

## BOOK REVIEW

**THE WORLD'S WATER 2006-2007.** Edited by Peter Gleick. Published by the Pacific Institute for Studies in Development, Environment and Security, Washington.

“The World’s Water” - is a Biennial Report on Freshwater Resources 2006-2007, edited by Peter Gleick and published by the Pacific Institute for Studies in Development, Environment and Security, Washington. The book deals with several topical issues of water management like water terrorism, environmental flows, environmental justice system, floods and droughts, bottled water etc., supported by well researched, priceless compendium of Data Tables which are of immense value for the researchers round the world. It is an unusual collection of facts gathered from across the continents, and spread over millennia, showing rare ingenuity of analysis. Though the book presents global perspectives of vital water related issues, two important issues not discussed in any forum before, though of serious concern to the world community, namely: water terrorism and environment, are highlighted. A summary of these two vital aspects with my comments on Indian scenario is presented here for the benefits of our readers.

### **Newer Aspects of Water Terrorism**

Terrorism is defined as premeditated and politically motivated violence perpetrated against noncombatant targets by subnational groups or clandestine agents (US Code of Federal Regulations). It is intended to cause quick, perceivable, maximum distress or pain to the target groups. Terrorist violence is affecting our life and environment the most. Water related terrorism is one form of environmental terrorism.

Water terrorism is no new phenomenon. It may take the form of blowing up of dams and water supply infrastructures, or poisoning water supplies. It has a long history dating back to 1700 BC as the Tigris was intentionally dammed by Abi-Eshuh, grandson of Hamurabi to prevent retreat of Babylonian rebels. Blowing up of Air India carrier “Kanishka” over the Atlantic in eighties by the Sikh terrorists killed more than 300 passengers on board. Since the 9/11 event increasing risks of water terrorism have been perceived as reality. Indian subcontinent, Sri Lanka, Middle East and African countries have become hub of terrorism threatening the world. Indian Parliament attack of 13/12 and Mumbai attack of 26/11 are but a few of the recent incidents.

About 30% of the countries in the world share river

water with bordering countries. In Northern India the major rivers and some of their tributaries, have their sources beyond the borders in Nepal or Tibet, and are the focus of international water disputes. The Indus, Ganga and Brahmaputra also cross international borders to flow into the sea. Water being key to life’s sustenance, and modern society being increasingly dependent on complex interconnected water infrastructure, such structures have become obvious targets of abuse, and used to gain political and military goals. Although large scale casualties and loss of property are not reported in such terrorist violence, it causes long term sufferings including economic fall outs. Mere rumors may put civil life and administration into jeopardy.

Peter Gleick in his account (“Water and Terrorism”) has highlighted this little understood, but gradually unfolding monstrous phenomenon, and the threats arising out of it through detailed mind-boggling chronological accounts, and an analysis of the causes and consequences of water terrorism. He has suggested a slew of measures to counter such acts and protect this valuable asset of mankind.

The acts of water terrorism are of diverse kinds and nature, ranging from explosion of water delivery and treatment systems, to the introduction of poisons or disease-causing agents into the system. Gleick has identified several forms of such terrorist acts such as:

- (a) infrastructure attacks on water supply and pipelines including attacks on valves, pumps, chemical processing equipment through computer based control; and
- (b) chemical and biological attacks through pathogens and toxins.

The devastation caused by breaches in the Kosi barrage last year demonstrates how destructive failure of large dams can be to life and property. US forces bombed irrigation systems of North Vietnam in 60’s. During the Persian Gulf War Kuwait’s extensive desalination capacity was destroyed by the retreating Iraqi army.

For quick crippling effects, chemical and biological materials are used, which are virulent, toxic and infectious, and can dissolve and transmit in water, threatening vast populations, A German biologist threatened to contaminate

water supplies with bacilli of anthrax and botulinum for a ransom. Poisoning of drinking water by Al-Qaida can not be ruled out.

The article by Gleick relates many such water related acts of terrorism through out history. The Table on water disputes provides much fuel for research on the genesis of terrorism, and understanding core issues involved. Other Tables enlist inorganic and organic chemicals, microbiological contaminants and biological pathogens which can be used for such terrorist acts.

Gleick has laid down a series of far sighted wise strategies widely applicable to all countries in the present day scenario of strife and hatred - intercommunal, interregional and intra state. The foremost step is to evaluate probability of future attacks and their consequences. This requires "a wide range of actions from reducing the fundamental motivation for terrorist attacks to reducing the vulnerability of water systems through focused efforts for protection and detection". Unjust deprivation or unfair sharing of the resources and acute poverty have bred terrorism the world over, be it Middle East, Africa, or Maoist and Naxalite dominated areas of India and Nepal, or strife torn North Eastern India, Sri Lanka or Pakistan. Curbing this menace needs political and social will, people's understanding of right and wrong, security and safety norms as State policy.

The primary task, however, is to protect the water supply system by denying physical access to such facilities vulnerable for such attack. Denying access to water distribution systems, maps and facility plans, and installation of surveillance cameras must be made mandatory for all water installations.

Detection and quick response to such acts is another essential step. Appropriate security measures like extensive monitoring of pipelines, water supplies, or more guards at power plants are some of the essential measures prescribed in US Bio terrorism Act (2002). Continuous real time monitoring of systems may reinforce such responses. As in USA India should also enact laws to assess vulnerability of community water systems to terrorism and develop emergency response plans.

A unique feature of the article is the in-depth analysis of a complex subject with an eye on human welfare. This subject has not been discussed in any world forum so far. The world community is grateful to Gleick for raising this issue at an appropriate time. According to him any water related terrorist act should be treated by the World Body as crime against humanity. All potential water related or allied disputes need be settled with due urgency rising above national, communal, political and regional interests.

Gleick has rediscovered history through annals of violent events in the past, aiming at redeeming our faith in life to make a just society and a world free from fear of terrorism. It enjoins on all of us to respond to this call. Today we are at the cross roads of survival or extinction.

#### **Environmental Justice**

An allied aspect of environmental terrorism is environmental injustice or anarchy committed by a few over a vast majority through intervention of water flows and services, denying equitable sharing of water resources and fruits of development, usurping fundamental rights to water. This has been discussed at length in another article titled "Water and Environmental Justice" by Meena Palaniappan and others, revealing the ugly face of skewed development which over a long period snowballs into widespread chaos – socioeconomic and environmental. Environmental injustice today is a malaise eroding the very foundation of the society on a global scale. It is breeding an unjust socioeconomic order where water is available aplenty, but large populations suffer from its scarcity. The article calls for environmental justice and suggests ways to correct this asymmetry and inequity in the use of environmental resources and services.

Water is fundamental for life and death. Access to water is a fundamental human right, entitling every one to affordable, safe and accessible water supplies for domestic uses (UN CESCR 2002). But in reality over two and half billion people in the world lack access to adequate sanitation and more than a billion lack safe and affordable supply of water. The economically and politically powerful elements control and divert water flows, depriving the underprivileged of this life sustaining resource. Large dams constructed for hydroelectricity or irrigation displaces huge population from their home lands, submerge swaths of fertile agricultural fields and forest lands. Indiscriminate disposal of municipal or industrial wastes pollute drinking water. The rich and the elite are beneficiaries of high living standards, industries, irrigated agriculture and urban municipal facilities. It is the poor who suffer from want of water for drinking, and food production. They spend all their time and energy walking over long distances to fetch water and lose whatever additional income they could manage, live in slums and squalor, and suffer from unsanitary condition and poor health. This is a sad tale of environmental discrimination without consideration given to equidistribution of resources causing poverty and widespread distress.

The United States of America was the first to launch environmental justice movement against dumping hazardous wastes, and siting polluting industries in areas of

predominantly low income communities. This culminated in civil rights movements, ethnic minority liberation movements or anti toxic movements across the world. Out of this were born the first Principles of Environmental Justice affirming the sacredness of Mother Earth; ecological unity and the right to freedom from ecological destruction; mutual respect and justice for all people free from any form of discrimination; right to ethical, balanced and responsible uses of land and renewable resources; fundamental right to clean air, land, water and food; and the right of victims of environmental injustice to full compensation for damages. In the opinion of the authors, environmental justice movements are struggles for livelihoods, health and survival. Environmental justice requires equal sharing of resources and burdens of pollution by the rich and the poor, those with political power and those without, and among different ethnic groups. This article broadly narrates various forms of environmental injustice, perpetrated in matters like water access, water quality, sanitary infrastructure, privatization, dams, as also likely fall outs of climate change. A set of recommendations follow recognizing and implementing human right to water, good governance and democratizing decision making in water sector.

Lack of access to water is the root cause of rural poverty. As in 2002 one sixth of the global population did not have access to improved water supply within 1 km of their residence. Millions of people lack even the basic minimum requirement of 50 liters of water per capita per day. With limited water resources and rising competitive demands in various sectors, water conflicts are raging. Huge rural population depending primarily on groundwater for drinking and irrigation are facing immense distress with overexploitation and rising costs of groundwater as in Gujarat. Women are the worst victims of unsanitary conditions. Indiscriminate pumping of groundwater for beverage production by Coca Cola Company in Plachimeda of Kerala, robbed the local communities of their indigenous control over local natural resources leading to litigations to save their livelihoods and health.

Water quality is another sensitive issue. Deteriorating water quality poses threats to human health, including poor sanitation, natural and industrial pollution, contamination from agricultural runoffs or leachates, saltwater intrusion. Nearly 80% of diseases in the developing world result from unsafe water causing 50% of child deaths. Nearly 70% of available water in India is polluted, and most of the waste waters in the metropolitan cities are discharged untreated in to the water systems with toxic chemicals. The fecal coliforms derived from sewage waters in some Asian rivers are 50 times the WHO guidelines. Nitrate pollution from

agricultural chemicals is also lethal. Left with no option slum dwellers discharge sewage, and garbage into water ways in the neighborhood, and are even compelled to use the polluted surface water for washing, bathing and drinking. Open defecation in rural areas continues.

Privatization in water sector, too, is causing public outrage. Worldwide analysis shows that public sector participation does not effectively address the underlying issues that result in poor water and wastewater services escalating hardship to the economically underprivileged.

The impacts of large dams on local populations, environment, and cultural and social resources have been universally disastrous. Be it China's George's Dam or India's Narmada Sagar, or Tehri Dams, the fall outs involving loss of property and displacement of people, mostly the tribal and indigenous people, have been enormous, with poor records of rehabilitation and compensation. Koyna dam triggered earthquake in western India with widespread devastation in the sixties. Now universally the opinion is in favor of minor irrigation, water shed development, rainwater harvesting, increasing water use efficiency as cost effective, sustainable alternatives, causing least environmental damage.

The much talked about climate change is likely to affect the water resources through reduction of snowfall, changing of timing and frequency of floods and droughts, exacerbating water shortages, and reducing available freshwater. Fast disappearing glaciers are threatening the Himalayan rivers, which provide life's succor to millions living in the vast alluvial plains. Although the industrialized nations in the North are major contributors of global warming emissions, the Global climate change is affecting the Global South and small island nations disproportionately with impacts on human suffering, health and financial consequences. The latter, mostly poor nations, contribute much less of the green house gases. So far no effective cooperation is forthcoming from the developed countries in reducing carbon dioxide emissions.

The key to water security is equity of resources, implementation of human rights to water, and good governance. "Water should be treated as a social and cultural good, and not primarily as an economic commodity" (UN CESC 2002). It is the poor governance in water sector that has led to constrained livelihoods, increased social inequity, and inadequate and unsafe water and sanitation for billions of people." In Dublin declaration (ACC/ASGWR 1992) a participatory approach has been urged in water development and management through involvement of the stakeholders and communities from project inception to decision making stages including implementation and

operation, in a community driven controlled process. This alone can rid the communities of all the water ills; ensure equity in sharing and distribution of resource as also in its sustainability. A shining example is Tarun Bharat Sangh's Project of water harvesting and water security in Alwar district of Rajasthan, and constitution of Arvari Parliament setting rules and laws of water distribution and use.

The article has provided us with much food for thought, written in a lucid manner, replete with information and data useful for research workers and in an effort to rid this world

of inequity and to ensure social justice which alone can eliminate poverty. This article has much relevance in India and the developing world to day.

The editor and his coauthors have come out with a prophetic view of the world water situation sensitising the world community into actions to avert disasters. We hail the pioneering efforts of the editor for this valuable publication on water, – a must read for all.

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