Water in arid areas

Introduction

Arid areas of the world are faced with a problem of access to fresh water for human, domestic and industrial use. Most people living in arid areas are not able to access fresh water for their consumption (Chester, 1951, p. 22). This is a problem affecting mostly people living in third world countries where people living in the arid areas are not able to access water and if they access it, it is usually not fresh and thus not good for domestic use. This paper evaluates the different ways of providing fresh water to the people living in the arid areas.

Desert Rain Water Harvesting

It had earlier been reported by Chester that this method involves the harvesting of the rain water in the arid areas to ensure that it is conserved instead of running into rivers in the deserts. Rain water is usually fresh and once harvested; it does not need treatment to become fresh water. Harvesting involves the building of many tanks in the arid areas. These tanks will then be used to store rain water once the rain falls. The arid areas however get very little rain or no rain at all. As a result, this method of providing fresh water to the people living in the arid areas may not be very much effective. However, at times, there is usually a heavy down fall of the rain which if harvested, can provide enough water to the people living in the arid areas. An advantage of harvesting rain water is that the people will not need to incur extra expenses once the tanks have been built. This means that the expenses which are incurred are during the building or buying of the tanks after which the water will be stored in the tanks without extra costs.

Rain water harvesting in the arid areas is faced by the problem of unreliability of the rains. In these areas, sometimes the rain fails resulting in lack of water. If there is no enough rain, there will not be enough reserve in the tanks or dams which are used in the storage of the water. As a result, the people will use the available water after which they will suffer from lack of fresh water. Another problem with rain water harvested in tanks is that the water is prone to contamination. It may be contaminated by dust in the atmosphere as the water falls. It can also be contaminated by poisonous gases in the atmosphere released by various factors located in that region. Thus, people who consume the water can have their health being affected.

Reuse of Waste Water

The reuse of waste water ensures that the available little water in the arid areas is used optimally (Joomla, 2009, P. 16). After the water has been used, it is treated and recycled and ths becoming useful again. Water which has been used needs to be passed through process which will make it safe for human consumption and then reused again. Recycling saves the little available water and thus making the people living in certain locality access water easily. If there is reuse of the used water, the people living in the arid areas are not likely to spend a lot of money looking for more water. This is particularly useful in industries located in these areas.

Reusing of the waste water presents some challenges. First, it might be very expensive to treat the used water so as to become useful again. The used water is sometimes contaminated making it inappropriate for human use. To treat it and make it safe for human use, the water needs to go through

complex processes which will purify the water. These processes are sometimes very expensive making the people incur a higher cost in the recycling of the water. Secondly, the recycling of waste water is mostly appropriate for industries. There is little water for recycling in the domestic setup. This means that this recycling will mostly benefit the industries which are located in the arid areas. Lastly, recycling of the water will need meticulous treatment of the waste water which if not treated properly can cause diseases to the people who use the water.

Use of Underground Water

According to reports of the Ministry for the Environment and Territory, Italy (2006), underground water has been regarded as safe water for use without requiring extra treatment. The water can be harvested by the use of boreholes or by the use of wells. Underground water can either be fresh or hard water. In most areas, the underground water is usually hard and requires extra treatment for it to become fresh. Underground water is however clean for human consumption. This reduces the necessity of treating the water so as to kill the microorganisms present in the water. It therefore does not require treatment before use making it appropriate for domestic use. In addition, underground water is usually constant in supply. When the borehole has reached the water table, there is a high possibility that it will not dry even in the dry seasons. This is very appropriate for the arid areas where rain is not reliable and may fail. Even when the rain fails, the people will be able to access water from the borehole (Ministry for the Environment and Territory, Italy, 2006).

The disadvantage of underground water is that it requires a lot of resources (Ministry for the Environment and Territory, Italy, 2006). The drilling of boreholes is very expensive and one needs to use a lot of resources to get the water. This means that the peeople who live in the arid areas especially in the third world countries may not benefit from this water although it is present there. It will need the funding by the government of other nongovernmental organizations so as to harvest the water. Underground water also has a disadvantage that it is at times hard and thus not fresh for human consumption. As a result, the water needs to be treated to become soft water so as to become safe for use. Treatment of the water may be very expensive and most people living in the arid areas may not be able to afford it (Ministry for the Environment and Territory, Italy, 2006).

Desalination

Further research-based reports by the Ministry for the Environment and Territory, Italy (2006), indicates that, in arid areas, desalination can be useful in the reduction of the strain on the fresh water resources available in the country. It has been used in countries in Asia at a cost which is almost equivalent to the normal costs of provision of fresh water. It can be considered in the establishment of a national water policy and thus reduce the amount of strain which is exerted on the available fresh water sources. Desalination makes hard water to become fresh water and thus make it useful for both domestic and industrial use. However, desalination requires the use of complex technology and tools. Most of the arid areas are not able to afford the tools and chemicals for desalination. As a result, the people living in the arid areas apply a lot of strain on the existing fresh water

sources which can lead to these sources drying up. With the help of government and other organization, the people living in the arid areas are able to change the hard water to fresh water which they can use for domestic purposes.

Recommendations and Conclusion

Availability of fresh water in arid areas of the world has been a challenge to most of the people living in such areas. Some of the ways of providing the people living in the arid areas with fresh water include desalination, harvesting of rain water and the harvesting of ground water. Harvesting of rain water is only possible if there is enough rain, sometimes not possible in the arid areas. Harvesting of ground water requires the use of boreholes and wells which are expensive to drill. It however produces clean water free of disease causing microorganisms. This is the best source of water in arid areas because it is usually fresh requiring less treatment for it to be safe. In addition, it does not need to be treated of microorganisms since most of the time it is free from such organisms. It is cheap to harvest and store, being the most appropriate for use in arid areas.