

1. Charitable Endowments as an Institute for Sustainable Groundwater Development and Management

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ABSTRACT

Charitable endowments (Waqf) are a community-based sustainable development initiative. The principle of charitable endowments has its roots entrenched in sustainability. The beauty of it is the fact that the donated asset is never lost but instead the returns stemming from the charitable endowments are utilized. Groundwater management has always posed numerous problems. Everything from financing a water project through to the maintenance of infrastructure incurs cost. Charitable endowments, in conjunction with other Islamic principles such as Shura, still find application in the water resources management field in Middle East countries and make a major contribution to the sustainable management of local groundwater resources through solving the problems relating to the financing of groundwater projects. This requires a multi-faceted approach, in which the clergy, engineers, teachers, social scientists, financial managers as well as media work together in a holistic manner. This paper examines some of the technical, socio-economic, financial as well as religious issues to illustrate the all-encompassing nature of this subject matter. In the end the principle of Shura (mutual consensus) in conjunction with waqf and Islamic law are the determining factors for the success of any groundwater project.

1.1. Introduction

Water is fundamental for all life systems and the all living entities are composed from this finite resource, as shown in the Quran. Groundwater is of particular importance due to the fact that it constitutes a much greater proportion of the total freshwater supply, when compared to surface water.

Local groundwater resources, because of their ubiquitous nature, are the main source for community supply throughout the world and particularly in the semi-arid and arid regions. Figure 13.1 shows that various types of wells or boreholes were used for groundwater utilization in Libya. Sustainable development principles emphasize the need of local management of such local resources. Public participation is a key principle in this regard, but its systematic application has remained a challenge for groundwater management world-wide, particularly where the poorest communities are involved. It is thus important to link up to value systems and approaches of traditional societies that may be supportive of sustainable management at local level. These societies may include various religious organisations. The charitable endowments, still practised in Islamic countries, is an important and well documented example in this regard.

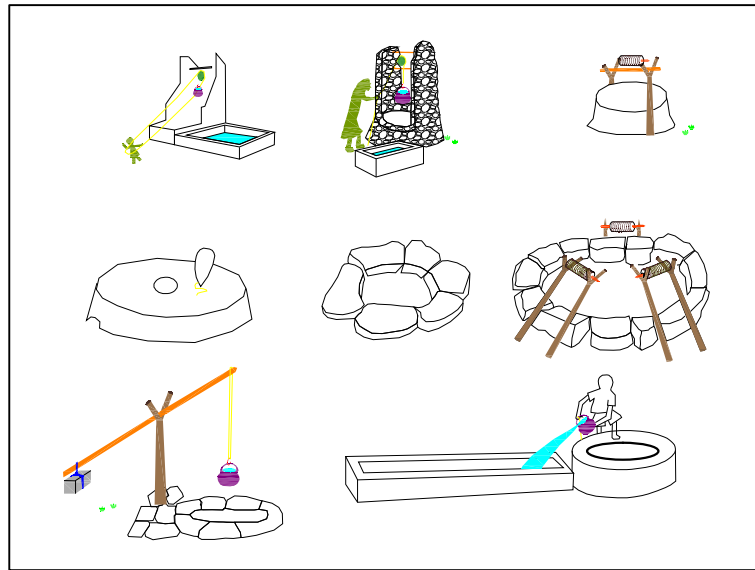


Figure 13.1: A sketch showing different types of wells used in Libya.

Charitable endowments (waqfs) or pious endowments (Abouseif, 1994), an Islamic based financial tool, has its roots based in charitable donation of assets that have been utilized to fund large scale projects. Waqfs originated in the country of Saudi Arabia around 1400 years ago during the time of the Prophet Muhammad (Peace be upon him). The first ever call for a waqf was answered with the donation of agricultural land occupied by date palms (Khan, 1971). The underlying principle for the charitable endowments is the fact that the donated asset will never be sold, but the returns stemming from the asset will be used to serve the community. Water waqfs work slightly differently due to the fact that no real financial returns occur. The asset, which is the borehole, is purchased and donated in order for the community to utilize it for their development. An excellent example, among several, is the well of Rumah, which was bought from the Jews. This well was given to the muslims of Madinah by Sayyidina Uthman at the time of the Prophet Muhammed (Peace Be Upon Him) (Khan, 1971). This shows that the waqf is a selfless act done purely for the sake of uplifting the community.

Sami and Murray (1998) as well as Abdurrazak et al (2005) called for an effective, community based, sustainable management tool for groundwater. This is where charitable endowments can come into play. For example, it has been shown to act as an institution for the development and management of the Qanats (underground aquaducts) in the Middle East (Faruqui et al, 2001). These underground aquaducts continue to sustainably irrigate farmlands. It is critical that the community is involved in the management of the resource, as it directly affects them. The Islamic term for this process of consultation is known as Shura. Shura is of the utmost importance for the understanding of the requirements of the community and developing an effective management strategy catering to their specific needs.

The waqf infrastructure in conjunction with the aforementioned principle of Shura perfectly compliment each other. Furthermore, if the financial aspects of the charitable endowments are included we see a powerful resource management tool. The wealth generated by the waqf

system was so great that major cities had their infrastructure built and maintained by charitable endowments (Abouseif, 1994).

The well of Rumah, as previously mentioned, was one of the first charitable endowments proving the importance of water for the survival of any community. This community-based approach is the underlying principle behind charitable endowments. Groundwater lends itself to the charitable endowments approach, it is cheap to develop and use and can be brought into supply systems with very little capital investment and wells can be easily drilled whenever the water is needed thereby allowing more freedom to operate and control (Abdulrazzak et al, 2005). This would mean that the financial strains placed on the charitable endowments would be much less than the funding required for developing surface water utilized. Unfortunately, in the case of groundwater, the amount of water that can be sustainably pumped out is a major limiting factor.

1.2. Practice in the Middle East

Countries within the Middle East and North African (MENA) region are the major focus due to the following important points:

- Firstly, most of the countries have an Islamic state in place and thus charitable endowments have played a major role in the development of infrastructure in these countries (Baer, 1984).
- Secondly, the general rate of evapotranspiration in the region by far exceeds the rate of precipitation, and thus, groundwater supplies are playing a pivotal role.
- Lastly, due to an increasing population, particularly in the MENA region, and dwindling freshwater supplies, management of the limited water resources is becoming increasingly important (Faruqui et al, 2001)

These water resources problems have to be tackled together with numerous other socio-political issues within the region. The solutions have to take a large variety of factors into consideration. Therefore the waqf body in the region in relation to other political bodies and NGO's has played a major role in groundwater development. In light of this background, charitable endowments should not just be viewed as a financial tool but instead as an all-encompassing tool for socio economic development (Al Melhem, 2007). Furthermore the management of transboundary water ways common in the MENA region, could initiate co-operation and prevent future conflicts as well as create broader benefit sharing (Phillips et al, 2006).

1.3. Socio economic issues

The Dublin principles of 1992, clearly state that the involvement of women and children in the management of water, is critical for the advancement of societies. From an Islamic viewpoint, women are held in high esteem, due to their important role in nurturing the leaders of tomorrow. Therefore their needs should always be taken into consideration. Thus the mutual consensus (Shura) amongst individuals within a society is important, in order to address their needs as well as for the development of the community as a whole. This process of Shura was practiced by the Prophet S.A.W and should be utilized more broadly. Furthermore, it creates transparency and accountability, two issues that are seriously lacking in our societies. Shura also allows the

communities to expose issues that affect them, through discussion,, and thus allows people to solve their pertinent problems through mutual consultation.

Broadly speaking, groundwater can readily address the basic needs for water, due to its relatively easy accessibility. This allows, inter alia, that a borehole can be sunk closer to a village, and less time can be spent on collecting water. Thus the women and children, who usually collect the water in rural African areas, could, as a result, direct their efforts towards some important issues such as education, and ultimately the upliftment of their community and society at large. It is interesting to note that one third of all charitable endowments, in Turkey in the 16th century were actually donated by females (Baer, 1984). This indicates that women had property rights, unlike in many western cultures of the past, and they would utilize these for the upliftment of the community. It also meant that they had power to effect change, irrespective of the scale. Furthermore Islam still affords those rights to women today.

Education relating to groundwater management on a micro-scale is of critical importance. This would have to involve the schools, and incorporate a basic understanding of groundwater at grassroots levels. Thus the implementation of awareness-raising relating to water management in general would have to be done in school curricula as well as in general media. The clergy could also be brought into play due to their great influence among people (Faruqui et al, 2001).

The construction and management of a Qanat (also known as Karez in China) (Figure 13.2) is a good example of the application of the principle of Shura. Faruqui et al (2001) clearly explained the entire process. It is initiated with Shura, within the community and the payment of individuals who distribute the water, is then done by means of water. All interested and affected parties would then decide on who should distribute the water. These distributors are then able to irrigate their arable lands and grow crops. . Everything is done in an effective manner and at a micro-scale. This somehow relieves the main duty of the water ministry as the people would literally be governing themselves. It is estimated that about 75% of all water supplies in Iran stems from Qanats. Similar systems can be found throughout the MENA region (Todd and Mays, 2005). However, it is unfortunate that the construction of a Qanat is extremely laborious and a borehole seems to be a much simpler modern solution.

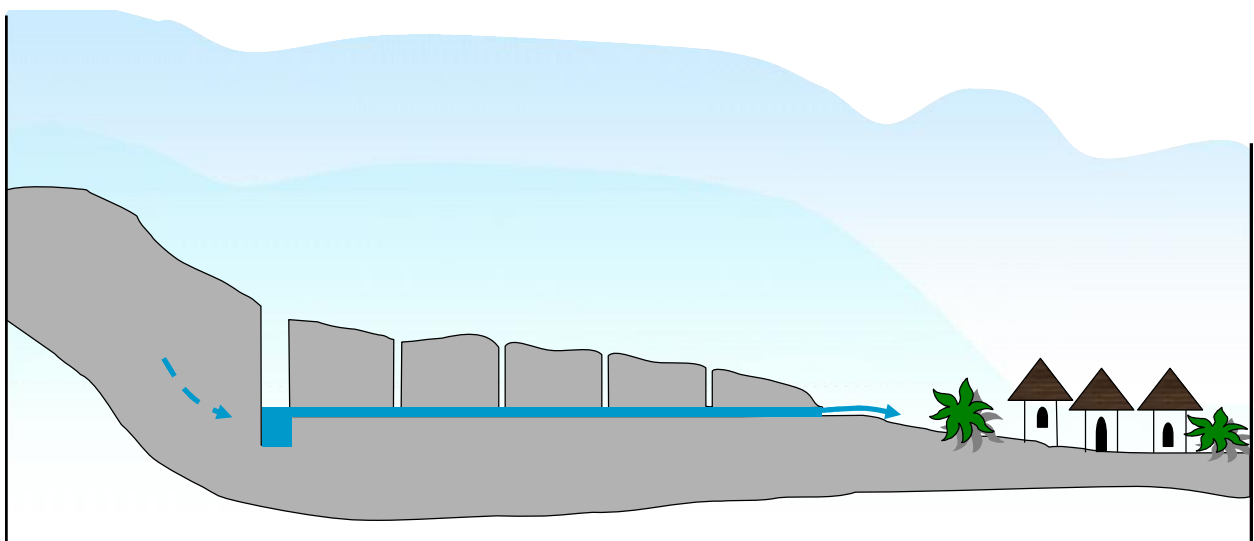


Figure 13.2: A sketch of cross section of a Qanat or Karez system in Asia.

This is where charitable endowments could come into play to help matters. It would play a role in terms of financing the initial stages of a groundwater supply project as well as the maintenance of other related infrastructures. Finally, charitable endowments would also aid in monitoring groundwater quality. Costs associated with groundwater development and operation activities are usually greater than respective surface water supplies. Furthermore, irrespective of the source of the supply, costs are fully recoverable as outlined by Islamic law (Faruqui et al, 2001) Thus all funds from charitable endowments projects are effectively utilized. .

Some NGO's, such as the Africa Muslim Agency, are also involved with water and sanitation projects funded by waqf. Once they have generated some funds, a certain percentage is then invested and its returns further used for maintenance purposes. This is a self-sustainable approach to resource management, which in turn is the fundamental principle of charitable endowments. These types of projects have a great impact on most afflicted communities and they effectively help in relieving the responsibilities of governments in the SADC region. In many instances NGO's like this are the main controlling bodies for water waqfs in the impoverished regions of the world, like the Indo Pak sub continent.

1.4. Technical issues

Numerous technical issues are evident when utilising groundwater. These include factors such as recharge, sustainable yield and water quality among others In the MENA region, Qanats have been successfully developed for this purpose and the infrastructure utilizes gravity flow and not pumping (Figure 13.1). The next step would then be to establish a long term sustainable management of the aquifer. It is important to note that maintenance of infrastructure as well as supply of the water should have to be continuously financed.

The supply management of water is extremely important for sustainability issues. Recharge rates determine the amount of water, which can be sustainably extracted from the aquifer over a specific period of time. Groundwater resources need to be strictly monitored because if abstraction exceeds replenishment, then the amount of groundwater available for the subsequent year would dramatically be reduced (Merret, 2005). A unique exemption to this rule is the water stemming from a well in Makkah. Engineers cannot seem to fathom the source of the Zam-Zam, nor can they explain the infinite nature of the resource. The distribution of this water is solely financed by charitable endowments. Furthermore, the mosques in the Kingdom of Saudi Arabia receive Zam-Zam on a regular basis (Shareef, 2007).

Unfortunately the aforementioned principles of the Zam-Zam do not apply to the general management of groundwater. This is due to the finite nature of the resource. Therefore a shift has to be made from supply management to demand management. The prophet Muhammad (S.A.W) used a 2/3 litre of water for wudhu (ablution) and about 1.5 litres for bathing. This is a perfect water demand management system whereby the total amount of water utilized by the masses is kept to minimum levels. In this case, the successful implementation of such a strategy relies upon the clergy. This has been proven to be effective, most recently in Jordan, whereby the pulpit has been used in conjunction with mass media with great efficacy Faruqui et al, 2001).

1.5. Conclusion

Overall, it could be said that waqf is a unifying characteristic within the MENA region. This therefore justifies its use as a tool for solving the major problems with regard to water, and specifically groundwater supply and management. Above all, in order for such a system to work, other Islamic water laws also have to be put into place. This is important due to the manner in which the waqf system, Shura and Islamic water laws work in conjunction with one another (Faruqui et al, 2001). The implementation of such a strategy would be critical for the development of the region and its economy.

The use of waqf infrastructure, such as mosques and Islamic schools for educating communities with regards to groundwater use and management could be of paramount importance. Furthermore, the use of some monetary aspects of charitable endowments for financing groundwater projects is just as vital as using the water itself. Therefore, charitable endowments provides a holistic solution for the sustainable development of groundwater resources

Finally, solutions and strategies deduced from the MENA region could be practically applied to great effect in the Southern Africa region because of the similarity in climatic conditions between the two areas. It could also be said that this community-based approach would find good standing on the African soil at large because of its tightly-knit social fabric. It seems that charitable endowments could provide some of the financial, social and political solutions to the problems relating to groundwater in general.

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