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Essay Competition on Water Conservation



Our Water Scenario: Are Heading Towards Disaster?

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Introduction

Water is a basic necessity yet more than a billion people in the world do not have access to it. In case of Pakistan, 38.5 million people lack access to safe drinking water (Riaz, 2009). According to Pakistani Meteorological Department, due to the lowest recorded levels of water in the country's dams, Pakistanis are facing shortage of clean drinking water and electricity. Water and sanitation related diseases are responsible for 60% of the total number of child mortality cases in Pakistan (WHO, 2005).

The aim of Islamic Republic of Pakistan is to enable its Muslim majority to order their lives in the individual and collective spheres in accordance with the teachings and requirements of Islam as set out in the Holy Quran and Sunnah. Water is recognized as a vital resource in teachings of Islam and everyone has right of fair share of it. The Prophet Muhammad (PBUH) said: "Muslims have common share in three (things): grass, water and fire" (Abudood 3470). Furthermore, the Holy Quran warns human beings against unfair distribution of common goods and the majority of scholars agree that Islam forbids speculation, manipulation and unbalance profit with a common good such as water (Rosemann, 2005).

Access to Water

Having access to water in Pakistan does not mean having access to safe and sufficient water supply. Pakistan's water quality ranks as 80th out of 122 nations¹. Pipe water in Pakistan is of very low quality. In majority of the areas, pipe water is contaminated due to various reasons. In rural areas majority of the people use hand pumps for water extraction. Water from hand pump is generally not good for drinking and cooking. Approximately 50 percent of urban water supply is insufficient for drinking and personal use, according to PCRWR.

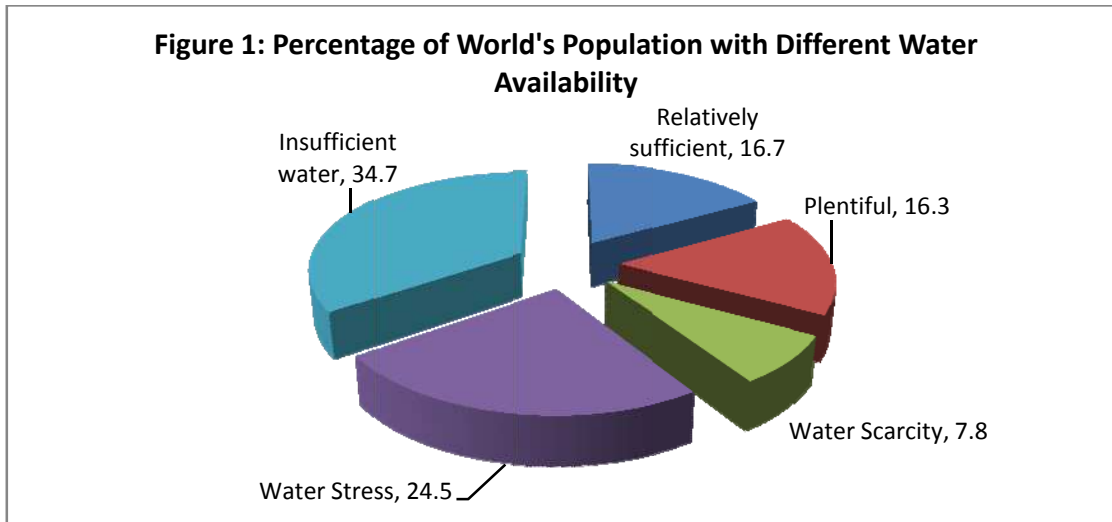
Access to safe drinking water is restricted to many households in Pakistan. As of 2005, approximately 38.5 million people lacked access to safe drinking water source. By the year 2025, the population of Pakistan is expected to be raised to 228.8 million and 295 million by 2050². With this increase in population, a significant burden will be imposed on water supply as on the other hand industry and agriculture sector, major users of water, are also growing. Approximately 6 percent of the total annual water resources available to Pakistan are used by the domestic and industrial sector (of which 30 to 40 percent gets wasted) and the rest 94 percent is used for irrigation purposes (Khan & Javed, 2007).

Lack of access to safe drinking water would lead to increasing incidence of diarrhea, malaria, trachoma, hepatitis A & B, poliomyelitis, schistosomiasis etc, both directly and indirectly. Investment in provision of safe water supply will not only supplement economic development but also would yield other socio-economic benefits like, improved health status, quality of labour force and reduced burden-of-disease. The majority of the population in the country is

¹ Water quality indicator values in selected countries http://www.unesco.org/bpi/wwdr/WWDR_chart2_eng.pdf

² Economic Survey of Pakistan (2007-08)

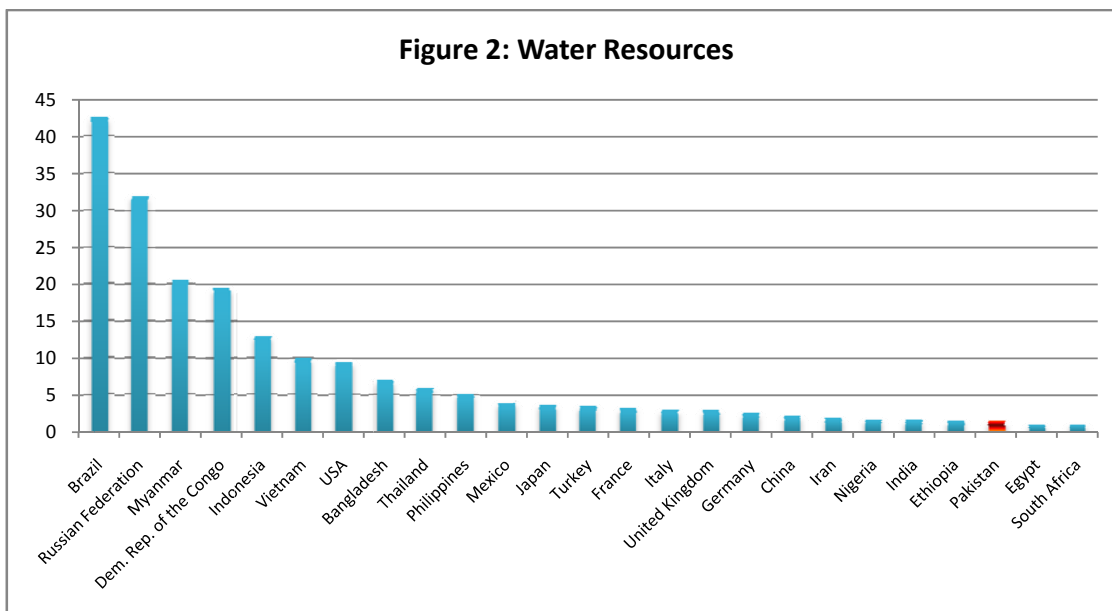
exposed to the hazards of drinking unsafe and polluted water. In Pakistan around 30 percent and 40 percent of all reported diseases and deaths are attributed to poor water quality respectively (PCRWR 2004). It can be seen for figure 1 that 34.7% of the world population is faced with the problem of insufficient water and only 16.3% has plentiful water.



Source: Robin Clarke and Jannet King (2004).

Water Resources of Pakistan

The per capita water availability in Pakistan has dropped from 5600 cubic meter during 1952 to 1100 cubic meter in 2006³ and if prompt policies are not devised, the per capita water availability would fall to less than 1000 cubic meter by year 2012.



Source: Author's estimated based on (Riaz, 2009)

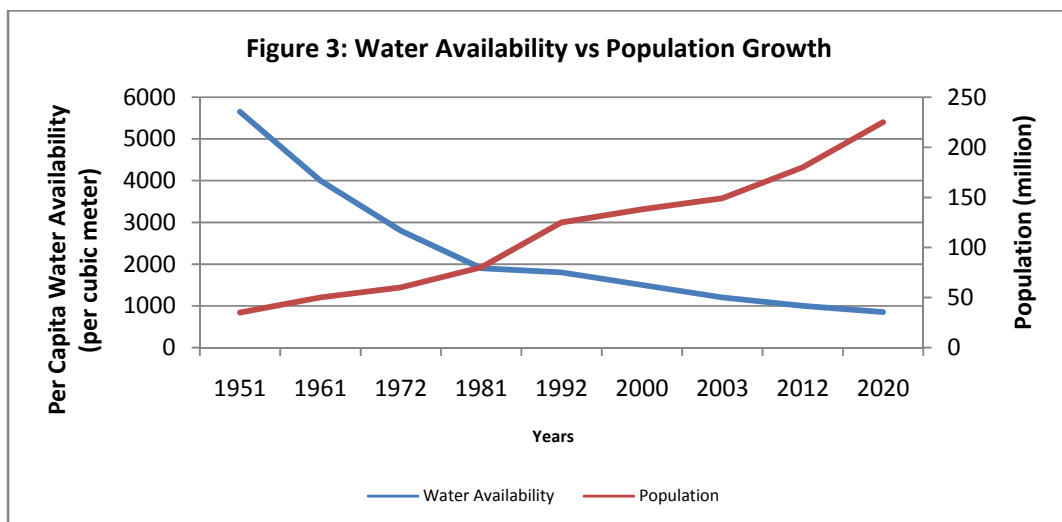
³ <http://www.wapda.gov.pk/pdf/KBDAM.pdf>

Figure 2 compares the water resources of 25 most populous countries. We can see from the figure that Pakistan is one of the most water-limited nations along with South Africa and Egypt. The neighboring countries, India, Iran and China, are marginally ahead with annual per capita renewable water resources of only 1600, 1900 and 2100 cubic meters respectively. The per capita renewable water resources in major European countries are upto two times greater than Pakistan, ranging from 2300 cubic meters for Germany to 3000 cubic meters for France. As compared to China, India and major European countries, The United States of America has far greater renewable water resources: 9800 cubic meters per person per year. Countries on top of the list with largest renewable water resources are Brazil and the Russian Federation with 31900 and 42500 cubic meters per person per year respectively⁴.

Water is becoming the key development issue for Pakistan and the country is rapidly moving from status of water stressed country to a water scarce country, mainly due to its high population growth (World Bank; 2006). The groundwater is polluted in most of the areas and most of the dams are not in sustainable condition requiring significant efforts on part of Government to employ resources in the sector.

Despite a lowering underground water level, excessive mining is still in practice and the annual growth rate of electric tubewells has been indicated to 6.7% and for diesel tubewells to about 7.4%. In addition to the increasing pollution, saltwater intrusion threatens the country's water resources. In Pakistan, about 36% of the groundwater is classified as highly saline.

Figure 3 depicts the relationship between population and water availability. In 1951, the population was 33.7 million and the per capita water availability was 5650 cubic meter. By 1972, the population almost got double and the per capita water availability decreased to 2800 cubic. By the year 1992, Pakistan entered into the list water stressed countries and if the current trends continue, it could go as low as 550-cubic meters by 2025 (Riaz, 2009).



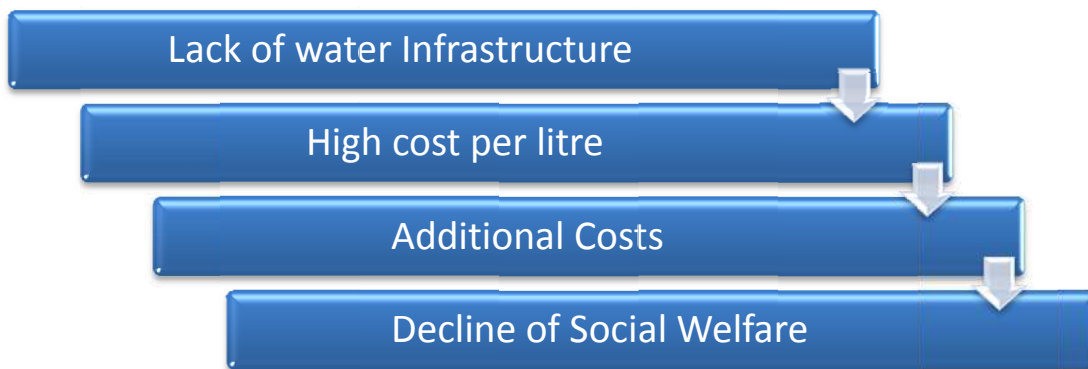
Source: Authors Estimation Based on Khan & Javed (2007)

⁴ (Riaz, 2009)

Welfare Impact

Figure 4 represents the process through which lack of water infrastructure affects social welfare of the population. The lack of water infrastructure forces the poor to purchase water at high per litre prices, the cost of availing this option is not limited to the per litre price but there are additional costs associated with it. People have to travel and wait in queue which incurs a time cost in addition to this; other costs are also incurred for storing and boiling water. Due to the lack of access to water, household's consumption of water falls below the minimum recommended level. Due to the reduced water consumption, people get sick more frequently and their productivity declines so does opportunities to earn and hence overall social welfare of an household declines.

Figure 4: Impact of Poor Water Infrastructure on Welfare



According to the World Bank data (World Bank; 2006), India stores 120 days of water usage, the US has storage capacity of up to 900 days of water usage whereas Pakistan only stores 30 days of river water. The report notes that new water reservoirs will supplement Pakistan's economic Growth and claims that a new dam can potentially add four to five percent to Pakistan's GDP.

Inadequate Irrigation

Pakistan has the world's largest contiguous irrigation system and it has harnessed the Indus River to transform 35.7 million acres for cultivation in otherwise arid conditions (Riaz, 2009). Despite this fact, the agriculture sector contributes less than 20% of the Pakistan's GDP and Pakistan remains a food-deficit nation. The inadequate irrigation and water infrastructure deficit is estimated at US \$70 billion. Pakistan needs to invest almost US \$1 billion per year in new large dams and related infrastructure over the next five years WHO (2004).

Hydroelectric Power

Power generation also utilizes water and it is considered an essential element in Pakistan, but despite the fact that Pakistan has the potential to generate power much greater than its requirement, only about 20% is generated by hydroelectric power plants (Riaz, 2009). The power shortage is expected to increase to 6000 by 2010 and 30700 megawatts by the year 2020 which currently stands at 2,000⁵ megawatts. Pakistan's current power generating capacity is 20000 MW from all sources and it has the potential to generate as much as 50,000 MW of hydroelectric power, more than twice its total current generating capacity. The current capacity is not only significantly less than demand but also acts as an obstacle in Pakistan's way to the sustainable economic growth.

Conclusion

To summarize the above discussion we can say that Pakistan is indeed heading towards disaster if immediate actions are not taken. Clear-cut policies with guaranteed implementation are required in order to fulfill the domestic water requirement. It would be unfair to state that Government is unaware of the situation. Minister for Environment spoke to media on World Water Day 2009 and urged water conservation measures as the country was nearing scarcity with per capita availability falling down to 1000 cubic meter annually.

There is a need to develop new, large and modern water reservoirs to increase the water saving capacity. In addition to this, serious conservation steps need to be taken to improve the efficiency of water use in Pakistani agriculture which claims almost all of the available fresh water resources. Pakistan is still employing old irrigation practices while better and reliable technologies and methods are available (Riaz, 2009).

Comprehensive training programs should be introduced in order to educate farmers and common people about the conservation practices. The motivating factor in this regard could be the religion as Islam discourages water wastage and Islamic history practically how to conserve water and how to avoid wastage and misuse.

The efforts to improve the current water scenario would have spillover effects on society. Through increase in clean water supply, health of the individuals would get better, their productivity will increase and economy will grow. On the other hand, clean water would increase the total agricultural productivity and crops produced with clean water would be much healthier than the existing ones. The healthier crops would mean healthier people and hence through labor productivity, economy will prosper.

⁵ (Riaz, 2009)

References

- Ahmad, E., and A. Sattar (2007) Awareness and the Demand of Safe Drinking Water Practices. Pakistan Institute of Development Economics, Islamabad. (Working Paper No. 21.)
- Khan, F. J., & Javed, Y. (2007). Delivering Access to Safe Drinking Water and Adequate Sanitation in Pakistan Working Paper Series 2007:30. Retrieved 2009, from <http://www.pide.org.pk>: <http://www.pide.org.pk/pdf/Working%20Paper/WorkingPaper-30.pdf>
- Khan, F. J., & Javed, Y. (2007). Delivering Access to Safe Drinking Water and Adequate Sanitation in Pakistan Working Paper Series 2007:30. Retrieved 2009, from <http://www.pide.org.pk>.
- PCRWR (2004), The Water Quality Report (2004) of the Pakistan Council for Research on Water Resources
- Riaz, H. (2009, March 21). World Water Day: Water Scarce Pakistan. Retrieved April 2009, from Haq's Musings: <http://www.riazhaq.com/2009/03/water-scarce-pakistan.html>
- Rosemann, N. (2005). Drinking Water Crisis in Pakistan and the Issue of Bottled Water The Case of Nestlé's 'Pure Life'. Swiss Coalition of Development Organisations.
- United Nation Development Programme (UNDP) and World Bank Water and Sanitation Programme (1998) National Seminar on Urban Environmental Sanitation. Seminar Report.
- United Nations Children Fund (UNICEF) (2004) State of the World's Children Report.
- World Bank (2005) Scaling-up Rural Sanitation in South Asia. Islamabad, Pakistan.
- World Bank, 2006. Better Management of Indus Basin Waters ; Strategic Issues and Challenges, The World Bank, Washington, D.C.
- World Health Organisation (2004) Water, Sanitation and Hygiene Links to Health, Fact and Figures.
- World Health Organisation (2005) Sanitation and Hygiene Promotion: Programming Guideline. http://www.who.int/water_sanitation_health/hygiene/sanhygpromotoc.pdf