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in

Hamdy A. (ed.), Monti R. (ed.).
Food security under water scarcity in the Middle East: Problems and solutions

Bari : CIHEAM

Options Méditerranéennes : Série A. Séminaires Méditerranéens; n. 65

2005

pages 177-181

Article available on line / Article disponible en ligne à l'adresse :

<http://om.ciheam.org/article.php?IDPDF=5002211>

To cite this article / Pour citer cet article

El Sheikh R.A., Hamdan S.M., Abo Shammala A.S. **Planning aspects for water culture development in Gaza strip**. In : Hamdy A. (ed.), Monti R. (ed.). *Food security under water scarcity in the Middle East: Problems and solutions*. Bari : CIHEAM, 2005. p. 177-181 (Options Méditerranéennes : Série A. Séminaires Méditerranéens; n. 65)



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PLANNING ASPECTS FOR WATER CULTURE DEVELOPMENT IN GAZA STRIP

R.A. El-Sheikh*, S. M. Hamdan* and A.S. Abo Shammala**

* Palestinian Water Authority, Gaza. E-mail: rebhy2000@hotmail.com

** UNDP/ PAPP, Gaza Office. E-mail: ashraf.shamala@undp.org

SUMMARY – The Coastal Aquifer being the only water resource in Gaza Strip suffers from deficit in the water budget which has been leading to deterioration in the quality and quantity of groundwater. Meanwhile service providers are obliged to supply water intermittently trying to keep the minimum level of service. Most of the customers on the other hand tend to secure their water for drinking purposes from the private sector brackish water desalination plants by paying a considerable fee in addition to the expenses of the bad quality water from municipal service, which in total can afford good quality water from the municipal service. The low confidence of consumers in the quality and quantity of municipal water supplied has led to bad behaviours of consumers represented in non payment of water bills and attacking the public distribution system. The Palestinian Water Authority (PWA) in its policy has paid attention to the public awareness but has never applied the related programs in a sustainable way. Other NGOs try to cover small awareness programs in their projects in coordination with PWA in small scattered efforts which have not resulted in a sensitive respond of the public. Conceptual planning taking in consideration the current socioeconomic reasons behind the weak respond of consumers has been targeted. The real costs of water paid by the consumers to secure desalinated water are the driving force for this plan. Enforcement of regulations, awareness and incentives for consumers who are committed by water conservation are strong means for a sustainable water resources management.

Key words: desalination, tariff, water deficit, water education

1. PROBLEM DESCRIPTION

The quality of the water supplies is far below the World Health Organization (WHO) standards. Most wells produce saline water, where chloride level much exceeds 250 mg/L (WHO recommended value), and nitrate level exceeds 50 mg/L (WHO recommended value). In addition municipal water is supplied intermittently. Customers are generally aware of the water quality and are not satisfied with the services of the municipalities. Based on (Ismail 2004), a family composed of seven persons having income of \$340 per month can afford \$0.84/m³.

The water tariff fluctuates from \$0.11 to about \$0.5 per cubic meter. The water tariff is not a factor that affects the customers to pay their water bills. In the high water tariff municipalities, many people pay their bills. In contrast, many customers do not pay their water bills in the cheap water tariff areas.

Such accumulated problems specially when accompanied with unstable political environment and a bad economic situation create a driving force for residents to react in an aggressive way towards the municipal systems. When accompanied with the limited knowledge in water resources and water quality that people have to use for different purposes, this creates a water culture that needs a lot of effort and time to be modified. The negative behaviours of consumers can be summarized in:

1. Non payment of water bill. Recently, the efficiency of collection has dropped to 20% which put the service providers in a very bad financial situation.
2. Illegal hooking to the municipal water supply system which is making the system efficiency to fall below 50% in many places, in spite of the continuous efforts made by PWA to rehabilitate water networks. Thus the culture of ownership of the system is missed.
3. Consumers are not aware of the water quality that they have to drink. They prefer water with the less minerals contents and ready to pay for it without calculating the actual costs.
4. Delay in informing about leaks in the public network and even delay in repairing leaks at domestic plumbing systems.

5. Misuse of the waste water system that leads to increasing the treatment loads and clogging in the waste water collection system.
6. Misuse of water at the public places, example are schools and mosques.

2. PUBLIC AWARENESS

2.1. target groups, participants, and partners

As far as the plan aims to change people's behaviour for the benefit of the consumer, and the society as a whole target groups can be categorized into:

- Water consumers.
- Water providers including municipalities, operators, other water vendors.
- Water resource management (PWA, Palestinian Environment Authority, Ministry of Agriculture).

According to the participative approach all three groups are participants in the process of awareness building, providers and water resource management institutions are partners in implementation as well. Additional partners for project implementation are the local consultants for preparing the basic information, external consultants for development of methodology and supervision.

2.2. PWA role in public awareness

According to the Palestinian Water law No.3, the Palestinian Water Authority has to coordinate and cooperate with other related organizations for planning and regulating water use and water conservation and has to organize awareness campaigns in this field.

Many public awareness programs were adopted by the Palestinian Water Authority after its establishment in 1995. The programs included TV spots, signs at streets and lectures conducted at schools, cultural centres and other relevant institutions. Some of these programs were conducted by PWA itself and other programs were carried out with coordination with non governmental organizations (NGO's). Other governmental bodies also participated in these awareness campaigns in workshops and lectures in addition to TV spots.

The response of public to the awareness campaigns was not clearly observed, since the efforts are scattered among PWA, governmental bodies and NGO's. Some of awareness programs were based on availability of residual funds in water projects implemented by PWA and others.

PWA also targeted the local authorities to achieve water conservation. Many inputs were done for restructuring of water tariffs and put tariff slides for different consumption rates to attain water conservation. Some of PWA projects adopted training programs for billing sections in the municipalities in addition to providing them with new software programs.

In all cases no measuring tools and follow up mechanisms have been considered. Discussions just end by the lunch of a workshop or the disbursement of the residual fund used for an awareness campaign.

3. FRAMEWORK FOR WATER CULTURE DEVELOPMENT

3.1. Overall objectives

The overall objective of the process is a contribution to the improvement of the living standard and health situation of the population of Gaza and West Bank.

3.2. Vision

Building a water culture through public awareness and participation so that by 2015 the water distribution networks efficiency exceeds 90% and revenue collection will be 100%.

3.3. Mission

Success and sustainability come through spreading the water conservation, environmental and ownership awareness in a long lasting process. PWA should be the primary source and focal point for development and monitoring of a water culture with the aim of generating and creating relevant procedures, programs and data base necessary for a sustainable positive water culture.

3.4. Target results

The following results are expected to be attained through out the process:

- Better understanding of water users for water quality and natural water resource issues is achieved. Thus consumers are taking care of every drop of water to be utilized. Consumers should realize that costs of desalinated water they used to purchase from water vendors are much higher than the costs should that water be supplied by the service provider if the service provider has the financial sustainability to improve his services.
- Feeling of ownership for the existing water supply and waste water collection schemes is created and maintained. Thus consumers keep safe the water and wastewater infrastructure.
- Information on rights and duties of water users and service providers are disseminated and better appliance is assured. Thus consumers pay water bills on time and enable the service provider to invest in improvement of the service.
- A dialogue for sustainable use of water resources between core parties (PWA, operator) and conflicting water users (municipalities, agriculture, environment, etc.) is created and maintained.

3.5. Tools

In parallel to the normal tools used including but limited to workshops, lectures, TV and radio spots, boosters and publications, school children will be the most important target group to be addressed. Basically it is easier to create a new generation with a positive water culture than to modify an existing culture. Courses on water conservation and water use can be introduced as a basic part of the study at schools in the different levels. Religion as well can play a big role in changing habits and creating a positive water culture.

3.6. Assumptions

3.6.1. External Factors

The most important external factors which cannot be influenced by the process are various manifestations of the political environment. Enforcement of the law and improvements in the economic situation can not be attained without a settling political environment.

3.6.2. Risk Factors and Potential Modifications

Risk factors besides the political situation are the rather narrow base of personnel capacity in the PWA and other Palestinian organizations in addition to the ability of the people in Gaza to change their behaviour in regard to water consumption and environmental issues. A flexible approach should guarantee an appropriate response to existing risk factors and unforeseen events.

3.7. Monitoring and evaluation

Serious coordination and integration of the activities among the involved partners, systematic monitoring and information sharing and use represent the track of success in changing habits and behaviours. To this effect, it will be necessary to work out sharp and realistic performance and progress indicators. Additionally, standard formats for reporting will be prepared for each of the result components. The format will enable PWA to match planned activities with performance and make the necessary adjustments when necessary.

3.8. Sustainability

3.8.1. Political support

The process sustainability is to a great extent connected to the political environment where the enforcement of the law and improvements in economical situation are the main pillars for success. It has to be adopted by the government. Caused through many years of occupation and unstable political and socioeconomic situations, the change of people's mentality and attitudes towards authorities will require concentrated efforts by water authorities and stakeholders at all levels of the society. The process should be staged so that it Creates awareness and interest, Changes attitudes and conditions, Motivates people to be willing to change their behaviour, Empowers people to act and Prevents backsliding.

3.8.2. Environmental impact

Environmental issues will be necessarily part of the awareness and public information campaign around the issue of clean and healthy drinking water and waste water disposal.

3.8.3. Socio-cultural aspects

Tradition, culture, and religion are important aspects of everyday life in the Gaza Strip and can represent a strong motivation for sustainability. This intervention puts a great deal of emphasis on these aspects to capture the trust, commitment and support of the communities.

Religious aspects have to be incorporated in the process. Since the Palestinian society is a Moslem society in its majority, versions in Qora'an will be very useful in achieving the goals. It is worthy to mention that religion had paid a big attention to the importance of water. In the Qora'an the word water is mentioned 63 times, rivers 54 times, rain 15 times, clouds 9 times and spring 18 times. Calls for water conservation have been mentioned in some of those versions in addition to hadeeth about Prophet Mohammed. The prophet him self used to consume 4 litres for bathing and 1 litter for wedo' before prayer.

3.8.4. Promotion of gender equity

In the socio-cultural setting of the Gaza strip, women have to shoulder most of the work related to the household activities and taking care for the family. Awareness will enhance the health situation and thus reduce the workload on women and contribute to the well being of the entire community. The process should address gender issues in an appropriate way and design gender-sensitive strategies and indicators.

3.8.5. Building of institutional and management capacities

Essential components of this process are to concentrate on building management capacity of the PWA and the service providers. All components in the process require the active and continuous participation of local groups and institutions to enable them assume responsibilities for the sustainable use of water resources.

4. RECOMMENDATIONS

1. Water quality supply situation analyses including Social segmentation, Willingness to pay and Behaviour change.
2. Strategy Development for further activities, e.g. organized excursions, training campaigns, etc.
3. Media and public information campaigns including Public events periodically, Printing of posters, flyers, Print Media, Radio, TV, Training of users.
4. Production of information material.
5. Exchange of experience (regionally and internationally) and design of training activities and Exchanging visits.
6. Implementation of tailor made training programs for users and service providers.
7. Establishment of quality standards for operators and vendors and development of guidelines in addition to processing and follow up mechanism for results.

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