

THE TRAGEDY OF THE YAMUNA AND A WAY FORWARD

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ABSTRACT

This paper presents the case of Yamuna river using the perspectives of the concepts of commons. As per the definition provided by the International association for the study of commons “The original meaning of the term 'commons' comes from the way communities managed land that was held 'in common' in medieval Europe” (Commons 2023). This concept of commons is now essentially understood in the field of natural resource management as a key towards addressing the challenges pertaining to climate change and development towards sustainable management of these natural resources. The theory behind the concept of commons explains the deterioration of common natural resources due to lack of individual responsibility and collective action. The theoretical background of this perspective is analyzed in context of Yamuna river to underscore the importance of protecting this common resource for the benefit of all. The findings of this paper emphasize the need for individual responsibility, collective action and community-government partnership to prevent the deterioration of Yamuna and promote its sustainable use.

Keywords: Industrialization, Urbanization, Utilitarian Ideology, Collective Action, Community Partnership, Sustainable Use

INTRODUCTION: A COMMONS

Human civilizations have always been dependent on natural resources for their survival and needs. These resources are commonly used by all but does not belong to any. A Commons can be explained as that category of resources which are not owned by any particular person or group and in which exclusion is difficult and joint use involves subtractibility. Forests, oceans, rivers, fisheries and national parks are some examples. Yamuna is the longest river of northern India which originates in Yamunotri glaciers in lower Himalayas and flows through a number of north Indian states including the capital, New Delhi. Being one of the major water resources, it caters to a wide range of domestic, irrigation and industrial needs of north Indian states, especially New Delhi. It is ecologically, historically, culturally and religiously important. But the sad reality remains, the unfortunate fact, that it is the most polluted river of India. The Yamuna is a commons because it is accessible by everyone but no one has exclusive right over it. It is non-excludable because it is not practical to exclude the people of local communities from using this water resource as they depend on it for irrigation, household and to an extent, for religious purposes. Moreover, nearby industries use its water for different purposes in their manufacturing processes. It is rivalrous because local communities and industries use this river jointly and use by one or few users leads to reduced quantity of water available for other users. They also pollute the river by discharging their waste into it which depletes its quality and ultimately leads to low quality of water available for further use. Hence, it is suffering from two major problems:

- 1.1. Over use
- 1.2. Over pollution

The Yamuna River is divided into segments and New Delhi segment is the most polluted. Being a metropolitan, New Delhi attracts migration of people from different rural areas of the country which has led to establishment of unauthorized settlements, especially around Yamuna. These settlements being unofficial are not the part of governmental planning and data, hence they do not get official water supply or sewage service from government. The consequence is a huge population depends on this river for its diverse needs and eventually also end up polluting the same. Due to its commercial and prime situation, a number of industries have been established around it, which not only utilize its water but also discharge their untreated waste into it because they find it costless and convenient.

METHODOLOGY

The present study is primarily based on a theoretical analysis of the issue of Yamuna river being a 'commons' and the application of Garrett Hardin's tragedy of the commons and Elinor Ostrom's critique to it. The method of research used in this study is qualitative, based on literature review. The data for this study was collected from different sources such as academic books, articles, journals, reports, government documents and websites. Theoretical analysis was conducted by critically examining the literature of Hardin, Ostrom and others who have written about the concept of commons and its management. The study also included an analysis of government policies and initiatives towards Yamuna conservation and their effectiveness. The main purpose of the study is to identify the major challenges faced by Yamuna in terms of over use and over pollution, and to suggest possible solutions based on the theoretical frameworks of Hardin and Ostrom. The study also aims to provide insights into the importance of local self-governance in resource management and challenges to its implementation.

Limitations: The study is limited by the availability and quality of data and the scope of literature reviewed. The data collected may not provide a complete picture of the situation as it is difficult to obtain accurate and reliable information on the issue. The analysis is confined to the theoretical frameworks of Hardin and Ostrom and may not consider other perspectives or alternative solutions. The study is also focused on the Yamuna river and may not be generalizable to other resources or contexts.

Ethical Considerations: The study does not involve any experiments or human subjects. The data collected from different sources is all in the public domain and does not involve any identifiable information. The study acknowledges the contributions made by different authors and institutions in the literature and gives proper citation to them.

THEORETICAL BACKGROUND

Hardin's Tragedy Prediction

In 1968, Garrett Hardin expressed his concern about the growing population and its proportional pressure on the finite natural resources. According to him "population over-growth is the reason of the depletion of the resource or tragedy of the commons"(Hardin, 1968,

p.1243) . It mentions that some problems have no technical solutions, over population leading to depletion of resources being one of them. He explains that “when a resource is shared and used by many without any exclusive ownership or claim, then users follow their self-interest and give priority to their own individual benefit over collective good to maximize their gain which leads to over exploitation and ultimately depletion of the resource”(Hardin, 1968, p.1244). They give priority to their own interest over collective interest because “benefits are concentrated to the user but the cost gets spread over all of them”(Hardin, 1968, p.1243). This pursuit of self-interest by every user leads to remorseless tragic end, which he calls “the tragedy of the commons”, which means ruin or destruction of the commons(Hardin, 1968). He further explains it with the example of over grazing of open pastures by cattle’s of herdsmen (Hardin, 1968, p.1244).

Not only over use, he also identified pollution as a problem of commons in following words: “in a reverse way the tragedy of commons reappears in problems of pollution. Here, it is not a question of taking something out of the commons, but of putting something in”(Hardin, 1968, p.1245). Hence, the industries will focus on profit-making without thinking about the damage being done to the river due to their discharge of untreated waste. When such discharge reaches the limit and go beyond the assimilation capacity of the river, it decreases the quality of water and ultimately ruin it.

He rejected Bentham’s utilitarian ideology of greatest good for greatest number, concept of laissez faire, Adam Smith’s invisible Hand (Hardin, 1968, p.1243-44). He said appeal to conscience will be ineffective and as long as people are free to make choices as they like, the problem will continue. He continued to conclude that the problem can be prevented by “coercive laws or taxing devices that make it cheaper for the polluter to treat his pollutants than to discharge them untreated”(Hardin, 1968, p.1245). According to him there should be some restrain mechanism originating from and enforced by external authority which should be “mutual coercion mutually agreed upon”(Hardin, 1968, p.1247).

According to Garrett Hardin, due to ever growing population, pressure on the Yamuna, which is a limited resource, will keep on increasing leading to over exploitation and pollution and its ultimate depletion. Going by his conclusion, communities and industries will continue to put their needs over and above larger collective good, thereby consuming more and more water and polluting it at the same time. Each user will exploit it as much as he/she can, without

thinking about its sustainability and future use. With such trends, the Yamuna will ultimately get destroyed over years.

Ostrom's Critique

Elinor Ostrom in her book pointed out that Hardin was not the first one to talk about the tragedy of the commons, Aristotle, Hobbes, William Forster Lloyd and H. Scott Gordon had already written about it (Ostrom, 2015, p.2-3). In her work she questioned the prevalent theories of commons problems and solutions and observed that a “theory of collective action is missing” in which group of users voluntarily organize and “manage their actions themselves”(Ostrom, 2015, p.24-25). She also explained Hardin’s tragedy, prisoners dilemma and logic of collective action as three influential models and observed “what makes these models so dangerous, when they are used metaphorically as the foundation of policy, is that the constraints that are assumed to be fixed for the purpose of analysis are taken on “faith as being fixed in empirical settings, unless external authorities change them”(Ostrom, 2015, p.6-7).

Dr. Ostrom advocated decentralization of resource governance and criticized Hardin’s narrow assumptions that:

- Users involved cannot change their situation as they are helpless and they need some external force or authority to get out of it. (Ostrom, 2015, p.8-9)
- Change should come from outside and be made to stick with whatever force needed.
- There are only 2 alternatives available to solve the problem- private property rights regime or State applying coercive laws.

Privatization involves affixing private property rights which is not possible in in all cases like “fisheries and water resources” (Ostrom, 2015, p.13). She disagreed with Hardin’s two alternative solution and said that “neither the state nor the market is uniformly successful in enabling individual to sustain long term productive use of natural resource system”(Ostrom, 2015, p.1).

In contrast to him, she suggested the third alternative of local self-governance where rules, regulations and institutions can be formed within communities to ensure that the resource is sustainably used and managed in the long run(Ostrom, 2015, p.14). She observed that “communities of individuals have relied on institutions resembling neither the state not the

market to govern some resource systems with reasonable degrees of success over long period of time”(Ostrom, 2015, p.1).

In view of the fact that arguments and problems concerning the “tragedy of commons” can be solved by voluntary participation instead of “coercive state”(Ostrom, 2015, p.1). She approached games suggested by Hardin herder to modify the image of centralized control. With the help of games 2, 3 and 4, Dr. Ostrom explained that the state control is not always successful in avoiding the tragedy and came to a conclusion that “equilibrium of regulated game has lower value than the unregulated game”(Ostrom, 2015, p.11). She conveyed that in case of state controlled commons, it is essential that the state has accurate information about the commons, proper monitoring and sanction mechanisms for violations in place which is difficult and it involves cost, as officials get paid to go and monitor it. According to her there is a free rider problem which means that when a user cannot be excluded from the benefits that others provide, each user gets motivated not to contribute to the joint effort and enjoy the benefits on the efforts of others. “If this continues or all users opt to free ride, there will be no collective benefit”(Ostrom, 2015). Her study focused on how individuals avoid free rider problem and achieve high levels of commitment, establish institutions and monitor that the set of rules are followed in commons environment. (Ostrom, 2015,p.27)

She presented game 5 as one of the possible solutions where herders themselves collectively manage the commons (Ostrom, 2015, p.15). As a theoretical alternative to centralization and privatization, she explained game 5 with the example of successful management of “inshore fishery at Alanya, Turkey by local cooperatives”(Ostrom, 2015, p.18-19). Her main arguments can be summarized as follows:

- Users involved are capable of changing the situation provided they are strengthened and empowered to do so.
- Rational response to the problem of the commons need not be made in tight-closed-compartments choices, privatization or state control. There are other ways too, like local self-governance.
- Local communities are in better place to regulate use and manage the resource.
- If Hardin’s pasture-herder example is taken as foundations of policy analysis, it would be dangerous.

- To solve the commons problem, Hardin in his work recommended as solution the mutual coercion, mutually agreed upon but the meaning of such agreement is unclear as he was emphasizing on central regulators.

ANALYSIS: THE TRAGEDY OF THE YAMUNA

This paper applies the social ecological systems framework based on the game theory literature, and identifies differences and opportunities to remove institutional impediments in communication and cooperation arrangements. Building upon the argument based on experimental games, this paper discusses two different perspectives on the tragedy of commons and its applicability to the Yamuna river. For Hardin the cause of the tragedy of commons is over population. This is not wholly true in case of the Yamuna as, including over population, there have been other factors too like industrialization, commercialization, poor infrastructure policies and developmental projects by government. It is interesting to note that local water resources including the Yamuna was managed by local communities until Britishers passed Land Acquisition Act in 1874 and later after independence, government passed the Water Act in 1975. The Water Act needs to be amended to resolve the centre-state conflict as the Yamuna being an inter-state river falls under legislative power of central government but its water supply and irrigation use falls under legislative power of provincial governments. Infrastructure-building and developmental projects by government have taken their heavy toll on it. Like the Yamuna Action Plan (YAP), the government have taken several initiatives to clean, conserve and protect it, but they failed because the projects lack of credible ground level information and took into account only official supply of its water, excluding its use by unauthorized settlements. Government also failed to provide proper sewage or waste treatment system.

The critique of Dr. Ostrom about state control holds true in case of the Yamuna. Due to lack of credible and reliable information about it and local population, the governmental initiatives have proved to be insufficient in addressing the core issue. As a result, huge amount of public money has been wasted on Yamuna projects so far. Moreover, the law has clearly failed as in spite of polluter pay principle, industries choose to pay the fine instead of treating their waste.

CONCLUSION: A WAY FORWARD

As understood in this analysis, simple decentralization and community governance is not the solution for the Yamuna. Nor is government working in isolation liable for all shortfalls. It is critical to understand that there are various stakeholders involved like communities, industries and the government. The cooperation among each of them plays a crucial role in solving or mitigating the problem since they each play a critical role in the overall outcome. Consequently, community-government partnerships are recommended as a means of mitigating this problem. This is mainly due to the fact that in developmental projects, the participation of local communities is crucial as they can provide reliable information and support outcomes. However, communities at local levels are not fully equipped with enough resources, infrastructure and knowledge to form effective regulations and make effective decisions. Also, the lack of coordination and leadership issues exist due to prevalent class divisions prominent in Indian society, which is another hidden obstacle that needs to be overcome. In addition, it is found that the public works department, which works at the grassroots level, can play a major role in enhancing the contribution of local communities.

The role of government cannot be undermined in the whole process because of its constitutional powers and responsibility for implementing judicial decisions. To make this partnership successful, the government should provide tangible incentives not only to industries who undertake supportive initiatives like waste treatment. In addition, the government should incentivize the local communities by providing the infrastructure needed and by educating people to motivate their active participation in mitigating this problem. Through this, these local communities will be able to make more informed decisions regarding sustainable use of the Yamuna and play a more active role in supporting judicial decisions made by the government. It is also recommended to involve local communities and foster participatory learning to ensure successful interrelationships between government and local communities. This is done by increasing community awareness and offering long-term incentives to encourage their active participation to achieve sustainable means of use. As a result, this will ensure that local communities have ownership of the project and are more likely to comply with regulations. This will also create a sense of responsibility for the project and create a sense of shared purpose between government and locals.

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