



WATER AND SUSTAINABLE DEVELOPMENT IN ARTHASHASTRA: ATP VS BENEFIT APPROACH

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ABSTRACT

Chanakya's astute understanding of water management reflects a strong emphasis on not only state's responsibility, but also community participation and collective action. He propagated that water conservation was not merely the king's responsibility but also a duty to be shared by all stakeholders. He postulated implementation of various penal schemes like differential tax on water, penalties for water-wastage; as well as incentive schemes for rainfall harvesting and construction of irrigation. The objective of this paper is three fold. First, it elucidates the ideas of Chanakya with regards to water conservation before it assesses how these ideas can be applied in contemporary India to address the country's growing water crisis. Secondly, this article explores how Chanakya's ideas have been revived or adapted in various Indian states and assesses their effectiveness and relevance in modern contexts. Lastly, it posits the challenges before the revival of this ancient Indian knowledge System.



KEYWORDS: Chanakya, Ability to Pay (ATP), Benefit Approach, Subsidy, Water, Development

1. INTRODUCTION

Water management has been an important aspect of human civilization since ages. In ancient India, Kautilya, also known as Chanakya, offered astute understandings into not only in governance and economics, but also in natural resource management in his seminal work, Arthashastra. Among these, Chanakya's ideas on water management are of particular relevance in contemporary India. India has been grappling with severe water shortages due to rapid urbanization, climate change, and over-extraction of groundwater.

Arthashastra is a treasure trove of wisdom and knowledge. Studies like those by Sharma (2009) and Rangarajan (1992) indicate that Chanakya stressed the need for sustainable water management as a vital resource for the state's prosperity. The construction of reservoirs, irrigation channels, and rainwater harvesting systems were among his water management tenets. These systems were created to guarantee the equitable distribution of water resources among the populace as well as the availability of water for agriculture. According to Rangarajan (1992), Chanakya gave considerable weight to the state's role in managing water resources, a point that is still reflected in contemporary Indian policies pertaining to water governance.

Scholars like Bansal (2017) have recently looked at how Chanakya's theories on water resource management relate to current environmental problems. According to Bansal, contemporary methods of water distribution and storage can be traced back to Chanakya's advocacy of rainwater harvesting and water conservation. The conventional Indian techniques of tank irrigation and step-wells, for example,

are similar to Chanakya's suggested approaches to dealing with water scarcity. Studies from the present, like those by Mishra (2018) and Jain (2020), have examined the difficulties in implementing traditional water management techniques in modern-day India. They contend that although Chanakya's ideas offer a theoretical framework, contemporary socio-economic and political realities—such as population expansion, industrialization, and dispersed water governance systems—impose practical implementation constraints on his ideas. Jain (2020) goes on to say that while modern Indian local governments are influenced by past water management techniques, they face governance inefficiencies and inadequacies in their infrastructure, which creates a gap between policy and practice. On the other hand, some researchers, such as Narain and Pandey (2021), highlight the possibility of fusing traditional knowledge with contemporary technology to improve India's water security. They make the point that with the help of modern engineering and legislative frameworks, antiquated techniques based on Chanakya's theories—such as the use of tanks, ponds, and check dams—can be revived. Overall, the literature indicates that while Chanakya's water management strategies are historically significant and theoretically relevant, their modern application faces various challenges. These include institutional inefficiencies, policy fragmentation, and environmental degradation. However, the potential for using his insights to address contemporary water issues remains a subject of growing interest, particularly in the context of sustainable development and climate adaptation. This paper builds upon these discussions, aiming to bridge ancient wisdom with modern water management practices in India. This paper seeks to explore the relevance of Chanakya's water management ideas in modern India, assess their applicability, and examine the prospects and challenges associated with implementing them in today's socio-political and environmental contexts.

2. WATER CONSERVATION AND PRE CHANAKYA ERA:

Chanakya flourished during the fourth century B.C. But the anecdotes of water conservation and rain water harvesting dates much before his time. The earliest record on the importance of water conservation can be traced back to the Vedas. Rig Veda attributes all good things in life to water¹. Water, according to this text should be protected in all forms and in all locations and should be treated as our mother. Water pollution is to be abhorred by all means. Rig Veda predicts the rainy seasons to last for only four months in a year, and hence, it becomes absolutely necessary to conserve rain water³. The Atharva Veda² furthers this claim by suggesting that water exerts the highest degree of sway on all objects boasting of life. Since agriculture was the dominant occupation during the Vedic epoch, the Vedas realized the importance of rain water harvesting to top-up water on rivers and lakes to increase agricultural output. Atharva Veda mentions nine sources of water: natural waterfalls, water flowing from snow-capped cliffs, rain water, water flowing in great speed, marshes, deserts, and water of source. Flowing water is considered to be the purest form of water. One important facet that can be observed in the Rig Veda is that, construction of dams was proscribed, despite their existence being observed in the Vedas (Sadhale, 2006). This implies, the Vedas preferred equitable distribution of water among the populace, as well as equal burden in case of flood. Also, irrigation from pits that would contain water all around the year was also in vogue during Vedic times. While the Rig Veda mainly gives prominence to rain and pits as potential source of agriculture and drinking water, the Atharva Veda adds ponds, pots and deserts as three other sources of water reservoir.

Krishi-Parashar (4th century, B.C.) is yet another text prior to Chanakya's Arthashastra. While the thrust of the text is dedicated to the discernment of rain, there are references to some methods of storing water in bunds on rice fields. Parashar advocates draining of flood water from rice fields to prevent rotting of crops. However, he advises storing of rain water during the late spells of monsoon in October and November.

Kashyapiyakrishisukti (800 B.C.-700 B.C.) on the other hand focuses mainly on alternate irrigation system. He suggests architectural schemes to build water reservoir and locates their sustainable source as well. He further conjectures plantation of certain types of trees around the reservoir to maintain the purity of water. He opined to construct deep, round, longish tanks with steps

to reach the water table and adequate safety measures to prevent flooding. This text boasts of a meticulous outline to construct wells as well, and even canals.

3. CHANAKYA'S IDEAS OF WATER CONSERVATION

The astute understanding of Economics that Chanakya had made him a genius in economic policy making. Since, the major driver of economy during his times was agriculture; he postulated ideas and concepts that have an all-encompassing nature of agricultural economics. Be it crop pattern, cultivation techniques or even water conservation! Chanakya doctined that entire water supply was affiliated to the state (ruler). Hence, the sole authority over management and distribution of water lay with the king. Since, rainfall is seasonal, and natural resources are inadequate to compliment water-needs of farms, Chanakya entrusted the state with responsibility of taking up irrigation schemes. The Arthashastra, speaks of two types of dams- Sahodaka setus and Aharyodaka setus. While the former catered to tanks and wells that derived its water source from natural springs, the latter were meant for those tanks and well where water needed to be stored artificially. Even though water and irrigation were state subjects, the subjects of the state were compelled to contribute in kind for the construction of the dams, as well in labour. Privately owned water tanks were also in vogue, whose ownership was lost if left unused for five continuous years.

Chanakya was a visionary regarding the policy of water pricing and tax. While he was vociferous for decentralized irrigation system, his humane approach towards the peasants, following the doctrines of ethics, gave various leeway to the subjects of the state in the event of precariousness. Since, community managed the construction, renovation and use of tanks, Chanakya valued contribution of peasants. He thus, advocated tax breaks for it. To be precise, he suggested tax breaks of five years for any new tank constructed. For dilapidated tax which were renovated, tax breaks for four years was considered. Those tanks which were cleared of overgrown vegetation enjoyed three year tax breaks. It is apparent that Chanakya knew the art of bestowing incentives to build public goods.

Since, public goods have the property of non-excludability, he devised a scheme of progressive tax system to overcome the Problem of Commons related to usage of water from public goods. His scheme of water tax entailed wealthier and larger consumers of waters pay a higher amount of tax. Those wealthy merchants who afford to dispel water farther away from its source were required to pay more than paupers. This not only combated inequality but also generated a sustainable source of revenue for the government. Lifting water manually for irrigation entailed lesser water tax than transporting water through bullock cart or by any other mechanical procedure like using Persian wheel. Income tax, in the form of land revenue was based on share system (at the rate of one-sixth of produce), rather than a fixed system. Though incentive to produce is lower in the former case than latter, but during hard times, this implied farmers paying less to the king. Otherwise, indebtedness of farmers would have risen if they had to pay higher amount of fixed share from their produce. Not only Chanakya knew the use of carrots, but of sticks as well. Squandering water entailed punitive actions. However levies were not imposed in terms of money, but through physical toil on farms or through share of crops. It is the state's responsibility to combat famine by distributing seeds and other provisions.

Archeologists through their discovery has evidenced that many of Chanakya's ideas were implemented during his epoch related to water harvesting. Sharma and Agarwal (2023) mentions some of the forms:

- Setu or dam for storing water
- Parivaha for channel
- Tataka for tank
- Nadyayatana for water from a river
- Nandiniband-hayatana for a structure dependent on a river such as a dam
- Nibadhayatana for canals from a river dam andkhata for a well

Chanakya's metric (called drone) to measure rainfall was more scientific and accurate (Sadhale, 2006). He even postulated the amount of rainfall required for a good crop, not only for the Mauryan

Empire, but also for other regions like Himalayan region, Western Ghat, Southern Marathawad, Malwa region and other dry and wet parts of present day India.

This is identical to the state of affairs in Singapore or Israel but stands in sharp contrast to that in India today where multiple government departments try to govern

4. REVIVING CHANAKYA'S PRUDENCE IN MODERN INDIA

The principles of water conservation advanced by Chanakya in the Arthashastra have been in various ways integrated into modern India's water management strategies. All stakeholders- the governments, NGOs and local communities have in many ways taken initiatives inspired by ancient water conservation practices. Some of these are outlined below.

4.1 Rainwater Harvesting and Reservoirs

Chanakya's recommendation for the construction of reservoirs to store rainwater is reflected in India's contemporary efforts to promote rainwater harvesting. Rainwater harvesting has been made compulsory in various provinces, particularly in urban areas where water table has been continuously receding. To recharge the aquifers and to provide a sustainable water supply during dry periods, Tamil Nadu, for example, has mandated rooftop rainwater harvesting in all buildings, way back in 2001. As a result Chennai's water crisis has been eased, if not erased. Further, buildings that don't harvest rainwater have been denied access to municipal water connection. In 2009, Bangalore made rainwater harvesting compulsory for new constructions for plots larger than 1200 sq feet. Similar mandates have been issued in other parts of Karnataka as well. Mumbai too follows this scheme since 2001, for all new constructions on plots larger than 1000sq feet. Pune Municipal Corporation not only made rainwater harvesting compulsory, but also provided incentives for the same. Thane and Nagpur are also required to obey similar mandates. Delhi and Chandigarh requires both new and old buildings to install rainwater harvesting scheme for plots on areas above 100sq meters, particularly for those areas where water table needs a recharge. Haryana Urban Development Authority (2003) mandates all building on plots above 500sq feet to install rainwater harvesting systems. In Gurgaon, severe penalties are imposed for such non-compliances. In Rajasthan, buildings with large areas or extensive roofs are required by law to install rainwater harvesting systems. In water-scarce Jaipur and other cities, harvesting of rainwater is also compulsory for new constructions. In Shimla, Municipal Corporation has integrated this system as well. Uttar Pradesh requires compulsory rainwater harvesting for all residential and commercial buildings, not only in urban areas of Ghaziabad and Noida, but in others as well. The Greater Hyderabad Municipal Cooperation has issued a similar mandate for all residential and commercial buildings having areas 300 sq metres.

At the local level, rural regions of Rajasthan and Gujarat have continuing with the centuries old traditional water harvesting systems such as johads (small earthen check dams) and kunds (circular underground water tanks) to collect rainwater during the monsoon season and gradually recharge groundwater supplies throughout the year. The "Waterman of India," Rajendra Singh has spearheaded efforts to revive these systems in drought-prone areas, resulting in significant improvements in groundwater levels. These initiatives derive their basis from Chanakya's philosophy of conserving rainwater.

4.2 Community-Based Water Management

Modern India has embraced Chanakya's concept of participation of locals in water management through a plethora of decentralized water governance methods. The Indian government's Jal Shakti Abhiyan (2019) places a strong emphasis on community involvement in water conservation initiatives. Through watershed management, retrofitting traditional water bodies, and rainwater collection, this project seeks to inspire citizens to practice water conservation. The government aims to encourage sustainable water use and lessen the burden on central water supplies by empowering local communities to take ownership of their water resources.

Participatory Irrigation Management (PIM) projects have also been implemented in numerous Indian states, including Maharashtra, Gujarat, and Andhra Pradesh. Irrigation system management is the responsibility of Water User Associations (WUAs) made up of nearby farmers under various programs. This group effort resonates with Chanakya's ideas of farmer collectives as outlined before.

4.3 Government Support and Infrastructure Development

Chanakya emphasized the role of the state in supporting water conservation efforts by providing financial assistance and technical expertise. In the Arthashastra, he suggests that the state should subsidize the construction of reservoirs and canals, while also rewarding communities that successfully manage their water resources. Modern India has seen similar government involvement in water management through schemes such as the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), which funds the construction of water bodies like ponds and check dams in rural areas. In addition, the Pradhan Mantri Krishi Sinchai Yojana (PMKSY) aims to improve irrigation efficiency by promoting micro-irrigation techniques and expanding access to irrigation for farmers. This initiative mirrors Chanakya's recommendation for building irrigation infrastructure to ensure a reliable water supply for agriculture, especially in areas prone to drought. The government's focus on "more crop per drop" through efficient water use reflects Chanakya's emphasis on sustainable water management for agricultural productivity.

5. CONCLUSION

Chanakya's ideas on water conservation, as articulated in the Arthashastra, offer a timeless and pragmatic approach to managing one of the most vital resources for human survival. His vision of sustainable water use, community participation, and state support is being implemented in present-day India through various government initiatives and community-driven projects. As India faces an escalating water crisis, the revival of ancient water management practices, combined with modern innovations, provides a viable path toward achieving water security. Chanakya's teachings continue to serve as a guiding light for addressing the complex challenges of water conservation in the 21st century.

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