INSTRAW

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I. INTRODUCTION

The national training seminar on "Women, Water Supply and Sanitation", was convened at the National Assembly Hall in Mogadiscio, Somalia, from 13-18 February 1988.

The meeting was organized by INSTRAW (United Nations International Research and Training Institute for the Advancement of Women) in collaboration with the Ministry of Interior and UNICEF.

Fifty participants represented their respective ministries and agencies (see Annex I).

Also participating in an observer capacity were 15 representatives of ten agencies and organizations (see Annex II).

A. Opening of the Seminar

The opening of the seminar was co-ordinated by Mr. Yusuf Hersi Galow, Director General of Rural Development and Planning of the Ministry of Interior.

The seminar was officially opened by the Minister of the Interior, His Excellency Mohamed Abdulle Ba'adle.

In his statement, the Minister said that they were all aware of the critical negative changes which the economic, social and political conditions of the people of the world were undergoing. This was particularly serious in the life situation of the people of developing countries. No wonder these crises had put a burden on the quality and delivery of social services to the given populations. Consequently, fundamental changes were taking places in the orientation and emphasis of development theory, giving a high place to improving the living conditions of the disadvantaged groups, particularly women and children.

In this light, it was crucial to note that the purpose of this national seminar was geared towards the development and consequent improvement of the life of women in Somalia. At the Ministry of Interior, a high priority was being put on these objectives - the basic principles being summarized in the National Rural Development Strategy. It was also significant to mention that the timing of the seminar translated into practical action the recommendations made on rural development interventions at the recent National Symposium on Social Affairs held from 10-14 November 1987. Thus, it had been recommended: "A high priority should be accorded in the national plans towards the recognition of the substance of the intersectoral collaboration among the government ministries having in mind in particular the advantages of integrated rural development programmes and the increment of their investment."

The Seminar also drew on its importance from the humane international efforts and campaign of development based on the objectives of the International Drinking Water Supply and Sanitation Decade 1981-1990. The objective of this campaign was to provide safe drinking water and basic sanitary services to all people in the world. The realization of these goals rested before all else, upon the shoulders of women as vehicles of social change and innovation. The Minister noted that it should be borne in mind that when it came to basic survival at the household and community levels, it was the women on whom society depended for existence. As such, women were the carriers of water, managers, users, and last but not least, the trainers of family health at the household.

The Minister noted that having in mind the professional and the technical scope of the participants, as decision-makers, planners, managers, evaluators, etc., in all aspects of social development, it was expected that the results and contributions achieved from this seminar would be of great benefit towards the improvement of the quality of life of women, especially in the rural areas, and would promote the profound and substantial participation of women in the decision making, managerial and supervision processes of national development in the country. All of these steps would enhance the realization of the national and international aspirations towards self-reliance and sound life for all people.

He closed by thanking the participants in advance for the active role they would take during the course of the seminar and the deliberations to come up with substantive conclusions that would strengthen the basic inter-relationship and linkage between women, water supply and sanitation.

The Resident Representative of the United Nations Development Progrmme, Mr. Slobodan Ristic, then made a welcoming statement.

He said that the selection of Somalia, as a developing country, for holding a seminar to test the multi-media training package on women, water supply and sanitation, prepared by two members of the United Nations family - the International Research and Training Institute for Advancement of Women (INSTRAW) and the ILO International Centre for Advanced Technical and Vocational Training, was considered to be a continuation and enrichment of the very successful co-operation between the Somali Democratic Republic and the United Nations development system. UNDP, UNICEF, WHO and UNFPA offices in Mogadiscio were very pleased to contribute to the preparation of this gathering.

The theme of this seminar was of particular importance for Somalia. Water was an essential and strategical development dimension of the country, bearing in mind the requirements for drinking water, agriculture, livestock, food production, family hygiene, etc., in an extremely unfavourable physical environment. On the other hand, Somalia was a country where women had been more and more involved in the development process, gradually changing their position from the traditional thinking of the women's role in society to women as active participants in and beneficiaries of development.

A movement for a more active role of women in water supply and sanitation had to make women's participation more effective and easy. Results of this seminar should be motivating and a challenge for planners, government authorities, party and women's associations at country, regional, district and village levels as well as for researchers, trainers, technicians and social workers to contribute to qualitative changes in women's position in water supply and sanitation. The United Nations system, he said, was ready to assist the country in its efforts.

He remarked with pleasure that this was the introduction of INSTRAW in development programmes of Somalia. This dynamic and successful organization within the framework of the United Nations system considered women in development not as a fashion, but with a view to action-oriented assistance to developing countries and therefore its research and training programme, had been well accepted by recipient as well as donor countries. He felt sure that the Government, Academy of Science, University, Somali Women's Democratic Organization and other institutions would continue to participate in the Institute's programmes in the future.

The United Nations development system, particularly UNDP, World Bank, UNICEF, FAO, WHO, UNFPA and ILO had been present in Somalia's development with a large number of significant projects in water resources development and sanitation and important support had been given to the involvement of women in the development process. He went on to mention a few of the UNDP projects or projects administered by the UNDP office in Mogadiscio.

In the water sector, UNDP had assisted the Government in planning at macro level and had supported the establishment of a water relief strategy and rehabilitation and construction of a number of water wells in regions frequently affected by drought. Range water resources development in central regions of the country was an important project in the UNDP supported country programme. Finally, the water component was highly important in integrated rural development projects and integrated regional development projects.

There were a number of on-going projects involving women in the development process of the country. These projects focused on integrated rural development, mother and child health care/family planning services, women's education, population education and secretarial training.

An active pipeline of projects oriented to more involvement of women's participation in the development process of the country was being evolved. This pipeline covered regional development (Awdal Region), health care, and women in development, women's education institute and small-scale poultry development.

An ILO/World Bank mission was in the country at that time to develop projects involving women in income-generating activities and up-grading their skills through training. The results of the mission were keenly awaited, in order to provide guidelines for future activities in this area including UNDP support.

A UNDP/UNFPA Task Force on "Women in Development" within the UNDP office had been established and started operating in January 1988. One of the main objectives of this Task Force was to follow-up on women's development issues in Somalia. The Task Force would liaise with other agencies (Government, United Nations agencies, donors,NGOs) concerned with women's programmes.

In closing, the Resident Representative stated that the UNDP office and the office of the other United Nations agencies would be ready to participate in the implementation of the conclusions and recommendations of this seminar through modification of on-going projects and new initiatives.

Finally, Mr. Adriano Gasperi, the Representative of the Government of Italy, which had funded the project, addressed the participants.

He noted that the subject of this seminar fit very well within the priorities which tended to guarantee a minimum of well-being for the population at large.

Water, of course, represented one of the basic needs which people must have, and water, far from being scarce in Somalia was not yet easily available to people in Somalia.

Sanitation, along with water, was the other pillar for health conditions of a population; safe water and good sanitation could prevent a large number of diseases which affected children and adults in this country.

In all this, women had to play an important role in education and training activities for water supply and sanitation and this seminar would focus on this role. Ethiopia, Kenya, Sudan, as well as Somalia had been selected as countries to carry out the testing of the package so as to determine its applicability and adaptability.

This seminar in Somalia was the last to be convened, and on the basis of results which would be achieved a report would be produced and the material revised accordingly before being distributed world-wide.

In closing, Mr. Gasperi said he hoped that the Somali component of this exercise, in terms of results produced by this seminar, would give an important input to the project as a whole.

B. Election of Officers

The following officers of the seminar were elected:

Chairman : Mohamed Hassan Haji
Vice Chairman: Fatima Sherif Nor
Rapporteurs: 1. Sadia Arif Qasim
2. Sadia Muse Ahmed

C. Adoption of the Agenda

The agenda and programme of work of the seminar were adopted with amendments. (See Annex III)

D. Adoption of the Report

The report of the seminar was adopted as amended.

E. Closing of the Seminar

At the closing of the seminar, several general recommendations were made:

1. that participants work more closely with donors, in order to help loosen tied aid and make aid more relevant to the needs of Somalia;

2. that participants highlight to their ministries and agencies those recommendations that are of particular relevance to their field of expertise;

3. that participants assume the commitment to enhancing the role of women in water supply and sanitation and interact at an inter-ministerial level in this regard.

Closing statements were then made by the Chairman, Mr. Mohamed Hassan Haji, on behalf of the participants; Ms. Stephani Scheer de Vela, on behalf of INSTRAW; Ms. Amina H. Aden, on behalf of UNICEF; and Mr. Yusuf Hersi Galow, on behalf of the Ministry of Interior of Somalia.

II. SUBSTANTIVE ISSUES

A. Module I: Introduction of the International Drinking Water Supply and Sanitation Decade and the United Nations International Research and Training Institute for the Advancement of Women.

Module I, introduction of the IDWSSD and INSTRAW was presented by the representative of INSTRAW, Ms. Stephani Scheer de Vela. Currently a consultant for INSTRAW, Ms. de Vela served as a member of the INSTRAW staff for a number of years and was actively involved in the development of the institute's programme, women and the IDWSSD, including serving as a member of the Inter-Agency Task Force on Women and the IDWSSD.

In her presentation of Module I, she noted that recognition of the seriousness and the vital importance of improving water supply and sanitation worldwide had been underlined by the international community at the United Nations Water Conference held in Mar del Plata, Argentina in 1977, which resulted in the subsequent launching of the IDWSSD in 1980.

A Steering Committee for Co-operative Action was established, comprised of eleven relevant United Nations specialized agencies and organizations. The objectives of the Steering Committee were, she said, to put into operation mechanisms designed to help match projects with external sources of funds, exchange technical information between countries, shape global plans for human resources development, advise on project formulation and investment planning, and assemble comparable data for progress reporting and public information on the Decade as a whole.

In 1985, she said, a review had been made of the progress in the Decade, in the form of a report to the General Assembly.

At the mid-point of the Decade, it was found that some 1,200 million people still needed safe drinking water and some 1,900 million people still lacked adequate sanitation. These numbers of unserved people represented more than twice the number of people provided with clean water during the first half of the Decade, and more than 20 times the numbers reached with adequate sanitation.

The consequences of this situation she said, were extremely evident. Less evident, though vital in consideration of the situation, was the role of women.

She stressed that women were the carriers of water, managers, users, family health educators, motivators and agents of change. They were responsible in this regard not only for themselves, but also for the members of their families and the community at large.

Any strategy for women's participation thus needed to consider water supply and sanitation as an integral part of the entire development process along with other socio-economic sectors.

Within the international community, one of the mechanisms established to address the question of the role of women in water supply and sanitation, was the Inter-Agency Task Force on Women and the IDWSSD. The Task Force was created as part of the Steering Committee for Co-operative Action.

Within this framework of international co-operation, the United Nations International Research and Training Institute for the Advancement of Women (INSTRAW) was seeking to make an important contribution to the implementation of the objectives of the IDWSSD.

Mandated to act as a catalyst, the representative stated that the objectives of INSTRAW were to stimulate and assist, through research, training and the collection and dissemination of information, the advancement of women and their integration in the development process, both as participants and as beneficiaries.

Since its inception, INSTRAW had worked to improve methodologies for training. INSTRAW remained firmly committed to innovative approaches to training, recognizing the urgent need for a shift from didactic instruction to more participatory methodologies, involving communication and media support as essential ingredients.

As part of its programme and with the generous support of the Government of Italy, INSTRAW and the International Centre for Advanced Technical and Vocational Training (ILO/Turin) had prepared the multimedia training package on Women, Water Supply and Sanitation.

The package reflected five years of research by INSTRAW, including a survey of material, projects and activities undertaken by other United Nations agencies and bodies, inter-governmental organizations, bi-lateral agencies and non-governmental organizations. Using a modular approach, the package aimed at two major target groups: national development officials and women's organizations. The major objective was to foster awareness of the close relationship between women and water, and help to ensure women's participation at all levels and stages of water supply and sanitation programmes and projects.

Now, before the package was reproduced in its final form and distributed world-wide, she noted, four national training seminars, such as this one, were being conducted to determine its applicability.

In closing, she said that in distributing the training package, INSTRAW hoped to strengthen the institutional capacity of developing countries in water supply and sanitation.

Two other papers were presented under Module I, by Mr. Abdulahi Mohamud Osman and Ms. Sadia Muse Ahmed. Mr. Abdulahi was the Deputy General Manager of Mogadiscio Water Supply. He was a civil engineer with 15 years experience specializing in water supply and sewerage. Ms. Sadia was the Head of the Women's Research and Documentation Unit of the Somali Academy of Science and Arts. She had eight years of community development experience especially women's issues.

In his presentation Mr. Abdulahi said that according to the Mid-Decade Review, in developing nations about 50 percent of the people did not have reasonable access to safe water supply, and 75 percent did not have adequate sanitation facilities. Rural people used water mostly from contaminated shallow wells and surface sources, their excreta was disposed of more or less haphazardly in the fields. In the view of the World Health Organizations (WHO) a rural family had reasonable access to safe water, if a member of the household, usually the woman did not have to spend a disproportionate part of the day in fetching water that was not contaminated. Adequate sanitation was often merely a latrine of some sort. In congested areas, however, most latrines did not meet minimum health standards, and they were often designed so that children did not have access to them.

Health problems in developing nations could be solved if a combined approach was adopted that included:

- improvement in water facilities resulting in accessible and reliable water supply that was of good quality and sufficient quantity;

- improvement in excreta disposal facilities, leading to better sanitation;

- education in water use practices, leading to better personal and household hygiene.

These improvements in water supply and excreta disposal facilities must occur at household as well as at the community level. When planning water supply and sanitation, community participation should aid design and construction of the facilities and their acceptance, use, operation and maintenance. Women and young people were particularly important, because of their traditional roles in water supply.

Safe water supply allowed an increase in economic productivity. If the work force was healthier, fewer work days were lost due to sickness and disability. Women and children, the chief drawers of water in developing countries, could spend more time in agricultural pursuits or other activities.

Water supply also affected the economy by influencing settlement patterns, encouraging isolated rural and nomadic people to settle in one place where they would be provided with better service. Rural areas with adequate water and sanitation become more attractive places, and people could remain there and lead decent lives, rather than streaming to the overcrowded cities.

From a social standpoint, improved water supplies affected family development. When women were freed from water bearing chores they had more time, not only for income generating work, but for child care and household tasks, training and educational programmes. The hours that children spent carrying water could be spent in school instead. The school drop out rates for girls was linked directly to domestic responsibilities.

Finally, he said that although many things pointed to economic and social rewards from improved water supplies and sanitation, it was difficult to describe these rewards in exact cost-benefit terms. However, too little was known about the ways in which the energy and time saved from disease and from carrying of water was used. It was the direct health impact of water supplies that justified investment in them, whatever the ultimate social and economic consequences of their impact.

Ms. Sadia began by saying that women accounted for two-thirds of the world's working hours. Their responsibilities ranged from domestic chores to income earning as household heads or supporters with emphasis on their time - an average of 16 hours a day as a norm, and the tedious work involved as well as their energy needs. However, in official figures only 35 percent was recognized as women's participation in the work force. The rest was unrecorded.

Water as an essential commodity for life and for the family was fetched and transported by women, which took an enormous amount of time and energy. The distance travelled, the effort of lifting and carrying water on women's heads and back was an arduous task for women that needed intervention from water planning institutions and ministries, as well as implementors.

Women's needs were best known by themselves, so their involvement in both planning and implementation levels was essential.

Usually extended families lived together in the same house or compound, and ventilation was a problem by itself. Latrines were not popular in rural areas because of lack of awareness of sanitation. Also, drinking water was not clean because water sources were contaminated by animal and human waste. Incorrect usage of water from the source itself occurred.

Women's lack of education, awareness and the shortage of time and fuel for boiling water or using other methods of cleaning and hygienic storage contributed to the problem.

Other water-related diseases like typhoid, dysentery, gastroenteritis and schistosomiasis, etc., contributed highly to malnutrition. Children and mothers figured largely in high morbidity and mortality rates in the country.

The five year plan of the country, she felt, neglected to take into account women's role in terms of water development processes and hence showed the lack of awareness at the national level towards the hazards that the community in general, and women in particular, faced.

In closing, Ms. Sadia said that this seminar's responsibility was to highlight the enormity of the problem and the relation of good sanitation and water supply to women's educational development and community participation needs.

In the general discussion that followed the presentations, it was enquired as to what were the problems in water supply and sanitation in Mogadiscio. It was replied that sewage disposal as a municipal responsibility posed problems of water contamination in roadcrossings, flush toilets as latrines, and that in the Mogadiscio area, the soil was porous and could absorb easily things that contaminated. The issue of community participation and awareness, starting in schools, households and at community gatherings was also noted.

Questions were also raised regarding types of information on water sources in rural and urban areas; whether women had been trained in water projects; and whether any evaluation had taken place involving community participation.

B. Module II: Participation of Women in Planning Water Supply and Sanitation Projects

Module II, participation of women in planning water supply sanitation projects was presented by Ms. Helena Soini and Mr. Mohamoud Abdi Deria. Ms. Soini was Assistant Programme Officer (JNSP Training) for UNICEF in the Middle Shabelle Region since July 1987. Previously, she had served as a registered nurse in Finland and health administrator in the college of nursing, Turku, Finland. In her preparation of the study to be presented at the Seminar, she had been assisted by Ms. Halimo Hagi Salah, the Family Life Co-ordinator of the Ministry of Education, in the Middle Shabelle Region. Mr. Mohamoud was a hydrogeologist and Acting Project Manager of the Mahadaay Weyne Project. While he was a permanent staff member of the Ministry of Water and Mineral Resources, he was on secondment to the Ministry of Interior.

Ms. Soini began her presentation with background information on 12 villages in the Middle Shabelle Region, the region adjacent to Mogadiscio, on the northern side. Most population settlements were along the river Shabelle which flowed through Jowhar and Balcad, two of the four districts of Middle Shabelle.

According to local government, population was 503,000. The urban population being 26 percent, the rural population 44 percent and the nomads 30 percent of the total. The proportion of children under five years was 16.4 percent and the proportion of women was 48.6 percent of the population.

The three main problems in the region were the low basic service level, inadequate government infrastructure and high morbidity and mortality among children and women.

UNICEF had assisted the region in health programmes already earlier, but in 1986 a new integrated programme was started under the joint WHO/UNICEF Nutrition Support Programme. This programme (so called JNSP programme) included components of primary health care, rural water supply and sanitation and women's development. It emphasized social mobilization and community participation.

The water programme in the region started in late 1986 when UNICEF and OXFAM agreed on joint actions to implement the project. UNICEF committed itself to provide pumps and well construction equipment and materials as well as some cash assistance, while OXFAM assigned one water engineer for technical assistance. The WDA provided the labour and office facilities for the project.

In the first phase, the project enlisted 28 villages where water was considered the priority problem, and where immediate actions could be planned. Three kinds of intervention were suggested:

1. digging of a new shallow well;

2. improvement and protection of an old shallow well;

3. improvement and rehabilitation of the distribution system of borehole wells.

For selecting the site for the new well, the project team contacted village leaders and asked for their proposals for the site. It was felt that there should be three site proposals with two limitations: a new well could not be located in the middle of the village and the site must be accessible by vehicle. The project team finally selected one of those three proposals which they regarded as most suitable.

Case Study

For getting more information about women's involvement in water supply and sanitation a case study was conducted in twelve villages. Villages were selected according to their JNSP activities (PHC, water and women) and different water sources.

The water sources in the 12 villages were as follows:

- five had new shallow wells;
- two had improved shallow wells;
- two had boreholes;
- one had an old shallow well;
- in one village the main water source was river and channel;
- in one village the main water source was water catchment.

Results

Basic information about interviewed women

There were 120 women in 12 villages, ten persons in each, who were interviewed. Women were divided into three age-groups: 15-25 years, 26-35 years and over 36 years; each group covered about 30 percent of the total number. Sixty-three percent were married, 19% were widows, 8 percent were divorced and 4 percent were single.

In most of the families (64 percent) there were three children or less; 33 percent of the families had 4-7 children and only two families had more than seven children. The total number of children in the interviewed families was 428 children. Of this number, 52 percent were going to Koranic school, girls' enrollment was 17 percent; 11 percent went to primary school; and girls' enrollment was four percent.

Basic income generating activities among women were farming (84 percent), fire wood collection (24 percent), animal husbandry (eight percent) and marketing (eight percent).

By the enumerators, families were classified into four groups: rich, middle, poor and very poor. The poor averaged 45 percent and very poor 30 percent totalling 75 percent of the interviewed households. Only four percent (five families) were rich; 20 percent middle-income.

Women and water

Women were the ones who took care of fetching water for families. Children did it only sometimes, and men never.

In the interviewed villages the water sources were located near the villages and the time used for fetching water commonly was less than half an hour. Sixty-five percent of the women were fetching water three times or more a day. The usual way to take water home was to carry it on the back. All this meant a big workload for women, including other duties.

In five interviewed villages with new shallow wells, women were asked about their participation in decision-making when the site of the well was selected. All women answered that the site had been decided by the village committee leaders. In one village there was a female member in that committee, according to the women's answers. In three villages, also, village health committees existed; and in two, village religious leaders were mentioned as additional decision-makers.

All the women said that their opinion had been asked before the decision. All also regarded the site of the new well to be convenient for the village and all except one told of using the new well. The reason for not using the new well was that the water in the new well was considered to be dirty.

Only in one village (Buulo Bishaaro) all women said that they got drinking water only from the new well. In other villages additional water sources, i.e., water catchment, channel were still used along with the well. And all these water sources were regarded as good water sources.

Water and health

For getting more information about beliefs and habits relating to water, questions about diarrhoea, its causes and prevention were made. Mostly causes of diarrhoea were related to dirtyness: dirty water, dirty food, dirty environment.

For prevention, cleanliness was regarded as the main way by 55 percent of women. Boiling the water was mentioned by 10 percent.

When asking how to try to avoid diarrhoea in the household, 50 percent answered that there was no way to avoid it, it was just fate. Twenty-five percent tried to avoid diarrhoea by cleanliness in the household, 10 percent by boiling the water. A few mentioned also not breastfeeding when the body was hot - that meant when women had worked hard and walked a long way in the sun, making her body hot and the milk also hot. This hot milk was regarded as a cause of diarrhoea. Breastfeeding regularly at the same time every day was also regarded as a way of avoiding diarrhoea.

To the question whether children were sick the last week, 75 percent answered yes and only 25 percent answered no. Main sicknesses were diarrhoea (48 percent), fever (24 percent), malaria (12 percent), measles (eight percent), schistosomiasis (five percent), respiratory problems (five percent) and worms (two percent). Main health problems in the villages were mainly the same.

Main advisers on diarrhoea treatment were the community health worker (CHW) (mentioned by 43 percent of women), Sheikh (42 percent), traditional healers (37 percent), doctor (28 percent) and pharmacist (eight percent). Family Life Centre (FLC) teachers, auxilliary nurses, Traditional Birth Attendants (TBA), and teachers were mentioned occasionally. CHWs' position varied in the PHC villages very much. In some villages he was the main adviser, in some others only a few asked him to advise.

As a source of health information, the CHW was at the top, mentioned by 45 percent of women. After him came the Sheikh (22 percent), TBA (20 percent), health personnel (18 percent), village women (17 percent), consisting of FLC teachers, SWDO women and active women in the village, radio (10 percent), teachers (five percent), village committee (four percent), and pharmacist (two percent).

Sanitation

One essential part of health was cleanliness in the environment. The number of latrines in the village and the manner of waste disposal gave a good picture of the situation.

Every village had at least one latrine, but only in one village all those interviewed had latrines.

Lack of latrines caused many problems, answered 57 percent of women. Many diseases were spread and for sick people it was difficult to go far away. One's own latrine was also a safer place than the bush.

Ways of destroying rubbish were burning (38 percent), burying (38 percent), and taking away from the village (25 percent). Only three persons of the total 120 said that they just left rubbish there where it was.

The future workplan

She noted that as the case study showed, improvement of water sources only was not enough. People needed more information, more training, and wells and pumps needed maintenance.

After installation of handpumps every village should select a person who would work as "water guardian". His/her responsibility was to ensure that the pump was used properly and to take care of minor repairs. All key persons in the village: village committees, village health committees, CHWs, TBAs, water guardians, women leaders would get training in the following subjects:

a) Clean water - what does it mean;

b) Environmental cleanliness, sanitation;

c) Waterborne disease;

d) Well maintenance.

Women's own channels should also be used for their training: functional literacy classes, women's organization, TBAs and other important women in the village. In well maintenance, women should be encouraged to take care of the surroundings of the well. One or two model gardens could serve as examples for the others.

Villagers would be the owners of the wells and handpumps and it was their responsibility to collect money for the maintenance of the pumps, e.g., for spare parts. A workshop was to be established in Jowhar town to assist villages with bigger problems.

In closing, Ms. Soini said that proper follow-up was needed to get to know how wells were used, how the health situation had improved, and what could still be done. But all the time the emphasis should be put on community participation and villagers' own activity in filling the tasks which were needed.

Mr. Mohamoud, in his presentation, said that women in many of the third world countries, both in rural and urban water supply and sanitation, were vital for development. After development of Somalia's Rural Development Strategy (1981-1990) under the auspices of the Ministry of Interior, many water supply and sanitation projects were undertaken, such as the Mahaaday Weyne Integrated Rural Development Project.

He stated that women both in rural and urban areas were important for water consumption in order to provide for their families. It was clear that women had a long distance to travel for water. The vast majority of the women still physically carried water, and methods of carrying varied from place to place.

The few existing wells or water points, from which women fetched water of common sources were unhygienic, which caused serious diseases, since women were the only supply of water to their families.

In general, water supply and sanitation were very low and it was important that they be developed. The existing women's institutions were less involved in planning, decision-making and other types of participation in water supply and sanitation projects. Dozens of households interviewed were observed, and it was noted that there was lack of maintaining any type of proper sanitation. In closing, Mr. Mohamoud recommended that the women's institutions should participate more in the development of planned and on-going programmes.

The group then held general discussions.

It was asked what went on in this area to overcome the obstacles posed by some traditional beliefs.

It was replied that lectures were given, literacy training and educational materials. It was also noted that long-time beliefs were usually rooted in fact and that, such as the case of the relationship between teething and diarrhoea, what was required was demonstration to the contrary.

Regarding the participation of women in planning WSS, it was felt that site selection was an area where women should be consulted. Their advice was deemed important in many areas of the planning process.

It was commented that all the organizations as well as the government should collaborate in the planning and implementation of water supply systems.

The participants then met in working groups. Their reports follow.

Group 1: How can women be involved in the planning process of WSS projects at the grass-root level

Chairman : Giama Farah Mohamed
Rapporteur: Fatima Sherif Nor

The group first discussed the topic and felt that most WSS projects failed because of the lack of women's involvement in the early planning stage. It was well documented that women bore most of the burden associated with WSS.

Based on this observation, the group made the following recommendations:

1. Women should be involved in the early stage of planning WSS (from village to national level and vice-versa).

2. Women should be included in village committees. They must be active in decision-making and communication skills and WSS technology and methodology.

3. Needs assessment must be done (site selection, etc.). Interviewers should include women and use language and culture related to the communities.

4. Involve women in community participation in selection of WSS technology.

5. Involve women and the community in contribution and construction of WSS facilities (kind/cash/encouragement, etc.).

6. Women should be trained in management and maintenance of WSS projects.

7. Government WSS projects should encourage private companies in WSS to include women in planning.

Group 2: How can we incorporate traditional habits and beliefs in planning WSS

Chairman: Catherine Michel Mariano
Rapporteur: Abdullahi Hassan Magan

This question was discussed by the group and it was agreed that these beliefs and habits varied from region to region within the country. It was found that there were both negative and positive habits and beliefs. The positive habits which the rural people used to promote sanitation were discussed.

The groups then made the following recommendations:

1. Undertake locally as the responsibility of local government the increase of the availability of safe drinking water.

2. The positive beliefs of sanitation already existing in each community should be promoted and incorporated in the planning stage, e.g., concept of purifying containers with "Jire or Asal" should be developed.

3. Mass media, especially radio, must be fully utilized, emphasizing the visible and invisible hazards of water supply.

4. Religious leaders should be encouraged to participate and advocate water supply on an existing religious basis.

5. The usefulness of latrines must be emphasized in settled communities. Also traditional beliefs such as burying excrements, should be used to promote the use of latrines.

6. A committee elected by the community, especially with women in a key role should be trained for community sanitation education.

7. Improvement of traditional technology for conservation of water and fuel must be explored and utilized for health purposes.

8. The surroundings of traditional wells should be built up in order to avoid the splashing and run-off from getting into the well.

Group 3: What role do women's organizations play in planning WSS? How can they be strengthened?

Chairman: Zahra Siad Naleie
Rapporteur: Halimo Hagi Salah

The group discussed the topic extensively and then made the ollowing recommendations:

1. The role of SWDO should be advocated from national to grass-root level so that women would be involved in planning as well as implementation and decision-making with regard to all activities related to water supply and sanitation. (SWDO could channel this issue through seminars, workshops, mobilization, conferences, etc.).

2. SWDO should encourage community committee leaders, which are now mainly men in many villages, to include women in order that they participate in planning projects related to water supply and sanitation.

roup 4: How can we ensure that the role of women in planning WSS is considered at the national level by the existing institutions

hairman: Mohamoud Ali Jama
apporteur: Faiza Jama Mohamed

The group first addressed the following questions:

1. Why was it that women were not involved in the planning and the decision-making process?

   a. The fact that they were behind in education could be one factor.

   b. Consequent to (a) men occupied key positions and decided for women.

2. How were projects (WSS) initiated?

   This was done by the Ministry (centrally), contacts were hardly made with communities, very few were consulted (the leader) and this did not include women.

3. Central offices did not have to get involved in the decisions and planning, except to provide the technical assistance needed by the community. The community should initiate its own projects/schemes privately.

4. While feasibility studies were being conducted, a point should be made to consult the women about their needs, and priority given to them.

5. Technical factors at times determined what should be the decision and community voice was over-ruled.

6. Who had the influence at the national level to push women to participate in the planning and decision-making processes?

   Two points were mentioned in respect to this:

   a. Political level - include more women in higher positions (as ministers, vice-ministers, directors, etc.), to raise women's voice.

   b. Technical and professional women should increase their technical skills to be able to take part, or have a voice in such issues as WSS.

7. What steps could be taken to involve women and prevent men from obstructing their participation when government officials visited their villages?

8. Village committees were all men and the role of women in any discussion was non-existent.

9. Men helped in building and digging wells for the villages, therefore their voice was considered to be more important.

10. Men's efforts would terminate when the wells were dug and completed, but the prime users then were the women who walked for miles to collect water on a daily basis. So, their contribution was for a lifetime.

11. Even when no technical efforts were required such as operating water facilties, men were employed while women were left out.

12. Any group who visited the village had contacts only with committee leaders (all men) and so women would never consider joining the men, who were assumed to be conducting important discussions.

13. It was pointed out that in Dar-El-Salam village (Afgoi) there was full participation of women in water operations and the village was in a good position as a result of their good leadership. This could serve as an example for other villages. It should be studied to find out what made this community so successful.

14. Colleagues from the Ministry of Water and Mineral Resources should give examples of how water was provided to communities. What procedures were involved.

The group then made the following recommendations:

1. Teams (technologists, social surveyors) conducting studies on WSS should consist of both men and women, where feasible.

2. Raise awareness of all concerned institutions on the role of women in WSS projects.

3. Restructure the existing committees to include women, where qualified.

4. Increase women's education at all levels.

5. Increase and encourage employment of women in water operations.

6. At the national level decisions should be made to technically train women in operating water facilities.

7. Study Dar-El-Salam and other successful villages to identify factors contributing to their success, then apply these to other villages, if feasible.

The participants discussed in plenary the findings of the working oups and adopted the recommendations as amended.

Module III: Involvement of women in choice of technology and implementation of water supply and sanitation projects

Module III, involvement of women in choice of technology and plementation of water supply and sanitation projects was presented by . Hassan Ahmed Egal. Mr. Hassan was the Deputy Manager of the North st Region Water Supply and Sanitation Project. He was a geologist who d been involved with water supply and sanitation projects for five ars as a field supervisor.

In his presentation, Mr. Hassan said that success of technologies r water supply and sanitation depended on their respective propriateness and complexity or simplicity in operation and intenance. However, appropriate technology did not necessarily mean mple technology but a technology specifically designed for the ndition under which it must function. These conditions included alth, sanitary, functional and environmental appropriateness. In that

case, the technology of water supply and sanitation programmes - as with other aspects of primary health care - must be acceptable, affordable and it must work. Initial cost, though, should not be the sole criterion for selection of equipment such as handpumps or generators. Consideration should also be given to running cost, maintenance and spare parts availability and cost.

Water and sanitation programmes were being designed to increase the human drinking water supply in rural or urban communities and were meant particularly for the advancement of women and children. Since the actual beneficiaries of such projects were women and children, consideration should be given to the involvement of women at various stages, of which the choice of technology was one of the most important.

Failure to involve women in initial testing of new technologies, like hand pumps and water carts had resulted in reduced effectiveness and use. Evaluation with men and users of experimental hand pumps and platform design yielded useful suggestions and contradicted the original expectations of ease of operation for children and women.

Women could contribute to decision-making for community water supply and sanitation by providing information on:

- location for facilities that were convenient for women;
- schedules for using facilities that fit women's work patterns or time use;
- design of technology that suited women and was easy for women to use.

Through experience, it had been observed that women were the primary users of water supply systems and sanitation facilities. Therefore, in order to provide reliable baseline data for the required operation and maintenance skills, it was inevitable that women be involved. Moreover, within the concept of community participation in programmes for WSS, women as future users and beneficiaries could at least be involved as motivators for adoption and self-help, and where possible as direct contributors to voluntary labour.

In some water and sanitation projects, women showed good participation in field duties such as construction, operation, maintenance and local management of project schemes.

Mr. Hassan noted forms of participation of women in local management and maintenance as follows:

A. Site management

1. as members of the user organization

2. as individual users

B. Care-taking

1. as members of male-female teams with culturally appropriate division of tasks

2. as care-takers doing both technical and non-technical tasks

C. Local administration

1. as members of local management committees

2. in parallel management committees for men and women

D. Self sufficient systems

In the group discussion that followed, it was enquired as to whether any new methods and suggestions had been developed in the project to improve the situation of women; and noted that women's participation had been supported at every level of the project. Considering difficulties encountered at the early stage of the project, full participation of women had not yet been reached.

The handing over of the project was also discussed and it was noted that UNICEF still managed the project, but that it would eventually be handed over to the Government.

The participants then met in working groups. Their reports and recommendations follow.

Group 1: How can we involve women in contributing to decision-making with regard to choice of technology for WSS?

Chairman: Sadia Muse Ahmed
Rapporteur: Severance Dolan

The group raised the following points during their discussion.

1. Choice of technology was based on:

   - government policy;
   - budget;
   - geography of region;
   - donor constraints.

2. Community participation was limited, not only in choice of technology, but also in site selection, maintenance and management. The Ministry determined policy and WDA implemented it.

3. Types of technology currently in use were:

   - deep wells with pump and generator;

   - shallow wells with: buckets, hand pumps (suitable to 50 m near rivers), solar pumps (expensive but low cost maintenance).

4. Maintenance and management was usually the sole responsibility of WDA.

5. Community involvement was dependent on informed and educated persons. The community was capable of responsible decision making if provided with information concerning site options, technology alternatives, maintenance requirements and management responsibility.

The group then made the following recommendations:

1. Responsible agencies should create awareness in the community as to water availability and options in order to participate intelligently in reaching decisions regarding sites, technology, maintenance and management.

2. Ensure that the community participate in decisions, including water providers (those who carried the water).

3. Encourage the community in the choice of technology that emphasized ease and low-cost maintenance.

4. A committee from the community should be established to provide management of the water source with government personnel. The committee should include community health workers, water providers and community leaders.

5. Community health workers should educate water providers (e.g., women, children, donkey vendors) in the preservation of water cleanliness.

Group 2: How can women be involved at the village level in the implementation of WSS projects

Chairman: Marian Osman Yusuf
Rapporteur: Ahmed Aideed Mohamoud

Before addressing the issue, the group identified the possible problems that could be found in a typical Somali village, and listed them as follows:

1. lack of knowledge

2. lack of proper sanitation

3. lack of organization

In addition to this, the group assumed that WSS projects, like most other projects was planned without involving the community.

On the basis of this, the following recommendations were made:

1. Mobilize women using existing community groups, like SWDO.

2. Appoint a committee, to include women, to supervise WSS projects continuously.

3. Encourage women to participate in the construction of WSS projects: morally, physically and materially.

4. Give management and operational training regarding WSS projects to communities, including women.

5. Encourage the community committee, including women to take responsibility for the supervision of follow-up of WSS projects, after termination.

Group 3: What is the role of women in operation and maintenance, e.g., women mechanics in the system. How can this be improved.

Chairman: Ali Haji Elmi
Rapporteur: Abdi Abukar Sheikh

The group paid specific attention to the need for women to become mechanics and understand mechanical operations of WSS. It was

unanimously agreed that if women were qualified and understood mechanics, operation and maintenance of WSS, as a result the benefits as well as the system would last longer. This was because women were seen to be the main users and more permanent members of society in relation to water points (in Somali culture men do travel and move around more frequently than women).

It also became obvious that there were only a few trained female mechanics/water engineers at the national level.

Culturally, it was believed that mechanics and related fields were specifically male jobs and responsibilities.

The group therefore recommended the following:

1. Increase people's awareness that these activities are not specifically for men (through SWDO, Family Life Centres, formal and informal training, mass media).

2. Local training in simple/basic operation and maintenance of WSS system/equipment (plumbing, sewerage repairs, handpumps, welding, etc.) should include female participants.

3. All WSS projects should include a training component and involve female participants.

4. Technical schools, vocational institutes, etc., should promote and give access to female students. Girls should be encouraged towards technical studies from an early age.

5. Employment of female technicians should be encouraged at national, regional and local levels.

Note: These recommendations were subject to the involvement of women in the choice of appropriate WSS technology.

Group 4: How can women physically participate in the construction of new WSS facilities? Make recommendations in this regard.

Chairman: Sadia Arif Qasim
Rapporteur: Fouzia Mohamed Musse

The group held lengthy discussions then made the following recommendations:

1. Women should be oriented to participate in the construction of WSS facilities.

2. The community should encourage women to participate in construction and operation of WSS facilities.

3. Women should be trained in participation of new WSS projects, such as:

   a. surveying and designing;

   b. construction (digging, concrete sections, drainage systems, installation of pumps, etc.).

4. Women should take part in water analysis and estimation for quality and quantity of water.

5. Women should participate in supervision of construction of WSS facilities.

D. Module IV: Role of women in education and training activities for water supply and sanitation

Module IV, role of women in education and training activities for water supply and sanitation, was presented by Dr. Abdullahi Hassan Farah, Ms. Sadia Arif Qasim and Ms. Fatima Sherif Nor. Dr. Abdullahi was an epidemiologist in the Ministry of Health, as well as Acting Director-General for Preventive Medicine. In addition to his medical degree, he held a Masters in Public Health and had served in the Somali Government since 1969. The background paper being presented was prepared by Dr. Abdullahi in conjunction with Mr. Giama Farah Mohamed, the Project Manager in Community Water Supply and Sanitation, and Mr. Jan Pospisilik, Sanitary Engineer with WHO in Somalia. Ms. Sadia was a hydrogeologist with the Ministry of Water and Mineral Resources. She had been the Director of Training with the Ministry since 1987 and was previously the Deputy Director of the Remote Sensing Section. Ms. Fatima was the Director of the Institute of Women's Education in the Ministry of Education and had been involved since 1978 with women's development programmes, first as a trainer, supervisor, then head of the Family Life Education Programme of Somalia.

In his presentation, Dr. Abdullahi stressed the importance of women's involvement in water and sanitation projects and as the first condition for their involvement cited the education of women. He underlined the necessity to include the education of women in every water-related project.

Water-borne diseases were reviewed and classified and according to their mode of transmission, preventive strategy was given. The inseparable part of water supply and sanitation was briefly discussed focusing on excreta-related infections, means of their transmission and preventive measures. General improvement of sanitation complementing water supply projects, education, and improvement of personal hygiene formed an integral part of strategy for health improvement.

As the part of women played in the households and family-oriented tasks was deemed very important, so was their role in the strategy of health improvement. The traditional barriers due to division of labour, where mostly men were the decision-makers, had to be broken down and the role of women increased to achieve success of water-related and sanitation projects.

In closing, he said that Somali society specifics were considered key factors in the orientation of these projects, namely the scarcity of water and the large portion of society which remained nomadic with the very special position of women in it.

Ms. Sadia in her presentation said that the issue of water supply had to deal not only with the sanitarian aspects of water but the problem of availability; the climatic and hydrogeological conditions of the territory had to be considered first. This country was a semi-arid zone with low average annual rainfall ranging 50-500 mm/year. The rains were concentrated into two short seasons; water was stored with great difficulty either naturally or artificially. The arid environment caused high evaporation losses.

From the above-mentioned physiographical conditions, Somalia could be divided into four provinces.

1. The southern province, which was crossed by the two rivers (Jubba and Shabelle) that were perennial.

2. The central province, which was without rivers and small numbers of emphemeral torrents. The only water sources were natural or man-made reservoirs.

3. The northern province, which was morphologically different (highlands, cliffs, valleys), climatic conditions varying from place to place, several water sources: a well and some springs present in the area.

4. The northeastern province had arid climatic conditions, with bare hills and dunes. The only existing water sources were deep aquifers and some ephemeral torrents. There existed also some springs which were not properly exploited.

The Somali women, she noted, were the house and family managers, in charge of basic education of children and health care and household, including food and water supply (administration).

Because of this managing experience and the daily responsibility for water, women were sensible and potentially enthusiastic subjects for a training programme on WSS.

She felt that training was needed and that the training network had to be planned with a pyramidal structure.

In the first stage a certain number of national experts had to be found and local expertise needed to be developed. The national staff needed profound background in hydrogeological and sanitation fields. Expatriate experts were needed at the beginning. They had to be anthropologically and ethnologically prepared to work in Somalia.

In the second stage, a certain number of women had to be selected from each region, to become the trainers at district and village level. This regional staff would be trained either in national courses in Mogadiscio or courses held in each region. The choice depended on the number of the selected persons and the possible mobility of the national staff.

The regional staff had the duty to train the women who would be responsible for the water in each rural and pastoral community. These had to be selected in the communities themselves.

The training methods were noted to be: cultural and technical. In the first one, women's issues were the preferred subject; the second should be to give them training in technology and policy making. As far as the topic concerned, Ms. Sadia's proposal was that at the regional level, the basic hydrogeological knowledge and skill had to be given to women. In the second, hygiene and health education was obviously the most important part of the training, taking into account the fact that the knowledge and awareness about the diseases induced by unsafe water was very low; also the effect of salty water (urological diseases, dehydration in children affected by diarrhoea).

A very important topic was the problem of methods used for taking water from the various sources, because these were dangerous vehicles which spread germs to all the household. Therefore, to prevent these water-borne diseases or water-related diseases, women should be trained to cover the well and ask the community to construct and use covered wells with hand pumps, to fence all the natural or artificial reservoirs, to build separate outlets of water places to drink, animals and humans. Latrines should be built downslope from the waterpoint. The community must be oriented and trained in hygienic practices.

Discussions and training in the cultural, social and religious aspects of the water problem had to be organized in rural and urban areas.

In closing, Ms. Sadia said that the training must be on a practical level with visual aids, mass media and water testing equipment (kits for basic analysis of water quality should be supplied).

In her presentation, Ms. Fatima first introduced the Family Life Education Programme (FLEP).

The Institute of Women's Education (IWE) was established in 1974 under the Department of Non-formal Education, Ministry of Education and Culture.

Its overall goals were summarized as:

"to provide non-formal education opportunities for rural and urban women enabling them to contribute more fully in the national development programmes".

The Institute had a network of 72 Family Life Centres (FLC), almost all of the district towns of the country; with a staff of over 600 teachers (female teachers), headmistresses, supervisors and administrators.

At the Family Life Centres (FLC), both teenage girls and adult women were given four-year, family life education certificate courses; short courses were also given. This included: health, hygiene, nutrition, cooking, childcare, home management, family health, family planning, literacy, numeracy, and income-generating skills.

The institute also ran day-care programmes for pre-school aged children.

In addition to that, it hosted refugees and offered family life education for refugee women.

From 1983, the Institute started to reorient its programme more to an out-reach approach, and decentralize the supervision, training, curriculum development to be carried out closer to the beneficiaries. So far six regions ran decentralized programmes (Bay, Northwest, Awdal, Lower Shabelle, Middle Shabelle, Lower Jubba and Banadir).

The out-reach programme showed rapid progress and to benefit more women, from 1986-87, 62 villages were covered in the above-mentioned regions.

IWE through its family life programmes had prepared educational materials related to water, sanitation and health (using posters, flipcharts, plays, slides) to convey messages to urban and rural women to create awareness about the hazards associated with family environmental sanitation. The programme emphasized the role of women as local managers of rural water supply. Therefore, creation of leadership skills and encouragement of women's participation in rural activities were emphasized.

Finally, Ms. Fatima noted the future programme development of IWE:

1. to up-grade trainers' knowledge and skills on WSS;

2. to produce more educational materials related to WSS;

3. to research traditional purification methods to test their efficiency;

4. to enhance training for women to create awareness of the hazards of faulty environmental sanitation and planning water points (resources);

5. in collaboration with various agencies and institutions, to develop and introduce simple appropriate technologies that could provide water and offer water purification.

In the general discussion that followed it was inquired as to whether any traditional methods for refuse disposal existed and how they could be introduced in society. It was noted that through the PHC programme, sanitarians were trying to advocate sanitation to the communities in various ways.

The question of co-ordination and collaboration between government and international agencies dealing with WID and WWSS was also raised. The group was informed that a new women's unit was being introduced into the Ministry of Interior under the Rural Development Directorate and that many of the recommendations of this seminar would be translated into positive action through this unit particularly with regard to training of women in rural development, as well as water supply and sanitation.

The participants then met in working groups. The following are their reports.

Group 1: What action could be taken at the national level for training women (trainers and trainees) in WSS?

Chairman: Hassan Mohamed Ali "Keynaan"
Rapporteur: Abdi Zubeir Sheikh Isaq

The discussions of the group were centred around the following questions:

1. Why did we need to train women in WSS?

2. Nationally, how could we train the communities in WSS?

3. Which institutions/groups should be responsible for the training and awareness-creating activities?

4. What role could each institution/group play in the process?

5. What should the mode of training be?

Then the following recommendations were made:

1. The Ministry of Health should strengthen components on WSS in training for TBAs and CHWs.

2. The Ministry of Education must emphasize and strengthen practical WSS education (hygiene) at the primary level and through all grades.

3. SWDO and FLCs should be trained in sanitation and hygiene.

4. In order to increase women's participation in technical training, the Ministry of Education should review constraints (such as sex bias in curriculum and boarding facilities) so as to eliminate them.

5. The Ministry of Information in co-operation with the relevant agencies should develop mass media programmes to encourage women's participation in all aspects of WSS.

6. The Ministry of Planning and Ministry of Labour and Sports should actively promote women's participation in all aspects of development projects (especially WSS) with the goal of having equal representation.

7. Local government should re-institute the practice of health inspection and fumigation.

Group 2: What is women's role in hygiene education? How can the existing constraints be overcome?

The group first identified constraints:

1. lack of proper hygiene education;

2. lack of enough time for women to learn hygiene education;

3. inadequate reliable water supply;

4. irrelevance of many health education programmes;

5. improper use of health facilities.

They then identified women's role in hygiene education as follows:

1. Women should participate in both formal and non-formal education for hygiene.

2. Hygiene programmes for women must be promoted towards proper use of water.

3. Women should educate children to use water facilities properly, as well as latrines.

4. Women should encourage others to use proper storage facilities.

5. Women's role in hygiene education at the community level should be emphasized.

The group then made the following recommendations to overcome the constraints:

1. In both formal and non-formal education, hygiene education must be emphasized.

2. Hygiene education must promote positive attitudes towards proper use of water.

3. Hygiene education must encourage proper use of latrines and hand-washing after defecation and before food preparation and eating.

4. Local government and sanitation agencies should provide and control the location of waste disposal and encourage communities to use them.

5. Religious leaders and important figures in the community should advocate the Islamic concept of hygiene.

Group 3: How can communities, including women, be oriented/trained to economize water consumption and maintain WSS schemes?

Chairman: Filsan A. Darman
Rapporteur: Hassan Ahmed Egal

The group held extensive discussions and then made the following recommendations:

1. The Water Development Agency and related ministries and agencies should orient the community, including women, on the usefulness of water through mass media, SWDO, orientation courses, etc.

2. A channel of communication from the community to the national water authorities should be established, so that the community could report observed water system damage.

3. Responsible agencies should then give immediate feedback on the reported water system problems.

4. The agency responsible for implementation of the WSS facilities should be responsible for training the community, including women in their maintenance.

5. Responsible agencies should provide the means and advise on ways of economizing water to the community.

Group 4: How can the Family Life Education Programme be strengthened to orient/train women in WSS programmes?

Chairman: Fatima Sherif Nor
Rapporteur: Anab Sheikh Hussein Osman

The group discussed the importance of FLEP and found there were many agencies involved in community development programmes with rather low co-ordination.

The group then made the following recommendations:

1. FLEP and other community/rural development agencies should be co-ordinated, e.g., Ministry of Health, Ministry of Interior, Ministry of Water and Mineral Resources, SWDO.

2. Workshops/seminars for FLEP trainers of trainers and teachers of WSS should be conducted. WSS authorities, managers and representatives from community development should be invited. FLEP representative in turn should be invited to other workshops and seminars.

3. FLEP should be extended to cover more villages and communities.

4. Exchange experience and expose key trainers to countries where women have participated in WSS projects, especially countries similar to Somalia.

5. WSS component in FLEP should be strengthened.

6. FLEP should be strengthened in order to carry out its activities.

E. Module V: Evaluation of water supply and sanitation projects

Module V, evaluation of water supply and sanitation projects was presented by Ms. Dierdre Lapin. Ms. Lapin was the Planning and Evaluation Officer in the Somalia Country Office of UNICEF. She held a doctoral degree of African Studies and had taught courses in anthropology and African cultures. In 1984 she joined UNICEF as a programme officer responsible for developing projects in areas including water and health.

In her presentation, Ms. Lapin used four hypothetical case studies to illustrate the issues.

1. An International Organization working in Ruritania agreed with a Regional Government to install fifty hand-dug wells equipped with hand pumps in a settled rural area. Labour for digging the wells was to be provided by the village. The project foresaw that health and hygiene education would be provided by resident CHWs, supported by district PHC teams who made monthly visits. The Village Health Committee would be responsible for managing the water points. Education in basic maintenance was to be provided through a government water agency represented in the regional capital. Individual family latrines were to be constructed by family members using a concrete slab provided free of charge by the project.

   a. Three years later a visit to one project site showed the following:

- Two wells, two metres apart, and fifty metres from the village, had handpumps removed and pipes capped.

- Ten metres away, a large balley had been constructed, partially lined in cement.

- No family latrines were seen.

- Women were seen buying water from 40-gallon tins brought from the nearest urban piped water supply system.

- On inquiry it was said that the handpumps were in the home of the CHW, but that he had been away for some weeks on a business trip.

b. A second project site showed a radically different situation:

- Two wells, two metres apart, had handpumps in perfect working order. Two men were working the pumps.

- Ten metres away was a borehole from which water was being pumped by an electric pump run by a generator.

- About twenty donkeys laden with 40 gallon tins surrounded the site.

- No individual users from the village only a few paces away came to fetch water.

- About thirty family latrines were seen, all of identical construction.

2. An International Agency agreed to construct a sophisticated water filtration plant using solar energy in a coastal town of about 250,000 persons. The water source was a perennial river that wound through the town and emptied into the ocean immediately to the south. No sewage system had been built for the town.

A visit five years after the project was completed showed the following:

- The town water supply was muddy in colour and residents complained of contamination by salt water in the dry season.

- Many town residents were seen defecating on the beach or in areas of the city where rubbish collected.

- Schistosomiasis and malaria prevailed among the population.

3. The Ruritania Department of Agriculture received funds to contract the construction of 25 deep boreholes in a range area for watering livestock. Each well was to be equipped with an electric motor run by a generator: a pump minder ran the generator and collected fees. One borehole was located forty kilometers from the nearest available water resource. It provided water for animals but no separate outlet for human consumption.

   A visit to the site showed the following:

   - About 500 camels, 2,000 sheep and goats, and 1,000 cattle surrounded the well, waiting patiently until the pump began to work again.

   - No pump minder was in attendance.

   - Human and animal waste had begun to accumulate in selected sites around the borehole.

   - Women had started to construct rough shelters to protect the children they had brought with them.

Ms. Lapin went on to discuss the various aspects of evaluation.

Purpose of evaluation

1. To critically analyse the development and implementation of a programme and its activities, with particular attention to its relevance, its formulation, its efficiency and effectiveness, its cost, and its acceptance by all parties involved.

2. The aim was to improve current and future programmes and services. Evaluation was a decision-oriented tool, linked closely with decision-making at the operational or policy level.

3. Evaluation as a process was as important as the conclusions drawn. Involvement in evaluation generated a better understanding of the objectives being scrutinized and often yielded a more constructive approach to project implementation overall.

Constraints to evaluation

1. While evaluation methodologies strove for statistical validity through quantitative analysis, qualitative judgements were also necessary and should be supported wherever possible by quantified information.

2. Evaluations often confronted an in-built resistance in principle to accepting evaluation and its results as a valid management tool. One way to minimize this constraint was to ensure maximum involvement of all parties at the outset in establishing the criteria by which the evaluation should be made.

Beneficiaries of evaluation

An evaluation could be seen as helpful to: donors, who funded projects; planners, who were responsible for translating government policy; but direct beneficiaries (and most certainly women) stood to benefit most.

Country context

Every country had special needs in the area of water supply and sanitation. In Somalia, the phrase "Water is Life" was often heard. This was especially true in the context in which water was the limiting factor in agriculture, animal husbandry, industry, and economic development in all its aspects.

On close examination the following features of the Somali context emerged as critical to the planning of water programmes:

1. An intense competition for scarce water existed between livestock, agriculture, industry, and people.

2. The country's only perennial water sources - the Jubba and Shabelle Rivers - originated outside the country.

3. The seasonal scarcity of water dictated the way of life of a large portion of the population - nomadic migratory patterns.

4. Increasing tendency toward settlement around water points had in many instances led to over-grazing, an ecological imbalance detrimental to pastoral livelihood and ultimately the national economy.

5. Whereas women in settled settings might spend much time fetching drinking water for their households, nomadic or agro-pastoral women were also responsible for watering sheep and goats, cattle, and sometimes camels. In a context where animal milk was a dietary staple, this liquid intake reduced the need for drinking water. Thus, watering animals indirectly provided liquids to the family diet, and implied a close and immediate relationship between water supply for livestock and water supply for humans.

6. Families living in irrigated farm areas were especially vulnerable to such water-related diseases as schistosomiasis and malaria, as parasites tended to breed in open ditches. Hygiene education became all the more important in this context.

Evaluation

Evaluation should be part of the total programming process. It was easy to demonstrate that projects did not work when women were not adequately involved in planning, maintenance, and other aspects.

Evaluation, like monitoring, was an in-built component of project implementation. Unlike monitoring, which was continuous, evaluation tended to be finite. An evaluation might take place because it was prescribed in the project plan or at the request of a donor or a government or a beneficiary community, because the project had reached a stage where some lessons must be learned and course changes made (e.g., recurrent technical problems, unclear management policies, etc.).

The evaluation process

The thrust of an evaluation was seen as dictated in large measure by the group which initiated it. Donors might look at cost; technicians at the hydrogeological features and equipment; government water development planners at utilization; social and health workers at impact.

A Minimum Evaluation Procedure (MEP) developed by WHO proposed a three-part evaluation process for water projects which responded to all of the above interests:

- functioning;
- utilization;
- impact.

The purpose of the MEP was to simplify the evaluation process, beginning with functioning, utilization, and finally impact.

Before evaluation began, the following decisions had to be taken:

- what was the target population?
- what methodology would be used?
- what indicators would be selected?

Indicators varied according to project design and context, but they would usually cover three areas: water supply, sanitation, and health education. Finally, indicators would also lead to an assessment of the institutions meant to support the project.

In closing, Ms. Lapin focused on evaluation for women. She said women must be taken into account in the following stages of the project development and evaluation process:

1. situation analysis - a baseline study;

2. acceptability of facilities to women;

3. resource distribution;

4. monitoring and evaluation measuring the specific impact on women;

5. involvement of the community, and especially women;

6. effects of the programme on women.

The participants then held discussions.

The two first case studies, they felt, suffered lack of community education and incorrect implementation of the construction of the sites. Management and maintenance were not considered thoroughly in the first place.

Regarding the third case, there was poor planning and management in the initial stages of the project. Realization of the project was not supervised properly. The maintenance and sanitation components were also missing. Finally, inappropriate technology was used without training technicians in operation and maintenance.

With the fourth case, the location of the well was considered incorrect. The design of the well was poor and poorly executed.

They then met in working groups. The working groups were divided into the four case studies described at the beginning of the presentation and the following questions served as the basis for their recommendations.

1. Add whatever information is necessary about the original project design, i.e., its policies, objectives, strategies, and actions.

2. Plan an evaluation that examines the functioning of each relevant component, whether it be (a) water supply (b) sanitation (c) health education. Give equal weight to the institutional (management), technical and human aspects of the situation described.

3. What corrective recommendations would you make about (a) policies (b) project design (c) implementation?

4. What objectives, strategies, and activities should have been planned that target women specifically? How might their involvement have prevented the consequences described?

Group 1: Case Study 1a

Chairman: Mohamed Mohamoud Dualeh
Rapporteur: Anab Sheikh Hussein Osman

The group discussed the case extensively and then made the following recommendations:

1. Consultation at the period of implementation should have been made with the community (especially with women to come up with a good site). A feasibility study should have been carried out in the first instance.

2. The community, especially women, TBAs, PHCs, etc., should be involved and put in charge of water operations.

3. Health and hygiene education should be provided to the community prior to project implementation.

4. Technical guidance concerning the establishment of latrines should be given to the community.

5. The sewage and water filtration system should be addressed by the project.

6. Supervision should be done by relevant institutions to assess the situation as it progressed, i.e., follow-up and feedback should be there.

Group 2: Case Study 1b

Chairman: Ahmed Abdi Nur
Rapporteur: Ruquiya Abdullahi H. Hassan

1. The group decided to evaluate the project as follows:

   a) House to house survey;

   b) Conduct interviews and informal conversation;

   c) Observation.

2. They assumed that:

   a) There was no proper selection of site;

   b) There was no community participation, including women; only men were involved. Community responsibility was not clear.

3. How women should have been involved:

   a) They should participate in the selection of the site, construction and follow-up activities, including education;

   b) They should be included in the village health committee for managing the wate point.

Group 3: Case Study 2

Chairman: Shukri Hilowle Adawe
Rapporteur: Sadia Muse Ahmed

The group discussed the case study and then made the following recommendations:

1. Planning of the project should be based on appropriate data.

2. Modifications should be made of the existing treatment plant, with appropriate technology.

3. In the planning stage, priorities should be given to the operation and maintenance stage of the plant, e.g., training.

4. In the planning stage, community awareness should be enhanced to ensure participation.

5. The sanitation component should be included in the planning.

6. A committee of concerned agencies should be formed to monitor the WSS project through its implementation stage and evaluate when completed.

7. The implementating agency in collaboration with health education and local government authorities, should promote training programmes for CHWs, TBAs, SWDO and other committees through orientation centres, mass media or other programmes to up-grade community awareness, especially for women, regarding sanitation.

Group 4: Case Study 3

Chairman: Fouzia Mohamed Musse
Rapporteur: Abdi Abukar Sheikh

The group discussed the case study and then made the following recommendations:

1. The community, including women, should be involved at the early stage of project planning, as well as decision-making and evaluation.

2. Baseline surveys should be conducted during the dry season, when water is scarce.

3. Terms of reference must be made more practical and applicable to the project area by consulting with the relevant agencies and ministries.

4. Any project that includes watering livestock must be integrated with WSS.

5. Simple and appropriate technologies must be introduced to the community.

6. Women must be trained in construction, operation and management of both livestock and human water supply systems.

7. A communication channel must be established so that the community can report WSS problems and get feedback.

8. Rural basic services must be introduced to the community.

9. The environmental impacts and/or side effects of these types of projects should be given high consideration.

III. BACKGROUND PAPERS

In addition to the modules used as the basis for the seminar, nine background papers were also prepared for presentation. It should be noted that the sequence of the papers in this report is according to their order of presentation at the seminar.

A. Community Water Supply and Sanitation

by Abdillahi Mohamed Osman
Mogadiscio Water Agency

1. Introduction

The principal result of inadequate water supply and sanitation is the heavy burden of disease. Third world nations have high mortality rates among infants and young children. Half of all deaths in developing nations are among children under five, with malnutrition and infectious diseases the principal causes. The disease that is most often involved is diarrhoea, caused by a lack of clean water and sanitation.

In developing nations, about 50 percent of the people do not have reasonable access to a safe water supply, and 75 percent do not have adequate sanitation facilities. Rural people use water mostly from contaminated shallow wells and surface sources; their excreta is disposed of more or less haphazardly in the fields. In the view of the World Health Organization (WHO) a rural family has reasonable access to safe water if a member of the household, usually the women, does not have to spend a disproportionate part of the day, in fetching water that is not contaminated. Adequate sanitation is often merely a latrine of some sort. In congested areas, however, most latrines do not meet minimum health standards. Improvements in water supply and sanitation in developing countries increase the well-being of the people. Such improvements promote economic and social, as well as human development.

Safe water supply allows an increase in economic productivity. If the work force is healthier, fewer work days are lost due to sickness and disability. Women and children, the chief drawers of water in developing countries, can spend more time in agricultural pursuits or other activities. Water supply also affects the economy by influencing settlement patterns, encouraging isolated rural and nomadic people to settle in one place where they may be better provided with service. Rural areas with adequate water and sanitation become more attractive places, and people can remain there and lead decent lives rather than streaming to the overcrowded cities.

From a social standpoint, improved water supplies affect family development. When women are freed from water bearing chores they have more time not only for income-generating activities but for child care and household tasks, training and educational programmes. The hours that children now spend carrying water can be spent in school instead. The school drop-out rate for girls is linked directly to domestic responsibilities.

Although many signs point to economic and social rewards from improved water supply and sanitation, it is difficult to describe these rewards in exact cost - benefit terms. However, too little is known about the ways in which the energy and time saved from disease and from carrying water is used. It is direct health impact of water supplies that justifies investments in them, whatever the ultimate social and economic consequences of these impacts. Most of the more serious diseases that plague the developing world have a close relationship with water.

Having a sufficient quantity of water is at least as important as having good quality. Many diseases are not only contracted through drinking or cooking with dirty water but lack of bathing, handwashing, unwashed dishes, and inadequate household cleaning. Water for these purposes need not be of the same quality as that which is for drinking. In practice, simply boiling a small quantity of water for drinking is not likely to solve a water supply problem.

Children are likely to drink from whatever container is handy, even if it contains impure water that adults know is to be used for other purposes. Water sources must be both accessible and reliable. There is evidence, for example, that diarrhoea infections are highest in homes that are farthest from the water source. If people must walk a long distance for water, or must stand in line to get it, there is a strong temptation to use a source that is closer, even if it is polluted. Water must be used and protected. If people do not understand the importance of washing and cleaning or if they are careless about excreta disposal in relation to water supply, their health is not likely to improve, even though water is available. Traditional beliefs and practices that lead to repeated contamination of water sources must be changed. The most widespread feeling among experts today is that health problems in developing nations cannot be overcome by a single remedy, such as improved water quality. Instead a combined approach is required that includes:

- improvement in water facilities, resulting in accessible and reliable water supplies that are of good quality and sufficient quantity;

- improvement in excreta disposal facilities, leading to better sanitation;

- education in water use practices, leading to better personal and household hygiene.

If they are to be truly effective, improvements in water and excreta disposal facilities must occur at the community as well as at household level so that the risks of infection in public areas can be reduced.

2. Water-related diseases

Intervention in the area of water-related diseases makes a health difference, as experience of developed and many developing nations show. The intervention may be by improved water supply, sanitary excreta disposal, better hygiene education or a combination of these. In order to effectively programme for interventions, there must be an understanding of the principal water-related diseases and the way each is transmitted, because it is at the transmission stage that most interventions can occur. All human beings must take water into their bodies in some form or dispose of body wastes. Therefore all persons should have water supply and excreta disposal methods. Dipping from flowing streams, drawing buckets from wells, turning-water taps, and catching rain water from roofs are all water supply methods. Excreta disposal methods range from depositing urine and faeces directly on the ground to flushing indoor toilets.

These processes take place in an environment that includes many varieties of agents that can serve as links in a disease chain. It is people, however, who are the chief agents in the spread of disease. As populations and cities grow and standards of living improve, people produce more household waste, and careless disposal of solid waste. However, when we trace the steps of the cause of disease to the ill infants or adults in developing nations, the trail often leads to a specific water supply. To summarize, water-related diseases are those traceable to water supply and excreta disposal. The most important of these diseases may be classified as follows:

- water site: disease carrying insects breed in or near the water supply;

- water contact: direct contact with water is an important step in the transmission of the disease;

- water quality/micro biological: the disease is transmitted through the consumption of water that is microbiologically contaminated;

- sanitation-related/water hygiene: the transmission of the disease is permitted due to incorrect use of water.

3. Community participation in WSS projects

Planners and economists know how to develop schemes and projects; health specialists know about the illnesses related to water supply and sanitation; and engineers know how to design, what to use, and how to build water and sanitation facilities.

The social and cultural factors influencing people, though, reactions to change in water supply and sanitation techniques must be understood, because these factors ultimately determine the acceptance and use of the systems. The success or failure of water and sanitation programmes depends on this understanding. Human dimensions must be taken into account if changes are to occur in behaviour patterns and traditional beliefs - to challenge customs with new ideas and new technologies. The key to dealing with social and cultural factors affecting a water supply and sanitation programme lies in community participation. Successful community participation will aid in design and construction of new facilities and their acceptance, use, and operation and maintenance.

Women and youth are particularly important because of their traditional roles in water supply and sanitation. It is usually the women who will maintain, or fail to maintain, the new facilities. More importantly, perhaps they will be critical factors in incorporating new behaviour patterns into daily life style and in training their families in improved personal hygiene. Young people are increasingly important in community improvement programmes because they act as communicators with their parents and may be more tolerant of change than their elders.

The community should be involved from the planning stage onward. Community residents should assist in the selection of sites, provide information regarding reliability of water source, help plan, be kept informed of the construction programmes, and be consulted about the level of service expected. In many cases the community must also take the responsibility for operation and maintenance of the system.

4. Economics of WSS projects

Economic and financial analysis of water supply and sanitation projects including the establishment and collection of charges for water supply and sanitation services and the community's acceptance and willingness to pay, requires understanding not only social factors but basic economic principles.

Planning the economics of water and sanitation programmes and projects involves consideration of four basic economic principles: demand, supply, cost and benefit. Once the system is constructed, the users will have to pay for service to defray operation and maintenance cost and perhaps a portion of the capital and interest of the construction costs. It is usually not practical for the operation of water supply and sanitation systems to be fully subsidized by the government. The key consideration in rate establishment and collection is adequacy of revenues to meet operation and maintenance costs, fairness to the users, and ability and willingness of the community to pay the rates.

5. Benefits of WSS projects

Benefits from water supply and sanitation are economic, health and social. Most benefits are obvious but are difficult to quantify.

a) economic benefits:

There are three aspects of water supply projects in which it is easier to measure cost than direct benefits. A water supply project may either improve quality, increase quantity, and/or make water more accessible. The improvement of water quality contributes to better health conditions and the cost can be directly justified. Increased quantities of water make people adjust quickly to using more water for many purposes, especially if previous quantities were low. Improved health may follow more water consumption but the relationship is difficult to prove and even more difficult to assess in money terms. The decrease in the time and effort required to fetch water also requires indirect measurement of benefits. In rural areas, particularly, women and children, who are the primary drawers of water, save time and effort when the water source is made more accessible. This time and effort can be used for other, more productive activities.

b) health benefits:

Changes in health, particularly in rural areas, are the result of many interrelated factors. Measurement of these changes is always very difficult, especially when quantifying and assessing the health benefits. Another problem is that resources are not usually available for detailed baseline studies of communities about to begin such projects. There usually are few resources for post-project evaluation and

estimates, rather than specific results, are used to assess project impact. Evaluation of health benefits is possible only where there is a health evaluation plan using extensive data collection and enough people, funds and equipment to carry it out.

c) social benefits:

Expansion of existing water supply or provision of a new system or sanitation facilities has several social benefits. Water and sanitation projects should serve the needs of the entire community. A water project that provides piped water to households, but makes no provision for the rest of the population may lead to social discrimination. Water supply and sanitation also affect income and asset distribution. Income distribution is affected since a healthier population will be able to work better and more productively over a longer period of time, than if adequate water supply and sanitation services were not available.

B. Mogadiscio Water Supply and Sanitation

by Abdillahi Mohamed Osman
Mogadiscio Water Agency

1. Water supply

The city of Mogadiscio has always relied upon ground water sources to meet the water required by the population by early 1960. About 200 wells had been dug in the city of which the majority were privately owned, selling water to the donkey cart vendors, by whom the population were served. There were also two independent municipal water supply systems in the city. One of them was brackish water with 38 wells and about 18 storage tanks with a capacity of approximately 1100 cubic metres. It distributed water through about 23,000 metres of piping of 100 mm diameter. The other system produced relatively fresh water from three wells and served a much smaller proportion of the population. They fed into elevated tanks with a capacity of 75 cubic metres of water and about 7,600 metres of distribution system.

The existing water supply installation was divided into two phases. Phase I was commissioned in March 1973 with 19 production wells, a transmission line, two storage facilities, a treatment plant, a power plant and a distribution system. This phase was projected to serve the city up to the year 1980 with a maximum of 24,000 cubic metres per day. However, immediately after the commissioning of the project, two wells failed to produce the necessary demand, leaving 17 wells. Thus only 21,000 cubic metres per day serve the city demand. This source is from Balad wellfield.

Phase II of the system was also implemented in stages. Stage 1 of Phase II was commissioned in 1982 with eight production wells, a transmission line and collector tank to support phase I and meet or cover the immediate demand. Stage 2 of phase I was commissioned in 1986 with 24 production wells, one reservoir, and a distribution system. This source is from Afgoye wellfield.

The water consumption varies according to the season. The demand is highest in the summer and lowest during the rainy season. Two factors have to be considered for the design purpose. The source should have a capacity to meet the peak day's demand. A factor of 1.4 x average daily demand. The source should have a maximum daily capacity of 1.4 x average daily consumption plus the system losses (we adopt 25 percent system losses). In addition to the source capacity, the trunk mains from the source to the storage reservoir is also designed for the peak day's capacity.

There is another factor that governs the design of the distribution system. The distribution system must be large enough not only to meet the peak day's demand, but also to meet the peak hour's demand. A factor of 2.66 is adopted, that is, peak hour demand = 2.6 x average daily demand.

The wells are usually designed for a normal output of 60 cubic metres per hour. The maximum number of wells in operation will be on the peak day to meet the peak day's demand. In addition there should be a minimum of 10 percent wells as stand by units.

For design purpose water consumption is assumed to depend on housing categories. There are four types of houses in Mogadiscio.

a) large houses with gardens;
b) large houses with no garden;
c) low cost houses;
d) temporary houses.

It is further assumed that the household size was 5.1 in 1976 and will be 7.5 in 2000.

		WHO	1976	1990	2000
a)	large houses with gardens	300	120	215	300
b)	large houses with no garden	150	60	105	150
c)	small houses	20	8	16	20
d)	temporary houses	-	4	8	12

The industrial demand is expected not to exceed 10 percent by the year 2000 (the present demand may be about three to five per cent).

Before the commission of the existing system the water quality was very poor. Both chemically, and bacteriologically it was unsafe. The content of chloride and sulfate was very high. The wells were dug next to pit latrines or cesspools. Water-borne diseases were common and in some cases very chronic. Since the commission of the new system, the situation has changed dramatically. Water quality has improved, except the slightly high content of cholride and sulphate due to the calcium and magnesium hardness, from Afgoye wellfield. All the other chemical contents are below or within the (WHO) guidelines. Gas chloride for bacteriological treatment has changed the environment and improved health conditions.

2. Sanitation

It is estimated that the population of Mogadiscio is about 45% of the total urban population of Somalia. The national programme's primary emphasis continues to be placed on water supply, water-borne sewerage and storm water drainage. There is no existing urban low-cost sanitation programme for Mogadiscio or any other urban area in Somalia. However, the risk and presence of disease, particularly excreta-related disease, is considered to be high. There are no communal latrines in the city. In most districts, many private households are currently served by some form of low-cost sanitation. Three typical forms of low-cost sanitation can be found in Mogadiscio:

a) - exterior pit latrines, separated from the house and generally comprising a single lined pit;

b) - exterior pit latrines attached to the house comprising a single lined pit and permanent superstructure;

c) - interior water seal toilets, including a ceramic squat plate and drainage to one or two cesspools.

None of the pit latrines have ventilation and the slab openings are generally small. Waste material is intended to seep through the pit floor. The water seal units are typically flushed using a gravity system. The cost of the existing sanitation units is high (15 - 20 thousand - Somali Shillings). The current sewerage and drainage project for Mogadiscio may solve a portion of the problem with the introduction of flush system toilets, and remove the risk of seepage that damages the quality of drinking water.

3. Socio-economic and health benefits

With improved health and a good water supply, socio-economic conditions have changed. The death rate has decreased, especially in relation to infants, although there are no vital statistics recorded. The rate of increase in population has not declined; and it is unlikely that the rate of net migration will decrease, due to the attraction of social and economic events in Mogadiscio.

With improved water quality and enough supply, and the upgrading of sanitation facilities in households in developed areas, 75 percent of the population now has access to piped water supply and 25 percent from public fountains. With the improvement of water supply, the time that women and children spend in fetching water has decreased and they have greater chances to go to school and improve household hygiene. The reliability and increased access to water supply has enhanced the willingness of the population to pay the moderate charge of 25 So. Sh. per 1000 litres or 5 drums. On the other hand, demand has increased, which may eventually decrease the quality and make less reliable the supply of water. This would lead to higher cost of supply and maintenance and to a higher charge for water consumption.

Very little socio-economic statistical information is available for Mogadiscio. Not enough public health indicators relating specifically to the incidence of water- or sanitation-related diseases are available. Estimates show, though, that about 30 percent of the population of Mogadiscio cannot afford to finance their own latrines if they want to improve conditions, but it may deteriorate and cause hazard if not properly maintained and operated.

It is very early to quantify the socio-economic and health benefits of sanitation conditions in Mogadiscio. However, with the increase in population and lack of town planning as well as the decrease of general hygiene, conditions will not be improved with the improved water supply system alone. Also, the industrial and traffic pollution may increase the danger. A combination of related activities are required, such as town planning, health education, and water and sanitation projects. These should be included in national economic planning, as well as sector planning.

C. The Role of Women in Water Provision

by Sadia Muse Ahmed
Somali Academy of Sciences and Arts

. Introduction

Women account for two-thirds of the world's working hours. They roduce 60 to 80 percent of the food in Africa and Asia and 40 percent in atin America. Yet, they officially constitute only one-third of the orld's labour force, receive only 10 percent of its income, and own less han one percent of its property. The work women do in the home and in he farm is never calculated into gross national product of any country. omen's unpaid contributions to their nation's economies are largely ver-looked.[1]

Women at all levels of responsibility have always been involved in ctivities for the improvement of the quality of life for their families nd communities.

For many women the world over, a 16 hour work day is the norm. eginning from early morning to the late hours of the night, most of them re working non-stop.

In Somali society, women play a prominent and important role in erms of work and responsibilities, and the distribution of labour among he members of the family is heavily weighted towards women, as the reater part of the daily work is shouldered by them.

In both rural and nomadic areas, home management, as the greatest urden and provision for the family are women's prime duties.

As a predominantly patrilineal society, the life-style of the ociety is geared to the male needs.

The traditional role of women buttresses and supports this rientation. Of course, the credit for the prosperity of the family and he rewards thereof are for the male member of the family, being the amily-head and ultimate arbitrator and controller of the family property ven in absence.[2]

As stated in the Long Walk Home by Marilyn Carr regarding ransportaton-related problems facing third world women, "Human porterage s arduous, time consuming and a major cause of injury and deformity. et, in the rural areas of developing countries, it is still the most mportant means of transporting water, fuelwood, agricultural inputs, ood crops, fodder and marketable surpluses. In many parts of the third orld, and especially in Africa, it is the women who bear the main esponsibility for such work."[3]

2. Women and water

Water as an essential commodity for the family is fetched and transported by women. The task of carrying water and fire-wood take up an enormous amount of time in rural areas.

In many parts of the world, distances travelled have increased as drought has become more widespread and as deforestation has decreased the supply of fuelwood and water close to the villages and other settlements. Such work is usually done by women without any carrying aids and frequently involves walking over rough paths, etc. Return journeys can be particularly hazardous, with women carrying home the daily food supply and farm implements, as well as firewood or water and often a baby as well. Scrapes and more serious injuries from falls are common and persistent back and head pains are blamed on this aspect of women's work. One report from Bangladesh, for example, reveals that 50 percent of the broken backs treated in rehabilitation clinics were the result of falls while carrying heavy head loads.[4]

Those with a well near their homes are the most fortunate but even for them the water is often tainted by human or animal waste. Others must walk miles, sometimes for many hours each day, to a source of water which, again, is not always pure. If the water source is very far away, the women walk a long distance, spend the night, and return to their homes at dawn, carrying heavy pots of water on their heads.[5]

A survey was conducted by the Ministry of Mineral and Water Resources and the Water Development Agency in Bay Region in 1983. The table below shows the time spent by the women for water provision in the villages of Bay region. It should also be noted that people make one or two round trips every day in the wet season. But this is decreased in the dry season, as the water source is very far and it is quite impossible for a woman, who is also a mother and who has to prepare meals as well as other domestic tasks, to make two round trips for water every day.

TABLE*

Time spent in water provision.

llages	Wet Season	Dry Season
rmandheer	1/2 hour	6 hours
reero jiif	1-1/2 hour	6 hours
abelle Dugsilo	1/2 hour	8 hours
rta Jaffay	1/2 hour	4 hours
ılo Hawo	1/2 hour	8 hours
otis	1/2 hour	6 hours
bay Gudud	1/2 hour	3-6 hours
duudo Dhunti	1 hour	6 hours
ılo Fur	1/2 hour	1-1/2 hours
rei Ali Galle	1/2 hour	5 hours
ılo Gaduud	1 hour	3 hours
rman	1 hour	trucked/Diinsoor
iole	10 minutes	10 minutes
iidalow	1/2 hour	1/2 hour

From the above table, the time factor involved is obvious. Bay gion is one of the wet areas of the country. Hence, one can imagine e condition of the women in drier areas of the country, some of which avel for many days for the provision of water in the dry seasons.

Furthermore, deep wells require a great deal of effort to lift ter from the well. It is tedious and tiring.

In dry seasons men usually participate in watering animals in madic settlements. However, in agricultural areas and villages it is clusively women's activity, without any consideration to the women's ysical condition.

Somalia, to make matters even worse, suffers from cyclical ought. The most recent ones of 1974/75, 1978, 1983/84 have compounded malia's deforestation and grazing problems. While previously, rural mali women walked an average of three miles a day to collect fuelwood, ey now cover five miles on the average to collect the needed quantity fuelwood. A similar effect was also noted with regard to water tching.

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ource: Bay Region Exploratory Report; Socio-Economic section, Water velopment Agency, (Mogadiscio, 1983), pp. 6-51

3. Water and sanitation

Usually large or extended families live together in the same house or compound. Most of the houses are generally built quite close together with poor ventilation. Latrines are not popular either in rural areas or smaller towns for many reasons, one of which is inadequate water supply. Drinking water sources are not always clean, due to human and animal waste.

Children may play in the water, in addition to other misuse like washing clothes on the bank of the drinking water sources. Often in homes, drinking water is stored for a few days at a time and is handled unhygienically.

According to a water supply study (WHO/IBRD, 1977), the state of public health is affected by water-borne diseases and cannot be assessed from the available statistics. However, field observations indicate that the population at large and especially those who live along the rivers suffer from a number of water-borne diseases: typhoid, dysentery, gastro-enteritis and schistosomiasis. [6] Also children's mortality and morbidity is heavily contributed to by unclean water. Diarrhoea and some parasites are largely caused by unboiled and unclean drinking water from the wells and rivers.

Women's lack of sanitary and hygiene education and the lack of time due to the endless duties of women, aggravate the already poor conditions that exist. The river water which is contaminated by parasites and bacteria, is usually not boiled or filtered prior to consumption. As women are the water carriers, they are the ones affected most by water-borne diseases.

Much of the water consumption decreases during dry season. As opposed to washing clothes every three days and the daily bathing of children during wet season, clothes are not washed for long periods and children are seldom bathed in the dry season. Also, food consumption decreases which contributes to malnutrition among the children and women.

There is also no proper sewage in the country, especially in towns. As a result, running water and rains transport the waste into shallow places, which are usually the common water sources, thereby increasing risks as a large part of the population is dependent for potable water on unprotected sources.

Lack of awareness among society, particularly in sanitation and health care complicates the problem.

4. Water development policies and projects

According to the five-year plan for 1988-1992, several government institutions share the responsibility for water resources development. The major ones are the Ministry of Mineral and Water Resources and its four autonomous agencies (the Water Development Agency (WDA), the Water Agencies of Mogadiscio, Kismayo, and Hargeisa), and the Ministries of Health, Interior, Livestock, Forestry, and Range, Agriculture and Juba Valley Development. There is a National Water Committee reinforced by the National Technical Committee which is the highest policy and decision-making body.[7]

Although no statistics are available, there are a number of different projects involved in water development in the country. However, none of them give any consideration to women as water transporters at their planning level nor in the implementation of the programmes. Even the five-year plan failed to give any consideration to women's problems in planning the water development of the country.

Water-related diseases are recurrent and account mainly for the high rate of mortality and morbidity. There is, therefore, an urgent need to improve the water supply situation of the country. For the future development of the water resources it will be necessary to select technologies which should be as operable as possible and, whenever expedient, implemented with the participation and help of the local population.

Much is said about the need to integrate women into the development processes of the countries. However, even in those countries that do involve women in development, their involvement and contributions often go unrecognized, unrewarded and underutilized.

Not surprisingly, many surveys aimed at identifying the needs of rural women have found that a means of relief from the burden of carrying heavy loads is high on their list of priorities. As yet, however, very little has been done to develop and facilitate the use of technologies which could improve the means of transportation in rural areas. Even less has been done to ensure that women have access to these technologies.

The importance of community participation and involvement of women cannot be overestimated. It has been increasingly recognized by the Water Development Agency over the past few years, and they are planning presently to employ scientists with community development skills to work with hydrologists in several regions of the country. This policy should be extended to the entire country as quickly as possible.

5. Conclusions and recommendations

As indicated in this paper, the principal constraint to women's increased participation in production in agriculture and livestock raising is the tremendous amount of time consumed by household chores, especially provision of water and fuelwood.

The work efficiency of women varies dramatically and reflects their energy levels. Technologies - such as, animal traction, flour-grinders, corn huskers - are rarely used. Other appropriate technologies have never been created to help ease their burden.

The author thus recommends:

1. Since women do at least three quarters of the work, they should receive some recognition of their contribution and should have greater access to training, etc.

2. Gradually develop appropriate technologies for transportation, like wheelbarrows, etc., from locally available materials.

3. Special attention should be given to community participation, especially women, for water development programmes at all stages.

4. Awareness of sanitation and health education should be promoted.

5. Priority should be given to realizing accessibility of water supply to the entire population.

6. Efforts should be made to encourage men's participation in provision of water and fire wood for the family, as well as other chores.

FOOTNOTES

1. The neglected resource, the Christian Science Monitor, an International Daily Newspaper, December, 1985.

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D. Case Study in the Middle Shabelle Region

by Helena Soini, UNICEF and
Halimo Hagi Salah, Ministry of Education

1. Background information about Middle Shabelle region

The region is adjacent to Mogadiscio, the capital of Somalia, on the northern side. It is divided into four districts: Jowhar (capital), Balcad, Adale and Aden Yabal. Most population settlements are along the river Shabelle which flows through Jowhar and Balcad.

While the population as a whole has increased, reaching 503,000 in 1985, the distribution of people has shifted in favour of urban areas, at the expense of rural settlements and nomadic groups. The urban population is now 26 percent, the rural population 44 percent and nomads 30 percent of the total.

Within the overall population, especially the number of children under five years and the number of women have increased. The proportion of children under five years is now 16.4 percent and the proportion of women is 48.6 percent of the population.

Because of the increased population, the ratio of population to health worker has risen dramatically and is now higher than the national average. Primary school enrollment, particularly for girls, at five percent, is now well below the national average of 7.9 percent and the declining trend is accelerating.

Despite the river Shabelle and the 60 boreholes in the region, potable water is not available to most households, and therefore water-borne diseases are common.

The three main problems in the region are the very low service level, poor government infrastructure and high morbidity and mortality among children and women.

UNICEF has assisted the region in health programmes already, but in the year 1986 a new integrated programme started under the Joint WHO/UNICEF Nutrition Support Programme. This programme (so called JNSP Programme) includes components of primary health care, rural water supply and women's development. It emphasizes social mobilization and community participation.

2. Basic information about the women interviewed

There were 120 women in 12 villages, ten persons in each, who were interviewed. Women were divided into three age groups: 15-25 years,

26-35 years and over 36 years, each group covering about 30 percent of the total number. Sixty-three percent were married, 19 percent were widows, eight percent were divorced and four percent were single.

In most of the familites (64 percent), there were three children or less, 33 percent of the families had four to seven children and only two families had more than seven children. The total number of children in the interviewed families was 428 children. Of this number 52 percent were going to Koramic school, girls enrollment was 17 percent. To primary schools, 11 percent went, which means that a total of 48 children, of whom 17 were girls, were going to primary school from these 120 households, thus making four percent of the total number. Ninety-three percent of the families had three or less adults. All together the number of family members was usually less than seven persons.

The basic income generating activity among women was farming, after that came fire-wood collection and animal husbandry. In some villages, a few women were marketing something. Only four women said that they do not have any income-generating activity.

Families were classified into four groups: rich, middle, poor and very poor. The poor totalling 45 percent and very poor 30 percent, came to 75 percent of the interviewed households. Only four percent (five families) were rich and 20 percent were middle.

3. Women and water

As is well known women are the ones who take care of fetching water for families. Children do it only sometimes, and men never. But with more technical assistance, for example, if there is a donkey or a vehicle available for fetching water, the person responsible might be a man.

In the interviewed villages, the water sources were located quite near the villages and the time used for fetching water was usually less than half an hour. But when 65 percent of women fetch water three times or more in a day carrying it on their backs, it means a big workload for them along with other duties.

The water sources in the 12 villages are as follows:

- five have new shallow wells (Baarow Weyn, Baarey, Buulo Waray, Gaafaay and Buulo Bishaaro).
- two have improved shallow wells (Koongo, Garaash).
- two have boreholes (Gololey (B), Miirtaqwa).
- one has an old shallow well (Nuukaay).

- in one village (Cabdi Geledi) the main water source is river and channel.

- in one village (Jameeco Muqtaar) the main water source is water catchment.

The water programme in the region started in late 1986 when UNICEF and OXFAM agreed on joint actions to implement the project. UNICEF committed itself to provide pumps and well construction equipment and materials as well as some cash assistance, while OXFAM assigned one water engineer for technical assistance.

In the first phase the project enlisted 28 villages where water was considered the priority problem, and where immediate actions could be planned. Three kinds of interventions were suggested:

1. dig a new shallow well;

2. improve and protect an old shallow well;

3. improve and rehabilitate the distribution system of borehole wells.

For selecting the site for the new well, the project team contacted village leaders and asked their proposals for the site. It was decided that there should be three site proposals with two limitations: the new well could not be located in the middle of the village and the site must be accessible by vehicle. The project team finally selected one of those three proposals which they regarded as most suitable.

In five interviewed villages with new shallow wells, women were asked about their participation in decision-making when the site of the well was decided. All women answered that the site was decided by the village committee leaders. In one village there is a female member in the committee according to the women's answers. In three villages, there were also village health committees and in two villages; religious leaders were mentioned as additional decision-makers.

All the women said that their opinion had been asked before the decision (or was that the only possible way for them to answer?). All also regarded the site of the new well as convenient for the village and all, except for one, talked about using the new well. The one reason given for not using the new well was that the water in the new well was dirty.

Only in one village (Buulo Bishaaro), all the women said that they get drinking water only from the new well. In other villages additional water sources, i.e., river, water catchment, channel are still used along with the well. and All of these water sources were regarded as good water sources.

The villages are waiting for the installation of the handpumps and after that it will be evaluated.

4. Water and health

For getting more information about beliefs and habits relating to water, questions about diarrhoea, its causes and prevention were made. Mostly, causes of diarrhoea were related to dirtyness: dirty water, dirty food, dirty environment.

But what does dirty water really means?

It can mean warm water. When the sun shines over the river, water becomes warm and it is regarded as dirty and as a cause of diarrhoea. But during the night when water is cooler it is already regarded as clean. Also water is deemed dirty if it seems to be dirty - you can see dirtyness with your own eyes.

Teething is also considered to be a cause of diarrhoea. Taking out the teeth will stop the diarrhoea.

In prevention, cleanliness was regarded as the main way by 55 percent of the women. Boiling the water was mentioned by 10 percent. Prevention and cure were mixed together and 10 percent told of using traditional treatment, nine percent drugs and one percent oral rehydration therapy. But as mentioned, this question was misunderstood in some cases.

When asking how to avoid diarrhoea in the household, 50 percent answered that there is no way to avoid it; it is just fate. Twenty-five percent try to avoid diarrhoea by cleanliness in the household, 10 percent by boiling the water. Few mentioned also not breastfeeding when the body is hot. That means that when women have worked hard and walked a long way in the sun, her body is hot and the milk is also hot. This hot milk is regarded as a cause of diarrhoea. Breastfeeding regularly at the same time every day is also regarded as a way of avoiding diarrhoea.

To the question if children were sick in the last week 75 percent answered yes and only 25 percent answered no. Main sicknesses were diarrhoea (48 percent), fever (24 percent), malaria (12 percent), measles (eight percent), schistosomiasis (five percent), respiratory problems

(five percent) and worms (two percent). Main health problems in the villages were mainly the same. Main sicknesses were diarrhoea (mentioned by 63 percent of women), malaria (47 percent), fever (43 percent), measles (34 percent), schistosomiais (29 percent), worms (18 percent), tetanus (eight percent). Tuberculosis and syphilis were mentioned only once. As we can see the main health problems are also related to water and its use.

Main advisers on diarrhoea treatment were CHW, mentioned by 43 percent of women, Sheikhs (41 percent), traditional healer (37 percent), doctor (28 percent) and pharmacist (eight percent). Family Life Centre teacher, auxilliary nurses, TBAs, and teachers were mentioned occasionally. CHWs position varies in the PHC village very much. In some villages he is the main adviser, in some others only a few ask him to advise.

As a source of health information the CHW is at the top, mentioned by 45 percent of women. After him comes the Sheikh (22 percent), TBA (20 percent), health personnel (18 percent), radio (10 percent), teacher (five percent), village committee (four percent) and pharmacist (two percent), traditional healer (five percent). Radio is mentioned in four villages.

All villages with trained CHW also have a village health committee. The functions of this committee seemed to be still unclear for the interviewed women. Only in one village (Buulo Waray) all the women knew that the village health committee existed. They also knew the names of the committee members. It is possible that this indicates the level of activity of the committee in the village.

5. Sanitation

One essential part of health is cleanliness in the environment. Number of latrines in the village and the ways of taking care of waste disposals give a good picture of the situation.

Every village has at least one latrine, but only in one village (Miirtaqwa) all the interviewed have latrines. The worst situations are in Buulo Waraay, Nuukay, Gaafaay, Garaash and Cabdi Geledi.

Lack of latrines cause many problems, answered 57 percent of women. Many diseases are spread and for sick people it is difficult to go far away. One's own latrine is also a safer place than the bush.

Ways of destroying rubbish are burning (38 percent), burying (38 percent) and taking away from the village (25 percent). Only three persons of the total 120 said that they just leave rubbish there where it is.

Eighty percent regarded rubbish in the village as a problem. It causes smell, hygiene problems, diseases and injuries. Fifty-one proposals were made for improving the situation. Main proposals were: organizing cleanliness campaigns, giving more health education, controlling people's behaviour, supporting villages with wheelbarrows, forks and other tools. Village women were regarded as key persons to undertake this task. Also village health committees should take care of village cleanliness.

6. Future workplan

As even this case study shows, improvement of only water sources is not enough. People need more information, more training; and wells and pumps need maintenance.

After installation of handpumps every village will select a person who will work as "water guardian". His/her responsibility is to ensure that the pump is used properly and to take care of minor repairs. All key persons in the village - the village committee, village health committee, CHW, TBA, water guardian, women leaders - will get training in the following subjects:

- clean water - what does it mean?
- environmental cleanliness, sanitation;
- water-borne diseases;
- well maintenance.

Women's own channels should also be used for their training. That means functional literacy classes, women's organizations, TBAs and other important women in the village. In well maintenance women should be encouraged to take care of the surrounding of the well. One or two model gardens could serve as examples for the others.

Villagers will be the owners of the wells and handpumps and it is their responsibility to collect money for maintenance of the pumps, e.g., for spare parts. A workshop will be established in Jowhar town to assist villages with bigger problems.

Proper evaluation and follow-up is needed to get to know how the wells are used, how the health situation has improved, and what could still be done. The emphasis must be put, however, on community participation and villagers' own activity in performing the tasks which need to be carried out.

E. Lack of Women's Involvement in Water Supply and Sanitation Projects

by Mohamed Elmi Derie
Mogadiscio Water Agency

In many third world countries like Somalia, improvement of water supply and sanitation is vital to development. Rural and urban water supply and sanitation are the backbone of Somalia's Rural Development Strategy (1981 - 1990) under the auspices of the Ministry of Interior.

Since the inception of the rural development strategy, many water supply and sanitation projects were undertaken throughout the country, ranging from small-scale to relatively large-scale types.

For example, one of these projects is the Mahaday Weyne Integrated Rural Development Project in Middle Shabelle Region. One of the main components of this project is the improvement of water supply and sanitation in the project area. The project was initiated to improve the existing water sources and develop plans to drill deep wells in the range-land and dig shallow wells in the riverine areas as they do not benefit from the availability of any existing source of clean water. The project undertook a field study covering: sources and exploitation of water supply resources; design; ways to minimize the distance travelled by women in collecting water.

In the survey analysis, it was observed that there is a lack of women's participation on the selection of water sources or water points. But women in both rural and urban areas of the project have a high demand for water consumption in order to sustain their families.

The study concentrated, though, on lack of women's involvement in sanitation rather than water supply.

In fact, in many third world countries like Somalia, improvements of water supply and sanitation are not keeping pace with population growth. So more, rather than fewer, women are having to carry water. In general, there is a lack of women's involvement in the decision-making process of water supply and sanitation projects. In site selection of the new water source or water point, women do not fully contribute in any aspect.

With regard to method of collection, the vast majority of both urban and rural women in the project area do still physically carry water. Methods used vary in the project areas. Rural women use a head strap to secure a vessel carried on the back. Along the riverine, traditional clay pots are common for collecting water.

In the urban areas, along the riverine or in the range, the traditional clay pot has been replaced by either the plastic 20 litre jerry-cans or galvanized sheet bucket. Some of the families use metal wheelbarrows to carry jerry-cans of water.

In the rural areas, particularly in the remote areas, women fetch water from the traditional reservoirs collected from rain water.

There are few existing boreholes in the remote areas, so most of women's time is consumed in this activity due to the great distance from their locations. Women in the range fetch water from common sources like water troughs which are unhygienic and may cause serious diseases.

In urban areas, especially on the riverine they fetch water from the river or main streams nearby their locations, which also cause water-borne diseases.

In the survey it was observed that these villagers did not boil water for household use, which shows that women in urban areas and rural families are not very knowledgeable about water sanitation.

In the rangeland, women have less choice for the selection of good sources, generally they rely on rain water collected in the water reservoirs and they bring home less water with less quality. The urban dwellers benefit more from the modern system.

It has been noted that women are the only suppliers of water to their households without giving any consideration to the quality of water.

As mentioned, in many developing countries, the rate of improvement in rural water supply is rather low compared to the rate of population growth. In rural areas there is no infrastructure for water distribution. Families have to depend on unprotected and unreliable sources often at great distances from their homes. The burden of carrying the household's daily requirements of water falls overwhelmingly on women; and water carrying occupies a significant portion of their time. The heavy workload often involved in carrying water prevents women from participating in other more beneficial activities such as child-care, handicraft production, education, etc. It is difficult to generalize about the workload involved in carrying water in Somalia, because of the condition of supply which varies from time to time and from place to place.

The existing women institutions such as Family Life Centres, IWE, SWDO and so on are less oriented in planning and participation of women in water supply and sanitation. Since women are widely involved in water supply and water consumption, the situation should improve through the Family Life Centre at village level.

Life is not possible without water. So all permanent settlements must have some sort of water source, however far or poor in quality.

Recommendations

1. Family Life Centres at village level should conduct lectures to women for improving water and sanitation.

2. Women should participate in planning and decision-making of actual or planned WSS projects and programmes.

3. The existing women's institutions should assist families in participation to improve water and sanitation.

FIELD SURVEY STUDY (4 VILLAGES IN PROJECT AREA)

Location	House No.	Time Travelled	Distance Travelled	Collector	Amount (lt)	Cost So. Sh.	Source	Water Quality
Mahaaday	1	1/2 hr	200 m	Children	60	-	River	Poor
"	2	1 hr	1 Km	Women	80	4	Well	Good
"	3	1 hr	1 Km	Children	100	5	Well	Good
Shaan	4	1/2 hr	200 m	Women	45	-	River	Poor
"	5	1/2 hr	200 m	Women	30	-	River	Poor
"	6	1/2 hr	200 m	Children	45	-	River	Poor
Dhurwayle	7	4 hr	1 Km	Women	200	50	Well	Satisfactory
"	8	3 hr	1 Km	Children	200	-	Wars	Poor
"	9	3 hr	1 Km	Women	200	50	Well	Satisfactory
Caadley	10	1/2 hr	200 m	Children	100	5	Well	Poor
"	11	3 hr	1 Km	Women	100	-	Wars	Poor
"	12	1/2 hr	200 m	Children	100	5	Well	Poor

F. Case Study of the North West Region

by Hassan Ahmed Egal
Water Development Agency/UNICEF

1. Introduction

Successful water and sanitation projects in developing countries are usually the result of pre-conditions in the project environment. These pre-conditions are the economic, technical and social characteristics determining existing conditions. Besides, they identify new conditions that are induced by subsequent project activities. The success and failure of such projects normally depends on the potentiality of their preliminary planning; and by understanding the influence of pre-conditions one could identify and select a sound project for implementation.

The North-West Region water project was specifically designed to promote human drinking water and environmental sanitation reaching rural people. The approach was a long one, providing the framework for the villages and poor urban areas. Along with that, tasks related to water, health, and sanitation were designed to strengthen family life and attain advancement of women.

Such a constructive step reflected the mutual recognition of UNICEF and the Somali Government toward positive impact and the advancement of women's and children's lives. Though infant mortality rates are high in both the urban and rural population of the region, it is especially conspicuous in rural areas. This is mainly because of low standards of drinking water supplies, health infrastructure, lack of proper nutrition, and absolute lack of proper sanitation measures. With the exception of a few villages, drinking water sources were completely unprotected open surface water sources such as springs, open ponds, surface dams, etc. Moreover, due to the lack of village latrine structures, defecation areas and dumping points were in direct contact with water sources. As a result, village water sources were highly polluted.

The elements of the project were as follows:

1. develop national efforts in organizing programmes meant for the improvement of women's and children's lives;

2. improve the capacity of women to participate fully in national and community development;

3. provide opportunities to women to promote their skills and knowledge in order to be capable of caring for themselves and their children;

4. encourage the participation of women in the strengthening of basic services for children;

5. improve the general health of women and children;

6. introduce low-cost appropriate technology in the country.

2. The North-West Region Water and Sanitation Project

The implementation of the North-West Region Water and Sanitation Project being the first of its kind, had additional motives other than its major objective of assisting the campaign on the development and promotion of regional women and children; that is, the introduction of low cost technology, appropriate for village water and sanitation programmes.

In the northern regions, sophisticated water supply systems and techniques were used in a few larger towns, similarly standard sanitation facilities and methods were practiced in these areas.

Apart from those rare, complex and expensive systems which usually presented considerable difficulties in operation and maintenance, the water and sanitation project presented simpler techniques for both water supply and sanitation in the villages. These simple techniques, besides being easy to operate and maintain, enhanced the involvement and awareness of the essential part of the community - women and children.

Again, because of their cost-effectiveness, a good number of villages could be helped through low-cost techniques at an equal expense to that of a complex scheme serving one village or a small section of a town.

The low cost village water schemes carried out by the project during its implementation generally consisted of:

a) protected multi-design dug wells;
b) drilled boreholes;
c) excavated earth dam (Bali);
d) installation of handpumps, solar pumps, and centrifugal pumps.

Apart from other activities, utmost priority was given to the construction of dug wells that were equipped with Bangladesh No. 6 handpumps. That is because on one hand, almost 75 percent of the project area had been found feasible for dug wells and on the other hand, rather than any other extraction means, handpumps were suitable to the mechanical operation characteristics that matched the exact water extraction system which is appropriate to the area.

In the case of unfavourable conditions for dug wells and low-head handpumps, the project chose to make other suitable water sources such as deep wells, earth dams, etc., along with the type of water pumps accordingly.

In some bigger villages, where handpumps were not sufficient because of water source remoteness or high population density, twin systems were made. Examples of those are Adaadley, Arabisio, Dacarbudhuq and Baki. In each, a piston pump and two or more handpumps were installed. In fact, there was a hidden scope on those twin systems that was to observe and compare their respective reliabilities. However in that context, hand pumps proved more realiable because of lack of fuel or spare parts.

The types, construction and designs of the project's shallow wells varied according to the hydraulic condition of the sites, soil characteristics and availability of different kinds of primary materials. In that connection, some wells were submerged in the torrent bed while others were situated on the banks. In cases of low surface water potential, infiltration galleries and subsurface dams were made. similarly, because of many obstacles, type of construction is not uniform in the dug wells. At the beginning, rubble masonry had been practised because stones were abundant in the selected sites and concrete rings were not introduced.

However, later concrete linings were commonly used. Different types of dug wells and their relative locations to the torrent are illustrated in Table 1.

TABLE 1 - Showing physical achievement of the project particular in water sector

S.N.	District	Dug wells	Borehole	Earth dams	Berkeds	H/pumps
01	Hargeisa	9	1	1	-	15
02	Berbera	9	1	-	-	8
03	Borama	2	-	-	-	2
04	Baki	5	-	-	-	7
05	Lughaya	6	-	-	-	9
06	Zeilac	2	1	-	-	1
07	Gabiley	5	-	-	5	8

Local activities on environmental sanitation aspects in the Northern regions had been practically non-existent. Apart from the practice of individual household latrine construction in the urban community sectors, other efforts were not made on sanitation improvement in the bigger villages.

Among other major activities, health education that might appear simple in implementation has been comparatively tedious. In this particular issue, organized field teams were undertaking special trips at regular intervals with various curricula on environmental sanitation programmes, using different approaches like audio-visual equipment, meetings, posters and booklets.

In order to prevent human defecation on the village openspace outskirts which had been commonly practised in rural communities, a pilot project was launched on village and school latrine construction. That activity, in fact, succeeded to quite an extent, and as a result, several family latrines were built. It was suspended afterwards, though, because of lack of construction materials.

In the urban community, the sanitation component performed appreciable tasks on the simplification of the collection and transportation of garbage in bigger towns. In co-operation with town municipalities, garbage bins were being placed in Hargeisa, Berbera and Borma (see Table 2).

Table 2

S.N.	District	Number of V Latrines	Number of G Bins	Number of Sch. Latrines
01	Hargeisa	157	16	2
02	Gabiley	43	12	7
03	Berbera	45	10	-
04	Borama	97	10	-

2. Popular participation

Popular participation for rural water supply development implies the participation of the rural population at all stages of the project: identification, implementation (planning, construction), utilization (operation, maintenance) and subsequent evaluation.

In fact, previously the regular or effective participation of Somali women in community-based matters had been restricted by tradition. Normally, Somali women's work had been restricted to particular matters for their own families, such as home maintenance, collection and preparation of firewood, cooking of food and tending to family and children's needs.

At present, as a result of the creation of women's organizations along with the constant encouragement for sharing common duties with their men, the situation as well as the morale of the Somali women has brightened and as a result they (especially urban women) get involved to a much larger degree in national development programmes.

Similarly, in the case of the North West Water and Sanitation Project, the rate of women's involvement in project activities, that had been negligible in the beginning stages, has undergone remarkable improvement and is regarded fair at present.

a) women's role in the choice of technology

During the feasibility study, the project staff usually held introductory meetings at the community level. However, in those meetings different types of consultations were made with the villagers, especially with women. During those discussions, women played a major role in the provision of basic information on village water and sanitation status as well as making appreciable recommendations for their improvement, location (siting) and utilization.

In some project villages, it was observed that women's views and opinions were much more realistic than men. In such cases, their ideas or proposals were taken into account.

b) women's role in implementation

Since rural women's family responsibilities are comparatively more than those of men, their practical contributions are generally very low. However in certain villages, women actively participated in the physical works like digging, construction and other maintenance. For example, in some villages where the project provided latrine slabs only for family latrines, women made superstructures out of local materials like tree branches and sacks. In addition to that, women took part in the village cleaning campaigns, collection and transportation of garbage, etc.

c) women's role in water source utilization

Initially improper usage of project water wells or latrines was observed. However, through several subordinate activities like health education programmes, public negligence was abolished and was substituted with great eagerness for utilization.

In this regard besides the very few villages where donkey carts are used for water hauling, women and children are the predominent users and suppliers of the project's water sources. That is because on the one hand, according to Somali tradition, women are responsible for bringing family water and on the other, handpumps are very easy to use by women and children.

G. The Impact of Water-Borne Diseases on the Participation of Women in Water Supply and Sanitation

by
Abdullahi Hassan Farah, Ministry of Health;
Giama Farah Mohamed, Ministry of Health;
and Jan Pospisilik, World Health Organization

1. Introduction

Technical water and sanitation projects often assume that women automatically improve domestic and personal hygiene when improved facilities have been installed. However, experience has shown that this is not always the case. The first condition for impact is that health education programmes reach those for whom they are intended.

One way to ensure that health education is integrated into water projects is for technical projects to organize concurrent health education programmes. The knowledge and understanding of health problems is the first step towards their solution.

Recognition of women's tasks and training for these and new tasks are not only essential to achieve maximum benefits from improved facilities, but also do much to improve the status of women.

a) Water-related infections

A water-related disease is one which is in some way related to water or to impurities in water. It is necessary to distinguish the infectious water-related diseases from those related to some chemical property of the water. In developing countries it is usually the infectious water-related diseases which are of prime importance and it is these which are considered in this paper.

Before we can classify the water-related infections we must define the four distinct water-related mechanisms by which a disease may be transmitted from one person to another. These are shown in Table 1, and are related there to the environmental strategies for disease control which are appropriate to each mechanism. The four mechanisms are described below.

(i) water-borne mechanism

Truly water-borne transmission occurs when the pathogen is in water which is drunk by a person or animal which may then become infected. Potentially water-borne diseases include the classical infections: notably cholera and typhoid; but also include a wide range of other diseases such as infectious hepatitis, diarrhoea, and dysentery. The term water-borne disease has been and still is greatly abused so that it has become almost synonymous with water-related disease. It is essential to use the term water-borne only in the strict sense defined here.

Another source of misunderstanding has been the assumption that, because a disease is labelled water-borne this describes its usual, or even its only means of transmission. The preoccupation with strictly water-borne transmission has its origins in the dramatic water-borne epidemics of cholera and typhoid which occurred in some European towns in the last century and the first quarter of this one, and were caused by urban water supplies with inadequate treatment facilities. Similar epidemics sometimes occur in tropical towns today, but it must be noted that all water-borne diseases can also be transmitted by any route which permits faecal material to pass into the mouth. Thus cholera may be spread by indirect faecal-oral routes, for instance via contaminated food. It is essential to grasp that water-borne transmission is merely the special case of drinking faecal material in water, and that any disease which can be water-borne can also be transmitted by any other faecal-oral route.

(ii) water-washed mechanism

There are many infections of the intestinal tract and of the skin which especially in the tropics may be significantly reduced following improvements in domestic and personal hygiene. These improvements in hygiene often hinge upon increased availability of water and the use for hygienic purposes of increased volumes of water. They may therefore be described as water-washed diseases and they depend on the quantity

of water used, rather than its quality. The relevance of water to these diseases is that it is an aid to hygiene and cleanliness, and its quality is relatively unimportant for this purpose.

A water-washed disease may be formally defined as one whose transmission will be reduced following an increase in the volume of water used for hygienic purposes, irrespective of the quality of that water.

Water-washed diseases are of three main types. Firstly, there are infections of the intestinal tract, such as diarrhoeal diseases which are important causes of serious illness and death especially among young children in poor countries. These include cholera, bacillary dysentery, and other diseases previously mentioned under water-borne diseases. These diseases are all faecal-oral in their transmission route and are therefore potentially either water-borne or water-washed. Any disease which is transmitted by the pathogen passing out in the faeces of an infected person and subsequently being ingested (a faecal-oral disease) can either be transmitted by a truly water-borne route in which case it is probably susceptible to hygiene improvements and is therefore water-washed. A number of investigations have shown that diarrhoeal diseases, especially bacillary dysentery (shigellosis), decreased with the availability of water and with the volume of water used but did not decrease significantly with improvements in the microbiological quality of the water. The conclusion is that these diarrhoeal diseases, although potentially water-borne, were in fact primarily water-washed in the communities studied and were mainly transmitted by faecal-oral routes which did not involve water as a vehicle. The second type of water-washed infection is that of the skin or eyes. Bacterial skin sepsis, scabies, and fungal infections of the skin are extremely prevalent in many hot climates, while eye infections such as trachoma are also common and may lead to blindness. These infections are related to poor hygiene and it is to be anticipated that they will be reduced by increasing the volume of water used for personal hygiene. However, they are quite distinct from the intestinal water-washed infections because they are not faecal-oral and cannot be water-borne. They therefore relate primarily to water quantity and are not significantly related to water quality.

The third type of water-washed infection is also not faecal-oral and therefore can never be water-borne. These are infections carried by lice or mites which may be reduced by improving personal hygiene and therefore reducing the probability of infestation of the body and clothes with these arthropods. Mites cause scabies and are also promoters of asthma. Mites and lice are vectors of various forms of rickettsial typhus but it is louse-borne epidemic typhus (due to infection by Ricettsia prowazeki) which is most likely to be affected by improved personal hygiene. It is mainly transmitted by body lice, which cannot persist on people who regularly launder their underclothes. Louse-borne relapsing fever (due to infection by a spirochaete, Borrelia recurrentis) may also respond to changes in hygiene linked to increased use of water for washing.

(iii) water-based mechanism

A water-based disease is one in which the pathogen spends a part of its life in cycle in a water snail or other aquatic animal. All these diseases are due to infection by parasitic worms (helminths) which depend on aquatic intermediate hosts to complete their life cycles. The degree of sickness depends upon the number of adult worms which are infecting the patient and so the importance of the disease must be measured in terms of the intensity of infection as well as the number of people infected. An important example is schistosomiasis in which water, polluted by excreta, contains aquatic snails in which the schistosome worms develop until they are shed into the water as infective cercariae and re-infect man through his skin. Another example, especially common in parts of West Africa, is Guinea worm (Dracunculus medinensis), the larvae of which escape from man through blisters on the legs and develop in small aquatic crustacea. Man is re-infected by drinking water containing these crustacea. The other diseases in this category are acquired by the eating of insufficiently cooked fish, crabs, crayfish, or aquatic vegetation. They are clearly unrelated to water supply, but they are affected by excreta disposal.

(iv) insect vector mechanism

The fourth and final mechanism is for water-related diseases to be spread by insects which either breed in water or bite near water. Malaria, yellow fever, dengue, and onchocerciasis (river blindness), for example, are transmitted by insects which breed in water while West African trypanosomiasis (Gambian sleeping sickness) is transmitted by the riverine tests fly (glossina spp.) which bites near water.

classification of infections

Table 1 lists these four water-related transmission mechanisms and links them to their appropriate preventive strategies. In order that these concepts may be employed to assess the impact on health of a water improvement scheme, it is necessary first to list the chief water-related diseases and assign them to an appropriate category. However, all the faecal-oral infections can be transmitted by either water-borne or water-washed mechanisms, so they are placed in a special category of their own. The second category is reserved for infections that are exclusively water-washed, in other words, the skin and eye infections plus diseases which are associated with infestations of lice. Each water-related infection can then be assigned to one of the following four categories: (1) faecal-oral; (2) water-washed; (3) water-based; and (4) insect-vectored.

Table 1. The Four Mechanisms of Water-related Infection Transmision and the Preventive Strategies Appropriate to each Mechanism

Transmission mechanism	Preventive strategy
water-borne:	Improve quality of drinking water. Prevent casual use of other unimproved sources.
water-washed:	Increase water quantity used. Improve accesibility and reliability of domestic water supply. Improve hygiene.

water-based:	Decrease need for contact with infected water. Control snail population. Reduce contamination of surface water by excreta.
water-related insect vector:	Improve surface water management. Destroy breeding sites of insects. Decrease need to visit breeding sites. Use mosquito netting.

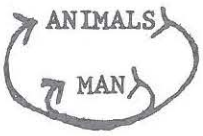
b) Excreta-related infections

All the diseases in the faecal-oral category mentioned above, as well as most of the water-based diseases and several others not related to water, are caused by pathogens transmitted in human excreta, normally in the faeces. In a similar manner to the water-related diseases, the classification of these excreta-related diseases can help us to understand the effects on them of the various possible engineering solutions to the problem of excreta disposal.

Those of the excreta-related diseases which are also water-related can of course be controlled, at least partially, by improvements in water supply and hygiene. But these and other excreta disposal, ranging from the construction or improvement of toilets to the choice of methods for transport, treatment, and final disposal on these diseases, a further classification is required.

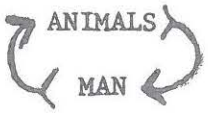
(i) Faecal-oral diseases (non-bacterial). Improvements in excreta disposal will have differing degrees of influence on the various faecal-oral diseases. Some of these infections, caused by viruses, protozoa, and helminths, can spread very easily from person to person whenever personal and domestic hygiene is not ideal. Changes in excreta disposal methods are unlikely to have much effect on their incidence unless accompanied by sweeping changes in personal cleanliness, requiring substantial improvements in water supply and housing, as well as major efforts in health education.

(ii) Faecal-oral diseases (bacterial). For the faecal-oral diseases caused by bacteria, person-to-person transmission routes are important but so too are other routes with longer transmission cycles, such as the contamination of food, crops, or water sources with faecal material. Some of the pathogens in this category, notably Campylobacter, Salmonella, and Yersinia are also passed in the faeces of animals and birds; and are transmitted in affluent communities in Europe and North America which have high standards of sanitary facilities and hygiene. This suggests that they will not be greatly influenced by limited sanitary improvements among poor people in the tropics.



1
Animal in Parallel

Examples: salmonellosis, balantidiasis, clonorchiasis.



2
Animal in Series

Examples: beef tapeworm, pork tapeworm.

(iii) Soil-transmitted helminths. This category contains several species of parasitic worm whose eggs are passed in faeces. They are not immediately infective, but first require a period of development in favourable conditions, usually in moist soil. They then reach their next human host by being ingested, for instance on vegetables, or by penetrating the soles of the feet. Since the eggs are not immediately infective, personal cleanliness has little effect on their transmission, but any kind of latrine which helps to avoid faecal contamination of the floor, yard or fields will limit transmission. However, if a latrine is poorly maintained and the floor becomes soiled, it can then become a focus for transmission. Dirty latrines may cause more transmission than would occur if people were to defecate in widely scattered locations in the bush.

The eggs of these worms can survive for months between hosts, so that treatment of excreta is vital if they are to be re-used on the land. The eggs can be eliminated by sedimentation in stabilization ponds, by the heat of composting or by prolonged storage.

(iv) Beef and pork tapeworms. These tape worms of the genus Taenia require a period in the body of an animal host before re-infecting man when the meat is eaten without sufficient cooking. Any system which prevents untreated excreta being eaten by pigs and cattle will control the transmission of these parasites. These infections have to pass through an animal before returning to infect another person. This transmission by animals in series is different from transmission in parallel, in which the pathogen infects man and animals in a similar way, and the faeces of both may transmit it to either man or animal.

(v) Water-based helminths. All of the water-based diseases already mentioned, except for Guinea worm, are caused by helminths which are passed in excreta and must then pass a stage in the body of an aquatic host, usually a snail. They then re-infect man through the skin or when insufficiently cooked fish, crabs, crayfish, or aquatic vegetation are eaten. Appropriate excreta disposal methods can help to control them by preventing untreated excreta from reaching water in which the aquatic hosts live. However, in all cases except Schistosoma mansoni and S. haematobium, transmission by animals in parallel may occur. Animal faeces are therefore a source of infection so that measures restricted to human excreta can have only to produce a thousand larvae, a low level of faecal contamination may still be enough to maintain transmission.

(vi) Excreta-related insect vectors. These are of two main kinds. First, the Culex pipiens group of mosquitoes, found throughout most of the world, breeds in highly polluted water, for instance in septic tanks and flooded pit latrines, and transmits filariasis in some regions. Second, the flies and cockroaches which breed where faeces are exposed. They carry pathogenic organisms on their bodies and in their intestinal tracts. Their nuisance value is great, but their importance in spreading excreted pathogens is uncertain. Flies have been implicated in the spread of eye infections.

latency and persistence

The pathogens of categories iii, iv, and v of excreta-related diseases show a property known as latency. This means that they cannot infect man immediately after they have been excreted, but must first undergo a period of development in soil, pigs, cows, or aquatic animals. Another important characteristic of each pathogen is its persistence - how long it can survive in the environment. As might be expected, the latent and more persistent organisms have "longer" transmission cycles, and the efficacy of improved sanitation in controlling them depends on this cycle.

Conclusions

The potential impact of sanitation improvements, and of improvements in personal hygiene, on the various categories of excreta-related diseases, is summarized in Table 2. For most of these diseases, an improvement in excreta disposal is only one of several measures required for their control. It is essential that people of all ages use the improved toilets and keep them clean. The disposal of children's excreta is just as important as that of adults. Studies in the past have often failed to detect beneficial effects from improved sanitation because, although latrines were built they were not kept clean and were not used by children or by adults when working in the fields.

Table 2: Potential for Control of Excreta-related Infections by Improvements in Sanitation and Personal Hygiene

Diseases category		Impact of sanitation alone	Impact of personal hygiene alone
(i)	Non-bacterial faecal-oral	Negligible	Great
(ii)	Bacterial faecal-oral	Slight to moderate	Moderate
(iii)	Soil-transmitted helminths	Great	Negligible
(iv)	Beef and pork tapeworms	Great	Negligible
(v)	Water-based helminths	Moderate	Negligible
(vi)	Insect vector	Slight to moderate	Negligible

c) Refuse-related infections

Poor refuse disposal will encourage fly-breeding and may thus promote the transmission of faecal-oral infections as described above. It can also promote diseases associated with rats, such as plague, leptospirosis, salmonellosis, endemic typhus, rat-bite fever, and some abboviral infections. Uncollected refuse can obstruct streets and drainage channels.

Refuse is a potentially important source of nutrients and may be used as agricultural composting material or as a food source for domestic animals.

d) Housing-related infections

The interactions between housing and human health are numerous and only four major areas will be mentioned here. First, the location of housing can have important effects on the health of the inhabitants. This is particularly relevant to vector-borne diseases such as malaria or sleeping sickness, where housing built close to high vector concentrations may increase disease transmission. Second, the manner in which the house design and location promotes or hinders domestic hygiene will have bearing on all diseases related to domestic hygiene. These are all the faecal-oral infections and all the water-washed infections. Third, housing has an influence on airborne infections: measles, mumps, meningitis, diphtheria, all respiratory infections, and pneumonic plague. Housing design will affect crowding, ventilation, air temperature, and humidity, all of which will affect the transmission of airborne pathogens. A smoke-filled or otherwise irritating atmosphere will also influence the susceptibility of individuals to respiratory infections. However, it is not normally possible to demonstrate a decisive association between larger, better ventilated rooms and better health. While it is clear that overcrowding and close physical contact present many opportunities for transmission of airborne infections, so also do many events outside the house such as crowded buses or markets. Lastly, the manner in which the house promotes or discourages populations of rats, fleas, ticks, mites, and lice will influence the prevalence of all infections related to these animals. In general, any housing which people share with animals or poultry may assist the transmission of diseases carried by those animals and their parasites. Earth floors in houses are also conducive to certain parasitic

insects such as the blood-sucking floor maggot (Auchmeromyia luteola) and the sand-flea or jigger (Tanga penetrans), both of which are widespread in Africa. African tick-borne relapsing fever, caused by Borrelia duttoni, is spread by the tick Ornithodorus moubata which hides during the day in the dust and cracks of earth floors and mud walls, emerging to feed at night.

Water and sanitation related diseases are responsible for most of the morbidity and mortality in developing countries. The use of more water of improved quality and safe methods of excreta disposal, adequate personal hygiene, and food hygiene by all members of the community can lead to significant reduction in these diseases. These measures can also decrease considerably the economic cost of these diseases and their treatment for individual households and for governments, and reduce the human suffering associated with them. Women play a key role in this process because traditionally, they manage domestic water use and household hygiene, educate and care for young children, provide health care in their household and often also in their community, and make decisions on use, and to some extent maintenance, of water supply and sanitation facilities.

There is a great need to integrate the involvement of women in a systems approach to water supply and sanitation, including regular monitoring and feedback on both the process and the effect of their involvement in relation to the type of technology and the socio-economic and cultural circumstance.

Women have participated actively in health education as community health workers, members of community committees and women's organizations.

The involvement of women in all project stages and at all levels, by building on their roles in domestic water supply and sanitation, can be a contributing factor to the achievement of short and long term benefits of water supply and sanitation improvements.

Their traiditional tasks in water supply and waste disposal for family well-being, economic resources and health, make women the main potential contributors to and beneficiaries of water and sanitation projects.

As traditional managers of water and waste in their households and in the community, they can play a valuable role in maintenance and management of improved water supplies, and in health education to reduce environmental health risks. In many cultures, women are more effective and sometimes required as trainers and as trainers of trainers.

The participation of women in water supply and sanitation projects can have several benefits which emerge logically from their traditional task in water supply and sanitation. As domestic managers, women decide where to collect water for various purposes and in various seasons; how much water will be collected; and how to use it. In their choice of water sources, they make reasoned decisions based on their own criteria of access, time, effort, water quantity, quality and reliability.

In sanitation, demand for privacy of women is a determining factor in latrine acceptance by men and women alike, especially in densely settled communities. Women also maintain latrines or supervise mantenance by children, provide hand washing facilities, take care of excreta disposal and hygiene of young children, and assist and educate them in correct latrine use.

Somalia is a predominantly patrilineal society where the lifestyle is primarily suited to men's convenience, and the traditional role of women buttresses and supports this orientation.

In the last one and a half decades, notable progress has been achieved in women's education and political participation.

In the farming and agro-pastoral sectors of Somalia, women make up more than 70 percent of the rural work force. There is a traditional division of labour with men making decisions and performing the hard to do tasks and women concentrating on tending small animals, milking, looking after the household and children. With the progressing change of the society from agro-pastoral to settled, a change in the set pattern of life is also in progress. The more congested communities are experiencing the obvious need for improved water supplies and better sanitation. To date, the involvement of women in these programmes has been minimum but their role has to change and their involvement must increase to achieve the required improvement as well as to fit the new pattern of life.

There are several important areas where their participation needs to be drastically increased. Among these are education - particularly health education, promoting better living conditions, better nutrition, better child care and improved environmental conditions emphasizing safe water and improved sanitation. This could best be achieved by greater involvement of women in the community decision-making process, their greater involvement in community affairs, formation of water committees, etc.

The improvement in water supply and sanitation cannot be achieved without the involvement of government at all levels; and it is most important for the women to get involved in the process and play their role. In this connection, the role of the Somali Women's Democratic Organization cannot be over emphasized.

H. Women's Education and Training in Water Supply and Sanitation in Somalia

by Sadia Arif Qasim
Ministry of Mineral and Water Resources

1. Introduction

The Somali Democratic Republic covers the main part of the so-called "Horn of Africa", the Northeastern triangle of East Africa.

It lies between the Indian Ocean, the Gulf of Aden, the Republic of Djibouti, Ethiopia and Kenya.

The Somali territory measures 1935 km in north-south direction with an area of about 640,000 kms and with the second longest shoreline in Africa (3,300 kms).

According to the latest demographic statistics, published by the Ministry of National Planning in 1987, the estimated population of Somalia is about 6 million, with an annual growth of 2.5 percent.

2. Geographical environment

Somalia has to deal not only with the sanitarian aspects of water, but dramatically faces even the problem of its availability; the climatic and hydrogeological conditions of the territory have to be considered first.

Somalia is a semi-arid country with an average annual rainfall ranging from 50 to 500 mm/year (200-300 in the most part of the territory). The rains are concentrated in two short seasons and, as a consequence, the water is stored with great difficulty either naturally or artificially. The arid environment causes high evaporation losses (loss of water through one year in a pond $m^3 = m^2$ of the pond surface x 2).

From the physiographical point of view, Somalia can be divided into four main provinces:

a) The Southern province is crossed by the two rivers, Shabelle and Jubba, that are nearly perennial (Jubba dries up rarely, Shabelle more frequently in the middle and lower course). The two rivers are the main source of water in this province,

either directly or indirectly, as they recharge a lot of small shallow aquifers, that are exploited with hand dug wells. Some deeper aquifers correspond to buried paleo-rivers and can be exploited only by drilling and pumping.

b) The central province is without rivers and with a small number of very ephemeral torrents. The only water sources are natural or artificial reservoirs (wars and ballis) seasonally filled by rainwater. Very deep watertables of good quality have been recently discovered in some areas of this province, but their exploitation needs high technology and expensive drilling operations and the installation of plants requiring costly and difficult maintenance.

c) The Northwestern province is morphologically different from the former, due to the presence of highlands, valleys and high cliffs facing the Gulf of Aden, and, as a consequence, with climatic conditions varying from place to place and irregular distribution of the population. Several water courses form a well developed drainage system from the mountains toward the coast, with a relatively high water potential. Unfortunately, the torrents are ephemeral, and the water disappears underground or evaporates before reaching the coast. Reservoirs, particularly those obtained by underground dams, could solve the water problem in several places. These plants can be built with relatively low cost technology and could supply fresh and safe water, as the water is stored underground. Some springs are also present and are worth tapping plants.

d) The Northeastern province is characterized by very arid climatic conditions, with bare hills and wide spread sand dunes. The only existing water is that of very deep aquifers and very ephemeral torrents. Worthy of mention is the outwelling of a perennial river near the town of Eil, some kilometres from the Indian Ocean coast. Even in this case the water is not properly exploited.

3. Somali women and water

The women in Somalia are the house and family managers, in charge of the basic education of children of health care and sometimes of the whole administration of the household, including food and water supply.

Because of this managing experience and the daily drama of water, they are the most sensible and potentially enthusiastic subjects for a training programme on water supply and sanitation. They are deeply interested in the family and social welfare and prepared for community experiences.

The women are already aware of the extreme importance of water and may easily acquire knowledge of the link between the quality and quantity of water and the community health level. In Somalia this awareness is at a very low level. Therefore, an intense and highly developed training system is needed in order to start a development programme in the water sector, e.g., the time spent by women in water supply for household in Bay region (Southern province) (See Table).

Table: Time Spent in Water Provision in the Bay Region

Village	Wet Season Round trip	Dry Season Round trip
Sarman Dheere	1/2 hour	6 hours
Hareero Jiifo	1-1/2 hour	6 hours
Shabelle Dugsilo	1/2 hour	8 hours
Warta Jaffay	1/2 hour	4 hours
Buulo Hawo	1/2 hour	8 hours
Bootis	1/2 hour	up to 6 hours
Robay Gadud	1/2 hour	3-6 hours
Gaduudo Dhunte	1 hour	6 hours
Buulo Fur	1/2 hour	1-1/2 hours
Durei Ali Galle	1/2 hour	5 hours
Buulo Gaduud	1 hour	3 hours
Kurman	1 hour	trucked/Diinsoor
Dodole	10 minutes	10 minutes
Shiidalow	1/2 hour	1/2 hour

In other regions which have cyclical drought and the availability of water is scarce, the people may spend two days or more to find a water point.

4. Training organization (a proposal)

In organizing a training network, a pyramidal structure must be planned.

As a first stage, a certain number of national experts have to be found and an inventory of local expertise needs to be developed.

This is the major concern, because the national staff needs extensive background, both in the hydrogeological field and in the sanitarian sector. In addition, all the experts must be aware of the specific characters of the Somali geological features and of the culture of the Somali people. If some expatriate experts are at first needed, they have to be anthropologically and ethnologically prepared, taking into account that the Somali culture is a very particular one.

In the second stage, a certain number of women have to be selected in each region to become the trainers at a district and village level. This regional staff will be trained either in a national course in Mogadiscio or in courses held in each region. The choice depends on the number of the selected persons and on the possible mobility of the national staff. The regional courses could be the best solution if the national staff is numerous and well equipped, as it should be.

Obviously a careful selection of the future regional trainers is very important.

The regional staff has the duty to train the women who will be responsible for the water in each rural and pastoral community. These persons have to be selected in the communities themselves.

5. Training topics and methods

The water problem has two main aspects: one is cultural and the other technical. Women's issues are the preferred subject of the first one, but training on the latter must be given to them as well, because of the policy involving the technological and economical aspects of water research and supply.

As far as the topics are concerned, it is proposed that at a regional level, the basic hydrogeological knowledge has to be given about the water cycle and the main possible water sources, i.e., surface water, both running and stagnant, and subsurface water, shallow and deep, have the physical and chemical characters of each source in the various environments.

The problem of the salinity and the methods of its evaluation are very important, since subsurface water is very often salty in Somalia, sometimes with a high content of magnesium. Some teaching about hand dug and drilled wells, infiltration and filtering galleries, subsurface dams, etc., has to be planned.

The economic evaluation of each kind of plant and the technical and economic problems of maintenance and management of each system have to be discussed, along with their hygienic aspects, because the person in charge of the water, even at community level should take part in choosing the most suitable system, when a new one is going to be built. Some guided visits to the most appropriate existing plants should be very useful.

Hygiene and health education is obviously one of the most important parts of training, taking into account that knowledge and awareness about the diseases induced by unsafe water is very low. Some attention in Somalia should be paid also to the effect of salty water, both as a source of urological diseases and as an indirect cause of dehydration in children affected by diarrhoea.

A very important topic is the problem of the means and methods used for taking water from the various sources, because the most dangerous vehicle that spreads germs in the Somali inland are, very likely, the buckets that before being dipped into the water touch the ground around the water point, where animals and small children spread germs. Germs reach the water in an open well through the bucket, and then are distributed with the jars to the households.

Of course, emphasis should be directed towards the construction and use of covered wells equipped with a pump (handpumps in all cases when they can meet the needs of the community), and to fence all the natural and artificial reservoirs (wars, ballis, etc.). Latrines should be built downslope and far from the water points.

Infiltration galleries are very good alternatives in some cases. Sometimes they can be equipped with taps, which is obviously the safest and technologically most appropriate system.

The traditional water purification methods, such as sedimentation, fumigation of the jars and vessels, rough filtration, boiling, mixing with lime or CaO and treatment with special leaves are considered valid but need to be discussed and evaluated.

Discussions and training on the cultural, social, psychological and even religious aspects of the water problem have to be organized, and the most appropriate and effective methods must be found in order to improve the level of knowledge about water of the rural and pastoral people. Special attention should be given to the opportunity to spread awareness through primary, secondary and Koranic schools.

As far as methods are concerned, the training must be as much as possible on a practical level with the main concentration left to discussion and with the maximum amount of visual aids. The main water-testing methods and equipment have to be tested. It would also be very useful if a basic kit for measuring salinity, ammonium and nitrium composites were to be supplied to regional teams.

What has been said so far, concerns the rural and pastoral communities. Regarding major towns, particularly Mogadiscio, an education programme about water supply and sanitation is needed. Mass media (radio and television) and the schools, starting from primary, could be the most suitable means for carrying out such a programme.

I. The Role of the Family Life Education Programme in Women, Water Supply and Sanitation

by Fatima Sherif Nor
Ministry of Education

1. Introduction

The Institute of Women's Education (IWE) was established in 1974 under the Department of Non-formal Education of the Ministry of Education and its overall goals were stated as follows:

"Provide non-formal education opportunities for rural and urban women enabling them to contribute more fully in the National Development Programmes, recognizing that women to a large extent are responsible not only for the physical and social well-being of the family but also for contributing to the economic resources of the household through agriculture and management of all available resources."

Since its inception, the IWE has progressed rapidly. A Family Life Education Teacher Training Centre has been established in Mogadiscio where more than 600 teachers, headmistresses, supervisors, and administrators have been trained (almost all women). Simultaneously a network of Family Education Centres has been set up in nearly all of the districts of the country (72 FLCs), four-year Family Life certificate courses and short courses have been provided for women and girls.

The education which these centres offer is meant to raise the consciouness of women about the difficult situation in which they live and to equip them with skills in order to improve their quality of life. This includes: health and hygiene, nutrition and cooking, childcare, home management, family health/family planning, literacy and numeracy, etc.

A large number of the Family Life Education Programme (FLEP) graduates have succeded in government jobs, while others are self-employed or use the skills they have been taught in their homes.

The type of women attending FLCs has gradually changed from mature or married women to mainly unmarried teenage girls between the ages of 15-20 years. Because of falling enrollment rates, IWE undertook an internal evaluation in 1983, and decided to re-state its goals as follows:

- to improve the quality of life of the disadvantaged rural and urban families by providing an opportunity to acquire knowledge and skills for income-generating activities;

- to raise the level of literacy of women and prepare them for leadership;

- to form groups of community women to stimulate rural development activities emphasizing women's participation.

These new goals and responsibilities could not be met without changing and improving those factors which brought about the decline in FLEP. The programme, which previously focussed on the urban centres, is now one which caters to women at the grass-root level. The accomplishment of this task, above all, required that the programme be outreach oriented. Therefore, supervision, training, curriculum development, as well as design of activities previously carried out centrally, have now been decentralized. The decision-making and planning of the programme is now close to the needs of the beneficiaries and the programme is more relevant and flexible.

So far, five regions have been focused upon: Bay, North West/Awdal, Lower Shabelle, Lower Jubba and Middle Shabelle. The outreach programme now covers 62 villages.

Needs assessment and feasibility studies were carried out prior to the development of training programmes, possibilities of including educational and training programme in other community development activities were also considered during studies. Pre-service, in-service, and on-the-job training are offered to FLEP trainers as well as trainees.

In addition to this programme, IWE is involved in day-care programmes and family life education for refugee women.

The Institute started the "Refugee Family Life Education Programme" in November 1980 for the purpose of stimulating women refugees to adapt themselves to the new life in refugee camps, and to teach them some skills to meet the challenge of the new ways of life.

2. Importance and problems of water

Water is such an integral part of our lives that we are seldom conscious of its importance unless, of course, we are deprived of it. Our bodies can survive a deficiency of all other nutrients for a long period of time, but they can survive only a few days without water.

For at least a quarter of mankind, a clean and adequate supply of water is neither a hope nor an early prospect. The task of obtaining water, improving its quality and quantity, and making it more readily available for irrigation and domestic use is recognized as one of the fundamental needs in Africa.

The quantity of water available in rural areas is insufficient during the wet season and life-threatening during the dry season. Only about 60 percent of the urban population and 20 percent of the rural population in Somalia have access to clean water. The problem of management of water quality is closely linked with the related problems of environmental sanitation, which create, perhaps, the most dominant health hazards for the Somali people. Problems of typhoid, cholera, hepatitis, and dysentery - all water-borne - contribute to malnutrition and illness which kills so many Somali children every year. Lack of sufficient water to maintain personal hygiene and do adequate laundering contribute to problems of skin diseases and other infections.

3. Women, water supply and sanitation

Women engage in different activities from the early hours of the morning till the evening. The activities of a rural woman on a typical day consist of milking the goats, caring for chickens, preparing the family meal, collecting fire-wood and water, and working in the fields. Fetching water is the most burdensome task that women perform. Water fetching from long distances can take most of the woman's time. During the dry season, women can spend six to eight hours in fetching water.

No data is available on how traditional work patterns and work loads performed by rural women in Somalia affect their health. It is, however, generally known that there is a correlation between work pattern, work load and health, e.g., pelvic deformation can occur by carrying heavy loads on the back and head. In addition to this, walking in sandy/dusty/rainy conditions contribute to health problems of women. There is also no doubt that under these conditions women suffer tremendous stress.

Despite all these problems women are seldom involved at any stage of WSS. The role of women as local managers of rural water supply is usually neglected and it is the men who are employed and trained for these activities.

Women need to be equipped with appropriate knowledge and skills for care of latrines, proper disposal of faeces and garbage, washing hands, simple maintenance of sewage systems, home management and cleanliness.

4. FLEP in women, water supply and sanitation

To minimize the above-mentioned problems related to water supply and sanitation, IWE through FLEP has prepared educational materials related to water, sanitation and health (using posters, flip-charts, plays and slides) to create awareness about the hazards associated in adequate environmental sanitation.

The programme emphasizes the role of women as local managers of rural water supply, creation of leadership skills and encouragement of women's participation in rural activities.

Also, the importance of the involvement of women when planning and implementing new water points is advocated, community women leaders are encouraged to be included in committees as decision-makers.

In addition to this, the use of traditional water purification methods are encouraged.

5. Future plans

The following are IWE's future plans for water supply and sanitation in rural areas:

1. up-grade trainers' knowledge and skills in WSS;

2. produce more educational materials for WSS;

3. research traditional water purification methods to test their efficiency;

4. more training for women to create awareness on the hazards of inadequate environmental sanitation and planning water resources;

5. in collaboration with various agencies and institutions, to develop simple appropriate technologies that can provide the foundation for the most basic of all services - water;

6. introduction of home filtration, using simple low-cost filters which effectively remove material and color, and which may reduce bacterial contamination to some extent.

6. Recommendations

1. Incorporate more health/hygiene education programmes into water supply projects/schemes.

2. Give information and training on WSS to women, but motivate men as well to share the responsibilities of improved family and community health.

3. Increase and up-grade key trainers' skills and expose them to successfully implemented WSS projects in other countries.

ANNEX I

List of Participants

1. Abdi Abukar Sh., Geologist
   Ministry of Mineral and Water Resources

2. Abdi Dahir Dirie, Director
   Ministry of Interior

3. Abdi Karin Ibrahim Elmi
   Ministry of Interior

4. Abdi Zubeir Sheikh Isaq, Director of Planning
   Ministry of Public Works and Housing

5. Abdillahi Isse Good
   Somali Women's Democratic Organization

6. Abdulahi Mohamud Osman, Deputy General Manager
   Mogadiscio Water Agency

7. Abdullahi Amin Sid-Ali, Deputy General Manager
   Ministry of Agriculture

8. Abdullahi Hassan Farah, Director
   Public Health Department
   Ministry of Health

9. Abdullahi Hassan Magan
   Land and Water Department
   Ministry of Agriculture

10. Abdullahi Sh. Ali Nur
    Ministry of Interior

11. Ahmed Abdi Nur, Programme Producer
    Ministry of Information

12. Ahmed Aideed Mohamoud
    Ministry of Livestock, Forestry and Range

13. Ahmed Ismail Jama, Co-ordinator
    Mogadiscio UBS
    Municipality of Mogadiscio

14. Ali Haji Elmi, Director
    Settlement Development Agency

15. Anab Sheikh Hussein Osman, Director of Administration
    Ministry of Public Works and Housing

16. Awil Suleiman Jamac, Engineer
Water Development Agency

17. Dahabo Farah Hassan, Dean
Faculty of Languages
Somali National University

18. Fatima Sherif-Nor, Director
Institute of Women's Education
Ministry of Education

19. Fouzia Mohamed Musse, Consultant
Mogadiscio UBS
Municipality of Mogadishu

20. Giama Farah Mohamed, Manager
Community Water Supply and Sanitation
Ministry of Health

21. Halimo Hagi Salah Mohamed
Regional Co-ordinator for Women's Development
Ministry of Education

22. Hassan Ahmed Egal, Deputy Manager
North West Region Water Supply and Sanitation Project
Water Development Agency/UNICEF

23. Hassan Mohamed Ali "Keyraan", Director
Department of Manpower Planning
Ministry of Labour, Sports and Social Affairs

24. Hussein A. Jibil, Programme Controller
Radio Mogadiscio
Ministry of Information

25. Ibrahim Maxamed Farah, Geologist
Somali National University

26. Jima Mohamed Jimala, Head
Statistics Section,
Ministry of Agriculture

27. Marian Mohamed Mohamud, Geologist
Ministry of Mineral and Water Resources

28. Marian Osman Yusuf, Head
Women's Refugee Unit
Institute for Women's Education
Ministry of Education

29. Mohamed Elmi Dirie, Hydrogeologist
Mogadiscio Water Agency

30. Mohamed Hassan Abdi, Deputy Director of Planning
Ministry of Agriculture

31. Mohamed Hassan Haji, Deputy Director
Water Resources Department
Ministry of Mineral and Water Resources

32. Mohamed Mohamoud Dualeh, Senior Officer
Rural Development
Ministry of Interior

33. Mohamed Nour Didar
Department of Planning
Ministry of Livestock, Forestry and Range

34. Mohamoud Abdi Deria, Acting Manager
Mahaday Weyne Project
Ministry of Mineral and Water Resources

35. Mohamoud Ali Jama, Planning Adviser
Municipality of Mogadiscio

36. Mohamud Mohamed Addani, Geologist
Ministry of Mineral and Water Resources

37. Omar Mohamed Abdi, Director of Planning
Water Development Agency

38. Osman Haji Ali, Director of Planning
Mogadiscio Water Agency

39. Ruqiya Abdullahi H. Hassan, Engineer
Ministry of Mineral and Water Resources

40. Sadia Arif Qasim, Director of Training Programmes
Ministry of Mineral and Water Resources

41. Sadia Muse Ahmed, Head
Women's Research and Documentation Unit
Somali Academy of Science and Arts

42. Saeed Farah Mohamed, Planning Officer
Ministry of Interior

43. Safia M. Jama, Lecturer
Somali National University

44. Safia Mohamed Moahmoud
Ministry of National Planning

45. Shamso Mohamed Mire, Head
Labour Statistical Service
Ministry of Labour, Sports and Social Affairs

46. Shukri Hilowle Adawe, Hydrogeologist
Ministry of Mineral and Water Resources

47. Tirike Awil Abdi, Head
Environmental Health
Ministry of Health

48. Yusuf Ainab Muse, Dean
Faculty of Engineering
Somali National University

49. Yusuf Hersi Galow, Director-General
Rural Development and Planning
Ministry of Interior

50. Zahra Siad Naleie, Education Officer
Institute of Women's Education
Ministry of Education

ANNEX II

List of Observers

United Nations Agencies and Organizations

INSTRAW

Stephani Scheer de Vela, Consultant

UNDP

1. Catherine Mariano, National Officer
2. M. Spezzati, Project Management Officer
3. Severance Dolan, Programme Administration Assistant

UNFPA

Faiza Jama Mohamed, National Programme Officer

UNHCR

F. Smith-Williams, United Nations Volunteer

UNICEF

1. Amina H. Adan, Consultant
2. Helena Soini, Assistant Programme Officer
3. Margaret Khalakdina, Programme Officer (Education)

WHO

Jan Pospisilik, Sanitation Engineer

Governments

Italy

Isa Minio, Italian Embassy Cultural Office

Non-Governmental Organizations

Adamiga Voluntary Organization

1. Ali M. Hassan, Director
2. Filsan A. Darman, Executive Director

Daryeel

Abdi Haybe Elani

Caritas Somalia

Rebecca Belas, Secretary

ANNEX III

WOMEN, WATER SUPPLY AND SANITATION
- a national training seminar -
National Assembly Hall
Mogadiscio, 13 - 18 February 1988

Agenda

1. Opening of the seminar

2. Election of officers

3. Adoption of the agenda and programme of work

4. Module I: Introduction of the International Drinking Water Supply and Sanitation Decade and the United Nations International Research and Training Institute for the Advancement of Women

5. Module II: Participation of women in planning water supply and sanitation projects.

6. Module III: Involvement of women in choice of technology and implementation of water supply and sanitation projects.

7. Module IV: Role of women in education and training activities for water supply and sanitation.

8. Module V: Evaluation of water supply and sanitation projects

9. Adoption of the report

10. Closing of the seminar