

# Sustainable Water Management

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*Abstract: Water is the prime need for the survival of all living things, whether it belongs to flora kingdom or fauna kingdom and industrial development. The demand on water for domestic, commercial, industrial and agricultural purposes is increasing significantly in the recent past. The situation is exacerbated by the growing population and urbanization, thereby there is an increased pressure on agriculture.*

*So far as the Earth is concerned, 97% of the water on it is salt water, with an average salinity of 35‰ (or 3.5%, roughly equivalent to 35 grams of salts in 1 kg of seawater and only 3% is fresh water, of which slightly over two thirds is frozen in glaciers and polar ice caps. The remaining unfrozen freshwater is mainly found as groundwater, with only a small fraction present above ground or in the air. Surface water is only 0.3 %. The planet's little fresh water is very unevenly distributed. Therefore, integrated water resource management is need of the hour.*

*Though integrated water resource management has very few successful examples of implementation but success in making the transition to better management is essential for sustainable development. We need to discuss common problems in order to promote cooperation and to publicize successes so that they can be implemented elsewhere. The water reforms debate and literature has strong influence of other important goals such as public participation, transparent decision making, human rights and democratization.*

*The planet's little fresh water needs a good system for Water Ecosystem Services (WES). The aim is to reach mutually beneficial agreements between providers and users of ecosystem services, entailing a reward mechanism for ecosystem managers for maintaining or improving the provision of water services. The growing policy interest in PWES schemes goes hand-in-hand with increasing attention in the scientific and policy oriented literature.*

*This is happening for several reasons. First, water services are involved in the majority of current Payment for Ecosystem Services (PES) schemes. Second, the water cycle is an excellent context for illustrating various types of ecosystem services-based approaches, in which changes to the state of natural capital is looked at in terms of their impact on human well-being. Water related ecosystem services and their upstream-downstream dynamics are to be understood in toto.*

*To achieve Sustainable Water goal, an in-depth and systematic regional analysis including quantitative evidence is required. It is a fundamental pre-requisite to achieving effective water reform and sustainability. However sustainable water management needs involvement of a number of policy goals. Here we have to reduce the potential for lip service to ideals while doing something else in practice. There are attractive reasons to think that core ideas about how to make a more sustainable and just world are integral to each*

*other. Together they make a powerful narrative that is inclusive and capable of mobilizing large numbers of people.*

*The integrated package approach also fits well with the argument that water reform is a cultural program requiring changed relationships between people and their environment and between each other and not just a technological managerial project. At the same time support for these goals as a single package is an essential requirement of nearly every application for funding. The linkage of these goals is a strong theme of major water reform programs such as that put forward in chapter eighteen of Agenda 21-a policy agenda for the twenty first century developed by the Rio Earth Summit.*

## 1. INTRODUCTION

On the one hand, the planet's little, fresh water is very unevenly distributed while on the other hand, many of our most important aquifers are being over-pumped, rivers, lakes over-used or polluted, causing widespread declines in over ground, groundwater levels. Major rivers—including the Colorado River in the western United States and the Yellow River in China—no longer reach the sea in most years.



Half of the world's wetlands have been lost to the so called development. The world's water is increasingly becoming degraded in quality, threatening the health of people and ecosystems and increasing the cost of treatment.

Some 780 million people around the globe still lack access to clean water and thousands perish daily for lack of it.

Therefore, water resource management is becoming a great challenge for us, threatening the life-support systems.

## 2. PROBLEM

The world's water problems stem from our failure to meet basic human needs, ineffective or inappropriate institutions and management and our inability to balance human needs with the needs of the natural world.

These maladies are rooted in a wasteful use of water, characterized by poor management systems, improper economic incentives, underinvestment, failure to apply existing technologies and an antiquated mindset focused almost exclusively on developing new supplies—to the exclusion of conservation and efficiency measures.

There are many facets of the water maladies e.g. water and energy are intricately connected. Producing energy uses and pollutes large amounts of water. Likewise, providing and using water requires large amounts of energy.

On the other hand, agriculture uses approximately 70% of the world's freshwater supply. Agricultural water use is under growing pressure as demands for water increase; competition among cities, farmers and the environment grows and as concerns grow over large-scale overdraft of groundwater and water contamination from agricultural runoff.



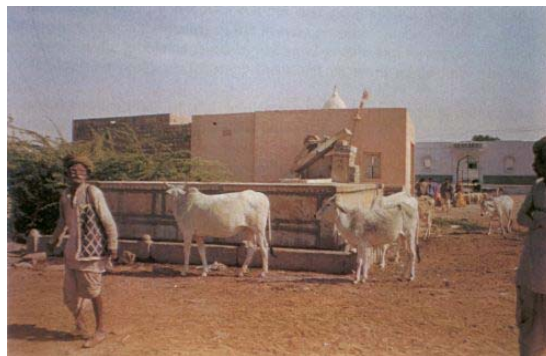
New threats include the challenges of climate change, which is likely to alter both water availability and agricultural water demands.

Over the next three decades, threats to water and food security will grow as the global population continues to climb, dietary preferences change and the climate becomes more variable.

We need to identify ways to ensure clean water and sufficient food for current and future generations.

Freshwater resources are fundamental for maintaining human health, agricultural production and economic activity as well as critical ecosystem functions. As populations and economies grow, new constraints on water resources are appearing, raising questions about limits to water availability.

Such resource questions are not new. The specter of “peak oil”—a peaking and then decline in oil production—has long been predicted and debated. Real limits on water are far more worrisome and far more difficult to evaluate than limits on traditional nonrenewable resources such as petroleum. Water is fundamental for ecosystem health and for economic productivity and for many uses it has no substitutes.



We need to identify challenges facing our water resources and find solutions—solutions that promote the sustainable management of water resources, in India and around the world.

Our research brings attention to key issues that have often been overlooked: the impact of climate change on water, water as a basic human right, the importance of conservation and efficiency, the role of water in conflict, the globalization and privatization of water, threats to the world's water and more.

## 3. SOLUTION

Underlying all of our work is the belief that a new approach to the way we plan, manage and use water is urgently needed. We have tried to focus water policymakers at all levels to look at the risks of climate change on water supply.

Our push toward a re-evaluation of the importance of water-use conservation and efficiency is leading to fundamental changes in water policy. The work continues, because more needs to be done—much more. The most important change we can make is in the way we think about, value and manage our water resource.

We should seek to take advantage of the potential for decentralized facilities, efficient technologies, flexible public and private institutions, innovative economics and our huge human capital.

The governments, companies and individuals need to focus on sustainable ways to satisfy the needs of people and businesses, instead of just supplying water.



We should develop water systems that supply water of various qualities for different uses. For instance, storm runoff, grey water and reclaimed wastewater are well-suited to irrigate landscaping or for some industrial purposes.

Investing in decentralized infrastructure can be just as cost-effective as investing in large, centralized facilities. There is nothing inherently better about providing irrigation water from a massive reservoir instead of using decentralized rainwater capture and storage.

Water personnel are required to interact closely with water users and to engage community groups in water management.

The health of our natural world and the activities that depend on it (like swimming and tourism) are important to water users and people in general. Often we do not return enough water to the natural world, harms other water users downstream.

Any water project disturbs the social, cultural and environmental fabric of the people living around. The people residing around the project face the upheaval in their daily lives. The project must employ local people in construction and then as staff.

#### 4. CONCLUSION

We need to strive to improve the overall productivity of water use in a sustainable way rather than seek endless sources of new supply. It works with water users at local and community scales and seeks to protect the critical ecological services such as nutrient cycling, flood protection, aquatic habitat and waste dilution and removal that water also provides.

It is also essentially required to change our materialistic, destructive life- styles and work-styles for a better earth for our future generations.

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