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**UNITED NATIONS INTERNATIONAL RESEARCH
AND TRAINING INSTITUTE FOR THE ADVANCEMENT
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Water as a Resource

Fresh water is considered a renewable resource, but there are limits on supplies available. In many countries and regions shortages of fresh water are the main obstacle to human settlements, agriculture, farming and industrial production. Some of these shortages including seasonal/annual variations in supplies lead to poverty and soil degradation in the more exposed areas. Many cities and agricultural regions are now drawing supplies from underground water aquifers at a rate for above their natural rate of recharge. Water is a prerequisite for human survival and for sustainable development. It is one of the main pillars of environment. Current and projected problems with freshwater resources arise from the pressure to meet the agricultural, human settlement, food and industrial needs of a fast-growing global population.

For the 1 billion people in developing countries who do not have access to clean water and the 1.7 billion who lack access to sanitation, these are the most important environmental problems of all. Providing access to sanitation and clean water would not eradicate all diseases, but it would be the single most effective means of alleviating human diseases.

Access to safe water remains an urgent human need in many countries. Part of the problem is contamination; tremendous human suffering is caused by diseases that are largely conquered when adequate water supply and sewerage systems are installed. The problem is compounded in some places by growing water scarcity, which makes it difficult to meet increasing demand except at a significant escalating cost.

Various Roles of Women in the Water Sector-Development of Non- Conventional Water Resources.

The primary role women play in the management of domestic water supply is well recognized. Women are the primary collectors of water; they determine which water sources are to be used, the quantity and hygienic condition of water available. It is well known that women's interest in participating at an early stage in the procurement of a new or improved water system is high and more and more success stories of long term sustainable projects with effective women's participation are coming to light every day.

Women also play a pivotal role in environmental sanitation. They take primary responsibility for the hygienic operation and maintenance of sanitation facilities. Women, as the primary household food prepares are responsible for food hygiene and are the first teachers of children to assure their good habits in all aspects of hygiene. It is women's behaviours in water collection, storage, utilization, waste disposal, human waste disposal, and solid waste disposal, as well as in food handling and hygiene practices which determines the state of health and well-being of the entire family and household.

In spite of the importance of women's involvement in environmental protection and development, their role and participation in the planning and management of non-conventional water resources, particularly in wastewater treatment and reuse, sea water desalination projects, are far from reaching desired levels. Their water related work has been taken for granted and its economic and social value are greatly underestimated. Therefore there is an urgent need to reconsider

development strategies and activities in order to benefit from the participation of women in the planning and development of non-conventional water resource management.

What is needed is a structural and attitudinal change in institutions including new integrated management system in human, financial and natural resources. One of the ways to achieve this is through increasing attention to women in human resources development. At the heart of the human resources development is training and research. Integrating women into that training and research is the goal to which INSTRAW is committed. It is important to make explicit provision, within the section of institutional arrangements and legislative authorities that manage, control and operate non-conventional water resources management, to help countries incorporate women in training as well as capacity building. Little or no data exists on the utilization of non-conventional water resources to augment conventional ones in ESCWA region; the environmental impacts of the production, utilization and management of non-conventional water resources. These types of data are crucial in order to achieve sustainable development.

With increased development, the contamination of surface water and groundwater in developing countries has also increased. Surface water is contaminated by sewage and chemical pollution from industrial toxic wastes. In developing countries, 95 per cent of urban sewage is discharged into surface waters without treatment. Exposure to bacteria, parasites and viruses from raw sewage in water supplies results in a more serious public health threat than exposure to toxic contaminants in developing countries. This is especially true for children who develop diarrhea from bacterial, viral and parasitic infection contracted through water, food and contact with fecal matter. Diarrhea diseases alone kill between five and six million children each year and is the leading cause of death among children in developing countries.

Exposure to industrial chemical pollution also seriously affects the health of women and children in developing countries. The costs of water pollution include the damage it does to fisheries, which provide the main source of protein in many countries, and to the livelihoods of many rural people. Fish are often contaminated by sewage and toxic substances that make them unfit for human consumption.

Fresh water is essential to health not only for its part in production but also for domestic consumption and use (drinking, cooking, washing, laundry). A high proportion of life-threatening and health-threatening infections are transmitted through contaminated water or food. Nearly half the world's population suffer from diseases associated with insufficient or contaminated water. Schistosomiasis (200 million people infected through contact with contaminated fresh water) and guinea-worm (10 million infected through drinking water containing the microscopic diseases vector) are two water-borne diseases. Insect vectors breeding in water transmit malaria (267 million infected), filariasis (90 million infected), onchocerciasis (18 million infected), and dengue fever (30-60 million infected every year), (WHO/EHE/92.1, 1992, page 8).

Recommendations

In general, the following areas can be underlined as those leading to possible future follow-up activities to the problems of non-conventional water resources and the role of women therein:

- (i) Women should participate in all non-conventional water-related sustainable development activities through various campaigns and mass media. For women's participation to be enhanced, it is necessary for governments, United Nations system and cooperating external agencies to adopt a policy of commitment to the involvement of women in non-conventional water resources management, programmes and project activities.
- (ii) Favorable conditions must be created to facilitate women's participation in wastewater treatment projects, sea water desalination projects, etc. by removing social constraints related to attitude, tradition and customs. This requires an open attitude and acceptance on the part of local community, concerned authorities and policy makers regarding increased participation of women in these projects. Such favorable conditions may be created through public awareness campaigns.
- (iii) If women are to assume a greater role in non-conventional water resources development activities, appropriate opportunities and incentives for their participation must be created, for example, income generating opportunities. This requires targeting women's involvement at all levels and at all phases of water development programmes/projects, as one of the fundamental objectives of these programmes or projects.
- (iv) Women must be given equal opportunity as men, to receive proper education and training to enable them to attain necessary qualifications to assume responsible technical as well as managerial positions. Women often lack adequate knowledge and experience to effectively participate at decision-making levels. Strategies to address this problem include: promotion of education and employment opportunities for women; development of training material for women's participation in non-conventional water development projects, and organizing training courses and workshops to train women in this field.
- (v) Projects towards achieving this objective should include the establishment and/or improvement of the data base on the existing technical capabilities of women in the field of sustainable water resources management. Then based on the requirements of each project, the nature, scope, level and extent of training programmes may be worked out to technically equip women to affectively take up their respective roles.
- (vi) It would be useful to set up networks of women groups/associations, where they do not yet exist, at both community and national levels so that women could have the opportunity to share their knowledge and experience among themselves.
- (vii) One of the most important strategies to enhance the role and participation of women in sustainable non-conventional water resources development projects is to mobilize funds for the implementation of projects promoting women's participation. There are usually two kinds of funds used in such projects:
- (a) Local currency, which can be made available by national governments in terms of budget appropriation or by local non-governmental and women's organizations through fund raising activities; (b) Hard or foreign currency, which may be made available by donor countries and agencies and international funding agencies in terms of loans and grants.

The 1990s and beyond call for a holistic approach towards the development and management of both, conventional and non-conventional water resources, which is prerequisite for the effective sustainable development of nations. We have entered an era where policies will have to be reformulated for all water activities to ensure sustainable development and adequate utilization of both, conventional and non-conventional water resources. Such a holistic approach implies the development of human societies, economies and the protection of natural ecosystems on which the survival of humanity depends. This includes not only the need to look at the water cycle but also at intersectoral needs, ecological issues, alleviation of poverty and diseases, sustainable rural and urban development, and protection against natural disasters.