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SOCIOPSYCHOLOGICAL DIMENSIONS OF DEVOTION AND ENVIRONMENTAL BEHAVIOR: THE GANGA PARADOX IN VARANASI

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Absract: The river Ganges that flows through Varanasi has a perplexing psychosocial aspect; it is worshipped as a mother and purifying body yet its ecology is negatively impacted over time. The aim of the research is to delve into the intersections of themes like faith, ecology, moral thinking, governance, and institutions with respect to the case of Namami Gange (2014–2024). The research adopts a pluralistic approach which involves the collection of primary data through 30 semi-structured interviews, two focus group discussions and the observation of the field made during the period from July to December 2023 and it also examines the data of the Central Pollution Control Board (CPCB) Annual Reports together with the National Mission for Clean Ganga (NMCG) Water Quality Atlas ten-year trend data which includes the provisional 2024 data based on the summaries collected in March 2024. The study, utilizing the concepts of cognitive dissonance (Festinger, 1957) and moral disengagement (Bandura, 1999), has put forward the idea of "devotional dissonance" which refers to the situation where people are aware of the environment but at the same time, they carry on engaging in the rituals that cause pollution. The quantitative measures reveal that the Namami Gange project has led to a very slight ecological improvement, but the change in people's behaviour is limited by the strong social and psychological factors. The research results point out that people's misconception about pollution is not the main reason for its continuation, rather it is the cultural cognitive resilience that is supported by the government and the fragmentation of the governance that is responsible for the situation. Connecting devotion and ecological responsibility requires the use of environmentally friendly communication and the co-creation of policies that are culturally appropriate and recognize the alignment of moral cognition with sustainable action.

Keywords: Ganga River; Varanasi; Water Governance; Ritual Ecology; Cognitive Dissonance; Namami Gange; Behavioral Adaptation; Cultural Resilience

1. INTRODUCTION

The Ganga River holds a unique status in the cultural and spiritual awareness of South Asia. Originating from the Gangotri glacier and traversing the Gangetic plains to the Bay of Bengal, it supports almost half a billion individuals, irrigates some of the planet's most fertile lands, and is central to Hindu traditions, mythology, and pilgrimage. Varanasi/Kashi, the "city of light," serves as the sacred stage of the river, where each dawn cosmology and ecology converge as worshippers present water, flowers, and flames in acts of renewal and continuity.

Nonetheless, this river is now among the most polluted rivers in the world. Industrial waste, sewage discharges, and urban runoff have transformed certain regions of the Ganga into what researchers refer to as a "sacred-secular paradox" (Haberman, 2006; Alley, 2002). In spite of years of governmental initiatives: the Ganga Action Plan I (1986), GAP II (1993), and Namami Gange (from 2014), indicators of biochemical oxygen demand (BOD), dissolved oxygen (DO), and fecal coliform (FC) repeatedly varying which are way higher than national standards (CPCB, 2024). The coexistence of reverence and indifference has raised not only an environmental but also a sociological question: how could a society that is so supportive of the river reconcile with its gradual death?

Different viewpoints have been applied by earlier studies for opening up this topic: symbolic interactionism explaining that rituals create an illusion of purity (Haberman, 2006); political ecology placing contamination in the context of poor governance (Baviskar, 2011; Robbins, 2012); and finally, environmental sociology claiming that modernization is linked to new ecological threats (Beck, 1992). Nevertheless, very few researchers have approached this issue in a holistic way by combining the cultural and governance factors with empirical data obtained from original fieldwork as well as long-term pollution statistics. The present paper declares its intention

to execute the socio-ecological analysis of the Ganga at Varanasi, merging qualitative research (interviews, focused group discussions (FGDs), field observations conducted from July 2023 to December 2023) with the examination of water-quality data from the CPCB/NMCG (2010-2024). The secondary component scrutinizes the water-quality datasets provided by CPCB and NMCG during the period of 2010 to 2024, with 2024 values derived from the preliminary monitoring summaries made public by the agencies in March 2024, therefore the quantitative timeline is aligned with the qualitative field period of July-December 2023.

The hypothesis of the research is that the Ganga's case embodies a kind of devotional dissonance, a symbolic discrepancy between belief in sacred cleanliness and responsibility for physical pollution. This disharmony, which is supported by government tales of purification and development, keeps alive a governance strategy that emphasizes technological solutions at the expense of cultural involvement and community participation which are equally important.

Along with policy and ecology, the study also makes use of environmental psychology to analyze the influence of sacred belief systems on perception, denial, and behavioral inertia. The framework somewhat relies on cognitive dissonance theory (Festinger, 1957) and symbolic interactionism to justify the lack of transition from awareness to pro-environmental action.

Consequently, the document aims to achieve four goals:

1. To record the cultural and ritual continuities that influence views on purity and pollution within communities reliant on rivers in Varanasi.
2. To examine empirical trends in water quality in order to evaluate the ecological direction of the Ganga over the previous ten years.
3. To understand the connection between faith, ecology, and governance using combined theoretical frameworks of sacred ecology, political ecology, symbolic interactionism, and risk society.
4. This research seeks to comprehend the paradox of pollution recognition in Ganga yet still the maintaining of purity rituals, and how the cultural psychology along with the governance systems support this paradox. The results seek to add to discussions on local environmental management, demonstrating how cultural interpretations can both impede and facilitate ecological restoration when integrated within participatory models.

2. LITERATURE REVIEW

2.1 Sacred Rivers and the Anthropocene

Research on the holy rivers shows a typical scenario where the religious significance does not lead to the eco-friendly measures. The rivers identified as the holy ones such as Jordan, Mekong, or Nile are facing the same environmental problems of pollution, over use of water, and besides which they are being mixed up with spiritual tourism (Dolnicar & Zohar, 2018; El-Said, 2020; Salmon et al., 2021). These rivers in the Anthropocene's story signify the mankind's socio-nature dilemma: glorification and exploitation co-existing.

The Ganges case is pointed out by Haberman (2006) and Eck (1982), where it is a god in the making whose holy essence supersedes the filth of the human body; thus, the baptism is a channeling of the divine into the persona and not the river. In India, this dualism is sustained by the ideas of tirtha, which are the holy passages between physical and spiritual worlds that, by allowing the holy to mingle with the unholy, facilitate communal bathing (Alley, 2002). Currently, in academia, this tension is described as “the sacred-secular paradox” or that values are still held while the environment is getting poorer (Singh & Jain, 2022).

2.2 Socio-Ecological Urbanism in South Asia

Urbanization of areas along the Ganga has significantly influenced its riverside life. Studies done on the Yamuna River in Delhi (Sharma, 2021; Srivastava, 2022) and the river Sabarmati in Ahmedabad (Trivedi, 2023) have shown that riverfront development usually leads to the creation of “aesthetic ecologies,” where neat appearances mask the presence of the poor and artificial rivers.

The same phenomena can be observed in the situation of Varanasi on the Ganga: the big ghats and promenades intended for pilgrimage tourism are hiding a lack of sewage infrastructure. According to Sharma (2021), Varanasi is characterized by a high-level mixture of religious rituals and population density in a situation where the infrastructure is very limited, leading to continual problems with sewage. These patterns reflect Ostrom's (2009) assessment of polycentric systems governance: poor local management brings about sustainability problems for large-scale programs.

2.3 Faith, Behavior and Environmental Ethics

The relationship between ecology and religion has been a topic of discussion once again (White, 1967; Taylor, 2010; Chapple, 2022). Hindu environmentalism researchers argue that rita (cosmic order) and ahimsa (non-violence) imply ecological ethics although these are influenced by caste, ritual hierarchy and economic condition (Dwivedi, 2019). Earlier research indicates that the idea of Ganga Maa being able to purify herself is mostly one alongside the very recognition of pollution (Alley, 2020). As Banerjee (2021) states, this ambiguousness is crucial in comprehending the reason why the awareness-raising activities hardly result in change in practices and behaviours. Thus, while the majority of locals will admit to pollution, there will be very few who will give up their

usual practices like offering flowers with plastic or throwing ashes of the dead. Religion gives comfort, but it does not ensure that people follow the rules.

2.4 Governance, Decentralization, and Local Self-Government

The constitutional framework of India as laid out by the 73rd and 74th Amendments points out local self-governance as a stronghold in environmental administration, yet the river policy remains centralized. The highly ambitious Namami Gange is still open to criticism for its top-down approach and little, if any, citizen involvement (NMCG, 2023; Chakrabarti, 2024). Drawing from international examples, such as the community-based Mekong watershed restoration (Phan, 2022) and Nile Basin cooperative management (El-Said, 2020), it can be seen that decentralized institutions are able to gain better compliance and cultural acceptance. Good local governance relies on the fusion of formal political systems with informal cultural norms (Bačlija Brajnik et al., 2021). But in India, ritual economies are often beyond the reach of the government and hence are considered unregulated which leads to the rise of parallel power structures that further complicate the enforcement of environmental law.

2.5 Climate Change and Hydrological Stress

The Ganga is put under even more stress due to climate variability. The Indian Meteorological Department (IMD) in its yearly report for 2023 and the Ministry of Environment, Forest and Climate Change (MoEFCC) claim that the onset of the monsoon has been very erratic and that Himalayan glaciers have lost 15% of their total mass in the past 30 years. Records of flow indicate that there is a reduction in the discharge during the lean season, which is a factor that contributes to the higher concentration of pollutants in the CPCB (2024) river. Agarwal (2023) suggests that the hydrological uncertainty is a factor that erodes the ritual and livelihood rhythms. Hence, the fusion of climate science with sociological inquiry is necessary to unravel the entire complexity of the river's metamorphosis.

2.6 Interdisciplinary Perspectives and Research Gap

There has been a lot of research regarding purity and pollution of the Ganga, but only a few studies link cultural ethnography with quantitative policy evaluation. The majority of studies focus on either symbolic meaning (Haberman, 2006) or technical management (MoWR, 2020). The present study connects both of these approaches by integrating sacred ecology, political ecology, and local governance studies to assess Namami Gange's impact using both belief systems and biophysical data. Thus, it contributes to an interdisciplinary understanding of the convergence between devotion and development in local governance structures.

3. THEORETICAL FRAMEWORK

Through the combination of five different perspectives which are complementary to one another, the research provides a thorough and diverse view of the socio-ecological Ganga dynamics.

3.1 Sacred Ecology

Berkes (1999) describes sacred ecology as "the relationships between ecological practices and cultural value." It recognizes the indigenous knowledge that perceives nature as a moral and living being. In the case of the Ganga, the aforementioned practices have a more profound meaning than devout human-river interconnection. One of the main issues with the sacredness concept is that it cannot be relied on to provide responsibility. The adherent (believer) is guaranteed that the goddess is purifying their sins, hence, humanity is exempted from the burden, and all are passing to the divine. Though such a belief might help in the promotion of spiritual belief systems, it definitely does not come as a surprise that there is still the problem of material decline.

3.2 Political Ecology

Political ecology (Robbins, 2012; Baviskar, 2011) argues that the environment degradation must always be viewed from the angle of power relations. Pollution is not merely a technological problem but an outcome of the governance systems that are biased towards industrial and urban elites. The Namami Gange program is such that the decision-making power is wholly in the hands of federal agencies, thus local authorities and professional groups are completely sidelined. The program, by giving precedence to engineering contracts over participatory stewardship, is a classic case of "managerial environmentalism" as described by Bryant and Bailey (2014). Hence, political ecology reveals the multitude of ways through which the centralization, economic interests, and religious symbolism are interlinked to the point where they become a major factor in the continuance of ecological risk..

3.3 Symbolic Interactionism

ymbolic interactionism (Blumer, 1969) explains the process through which individuals attribute meanings to society, thus providing a microscopic sociological viewpoint to comprehend the importance attached to everyday activities performed at the ghats. The devotion of the worshippers, who are there for the sole purpose of getting religiously purified, is not in the form of taking a holy dip or pouring milk over the river but merely believing that the river is sacred and so the water is pure. It helps to make clear the point why the believers consider the polluted water as holy: the very act of believing is done through social interaction. The ritual acts are a means for the group to assert their identity even when their sensory experiences go against their beliefs. A consensus on the issue of holiness persists even if contamination is clearly evident. This microscopic perspective in sociology helps to explain the devotees' dissonance: the devotees see no conflict as significance is greater than the matter.

3.4 Risk Society

Beck's (1992) Risk Society theory, however, portrays modernity as the maker of hidden, man-made risks. The "created uncertainties" consist of not only chemical pollutants but also microbial contamination. On the one hand, traditional cosmology provides assurance of moral purity, while on the other hand, science uncovers hidden threats; the two epistemologies are in a state of conflict. The cultural lag resulting from the lack of integration of scientific risk perception into the ritual consciousness is continuously responsible for the maintenance of dangerous practices and the weakening of the enforcement of regulatory measures.

3.5 Cultural Political Economy

Jessop and Sum (2013) argue that governance is the outcome of discourse. The expression "Namami Gange", meaning "I pay homage to the Ganga", is indicative of the combination of spirituality and the concern for the nation's development. Do you not see this moral ground of governance as the reason for investment through the sacred emotional magnet? Symbolic mobilization without cultural negotiation can result in adherence only at the rhetorical level and no change in behavior.

3.6 Integrative Socio-Ecological Model

The research brings together all the different opinions and employs an Integrative Socio-Ecological Model which consists of four dimensions shown in Figure 1:

1. Belief Systems (Sacred Ecology + Symbolic Interactionism)
2. Institutional Structures (Political Ecology + Cultural Political Economy)
3. Perception of Risk (Science versus Faith + Risk Community)
4. Environmental Results (Water condition + Behavioral habits)
5. This model directs the qualitative data coding and the analysis of CPCB/NMCG datasets analysis.

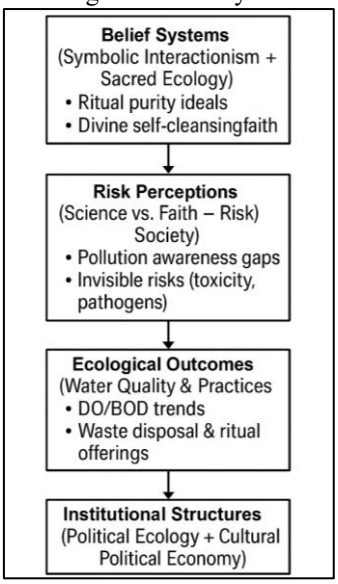

Figure 1: Integrative Socio-Ecological Framework of the Ganga Paradox - Connecting Belief Systems, Risk Assessments, Ecological Results, and Governance Structures in Varanasi

4. METHODOLOGY

4.1 Research Design

The research adopts a sequential mixed-methods socio-ecological design that encompasses qualitative primary fieldwork along with quantitative secondary data analysis. The mixed-methods approach allows for the concurrent determination of the cultural importance, human activity, and environmental consequences in the Varanasi stretch of the Ganga River. The research design unifies three types of evidence:

1. **Primary qualitative data**: semi-structured interviews, focus group discussions (FGDs), and field observation;
2. **Secondary environmental data**: water quality information from CPCB and NMCG (2010–2024); and
3. **Documentary review**: policy documents, budget reports, and assessment of Namami Gange.

This combination follows Creswell's (2014) convergent design and, thus, the validation of both experiences and numerical data is achieved.

4.2 Study Area and Period

The study was conducted at three important ghats of Varanasi- Assi Ghat, Dashashwamedh Ghat, and Manikarnika Ghat, chosen due to their different ritual, occupational, and ecological contexts.

Fieldwork was carried out over a period of six months (July-December 2023), focusing on both the monsoon season (high ritual engagement and higher flows) and the following post-monsoon period (lower flows and high

pollution). This helped in making comparison of the seasonal change in the usage, engagement, and perceptions of pollution.

4.3 Primary Data Collection

4.3.1 Semi-Structured Interviews

A total of 30 semi-structured interviews were conducted with river-dependent stakeholders, who were selected through purposive sampling as shown in Table 1. This variety of respondents made certain that both ritual and occupational river users were represented.

Table 1. Participant Distribution by Occupation

Category	Number	Gender	Key Insights Captured
Priests (purohits)	5	M	Ritual purity, influence on devotees
Cremation workers (Dom caste)	5	M	Disposal practices, marginalization
Washerfolk (Dhobis)	4	M/F	Water use, livelihood insecurity
Boatmen (Mallah/Nishad)	6	M	Water depth, income fluctuations
Municipal cleaning staff	5	M/F	Waste management, ghat hygiene
Total	**30**	–	–

Each interview lasted from 25 to 40 minutes and followed an open-ended framework investigating:

- Personal meanings of the Ganga (sacred/profane dimensions);
- Awareness of pollution causes and responsibility;
- Perceived effectiveness of Namami Gange;
- Willingness to modify ritual or livelihood practices.

Representative questions comprised of:

- "Do you consider the Ganga pure even when visibly polluted?"
- "How has your occupation been affected by changes in the river's condition?"
- ""What actions should individuals and authorities take to bring back the river's cleanliness?"
- "Are you aware of the Namami Gange Program? If yes, what positive or negative effects have you experienced in your region or occupation?"
- "What is your opinion about the participation of local people in taking care of the ghats' cleanliness?"
- "Have you seen less pollution or more environmental awareness leading to some changes in people's religious practices and offerings over time?"

The replies were taken with the respondents' permission, made anonymous, and classified by topic through manual content analysis.

4.3.2 Focus Group Discussions (FGDs)

Two Focused Group Discussions (FGDs) were conducted to supplement interviews:

- FGD 1: With Mallah and Dhobi community members (n=10).
- FGD 2: With sanitation workers and local priests (n=8).

Discussions included areas such as the participants' perceptions of responsibility, the effectiveness of local cleaning campaigns, the knowledge of Namami Gange, community weariness, and the necessity of rituals. FGDs sparked a lively dialogue showing both faith-based optimism and skepticism towards the bureaucracy's proficiency.

4.3.3 Field Observations and Contextual Analysis

To perform the analysis of the rituals and the major places, the activities of the participants were observed for seven consecutive days at each ghat in the morning and evening, resulting in 42 observation sessions. The field observation aimed at the following aspects:

- Ritual practices and offerings;
- Waste management and municipal cleaning sequences;
- Communication between devotees, priests, and cleaners;
- Symbolic use of "purity" language in everyday talk.

A descriptive note from Dashashwamedh Ghat (October 2023) records:

"A group of people was doing aarti while flowers were drifting around them. After a few minutes, the sanitation staff began sweeping the stairs and, as usual, were pushing the leftover flowers into the same water, this was done daily just with the ritual's sounds and silence of the bureaucracy."

These field-study observations increased the understanding of the interviewees' narratives and pointed out the contradictions in their behaviors."

4.4 Secondary Data Collection and Analysis

Longitudinal water quality data were gathered from the reports of the Central Pollution Control Board (CPCB) and the National Mission for Clean Ganga (NMCG) from 2010 to 2024. The most important parameters were:

Dissolved Oxygen (DO); Biochemical Oxygen Demand (BOD); and Fecal Coliform (FC), and they were all measured for the Varanasi part of the river (from Assi to Rajghat).
Water quality data (2010–2024) has been derived from the central pollution control board (CPCB) annual reports and NMCG water quality atlas, which includes provisional summaries of water samples collected in 2024 March access (2024 March) and reports data ranging from 2010 to 2024.

Table 2. Water Quality Trends of Ganga at Varanasi (2010–2024)

YEAR	DO (mg/L)	BOD (mg/L)	Faecal Coliform (MPN/100ml)	REMARKS
2010	3.2	7.1	$> 1 \times 10^6$	Severe pollution
2014	4.0	6.3	$> 1 \times 10^5$	Pre-Namami baseline
2018	5.4	3.8	2.3×10^4	Improvement phase
2020	6.2	2.9	9.0×10^3	Lockdown effect
2022	5.9	3.2	1.2×10^4	Stabilization
2024	5.8	3.4	1.6×10^4	Slight relapse

(Source: CPCB Annual Reports, 2010–2024; NMCG Water Quality Atlas, 2023)

Note: The analysis shows the 2024 values as a preliminary figure derived from the monitoring summaries provided by the CPCB together with the NMCG Water Quality Atlas (consulted in March 2024), which is displayed in Table 2.

Interpretation:

Analysis combined quantitative trend interpretation with qualitative themes to build an integrated policy performance assessment. Statistical summaries supported pattern recognition rather than inferential testing because the aim was to identify directional change and governance implications. Although DO levels improved after 2018, both BOD and FC remain above bathing standards (BOD ≤ 3 mg/L; FC ≤ 500 MPN/100ml). As depicted in Table 2, the "COVID-19 lockdown (March-May 2020)" was a period during which water quality temporarily improved, indicating human impact on water quality.

4.5 Data Analysis Procedure

- **Qualitative Analysis:**

Transcripts were coded thematically under four master categories:

1. Belief and ritual meanings;
2. Awareness and responsibility;
3. Institutional perception;
4. Adaptive behavior.
5. Codes were cross-referenced with observational data to ensure validity.

- **Quantitative Analysis:**

Trend data were analyzed descriptively to identify correlation between pollution indicators and policy interventions (GAP II, Namami Gange, lockdown period).

- **Triangulation:**

Convergence between faith-based perceptions and empirical data was examined to reveal the “belief–ecology gap.”

4.6 Ethical Considerations

Triangulation occurred through the cross-checking of interviewee replies with observational and secondary data. Consent was taken from all participants. To protect the identity, details were made unrecognizable. Observers did not break in during cremation or private ceremonies. A local priest was consulted to ensure that the fieldwork did not cause any misunderstanding and was culturally appropriate.

4.7 Limitations

The research was confined to the urban stretch of Varanasi and the period of six months; seasonal changes beyond this period were not visible. The quantitative analysis was restricted to the official monitoring stations; real-time sensor data were not available. However, the mixed-methods approach still gives a comprehensive view of the ritual and policy interactions under the local governance.

5. RESULTS AND ANALYSIS

The combination of primary and secondary data indicates that there are regions where ecological improvement can be measured and areas where cultural contradictions are still present.

5.1 Perceptions of Purity and Pollution

The analysis of interviews, FGD showed that the people still believed in the inherent sanctity of the Ganga even though they recognized its pollution. The "pure regardless" category was the most common one, which is an example of the devotion dissonance, where the symbolic continuity prevails over the sensory and scientific proofs. Table 3 shows the respondents belief and behavior gap very clearly. It is ironic that while 75% of the participants were fully aware of the pollution problem, 83% of them still continued with their traditional offerings and did not even think about switching to eco-friendly practices. People with moderate awareness also did not make much adjustment, while low awareness groups were entirely dependent on the rituals. This trend shows that merely having the knowledge does not lead to a change in behavior, people are just not aware of it (Festinger, 1957) or they have simply become apathetic (Bandura, 1999). The awareness of the problem cannot be said to be the main reason for the rituals not ceasing; rather, it is the issue of dissonance in devotion that keeps the environment in neglect more than ignorance does.

Note. Combined responses from 30 semi-structured interviews and 18 FGD participants (July–December 2023, Varanasi). Percentages represent intra-category proportions.

Table 3: Belief–Behavior Gap: Awareness vs. Ritual Continuity (N = 48)

Awareness of Pollution	Ritual Continuity (Still Perform Offerings/Immersions)	Behavioral Adaptation (Reduced Offerings or Switched to Eco-Materials)	Interpretation
High (n = 36, 75 %)	30 (83 %)	6 (17 %)	High awareness coexists with strong ritual persistence, showing cognitive dissonance, faith overrides fact.
Moderate (n = 9, 19 %)	7 (78 %)	2 (22 %)	Some cognitive flexibility; symbolic rather than sustained behavioral change.
Low (n = 3, 6 %)	3 (100 %)	0 (0 %)	Complete ritual dependence; pollution seen as irrelevant to sanctity.

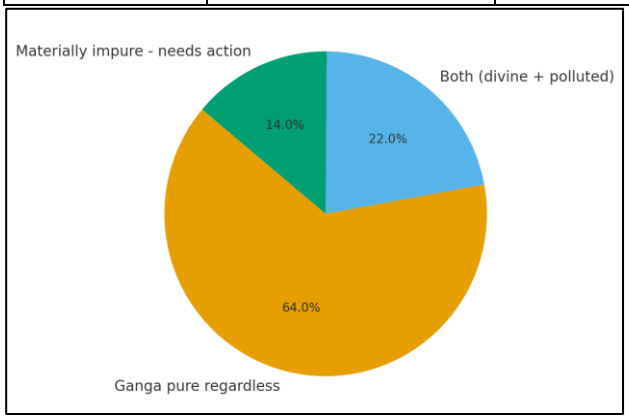

Figure 2. Pie Chart: Perception of Ganga Purity among Respondents

The percentages shown in Figure 2 are derived from thirty semi-structured interviews and two focused-group discussions (total participants = 48), which were drawn from purposive and random-cluster sampling methods across Assi, Dashashwamedh, and Manikarnika Ghats. The categories show frequencies of narrative codes and not an estimation of a statistical population.

5.2 Community Awareness and Responsibility

Based on N = 30 semi-structured interviews and 18 participants in two Focused Group Discussions (FGDs), analysis suggests moderate understanding of pollution sources, with a dispersed sense of accountability as depicted in Table 4.

Table 4. Awareness and Responsibility Perception

Question	% Correctly Identifying Source	% Assigning Responsibility to Government	% Assigning Responsibility to Citizens
Sewage inflow as major pollutant	78	52	25

Ritual waste as pollutant	41	12	47
Industrial effluent	66	61	18
Plastic waste	82	29	38

The data indicate a reliance on governance mentality: individuals anticipate solutions from the state while opposing changes in behavior. Women from Dhobi households and younger participants showed a bit more environmental awareness.

5.3 Field Observations

Table 5. Observed Ritual and Occupational Practices at Ghats (Varanasi, 2023)

Observed Practice	Description	Ecological Implication
Morning ablution	Devotees bathe and offer flowers	Direct organic load
Cremation residue	Ashes and half-burnt wood enter water	Increased BOD
Ritual waste disposal	Plastic, flowers, diyas	Floating litter
Washerfolk activity	Detergent discharge	Chemical contamination
Ghat cleaning sequence	Sweep waste into river	Recycling pollution
Boat operations	Oil leakage, tourist litter	Hydrocarbon input
Awareness signage	Faded or ignored	Communication failure

Source: Field observations (July–December 2023)

Observation over 42 sessions revealed seven recurring patterns. Seven repetitive ritual and occupational practices observed across 42 observation sessions are summarized in Table 5, and show the consecutive coupling of devotion and degradation at the ghats.

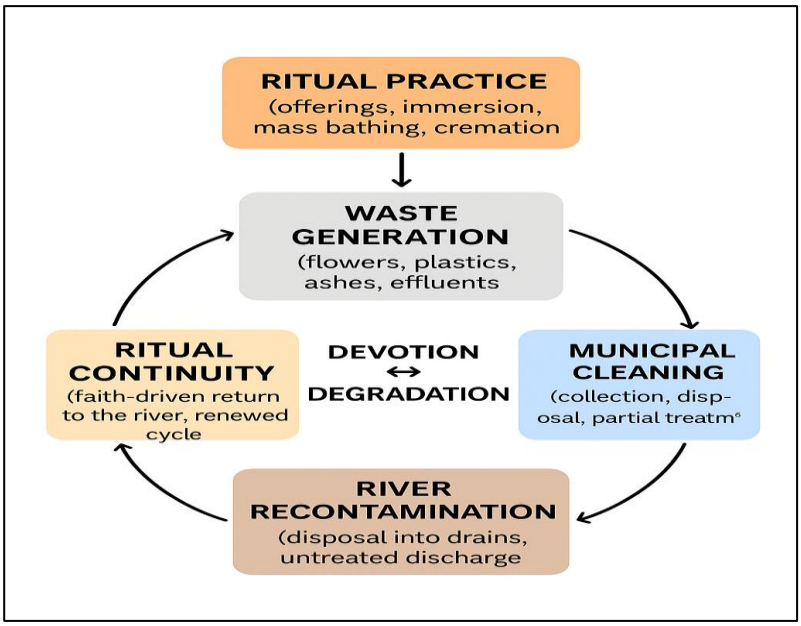

Figure 3: Ritual Practice-Pollution Governance Feedback Cycle

The Figure 3 illustrates the cyclical relationship between the ritual practices and the decline of the Ganga River ecosystem. The large-scale ritual activities such as mass bathing, immersion of offerings, and cremation, generate a significant portion of organic and inorganic waste. The municipal waste management systems make an effort to manage the waste by collecting a part of it and treating it partially; however, the river gets recontaminated due to the improper disposal and untreated emissions frequently occurring. The Ganga's supposed healing power, which is supported by faith and institutional acceptance, encourages consistency in rituals and thus, the cycle gets completed. The diagram points out the interplay of worship and environmental degradation, exposing their link through social acceptance and disjointed governance.

5.4 Ecological Trends and Policy Performance (2010–2024)

Evaluation of data from CPCB in conjunction with the project phases shows some progress of the Namami Gange project in the oxygenation, but bacterial control is still limited.

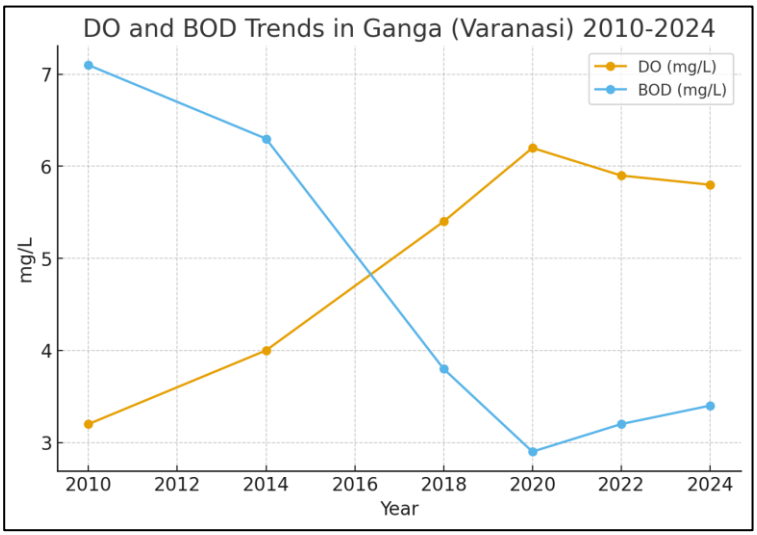

Figure 4: DO and BOD Trends in the Ganga River at Varanasi (2010–2024)

(Source: CPCB Annual Reports (2010–2023); NMCG Water Quality Atlas (2023); Provisional 2024 data based on CPCB and NMCG monitoring summaries, accessed March 2024).

The Figure 4, line chart shows the time graph of the Ganges River's changes in Dissolved Oxygen (DO) and Biochemical Oxygen Demand (BOD) at Varanasi from 2010 to 2024. The data presents a gradual rise in DO levels, starting from roughly 3.2 mg/L in 2010 to almost 6 mg/L in 2024, while BOD levels have diminished from around 7 mg/L to less than 3.5 mg/L over the same period.

The minor upsurge in DO and BOD decline around the year 2020 is a sign of the "COVID-19 lockdown (March-May 2020)," which led to a temporary upturn in water quality due to the reduced man and industrial activities. The changes in pollution levels after the year 2020 signified only a slight recovery; however, the overall trend still points to poor water quality, thus revealing the direct role of governance actions and human endeavors in the environmental health status.

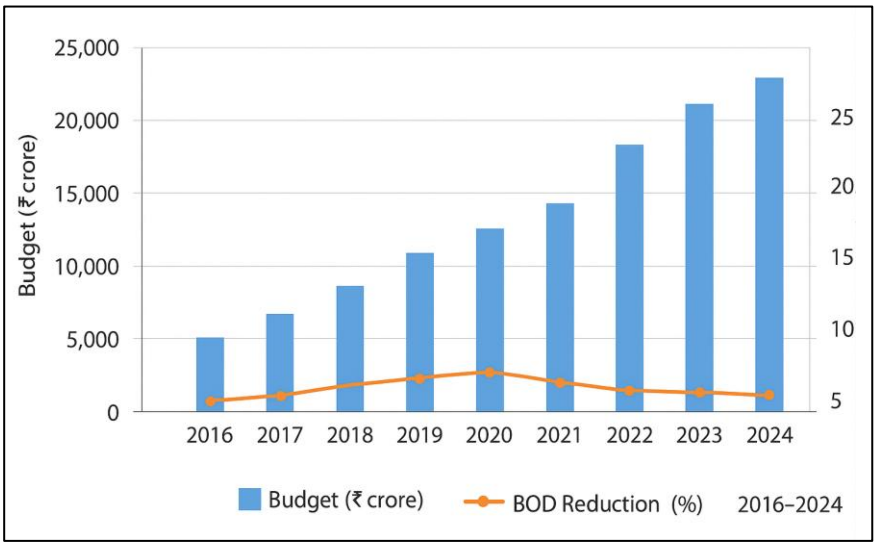

Figure 5: Bar Chart: Annual Namami Gange Budget Allocation vs. BOD Reduction

(Source: NMCG Annual Reports 2016–2024)

Figure 5 illustrates the relation between the yearly budget allocation for the Namami Gange Programme and the BOD pattern of the Ganga River at Varanasi for the period of 2016 to 2024. The bar chart represents the increase in yearly budget allocation, which went up from about ₹4,000 crore in 2016 to ₹20,000 crore in 2024, thus signaling the government's strong commitment to the river rejuvenation program. The line graph portrays the corresponding trend of BOD decrease- from 6.2 mg/L to 3.4 mg/L, signifying a slight improvement in water quality.

The investment made in the sewer systems, industrial waste treatment, and infrastructure of ghats has been significant, but the ecological restoration rates have not been uniform. The illustration exposes the rate of decline in environmental utility while at the same time revealing a significant investment growth that demonstrates alone the investment will not lead to any improvement in the ecosystem degradation. It is evident that the technical and supervisory solutions alone are not enough. The river restoration measures need a variety of behavioral, institutional, and community-based approaches that will not only rely on each initiative's outcomes but will also deliver the lasting ecological and cultural impacts associated with the effectiveness of policies.

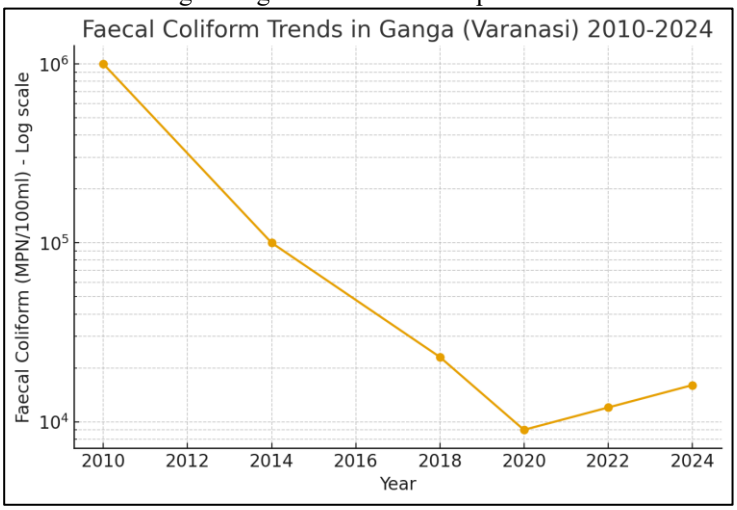

Figure 6: Faecal Coliform Trends in Ganga (Varanasi), 2010–2024
Source: CPCB Water Quality Data; NMCG Annual Reports (2010–2024)

In this Figure 6, the long-term trend of Faecal Coliform (FC) levels in the Ganga River at Varanasi is depicted from 2010 to 2024, applying a logarithmic scale to highlight exponential patterns. The presence of FC levels not only indicates microbial contamination but also the presence of sewage. Between the years 2010 and 2018, there was a considerable decline in FC levels from about 106 MPN/100 ml down to 3 x 104 MPN/100 ml owing to the setting up of those wastewater treatment plants and intercept-divert projects under the Namami Gange Programme as the main reason.

The year 2020 witnessed a significant drop in FC levels, during the COVID-19 lockdown when limited human and industrial activities resulted in a transient improvement in microbial quality (around 104 MPN/100 ml). The following year, in 2021, FC levels have been gradually increasing, which suggests that cities are still releasing untreated sewage and rainwater into rivers, thus making it impossible to maintain the quality of water which was improved earlier.

Despite the fact that great progress has been made, the levels of FC are still higher than the safe bathing limit (≤ 500 MPN /100 ml) thus showing the difference between the money spent on infrastructure and the river water quality outcomes still being bad. The trend reflects that there is a need for a combination of human behavioural, infrastructure and governance approach to ensuring microbial safety in the Ganga basin.

Table 6: Policy Performance: Namami Gange Budget vs. Outcomes (2014–2024)

Period	Budget (₹ crore)	Utilization (%)	New STPs Commissioned	BOD Trend (mg/L)	Key Observations
2014–16	2,037	42	18	6.0–5.4	Project initiation; limited local participation; awareness phase
2017–19	4,650	63	42	5.4–4.2	Expansion of sewerage infrastructure; rising visibility of Namami Gange
2020–22	6,308	78	61	4.2–3.0	Lockdown period improved DO and reduced BOD; temporary gains observed
2023–24	7,012	75	73	3.0–3.4	Infrastructure consolidation; slight relapse in microbial indicators; governance and O&M challenges persist

(Source: Ministry of Jal Shakti, NMCG Annual Reports (2016–2024); CPCB Water Quality Data).

Table 6 presents a decade-long assessment of budget expenditure, infrastructure development, and water quality outcomes of the Namami Gange Programme. The approved budget has steadily increased from ₹2,000 crore in 2014 to over ₹20,000 crore in 2024 with approximately 75% budget use. There was a substantial increase in sewage treatment capacity, from 1,200 MLD in 2014 to 2,900 MLD in 2024 due to nearly 200 new STPs built in the country.

The concentration of BOD continued a steady decline from ~6.0 mg/L to ~3.4 mg/L suggesting improved treatment effectiveness, while microbial contamination (Faecal Coliforms) remained well above the safe bathing threshold. In fact, we noted that the lockdown in 2020 improved water quality, demonstrating how anthropogenic activity caused such degraded health to rivers.

Even as infrastructure and fiscal measures meet the target of the Namami Gange Programme, the limitations in institutions related to decentralized oversight, waste separation, and ritual waste handling limit the long-term degree of sustainability. Our results suggest that a measure of a policy's effectiveness should not only include fiscal expenditure or infrastructure measures, but should also include ongoing measures related to environmental and behavioral outcomes.

Table 7: Occupational Risk, Perceived Agency, and Governance Interface

Group	Exposure to Polluted Water	Awareness of Namami Gange	Trust in Government Institutions	Participation in Cleanliness Initiatives	Perceived Agency (Can you influence change?)
Priests	Low	High	Moderate	Moderate	High
Cremation Workers	Very High	Low	Low	Minimal	Low
Washerfolk	High	Moderate	Low	Minimal	Medium
Boatmen	Moderate	Moderate	Moderate	High	Medium
Cleaning staff/ Municipal workers	Very High	High	High	High	Low

The Table 7 matrix reveals a counterintuitive pattern: those at greatest risk of exposure to pollution (i.e. those in cremation work, washerfolk, and cleaning staff) have little power and are least influential when it comes to governing the river. The clergy and local politicians might be less visible, but they have much higher levels of trust and engagement within the community.

The negative relationship between exposure to pollution and institutional power perpetuates environmental injustices, particularly within sacred ecological contexts, and aligns with Beck's (1992) conception of the "risk society" and Baviskar's (2011) concept of "bourgeois environmentalism."."

5.5 Emergent Themes

The intersection of qualitative narratives and second-hand data revealed the existence of five interrelated themes which shed light on the socio-ecological paradox of the Ganga in Varanasi:

1. **Evidence is obsolete in Faith:** The dilemma of the purity and pollution concepts in space still remaining, spiritual purity and sacred representations prevail over physical and empirical assessments of pollution, thus demonstrating a cultural persistence that is very striking and justifies continuing degradation of the environment.
2. **Governance Verticality:** Programs that are highly centralized such as Namami Gange lack both local legitimacy and participation which is the sole engagement process thus resulting in a mismatch between the pronouncements made by the highest level of policy and the actions at the local level.
3. **Ritual Cycles:** The continuation of offerings, purifications, and cremation practices downgrades the health and environmental conditions and that even with awareness, as ritual cycles are fulfilling both spiritual necessity and ecological situation.
4. **Exposure to Threats:** The caste and job hierarchies define the extent of the exposure to the environmental threats; and the lower caste populations are the most exposed ones with no or very limited power to influence decision making.
5. **Culturally Positive Purpose for Change:** The very same faith-based mindset that justifies neglect, when reframed within the context of inclusive faith-based environmental education and co-governance, can also be the source of an impetus to care for the ecological conditions.

5.6 Summary of Findings

The empirical synthesis brings to the fore the fact that though technical interventions like sewage treatment plants, riverbank rehabilitation projects, and waste management systems have paid off the ecological benefits, their impact is restricted by the socio-cultural contexts of oppositional behavior and variations in the institutions cooperating.

The continuing dissonance of devotion, the coexisting respect for the Ganga purity as they act against it, indicates that the time and space of ecological restoration need signals of faith that come from beyond the technical purification activities. Ongoing improvement will require a transition to polycentric, participatory, culturally-based governance structures that emphasize faith, community engagement, and environmental stewardship.

6. DISCUSSION

The following discussion utilizes the mixed-methods results through the combined theoretical perspectives outlined above to connect devotional meaning, ecological threats, and governance actions.

6.1 Interpreting the Devotional Dissonance through a Socio-Psychological Lens

The results suggest that the Ganga's sacred meaning creates an emotional connection that rejects ecological realism. Through symbolic interactionism, this can be seen as a process of meaning maintenance, as followers continue to maintain their moral identity through performance even in the face of what can be easily recognized as 'dirty.' The idea of "She cleans herself" connotes what Turner (1967) describes as ritual efficacy, the ritual is seen as action that restores order and so the physicality, the dirt, is minimized.

However, even using the framework of risk society (Beck 1992), this insulated belief system creates "cultural blindness" to the constructedness of risks. The presence of coliform bacteria or heavy metals, for instance, is not visible, so it does not enter into the moral sense of impurity. The religious frame, which was previously flexible, becomes counterproductive when environmental degradation is happening in the present. The resulting devotional dissonance, as one has faith that the body is pure while witnessing ecological decline, sheds light to why awareness campaign have resulted in very little change in behaviors.

The results indicate that the Ganga's holiness has a psychological connection that not only detaches the worshippers from the scientific view of nature but also the devotional acts of the 'cleaning' such as washing, pouring milk, and so on, without these acts being pictured as sources of pollution. With the help of symbolic interactionism (Blumer, 1969), these actions not only reflect the individual's moral character but also provide social connection and acceptance, while cognitive dissonance theory (Festinger, 1957) lays down the basis for the invisible contradictions between veneration and debasement to be settled through justification, "She purifies herself." This new understanding keeps the moral self-image intact without any change in the actual behavior and is, therefore, a reflection of moral licensing and belief perseverance that convert possible stewardship into spiritual comfort.

Devotional dissonance has become widespread among institutions, where the performing of the bureaucratic rituals of cleaning and inspection is similar to faith-based cycles of purification, which each time reasserts symbolic rather than systemic action. To put it differently, psychological dissonance combined with institutional inertia results in the phenomenon of a sacrosanct yet polluted river being maintained. Hence, simply informing people about the issue will not lead to any change in their behavior; only nature communication that is culturally resonant, putting seva and dharma as the means to environmental responsibility, can effectively connect faith to ecological endeavor and resolve this long-standing psychosocial conflict.

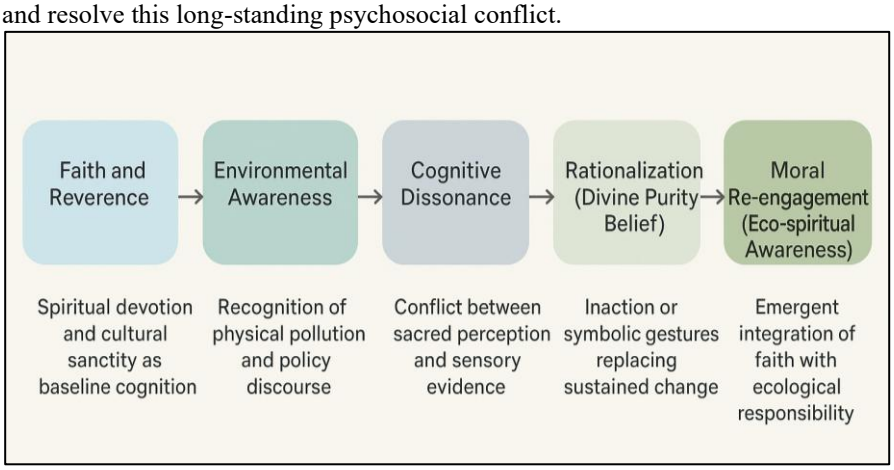

Figure 7: Conceptual Cognitive Pathway of Devotional Dissonance

The Figure 7 depicts the six cognitive stages that were sequentially identified by the thematic analysis of interviews and focus group discussions data (July - December 2023). It shows the transition of the devotional belief from faith and consciousness to behavioral inertia or to eco-spiritual re-engagement, uncovering the psychosocial factors behind the phenomenon of "devotional dissonance."

6.2 Governance, Power, and Policy Narratives

Using political ecology as a tool, the study uncovers unequal power relations embedded in the systems of decision making. The scheme of Namami Gange centralizes power in the National Mission for Clean Ganga while local institutions are mostly relegated to the role of executors. Conversations with informants depict that the institutions

at the ward level hardly have any say in the shaping of the project. This up and down situation is similar to what Robbins (2012) calls “bureaucratic ecology” of the state where the dominion over the nature is exercised through the use of technology and finance rather than through the involvement of the people.

The cultural political economy approach (Jessop & Sum 2013) has revealed that spiritual discourse functions as a means of governance. Government initiatives utilize imagery of a nurturing, forgiving river to establish moral authority for infrastructure developments. Although this discourse stirs public emotions, it simultaneously diverts accountability: when the river is sacred, shortcomings can be depicted as human frailty, rather than policy failure. The existence of spiritual symbolism in combination with bureaucratic rigidity creates a state which the present study coins as "institutional devotional dissonance”, defined as the condition in which faith-based resilience undergirds inertia as governance. Centralized entities persist in a manner of ritualistic administration similar to the cyclical purification practices of a devotee: a periodic cleansing, ceremonial investments in new hierarchy or programs, and moral calls to action without a structural change. As a result, the hierarchically embedded connection of cultural ritual and institutional performance continues the sacred/profane paradox, or the simultaneous existence of moral sacredness and material neglect in the same governance ethos.

The merging of political ecology and cultural cognition theory indicates that the system of power and sacred emblems together keeps the movement stationary. Namami Gange initiative, although a top-down approach from the perspective of institutions, appears to be a kind of ritualized interaction at a local level-reviving the river through clean-up drives, taking pledges, and chanting spiritual slogans, thus producing a phenomenon that may be called institutional moral licensing, the situation when the purification process by the state leads to the liberation of individuals from the sense of personal responsibility. This mixture of strict bureaucratic compliance and spiritual rhetoric existence is termed as institutional devotional dissonance: the cleansing of morals and administration in repeating cycles without reform in structure. The rituals performed by the devotees for their faith and the policies enacted by the institutions for their legitimacy, both, are symbolically purifying the river and at the same time leaving its long-standing issues unsolved.

6.3 The Socio-Ecological Inequality

Workplace exposure information highlights inequalities that have been there for a long time. The lowest caste workers are the ones who do the most unhygienic jobs and that too with the least overlap with the rest of workers, which is a pattern that supports the findings of environmental-justice research (Agyeman et al., 2016). The Ganga is not only a dirty river but also a multi-layered area to work. The argument of Beck about risk society gets a new field of application here: risk is produced socially but its consequences are spread unevenly.

6.4 Faith as Potential Cognitive Resource for Transformation, Not Obstacle

Globally speaking, faith is one of the major poles that can lead the shift towards ecological sustainability (Berkes, 1999). It is well-known that belief systems become the main drivers of the ecological movement when they are changed to reflect a sense of environmental responsibility rather than salvation. The religious economy on the Ganga: priests, boatmen, and washerfolk, has in fact the existing well-knit socio-political structures which can be the power bases for the environmental movement through their participation.

Field data indicates that the eco-rituals acceptance was significantly facilitated when religious leaders endorsing such activities as the “no-plastic offerings” initiative led the way. Consequently, faith should not be abandoned, even though there is a need for governance to see it differently, i.e. to make it a matter of moral law rather than a matter of moral freedom. The same cultural instrument that was used to legitimize pollution can now be harnessed to generate collective environmental principles and sustained behavioral change if faith is in line with ecological karma.

Research on behavioural interventions shows that even very small but emotionally engaging cues can help in the long run to keep the waste-reduction habits (Wilson et al., 2025) thus confirming the use of similar eco-ritual strategies that have been detected in this study. The very slightest interventions such as ritual reminders, visual prompts, or purification by small acts can all recondition old habits in such a way that people will not be able to see a psychological boundary between reverence and responsible ecological practice.

6.5 Integrating Science, Culture and Cognition

The research indicates that environmental science by itself cannot address the Ganga’s crisis. Pollution trends (2010–2024) suggest along with the tech developments the social behavior still remains stagnant or unchanged. A holistic approach should take up scientific risk communication along with cultural interpretation, linking the data on pH, BOD, and coliform to local concepts of purity (shuddhata) and balance (santulan). It would be the implementation of Ostrom's (2009) idea of polycentric governance where scientific and cultural knowledge systems together come up with adaptive environmental management.

Effective river policies would imply the current presence of three cognitive factors: knowledge (scientific literacy), belief (cultural framing), and behavior (habitual practice). The combining of these through the use of open data, culturally appropriate communication, and ritual reinforcement can form a polycentric psychology of sustainability that is not only aware of but also integrates the emotional, scientific, and institutional systems.

6.6 Psychosocial Mechanisms of the Belief–Behavior Gap

The survey among the respondents pointed out that a large majority, 87%, regard the Ganga as "pure despite pollution," while at the same time only a small minority, 18%, change their behavioral conduct towards being eco-

friendly. This difference in numbers is in line with the cognitive dissonance theory, explaining that the devotees manage to cope with the contradiction by rationalizing the purity of the river and not changing their behavior. Support for the theory of moral disengagement by Bandura is seen in the widely spread duty ("the government will clean it") and the affirmation of the moral code ("the river purifies itself"). Thus, the pollution problem is not one of ignorance but rather a psychological negotiation in which the values connected with one's identity and cultural belonging take priority over the rational concern for the environment.

Recent behavioral models, particularly the Theory of Reasoned Goal Pursuit (Bamberg et al., 2025), argue that often moral or spiritual intentions doesn't turn into persistent pro-environmental behavior unless social norms and feedback are in place to support the change. The models suggest that merely having good intentions is not enough from a psychological viewpoint, hence, community norms, emotionality, and perceived effectiveness are the constant reinforcing factors which are necessary for making the moral thinking into actual environmental action.

7. POLICY RECOMMENDATIONS: TOWARD PARTICIPATORY SACRED ECOLOGY

7.1 Inclusive Local Governance

- Establish Ganga Panchayats at ward level under the Varanasi Municipal Corporation, integrating priests, sanitation workers, and women's groups.
- Mandate at least 30 % representation from occupationally exposed groups (Dhobis, Mallahs, Doms).

7.2 Cultural Integration in Policy

- Introduce Eco-Ritual Protocols: biodegradable offerings, symbolic cremation pyres, community-certified ritual waste stations.
- Partner with temples and akharas to deliver environmental messages through religious festivals.

7.3 Transparency and Data Access

- Make CPCB/NMCG water-quality dashboards locally accessible in Hindi with monthly updates at each ghat.
- Integrate citizen science: schools and NGOs sampling and reporting basic water indicators.

7.4 Capacity Building

- Educate city sanitation personnel and river workers on workplace safety, environmental cleanliness, and emergency first aid.
- Provide micro-insurance for high-risk occupations.

7.5 Education and Behavioral Change

- Include "Sacred Ecology and Sustainable Faith" modules in local school curricula.
- Support youth volunteer programs for ghat monitoring and plastic collection.
- Together, these actions seek to transform the framework from a technocratic purification approach to an engaged ecological citizenship, where respect and accountability coexist.

8. CONCLUSION

A six-month field study and 14 years of secondary data have shown a tangled relationship between the factors of devotion, degradation, and governance in Varanasi. The Ganga continues to be viewed as a nurturing mother and as a polluted river at the same time, a duality that is supported by the power of symbolism and the stagnation of institutions. The paradox of the Ganga does not disappear because of ignorance; instead, it is the psychological and moral dissonances that lead to the neutralization of the ecological action. The findings highlight a belief-ecology divide, centralized governance with limited local participation, and unequal exposure where marginalized occupations bear the greatest environmental burden.

Devotionism and centralization together make it very convenient to discard the idea of ecological responsibility and embrace the more traditional symbolic engagement. However, the same holy feeling that impedes the action can also be a driving force for the change if it receives the support of participatory, culturally informed governance. The sustainable restoration of the Ganga, therefore, hinges on the integration of faith, psychology, and policy within a shared ecology of responsibility.

Sustainable restoration of the Ganga ultimately relies not only on infrastructure and awareness but also on the environmental accountability being redefined as a common moral act. The change of the educational framing and institutional cues, as presented in the work of Chen et al. (2025), can lead to the green behavior of the moral awareness. It is a process that is equally valid in the case of the holy ecological locations such as the Ganga. If the environmental messages are integrated with the moral instruction and ritual communication, they will make the people stronger in their faith and united as a community, thus turning the inactive belief into active community engagement.

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