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WATER RESOURCES : PROBLEMS & SOLUTIONS

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Abstract:

India has 2.45 per cent of the world's land resources and roughly 4 per cent of the world's fresh water resources, while 16 per cent of the world's population resides in the country. An average annual precipitation in India including snowfall has been estimated as 4000km. The estimated total annual water resources including both surface and ground water are 1953km.

Water is an indispensable natural on the planet earth on which all life depends. The Human Development Report (2006) rightly remarks, water is central to the realization of human potential. It is a source of life for people and the planet. In fact, mankind acutely needs water to survive. This is the reason why almost all the major cities of the worlds were located and developed on the banks of the rivers or sea shores.

Tries to analyse the causes of water scarcity which are in the form of rate of growth of population, wastages of water, lack of proper management of water, industrial development etc. It tries to examine the sector wise water utilization in India.

Suggest participatory management approach to arrest the water crisis where there must be the involvement of all the stake holders like local government agencies, mass media, financial institution, local elected officials, environmental and conservation group, teachers, women's groups and religious leaders.

Examine whether privatization of water resources is a solution to tackle water crisis, models of water privatization and observes that privatization has several shortcoming like it leads to price hike which are unaffordable for the poor people, unsustainable water mining, creation of water monopolies, water quality is compromised and corruption and lack of transparency.

Everyone agrees that the world is facing a severe water crisis. Water abundant regions have become water scarce, and water scarce regions face water famines. Water crisis is an ecological crisis with commercial cause, but no market solutions. For injustice is democracy. Therefore, there is need for people's participation for sustainable development. Bottom-up approach is needed so as to involve local people in planning, managing and decision making process. The bureaucracy should play the role of a facilitator. The maximum involvement of people, PRLS NGOs, SHGs and other social groups may be encouraged by the central and the state governments.

KEY WORDS:

Water Resources , proper management , environmental and conservation .

INTRODUCTION

India has 2.45 per cent of the world's land resources and roughly 4 per cent of the world's fresh water resources, while 16 per cent of the world's population resides in the country. An average annual precipitation in India including snowfall has been estimated as 4000km. The estimated total annual water resources including both surface and ground water are 1953km.

Water is an indispensable resource on the planet earth on which all life depends. In the word of Greek poet Pindar "Water is the best of all free gift of nature and it is a divine drink essential for maintaining life. The Human Development Report (2006) rightly remarks, water is central to the realization of human potential. It is a source of life for people and the planet. In fact, mankind acutely needs water to survive. This is the reason why almost all the major cities of the worlds were located and developed on the bank of the rivers or sea shores, e.g. London over river Thames, Paris on over seine, Moscow on river Moscova and Cairo on river Nile. In India, Delhi is located on the banks of river Yamuna, Vijayawada on the river Krishna, Ahmadabad on river Sabarmati, Surat on river Tapi, Varanasi on the banks of river Ganga.

OBJECTIVE:

- 1.To highlight drawbacks of water privatization.
- 2.To suggest participatory management approach for water management and measures to strengthen partnership approach.
- 3.To examine the meaning and models of water privatization.
- 4.To analyze the causes of water scarcity in India
- 5.To study the Sector-wise utilization of total water resources in India.

CAUSES OF WATER SCARCITY IN INDIA:

- 1.Wastage of water: Since water is cheap a lot of water is wasted which leads to water crisis. Wastages of water also take place due to pipe leakages.
- 2.Industrial development: industries use large quantities of water. For smelting one tone of nickel, 4,000 cubic meters of water and for one ton of iron 200 cubic meters of water is required. One tone of paper manufacturing requires 100 cubic meters of water. One tone of synthetic fibers need 2500 to 5000 meters of water. It has been estimated that in cities nearly 85% of water is consumed in the industrial sector. (Dr. AlkaGautam) (20102). Obviously industrial and urban areas face scarcity of water on a regular basis.
- 3.Lack of proper management aspects: Management aspects like water conservation, recharging, efficiency in water usage, water recycling, self-regulation and eco-system sustainability were not paid adequate attention which led to water scarcity.
- 4.Failures to use salt water in place of fresh water because it required expensive corrosion resistant materials.
- 5.Rapid growth of population: The rapid growth of population has enhanced the demand for water many folds. This has led to over exploitation of both surface as well as groundwater and has resulted in water scarcity.

Sector-Wise Utilization of Total Water Resources in India:

The table below indicates the sector-wise utilization of total water resources in India at present.

Purpose	Present utilization of billion cubic meters(bcm)	Percentage
Irrigation	501	82.9%
Domestic	30	4.9%
Industries	20	3.3%
Power generation	20	3.3%
Other	34	5.6%

Source: Nation Water Development Agency

WATER RESOURCES : PROBLEMS & SOLUTIONS

DECLINING WATER RESOURCES:

The annual per capita availability of fresh water in 1951 was 5,177 cubic meters declined to 1,869 cubic meters in 201 and is likely to fall further to 1,341 and 1,140 cubic meters in 2025 and 2050 respectively. It is generally presumed that if per capita level falls to 1,000 cubic meters, it would seriously affect the health and economic activity of the entire country. This will affect 25 percent of India's geographical area and 21 percent of total population.

FUTURE WATER REQUIREMENT:

The Natural Water Commission has estimated that the total water of the country in the year 2025 would be about 973 bcm on the lower side and 1180 bcm on the upper side depending upon the actual population growth;. However, the ministry of water resources on the basis of other studies has estimated that India's water requirement to be around 1093 bcm for the year 2025 and about 1,447 bcm for the year 2050.

Future Demand of Water:

Purpose	Year 2010(bcm)	Year 2025(bcm)
Irrigation	688	910
Domestic	56	73
Industrial	12	23
Energy	05	15
Other	72	72

Source: Nation Water Development Agency.

It is evident from the above two tables that the world heading towards increases in the magnitude of water uses and scarcity. India's water consumption is approximately 20.1 percent of the world consumption with a per capita consumption of 297.7 cubic meters; it is more than world per capita consumption of 287.3 cubic meters.

Meaning of Water Privatization:

Water privatization means transfer of control over water or water management services to private companies. The water management service may include collection, purification, distribution of water and waste water treatment.

Models of Water Privatization:

The following models of water privatization are found in different parts of the world depending on the degree of privatization.

1) Disvestiure:

In this model, the Government or public authority wards full ownership and responsibility of water system including the water source to private operator under a regulatory regime. This is also done in the form of 10-20 year renewable contracts on the entire system. In this model the private firm/company is expected to take the risks and rewards.

Water privatization has been recommended by the Indian Government's National Water Policy, which says that private sector participation should be encouraged in planning, development and management of water resources projects for diverse uses wherever feasible. India follows the (D) BOOT model.

2) (Design), Build Operate, own and Transfer or (D) BOOT:

This model of privatization is usually used for system infrastructure development such as water treatment plants that require significant finance. The private operator is required to finance, construct, and maintain the facility for a specific period of time usually for more than 20 years. At the end of the term, the infrastructure may be turned over to the municipality or the contract is renewed. This model is more prevalent in developing countries.

3) Service Contracts:

In this model, public authority retains overall responsibility for the operation and maintenance of the system, and contracts out specific components. These contracts last for 1-3 years and include services such as meter reading, billing and maintenance.

ARGUMENTS AGAINST WATER PRIVATISATION:

1. Water quality compromised:

Corporation in search of profit can compromise on water quality in order to reduce cost. This is especially true in a country such as India, where the water quality regulatory boards do not have the teeth to enforce their standards. There have been numerous instances of outbreak of epidemics due to poor quality of water. In India, the bottled water industries and cola industries have been shown to have high pesticide levels in their products. These are classic examples of how private companies cannot be expected to provide quality without regulation.

2. Potential Export of Bulk Water:

Fully aware of the \$2 billion water market in India, private companies are in a frenzy to access fresh water sources that they can sell at huge profits. For instance, the huge market for drinking water in the perpetually water starved city of Chennai has prompted several private companies to mine the surrounding villages for groundwater. Privatization opens the door to bulk water exports as control over this scarce resource is transferred from local communities to profit minded global corporations. Bulk water exports will have disastrous ecological and environmental consequences.

3. Corruption and Lack of Transparency:

Indian government agencies are notorious for their lack of accountability and transparency in awarding of service contracts to private corporations. The Enron scandal in which the Maharashtra government awarded Enron a contract for generation and supply of 695 MW of electric power has epitomized the allegation of "bribes and kickbacks" that have plagued practically every major service contract awarded by governments in India.

Above reasons clearly state that privatization of water in no way leads to sustainable water development, on the other hand it cuts the very root of the people's empowerment. This is because privation of water is a process like the camel's entry into the tent. It will not give importance to the concepts of social justice and basic human rights. Hence to tackle the problem of water scarcity it is better to have participatory management approach.

4. Price hikes are unaffordable for the poor:

Water privatization has invariably led to price hikes in almost all regions in the world where water has been privatized. This is because there are considerable costs involved in upgrading water harnessing, purification and distribution system. For such expensive projects, water companies borrow private money, which is subject to high interest rates from financiers and state taxation. The companies recover their costs and expenses by charging the consumers. Not only is the capital divided among all the consumers but also the interest, taxes and overheads on the capital. Thus, the consumer is forced to bear the burden of higher payments on company loans. The price hikes following privatization have almost always made water unaffordable to the poor.

5.Unsustainable Water Mining:

These corporation, which are answerable only to there shareholders, have a declared agenda to make profit. Once water becomes a marketable commodity and a corporation is given sole right to a body of water, then it is within the corporation's rights to mine as much water as it deems fit. Furthermore is an effort to maximize profits, if the corporation mines an environmentally unsustainable amount of water and deplete the water body at a rate faster than it is replenished, then the government official and the affected populatoin can do very little to legally prevent the corporation from doing so. Mining of groundwater by coca cola in the Khammam district of Andhara Pradesh, Athur village near Channai and Plachimada in Kerala are such examples indiscriminate water mining has dried up many wells and contaminated the rest.

8.Creation of water monopolies:

Privatization by definition eliminates public control of the resource in question. Public Control of water is essential not only because water is necessary for survival and human Fulfillment, but also because of the severe and ever-worsening water crisis that the world is faced with. Unlike privatization of other sector such as airlines or telecommunication, Privatization of water services often does not leave the consumers with a choice of provider. Physical reliance on a single water pipe network little room for competition, which lead Monopolistic attributes to privatization in this sector, furthermore, the water corporations Demand exclusive service provider right infrastructure. The end result is almost a water monopoly sanctioned by the government agencies.

STAKEHOLDER OF THE PARTICIPATORY MANAGEMENT APPROACH:

1.ENVIRONMENTALAND COSERVATION GROUPS:

They have knowledge of environmental degradation and can spread awareness of problem and issues of environmental degradation among the people.

2.TEACHERS:

They have influence over values and beliefs and have the ability to shape future generations in a right direction

3.WOMENS GROUPS:

They have ability to mobilize and motivate members, and have influence over family decision interest and concern for health issues.

4.RELIGIOUS LEADERS:

Ability to appeal to higher values, credibility and legitimacy.

5.LOCAL GOVERNMENT AGENCIES :

They play an important role in providing financial and Technical support, logistics, equipment's and related support, data collection and analysis expertise.

6.MASS MEDIA:

It can play an important role in disseminating information through coverage of watershed events and to spread awareness amongst the people for the need for conservation of water resources.

7.FINANCIAL INSTITUTIONS:

It can influence over management decisions, linkage with land owners, and provide funding for programmers.

8.LOCAL ELECTED OFFICIALS:

They can play important role in influencing land use and resources management decisions and providing financial support for projects.

MEASURES TO STRENGTHEN PARTICIPATORY MANAGEMENT APPROACH:

The following remedial measures are suggested to overcome the difficulties of participatory management approach and develop healthy environment for participatory management:

People are often skeptical at the initial stage, so paying regular attention to early meeting. a bottom top approach will work to a great extent. Leaders should emerge from among the members of the partnership. Someone will have to take the initial responsibility for getting members together. So there is the need to train both government officials and functionaries of members together. So there is the need to train both government officials and functionaries of agencies.

Select partner based on existing and potential skills, not personalities- partnership. The partner selected will need technical, communication, problem solving and interpersonal skills.

There are three groups in a watershed: A) those who are both affected by and interested in watershed; B) those who are not affected but interested. C) Those who are affected but not interested. All partners should be able to take in any decision or activity where they have interest or expertise.

Initiating the project with a few short term goals has a good chance of success. Early projects are realistic and will be seen as winners in the eyes of the partners.

Make sure that all partners are comfortable in placing their statements. Potential conflicts need to be discussed and resolved. It is important to keep the statement general enough to encourage wide spread support, but specific enough to identify goals and most effective decision are made by consensus. This does not mean that everyone will be completely happy; but that everyone live the decision and feel decisions are fair.

CONCLUSION:

Everyone agrees that the world is facing a severe water crisis. Water abundant regions have become water scarce, and water scarce regions face water famines. Water crisis is an ecological crisis with commercial cause, but no market solutions. For injustice is democracy. Therefore, there is need for people's participation for sustainable development. Bottom-up approach is needed so as to involve local people in planning, managing and decision making process. The bureaucracy should play the role of a facilitator. The maximum involvement of people, PRLS NGOs, SHGs and other social groups may be encouraged by the central and the state governments.

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