INDIA'S TRADITIONAL WATER CONSERVATION AND HARVESTING SYSTEM: A SOLUTION TO COMBATING WATER SCARCITY

Souvik Ghosh, H. N. Verma, P. Nanda, and Dinesh Chandra

Introduction

Water has been harvested in India since antiquity. Evidence of this tradition can be found in many age-old ancient texts, scriptures, inscriptions, local tradition and archeological remains. Traditional systems are the specific responses to the ecology and culture in which they have evolved, they are more durable and have satisfied certain needs of local people in environment friendly manner. These systems emphasize the ecological conservation in contrast to environmental exploitation by the modern systems. These have benefited from collective human experience since time immemorial and in that lie their biggest strength. Traditional systems are low cost, user friendly techniques and community-based systems, which contribute to social cohesion and self-reliance. Often the responsibility of taking decisions and actions was left to individuals, groups and local communities working together. This encourages economic independence and optimatisation of local resources at micro-level.

British colonial state, with its new revenue policies, dramatically transformed the economy and created the conditions for the collapse of these systems. The Indian post-independent state is no different in this regard. Dams, those controls water and not manage it, are still the temples of India. Irrigation potential is created, but no thought spared for its utilization. Community controls on choice of crops grown in the irrigated command areas have slowly disappeared. Ad hoc project implementation leads to wasting public money. Land degradation, deforestation and massive groundwater exploitation have also contributed to a situation summed up by the word 'scarcity'. The problem is compounded with the fact that modern systems, operating on market

* *Scientist, Water Technology Centre for Eastern Region, Bhubaneswar*

economy principles, are far from perfect in terms of their distributional impact. The case for the revival of small, decentralised, traditional water harvesting gains urgency from this context. Small scale water harvesting has enormous potential and it is time this potential is given a reckoning.

Characteristics of traditional water harvesting system (TWS) & its importance in present paradigm

Technically speaking, water harvesting means capturing the rain where it falls, or capturing the run-off in one's own village or town. Experts suggest various ways of harvesting water: capturing run-off from rooftops; capturing run-off from local catchments; capturing seasonal flood water from local streams; and conserving water through watershed management. The indigenous systems exhibit following features:

1. Traditional water harvesting systems have passed the test of time and are suited to specific environment and culture in which they have evolved. They worked efficiently in different social, economic and political environment.

2. These systems emphasis ecological conservation in contrast to environmental over use of modern system. E.g.: Afforestation, ground water recharge, soil conservation.

3. Ensures community participation and management:

   For any development to take place people's enthusiasm participation is must. Traditional water harvesting systems were effectively managed, established and operated by the small communities in many regions of our country.

4. Low Monitory costs:

   In India, still there are some regions were Modern Systems will not due to the costs required to set up. So in this context it is wise to use the TWS which can be build with the low costs and local material available in the villages.

5. Traditional water harvesting system contributes to social cohesion and self-reliance.

The Modern Systems have increased the dependence of rural communities on the Govt. agencies, which often fail to provide the basic needs of the society or people. On the other hand, TWS are community managed system, where the responsibility of taking decision is left with individuals, groups and community working together in the society. This encourages the community and economic independence and optimization of local resources at micro level.

Fall of water harvesting systems in India:

Indian villages functioned like little republics and played an important role in managing their own resources. As the Indian kings knew that agricultural prosperity was vital for financial health, they created new agricultural land, and intensified agricultural production by building tanks, wells, and canals to increase state revenue, he took the help of local nobles, ordinary people and even temples to build the water harvesting structure. Today, unfortunately, this heritage culturally and technologically lies in poor condition.

The British initiated new Govt. Revenue Policy that destroyed the financial resources base of the Indian villages and their inner capacity to manage their natural resources. As a result, the village community could no longer raise enough internal resources to manage its irrigation structures and thus, agriculture and incomes declined to a point that India became a nation chronically affected by farmers and destitution.

But the worst for the fall of traditional water harvesting systems in India was the irrigation bureaucracy. No effort was made to review of these systems or build new systems in a way that complemented the traditional systems. Switched towards westernisation policy makes concentrated their efforts on big dam projects copied from developed or western countries which are becoming danger to the human as well as ecology.

Some of the other facts responsible for the decline of traditional systems are given below:

Growth in population and water demand, which could not met through traditional technology and systems and at the same time, availability of

modern and more convenient water supply through centralized storage systems like reservoirs and canals because of the officials emphasis on them led not only to halt in the expansion of traditional systems but also to disuse and consequent deterioration of the existing ones.

The centralized modern systems were initially installed in good faith to provide water with more convenience and with abundant supply, but over the years the govt. has developed an open bias in favour of these large complex and costly systems.

The posturing of greater dependence on the state itself for even small matters like maintenance of existing systems and the powers that govt. agencies have acquired through existing water and land resources laws which provide complete control over these resources, leading to large scale misuse.

- Commercialization of agriculture and the large-scale cultivation of cash crops.
- Changes in distribution and concentration of ownership of land and community resources in fewer hands.
- Unchanged state investment patterns that were developed during the colonial regime and neglected small water harvesting irrigation systems.
- Inability of govt. agencies to take a holistic view of water as a product of larger environmental management.

Viability of large Dams in Indian context:

India is a land of rivers and our economy is predominantly agricultural economy. Development of river valley projects has become lifeline for progress and prosperity for the country. In recent years strong oppositions has been voiced to the construction of Dams arguing that irreparable damage to the environment and society by such projects which may result into Global hunger and malnutrition. Now a day, big dams are seen with negative light. Big dams are not only unnecessary but also they have tremendous social, ecological and economic costs. Such projects always mean either a big displacement of people and/or a big submergence of forests and other natural ecosystem.

Disadvantages of big dams

1. Threat to ecosystem:

Ecological cost is too huge in terms of rivers, the mountains and the forest of the India. In India large dams have already submerged 1.5 million hectares of forests and countless other ecosystem. They have endangered several species of fish and mammals by drowning their homes or blocking their migration. They have also increased the salt-water ingress along the coastal line as the outflow of the river-borne fresh water is decreased. It is found that an astounding 89% of the 300 dams given environmental clearance since 1980, migratory measures were been violated. Compensatory afforestration has been not done. The wild life has not been restituted, catchment areas have been left to erode and water logged command areas were not reclaimed. This means the vast majority of dams have been built not just in ways that are environmentally compatible but in violation of the laws of land.

2. Neglect of rehabilitation:

A detailed study of 54 dams was done by the Indian Institute of Public Administration, which found out that the average no. of people displaced by a large dams is 44.182 and there are 3,300 dams in India. N.C. Saxena, Secretary to Planning Commission said, the total no. was in the region of 50 millions and a huge percentage of the displaced are tribal people i.e. about 60%. What happened to all these million of people? Where are they now? How do they earn a living? No one really knows about it. The rehabilitation problem is severe. The Gujarat Govt. committed to provide land because of the Sardar Sarovar, is dragging its feet on resettlement. The fact is that Gujarat Govt. has no land to offer. Apart from those who received land have complained that they have been given uncultured land or bad land. In April this year, seven tribal ousters of Madhya Pradesh, resettled in Gujarat, deed in the span of 10 days, putting a question mark on rehabilitation itself.

3. Economic cost :

Over the last fifty years India has spent Rs.80, 000 crores on the irrigation sector alone, yet there are more drought prone areas and more flood prone

areas today than there were in 1997. Big dams are planned for a hundred years, but they lose their capacity from silting and age. Some of our old dams have already lost considerable storage capacity and developed cracks and the scope of renovation is limited. The accumulated silt cannot be carried away at any reasonable cost.

The India scenario

More than 2000 million people would live under conditions of high water stress by the year 2050, according to the UNEP (United Nations Environment Programme), which warns water could prove to be a limiting factor for development in a number of regions in the world. About one-fifth of the world's population lacks access to safe drinking water and with the present consumption patterns, two out of every three persons on the earth would live in water-stressed conditions by 2025. Around one-third of the world population now lives in countries with moderate to high water stress—where water consumption is more than 10% of the renewable fresh water supply, said the GEO (Global Environment Outlook) 2000, the UNEP's millennium report. Pollution and scarcity of water resources and climate change would be the major emerging issues in the next century, said the report. These issues would be followed by problems of desertification and deforestation, poor governance at the national and global levels, the loss of biodiversity, and population growth, said the report (*The Observer of Business and Politics, 12 October 1999*).

There is an urgent need for action to maintain the health of our water systems. Shortages of fresh water and its pollution threaten the quality of life of many Indians— nothing demonstrates this fact than the recent drought that had the entire country reeling under its devastating impacts. Life poses us with so many contradictions. Despite being one of the wettest countries of the world, India's growing water shortage has reached alarming proportions and become a growing concern.

Traditional Solutions Revisited

While the Indian government is making efforts to solve the country's water problems through modern means, India's population is now looking toward

traditional proven methods. Indian communities have long been aware of the interdependence of their lives on the natural resources around them. India has a rich legacy of water harvesting technologies and these methods, combined with modern science, could lead to a permanent solution to this problem. Rainwater harvesting, simply put, is putting water back into the soil where it is stored in underground rivers and reservoirs so that it can be drawn when needed. As a result of the failures and short-comings of the water system and its distribution network inherited by India from the British colonialists, local indigenous populations have begun to think of innovative alternative solutions to the water problems based on a revival of traditional rain harvesting systems, which have transformed some of these areas from places of economic backwardness to areas of abundance. The advantages of traditional methods such as rain harvesting are numerous. They have the potential of providing a solution to rural poverty and unemployment resulting in an overall improvement of the economy. They can give high agricultural returns and their installation and maintenance are cost effective. They are also highly sustainable. As we have entered in the new century, further growth and urbanization will go hand-in-hand with environmental crises. We must rejuvenate our "dying wisdom" and tap the traditional systems of resource management to suit our present day needs. This basic simple wisdom is underlined by the continued success of traditional methods of managing earth's resources in India as well as in other parts of the world. Modern communities the world over should, therefore, be encouraged to look at time tested traditional methods of resource management.

Conclusion

Sustainability in agricultural production depends considerably upon proper development, conservation and use of water and land resources at micro-level. It is now widely recognized that much of the available 'exogenous' technologies (emerging from formal research system) for management of watershed resources is not suitable for the small holding situation in India. Farmers all over the world have a wealth of information of their own environment and have evolved suitable indigenous farming systems and

practices. The relevance of indigenous knowledge as a resource that provides a basis for sustainable and environmentally sound approaches to agriculture and natural resource management has been understood. Tendency to ignore local knowledge systems and practices has been cited as one of the reasons for failure of conventional development approaches. Observations indicate that farmers practices are ecologically sound and should be supplemented and improved by modern technology. Indigenous systems may not work in every situation, but the integration of local and external technologies can result in appropriate solutions. Future planning must involve a proper blending of indigenous and recommended technologies.

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