

GLOBAL WATER NEEDS FOR THE FUTURE

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Summary

The awareness that water and water planning is significant for human development and the environment has come little by little. While it is often acknowledged that water is an important resource, it has seldom been placed high on the agenda at national and international fora. The realisation and acceptance that water should be used prudently and monitored vigilantly is an essential step toward a more prosperous future. Global awareness of sustainable water practices is growing but, once again, positive global trends may disguise disturbing local practices; each community must attend to its own unique freshwater systems.

While developing states may even abuse national resources in an attempt to develop, this cannot be sustained. The political process often favours a short term solution and it can be expected that future attempts to alleviate water shortages will be no different. It is easier to divert water to a politically important area from another than to carefully identify a process that will allow both to grow.

It has been said that water flows towards power and money even if that means flowing uphill. To this may be added that water can only flow, uphill or downhill, where it has been conserved. Like many other resources, water is part of the global power system and has been abused in the past. Water remains unique, however, as an essential of life, the future of which cannot be ignored. Despite the mishaps of the past and the muddles of the present, the opportunity exists for the careful study and planning of future global water needs

1. Introduction

Any discussion of future water needs must acknowledge that while it is possible to sketch a picture of the global future, water use is a local activity that affects individuals and small communities as much as it does sovereign states and large commercial enterprises. Global averages are only useful when they allow a better understanding of individual and community use of water. That water is unevenly available is a principle that will guide this analysis of future water needs. One community may have more water than it can use while another may have so little water that its survival is at stake. While humans and ecosystems can tolerate and sometimes depend on an uneven supply of water, there is generally a continuous and growing demand for water. It can be said that the flow of water through the biosphere is like the flow of blood through a body. The relationship between the constant demand for water and the uneven supply is crucial. If well-managed, it can help society in its search for a better life. If water needs are not carefully matched to the supply, disaster becomes unavoidable. Need and demand must conform to supply and access.

At the outset it is important to distinguish between water that is naturally available and that which is made accessible in one way or another for use by a community. Geographical differences and seasonal changes are perhaps the most obvious factors that affect the amount of water naturally available to a particular community. Whatever else changes in the future, these factors will still affect the rhythm of future water needs. Communities also make use of additional water that does not occur naturally but must be made available through engineered means. Dams, pipelines and canals are the most well-known of these.

Water needs, though continuous, are not constant. They are driven by factors such as population growth and economic development; two very powerful drivers of water use. Large populations with growing productive capacities are known to use considerable amounts of water. It is clear that populations do not grow or become significantly productive without a related rise in demand for water. This observation draws yet another distinction: between those societies which are growing and productive and those which are not. While these two groups have much in common, it is useful to treat them separately since their water needs are quite different in many respects. For instance, societies reliant on agriculture as a source of income use large amounts of water as a primary input whereas societies with an advanced industrial capacity and an economy based on services allocate freshwater resources more carefully and usually more efficiently; thus while their absolute water needs are greater, water forms a smaller part of the total resources used.

While all communities do need water, it soon becomes apparent that different types of water are needed. Many researchers use the terms “blue water” and “green water” to explain these differences. Blue water refers to that which is available in streams, lakes and underground aquifers. Dams are built to store blue water and control it for distribution through controlled channels. Green water has been defined as the water supply for all non-irrigated vegetation, including forests and woodlands, grasslands and rain-fed crops. These basic differences are important since they allow more useful detail in this sketch of global water needs in the future.

Writing about the future is seldom free of subjective views. In the case of water, most stated views fall into two broad categories: those who predict that water is bound to become even more scarce thus limiting growth and becoming a source of conflict and misery, and those who believe that society and the environment will adapt to changes and that water scarcity is unlikely to be of global catastrophic proportions. A good argument can be made for both views since the human capacity for ingenuity is equal only to its talent for destruction. This article will explore the future drivers of global water resources. In the first section the current drivers of water resource use will be looked at. The second part will be devoted to present global water needs, with the third section of the article looking at future trends in water use. In the last part of the article a conclusion will be drawn.

2. Drivers of Water Use

There are specific circumstances in which the amount of water used by a community rises and falls. Sometimes when more is available, more will be used. In this respect water is like many other resources. If it is perceived to be plentiful, and it is useful, then it is unlikely to be used sparingly. When very little water is available, care is usually taken to make good use of existing stocks and provision is made to secure a continuous supply. However, irrespective of how much is available, human populations and the environments that surround them require a minimum amount of fresh water to function. As a result, it is necessary for communities to intervene in the natural course of events to ensure a steady supply of fresh water. The healthy growth of a population and the expansion of its economic activities, both of which require water, are generally regarded as essential to the attainment of a better life for the community. As a result they are encouraged by national and regional development institutions. The lesson here is that in order to foresee or control future water use, it is necessary to understand the water resource demands of economic expansion and rising populations. Economic expansion can be further broken down into industrial development and irrigated agriculture.

Over the centuries, humans have found water useful for far more than the essentials of drinking and growing food. Rivers often form the boundary between many sovereign states and acquire an importance beyond their practical use. Trade and the transport of goods and people occurs along and upon stretches of water. Water is used in many recreation activities and is also central to many religious ceremonies. The movement of water has also been harnessed and used to increase the power of humans over their environment.

2.1 Population growth

In 1900 the world population was 1.6 billion. In the next 95 years it increased to over 6 billion. This huge increase has had a significant effect on the amount of freshwater withdrawn or diverted from normal runoff. As populations grow, more people interact with water in some way or another than ever before. Large communities need more water for washing and cleaning and require still more for electricity supply. The list of human activities that involve water is long and becoming longer. More efficient use of water can reduce the total somewhat but population growth will remain a key determinant of future water needs. As populations grow, more food needs to be

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Bibliography

Adams W.M. (1998). *Wasting the Rain: Rivers, People and Planning in Africa*. London: Earthscan Publications. [Practical examples of water projects are discussed critically ; River development plans are evaluated.]

Gleick P.H. (1999) *The World's Water: The Biennial Report on Freshwater Resources*. Washington DC: Island Press. [A report that reflects current thinking on water, gives an update of how freshwater is used and the current state of water planning.]

Hillel D. (1994) *Rivers of Eden: The struggle for water and the quest for peace in the Middle East*. Oxford, UK: Oxford University Press. [This book tells of how water scarcity is intertwined in the conflicts of the Middle East.]

Lundqvist J. *et al.* (1999). *Adapting to Growing Water Scarcity: Ecological and Social Challenges*. Report prepared for the Food and Agricultural Organisation. [This suggests a new way of thinking about water supplies, classifies water and identifies challenges for future water needs.]

Rosegrant M.W. (1997). *Water Resources in the 21st Century: Challenges and Implications for Action*. Washington, USA: International Food Policy Research Institute. [This presents an overview of the salient points to be considered in water policy planning.]

Thomas C. and Howlett D. (1987). *Resource Politics: Freshwater and Regional Relations*. Philadelphia, USA: Open University Press. [Chapter Eight of this source focuses on the politics of interstate management of water resources in East Central Europe and Central Asia.]

Turton A.R. (1999) *Water Scarcity and Social Adaptive Capacity: Towards an understanding of the social dynamics of water demand management in developing countries*. London: School of African and Oriental Studies; MEWREW Occasional Paper No.9. [A paper discussing how societies cope with water scarcity.]

Biographical Sketches

Richard Meissner received his training as a political scientist at the Rand Afrikaans University (RAU) in Johannesburg. He obtained a Magister Artium (M.A.) degree in Political Studies from the same university in 1999 and is currently busy with a D.Phil. in International Relations at the University of Pretoria (UP). He was one of the first students in South Africa to complete a Master's thesis on water politics.

He was employed by the Political Studies department at the Rand Afrikaans University from 1996 to 1998 as a research assistant. He is currently employed as a research associate by the African Water Issues Research Unit (AWIRU) which he joined in 1999. He was involved in a number of studies regarding the management of national and international water resources in Southern Africa and the Middle East. He has also written a number of articles which were published in accredited journals. His scope of interest lies within the field of water politics and particularly the interaction of diverse actors

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