STAKEHOLDER ENGAGEMENT IN RIVER CONSERVATION: A STUDY OF THE NAMAMI GANGE PROGRAMME IN UTTARAKHAND

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submitted by
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**INDIAN INSTITUTE OF PUBLIC ADMINISTRATION
NEW DELHI**

CERTIFICATE

I have the pleasure to certify that **Brigadier Dhananjay Joshi, VSM** has pursued his research work and prepared the present dissertation titled '**Stakeholder Engagement in River Conservation: A Study of the Namami Gange Programme in Uttarakhand'** under my guidance and supervision. The same is the result of research done by him/her and to the best of my knowledge; no part of the same has been part of any monograph, dissertation or book earlier. This is being submitted to the Panjab University, Chandigarh, for the purpose of **Executive Masters in Public Administration and Public Policy** in partial fulfillment of the requirement for the Advanced Professional Programme in Public Administration (APPPA) of Indian Institute of Public Administration (IIPA), New Delhi.

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DECLARATION

I, the undersigned, hereby declare that the dissertation titled '**Stakeholder Engagement in River Conservation: A Study of the Namami Gange Programme in Uttarakhand**' is my own work and that all the sources I have accessed or quoted have been indicated or acknowledged by means of completed references and bibliography.

The dissertation has not been submitted for any other degree of this university or elsewhere.

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Brig Dhananjay Joshi

EXECUTIVE SUMMARY

General

The *Namami Gange* programme was launched in 2015 for conservation and rejuvenation of the national river Ganga. It covers the entire Ganga Basin spanning nine states. The study was restricted to the state of Uttarakhand. The aim was to - (i) study the functioning of the State and District Ganga Committees; (ii) assess the level of public awareness and community mobilisation; (iii) analyse the impact of rapidly expanding tourism in the state on river pollution and (iv) suggest practical measures to strengthen the programme in the State.

A field visit was undertaken to districts along the main stem of the Ganga in Uttarakhand. A survey was also conducted using a questionnaire to assess public awareness about the programme and perception about environmental challenges confronting the state. The responses to the questionnaire were correlated and analysed with the inputs gathered during the field visit.

The Ganga originates in Uttarakhand. The dynamics of river conservation are a little different in the hill state. The state is susceptible to frequent natural disasters whose impact is exacerbated by human activity. The economy relies heavily on tourism, especially religious tourism, as the state is home to several important temples and pilgrim sites. Exponential increase in tourist footfall is leading to rising pollution and environmental stress in the state. The state is also witnessing massive infrastructure development in the form of highways, railways and hydropower projects. The *Namami Gange* programme is greatly impacted by such activities. The success of the programme greatly depends on alignment of perception of all stakeholders towards pollution control, sustainable eco-tourism and balanced development in the state.

Programme Outcomes in Uttarakhand

Uttarakhand does not have any major polluting industries along the main stem of the Ganga. The two main sources of pollution in the state are discharge of untreated sewage and dumping of solid waste into the river. The management of Municipal Solid Waste is being addressed under the *Swachh Bharat* Mission, therefore the main thrust of the *Namami Gange* programme has been on creation of infrastructure for the treatment of sewage.

The study indicates that a considerable amount of infrastructure has been created in the state under the programme. The impact is now visible in terms of improved water quality and a cleaner riverfront. The water in the Ganga is fit for drinking from source to Rishikesh and is fit for bathing at Haridwar.

A lot of effort has also gone towards construction and upgradation of bathing ghats and crematoria all along the river as part of Riverfront Development. Information, Education and Communication (IEC) activities are regularly being undertaken to spread awareness and strengthen the connection between the people and the river. Considerable forestry interventions have also been undertaken to restore the natural landscape and recharge natural springs.

There is a need to consolidate on the gains made so far and focus on unaddressed sources of pollution. Habitations along the tributary streams of the Ganga, smaller untapped nalas in towns, slums on flood plains, encroachment of river banks and leakages from old sewer networks in cities are some of the sources of untreated liquid waste that deserve attention.

Solid waste from habitations close to the river remains a challenge. Though Urban Local Bodies (ULBs) are striving for proper collection and disposal of solid waste, unauthorised dumping of garbage is happening at places. The problem is more acute in villages where there is no organised system of garbage collection and disposal. Construction debris from massive infrastructure development projects going on in the state is also a problem.

The state attracts lakhs of tourists between April and October. The infrastructure for waste management has been created for the permanent population. All Ganga towns have a population of barely a few thousand but they receive many times more visitors every day during the tourist season which overwhelms the system.

The discharging of *puja* items and discarding old clothes into the river as part of rituals is a common practice at religious sites like Haridwar and Rishikesh. This practice alongwith the immersion of thousands of idols into the river during festivals is a big source of pollution. The surge of devotees during important festivals like the annual *Kanwar Yatra* adds to the pollution.

Functioning of the State and District Ganga Committees

The functioning of the State Ganga Committee (SGC) and District Ganga Committees (DGCs) has evolved over the last eight years and they are working effectively. The DGC is a good coordinating mechanism at the grass root level that brings together all stakeholders regularly. The devolution of responsibility to the DGCs along with the 4M model (monthly, monitored, mandatory and minuted) of meetings has brought about greater accountability.

However there is a variation in the diligence with which the programme is being pursued in different districts. It stems from competing priorities at the local level and also personality factors. As a result there is a difference in the effectiveness of DGCs. Moreover, there is little sharing of best practices among districts. The initiatives of District Chamoli which won the Prime Minister's Award for Excellence in Public Administration have not been replicated elsewhere.

The State Programme Management Group (SPMG) is the executive arm of the SGC. However it is staffed predominantly by consultants from National Mission for Clean Ganga (NMCG). The State Government officers deputed to the SPMG are not full time as they have to attend to their primary duties in their department. Similarly at the district level, the District Plans Officer is an employee of the NMCG and not a

Government official. This leads to many functional problems. The staffing of the SPMG and DGCs can be improved by deputing full time officers and providing clerical support.

Public Awareness and Perception

The survey indicates that awareness about *Namami Gange* programme is fairly high at around 76%. However, considering that the programme has been in operation for over eight years, the awareness levels should have been near total. 46% people said that they had not participated in any activity related to *Namami Gange*. Presently the IEC activities activities appear to be concentrated along the towns and villages along the main stem of the Ganga. They need to spread to more places in the interior. Both the number and type of participatory activities should increase.

Over 93% people expressed a high concern for pollution and environmental degradation in the state and 78% felt that awareness about such matters has increased. 84% people felt that the standard of cleanliness has largely improved over last few years and 74% felt similarly about the ghats and crematoria. 49% of the people reposed faith in the local civil and municipal authorities to resolve concerns about pollution and environment which indicates a responsive administration. 22% indicated that garbage was being dumped at unauthorized places and around 16% indicated the absence of proper sewage arrangements.

On the whole the responses indicate a high concern for pollution and environmental issues. The high public concern can be harnessed for inculcating behavioural change and adopting eco-friendly practices.

Impact of Tourism

Uttarakhand's unique geography and topography make it particularly vulnerable to natural disasters and climate change. The state is prone to earthquakes,

landslides, cloudbursts, flash-floods, avalanches and forest fires. The environment in the state is under stress from natural causes as well as human activity like rapid expansion of tourism and reckless development.

The study has highlighted that while tourism and development activities in Uttarakhand pose a risk to river conservation, there are also several trends that can turn this vulnerability into an opportunity. The high concern among people for environmental causes and an admission that they themselves at times break rules and cause pollution are positive indicators.

The State Government has also brought out a comprehensive policy to transform tourism from pilgrimage-centric to more broad-based packages offering wholesome experiences. The policy also talks about promoting sustainable eco-tourism. The survey shows that the biggest stakeholders i.e. the local people are inclined to embrace behavioural change and adopt sustainable and eco-friendly practices. The Government needs to harness this potential and turn it into reality.

The survey also shows that with changing times, social media has become a major influence in the state. If harnessed correctly it can play a big role in IEC activities and support for conservation efforts. It can mobilize people to adopt eco friendly practices and help promote sustainable eco-tourism. A shift to sustainable tourism and development will automatically strengthen efforts for Ganga conservation. The *Namami Gange* programme should invest more in harnessing social media as a vehicle of change.

Other Facets of the Programme

Forestry Interventions. Afforestation activities and biodiversity conservation under the programme are executed by the State Forest Department and funded by the NMCG. However the direct allotment for funds under this head has practically ceased and states have been asked to source their activities from the Compensatory

Afforestation Fund (CAF) set up under the Compensatory Afforestation Fund Management and Planning Authority (CAMPA) Act, 2016.

Forest officials highlighted many problems in getting funds from CAMPA as versus allotment of funds by the NMCG. CAMPA funds are meant for many uses and Namami Gange is just one of them and there is a limit to the funds that can be allotted. Also the process of allocation is quite tedious and does not cover all the activities envisaged under the programme. The lack of direct funding by NMCG has practically stopped any major forestry interventions under the programme, especially in Phase II. Therefore Forestry Interventions through CAMPA ought to be reviewed.

Arth Ganga. This pillar of the programme envisaged linking the local economy to the Ganga in multiple ways like promotion of local Self Help Groups (SHGs) and marketing local products. However a sustainable economic model that provides viable livelihood opportunities has not emerged. Projects like waste to wealth largely remain on paper and organic farming etc is yet to take off in a big way. The subject is also hardly discussed in any of the DGC meetings.

Ganga Grams and Ganga Praharis. Ganga Grams were notified in the state in 2023. However, so far, no major activities related to them have taken off. Similarly, Ganga Praharis were conceived as motivated and trained volunteers who would mobilise communities. However there is little interface between them and the DGCs. Presently, there are just a handful of Ganga Praharis and they are working under the directions of Wildlife Institute of India (WII), Dehradun who sponsored their training.

Maintenance of Assets. Assets created as part of Riverfront Development are handed over to the State Government after completion. At places the assets are not maintained properly and their condition has deteriorated rapidly. Many bathing ghats and crematoria got damaged in floods in 2021 and 2023 but have not been repaired thereafter. Timely repairs and maintenance of assets is important.

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LIST OF ABBREVIATIONS

Ser No	Abbreviation	Full form
1.	CAF	Compensatory Afforestation Fund
2.	CAMPA	CAF Management and Planning Authority
3.	CPCB	Central Pollution Control Board
4.	DFO	Divisional Forest Officer
5.	DGC	District Ganga Committee
6.	DM	Divisional Magistrate
7.	DPO	District Projects Officer
8.	DPR	Detailed Project Report
9.	DTDO	District Tourism Development Officer
10.	FSTP	Faecal Sewage Treatment Plant
11.	HAM	Hybrid Annuity Model
12.	I&D	Interception and Diversion
13.	IEC	Information Education Communication
14.	NGT	National Green Tribunal
15.	NMCG	National Mission for Green Ganga
16.	O&M	Operations and Maintenance
17.	PWD	Public Works Department
18.	SGC	State Ganga Committee
19.	SMCG	State Mission for Clean Ganga
20.	SPMG	State Project Management Group
21.	SSP	Senior Superintendant of Police
22.	STP	Swewage Treatment Plant
23.	SWM	Solid Waste Management
24.	UK PCB	Uttarakhand Pollution Control Board
25.	ULB	Urban Local Body
26.	WAPCOS	Water and Power Consultancy Services

STAKEHOLDER ENGAGEMENT IN RIVER CONSERVATION: A STUDY OF THE NAMAMI GANGE MISSION IN UTTARAKHAND

CHAPTER 1
INTRODUCTION

"Our civilization has developed near rivers. Be it Sindhu, Ganga, Yamuna or Saraswati, our rivers and seas hold economic as well as strategic importance for our country. These are our gateway to the whole world"

Prime Minister Shri Narendra Modi

1.1. Background

The Himalayas are the source of three major Indian rivers namely the Indus, the Ganga and the Brahmaputra. The Ganga drains a basin of extraordinary variation in altitude, climate, land use, flora & fauna, and social life. It has been the cradle of Indian civilisation and culture for over three millenia. Millions depend on this great river for livelihood and spiritual sustenance. People have immense faith in the powers of its waters to heal and regenerate. It is the most sacred river in the world and worshipped as a goddess. The Ganga plays a vital role in religious ceremonies and rituals. To bathe in its waters is a lifelong ambition of countless people who congregate at holy sites on its banks to take a dip during the *Kumbh Mela* and numerous other festivals.

Rapidly increasing population, urbanization, exponential growth of industries and rising standards of living have led to over exploitation and degradation of water resources, particularly rivers. The Ganga is no exception. The

fertile Ganga basin is not just an agricultural hub but is also home to hundreds of industries. The average population density in the basin is much higher than rest of the country. The river has been under severe stress due to rising diversion of water for domestic and industrial uses one hand and rising pollution on the other. Owing to insufficient flow, especially during the lean season, the water has become unfit for even bathing. Global climate change and glacial melt are greatly impacting the flow of the Ganga. Massive development activities taking place in the Himalayas have added to the above factors raising complex challenges that require a comprehensive response.

Since the 1980s a number of programmes were launched to clean the Ganga that met with only partial success. Lessons from these programmes indicated that any effective initiative requires a multi-pronged approach to include - (i) a comprehensive basin-level strategy for addressing water use and pollution in the river; (ii) making relevant institutions effective; and (iii) implementing a phased action plan for clean-up (NMCG, 2024).

1.2. **Namami Gange**

The 'Namami Gange' is an Integrated Conservation Mission and a 'Flagship Programme' of the Government of India launched in 2015 for a comprehensive response to the challenges related to the Ganga. It has five pivotal pillars namely - *Nirmal Ganga* (unpolluted river), *Aviral Ganga* (unrestricted flow), *Jan Ganga* (people's participation), *Gyan Ganga* (knowledge and research-based interventions) and *Arth Ganga* (economic growth). The eight thrust areas of the programme include setting up of sewage treatment infrastructure; river surface cleaning; river front development; conservation of bio-diversity; afforestation; industrial effluent monitoring; spreading awareness and developing model villages (NMCG, n.d.).

Though many programmes were launched in the past to clean the Ganga, Namami Gange has received unprecedented priority from the present political leadership. A non lapsable sum of Rs 20,000 Crores, was earmarked for the programme over a five year period up to 2020. Considerable amount of infrastructure has been created to control pollution. In 2022, the Union Cabinet approved Namami Gange Phase II with an outlay of Rs 22,500 Cr for the period 2021- 2026 (PIB, 2023).

A five-tiered structure has been created to oversee implementation of the programme, which includes the National Ganga Council (NGC) at the apex level under the Prime Minister; an Empowered Task Force (ETF) under the Union Minister for Ganga Rejuvenation; the National Mission for Clean Ganga (NMCG) as the executive authority; the State Ganga Committees (SGCs) as the state-level agencies and the District Ganga Committees (DGCs) as the district level agencies (MoJS, n.d.).

Besides incorporating several novel features, the Namami Gange mission lays special focus on decentralised planning and execution. The DGCs under the respective District Collectors include Government officials as well as representatives from the public. They have been given financial as well as administrative powers to take necessary action to curb pollution at the local level (Mishra et al., 2021).

1.3. **Namami Gange in Uttarakhand**

The Ganga originates in Uttarakhand. Uttarakhand does not have major polluting industries and there is no reduction of flow due to diversion of waters for irrigation as in the plains. The main sources of pollution in the state have mainly been untreated sewage and dumping of solid waste. Reports indicate that with creation of adequate treatment infrastructure, the Ganga has become sewage free

in the hill State (PIB, 2020 and ANI, 2022). But the state is facing new challenges. Climate change is making the state susceptible to frequent natural disasters whose impact is exacerbated by human activity. The state economy relies heavily on tourism which provides livelihood to thousands of people. Exponential increase in tourist footfall is leading to rising pollution and environmental stress in the state. The gains made by *Namami Gange* in Uttarakhand may get undermined if tourism is not managed sustainably (Roy, 2023).

In 2020, Namami Gange was included as one of the categories for Prime Minister's Awards for Excellence in Public Administration[1]. 46 DGCs from five states sent their nominations out of which Chamoli district in Uttarakhand, was chosen for the award. The citation of Chamoli district states that, "*despite tough geographical conditions, the district completed the construction of 15 out of 16 of Sewage Treatment Plants (STPs). It undertook massive efforts to recharge water resources through spring shed management which has increased water tables and improved the quality of life in villages in the catchment area. It also mobilised community participation in cleanliness activities. The towns in the district regularly feature in the top ten of Swachhata rankings"* (DARPG 2020). The award indicates how creative solutions to local challenges can contribute to the overall goals of the programme.

1.4. **Review of Literature**

An extensive review of literature on the subject was carried out and the details are outlined in Chapter 2. The review has highlighted many gaps in

[1] The '**Prime Minister's Awards for Excellence in Public Administration**' were instituted in 2006 to recognise extraordinary and innovative work done by Departments and Districts. The scheme was restructured in 2014 to recognise the performance of District Collectors in Priority Programs, Innovations and Aspirational Districts. It was again revamped in 2021 with emphasis on good governance, qualitative achievements and last mile connectivity rather than just quantitative parameters (DARPG, 2024).

research related to the subject. The gaps identified for study as part of this dissertation are as follows:-

(a) The *Namami Gange* programme has been under implementation for over eight years now. Government reports indicate that there has been substantial progress on all fronts. But there are very few independent studies on the programme so far.

(b) The expediency of a tourism based economy in Uttarakhand conflicts with the demands of a conservation programme like *Namami Gange*. Therefore stakeholder engagement becomes extremely important. Whether public priorities and perception are aligned with the goals of the programme has not been studied so far.

1.5. **Rationale for the Study**

There have been many attempts in the past to clean the Ganga, without much success. The *Namami Gange* mission aims for a 'bottom-up' approach by empowering the State and District Ganga Committees (SGC and DGCs) besides incorporating other features. Whether such decentralization is succeeding ought to be analysed.

The Ganga is a highly stressed river due to immense pressure from human activity all along its course. Cleaning and rejuvenating the river is a massive task that calls for a massive behavioural change among people, besides infrastructural interventions. Studying whether *Namami Gange* is succeeding in mobilising and sustaining public support is important.

Uttarakhand has reportedly performed well in implementation of the programme. An analysis of the programme outcomes in Uttarakhand will bring forth useful lessons for both policy makers and practitioners.

1.6. Research Objectives

The aim and objectives of this dissertation are as follows:-

(a) To study the functioning of the State and District Ganga Committees under the *Namami Gange* programme in Uttarakhand.

(b) To assess the level of awareness and public mobilisation in the State for Ganga conservation and rejuvenation.

(c) To analyse the impact of a booming tourism economy in the State on river pollution.

(d) To suggest practical measures to strengthen the programme in the State.

1.7. Research Questions

The research questions addressed are as follows:-

(a) How are the State and District Ganga Committees (DGCs) functioning in Uttarakhand? Has decentralisation led to discernible improvement in conservation efforts? What are the good practices followed by DGCs in the State?

(b) What are the perceptions of different stakeholders in a tourism driven economy? Is public awareness and behaviour aligned with the goals of the *Namami Gange* programme?

(c) How is tourism in Uttarakhand impacting the *Namami Gange* mission? Can media and social media influence social behavior to promote conservation efforts and sustainable eco-tourism?

1.8. **Chapterisation**

The dissertation is covered in the following parts:-

(a) Chapter 1 – Introduction

(b) Chapter 2 – Review of Literature

(c) Chapter 3 – Research Methodology

(d) Chapter 4 – Overview of Namami Gange Programme and Orientation to Uttarakhand

(e) Chapter5– Functioning of the State and District Ganga Committees

(f) Chapter 6 – Assessment of Public Awareness and Perception

(g) Chapter 7 – Assessment of Impact of Tourism

(h) Chapter 8 – Findings and Recommendations

CHAPTER 2
REVIEW OF LITERATURE

2.1. Introduction

The literature on the subject of pollution, river conservation and rejuvenation is vast. It includes analysis from different perspectives like scientific, hydrological, industrial, technological, economic, social and behavioural angles. River pollution is a challenge being faced in most countries and each has designed programmes suited for their conditions. There are many success stories but few are relevant in the Indian context. The review has been restricted to studies related to past efforts to clean the Ganga, success stories of public mobilisation for ecological causes and challenges for river conservation in a hill state like Uttarakhand.

2.2. Past Efforts to Clean the Ganga.

The Ganga basin constitutes 26% of India's total land area and sustains over 43% of its population. The main stem of the Ganga flows through five states, while four others are part of the basin. There are 97 major urban centres and 4,457 villages along the main stem that produce over 12,000 million litres of sewage every day, out of which roughly only 4000 million litres gets treated before entering the river presently (NMCG, 2023). Additionally, numerous industries discharge untreated effluents that pose significant threat to human and aquatic health due to their toxic nature. Garbage from various sources also gets dumped into the river due to inadequate infrastructure for solid waste management. Dead bodies and waste from religious rituals also contribute a significant share. The river does not have sufficient ecological flow (e-flow) to assimilate such a huge

amount of pollution as water gets diverted for numerous power projects, irrigation canals, domestic and industrial purposes (Chaudhary and Walker, 2019).

There have been numerous efforts to clean the Ganga. The Ganga Action plan (GAP) commenced in 1985. It was expanded to GAP-II in 1993 and to the National River Conservation Plan (NRCP) in 1995 by including 18 other rivers in the country. In 2009, NRCP was re-launched in the form of National Mission for Clean Ganga (NMCG). In 2014, the NMCG became the implementation authority for the *Namami Gange* programme. What stands out in all plans prior to 2014 is a 'top-down' or centralised approach where local government institutions were missing from the organisational structure (Alley, 2016). Execution was mainly through the line departments of the Centre and State with no involvement of the district administration. Despite the provisions of the 74th Constitutional Amendment Act, there was little devolution of administrative or financial powers. The *Namami Gange* programme has tried to address this shortcoming by devolution of authority and responsibility of controlling pollution at the local level to the District Ganga Committees (DGCs) (Mishra et al., 2021 and "Digital Dashboard for DGCs", 2022).

Alley (2016) points to the complex decision making, implementation, management and monitoring arrangements within which the Ganga mission has to operate. These include Centre-State relations, working out operating costs of PPP projects, complying with environmental laws, factoring-in rulings by courts and tribunals, land acquisition and technological constraints etc. She draws attention to issues like power cuts and shortage of trained staff which often lead to key infrastructure like sewage treatment plants working sub-optimally. Similar views have been aired by Wu et al. (2017) who have analysed *Namami Gange* Mission from the angle of governance and management. They point out that though the mission has been conceived holistically, numerous gaps related to information sharing, trained manpower and coordination between the Centre and States can adversely impact success.

Awasthi (2017) argues that to conserve Ganga, the sources of point and non-point pollution should be dealt differently and has drawn attention to cleaning of the Rhine in Germany through public participation. He believes that given the religious significance of the Ganga, religious leaders can play an important role in mobilising people to keep the river clean. Shah and Rajan (2021) feel that prioritising *aviral dhara* (uninterrupted flow) over *nirmal dhara* (unpolluted flow) can deliver quicker outcomes. Treating human, municipal and industrial waste is a long term project requiring vast resources, besides calling for behavioural change on a mass scale. But the Ganga's dry season flows can quickly be improved by reviewing irrigation in the Ganga Basin. Irrigation in the Gangetic plains today depends more on tube-wells than on canals, therefore the traditional practice of significant diversion of waters from the main stem of the Ganga for agriculture requires a re-think.

In 2017, the Comptroller and Auditor General (CAG) carried out a performance audit of the *Namami Gange* mission. It revealed major deficiencies in financial management, planning, implementation and monitoring, which led to delays in achievement of milestones. The objective of making all Ganga river basin villages 'Open Defecation Free' was not achieved despite claims to that effect. There were shortfalls in forestry interventions for ecological conservation and there was hardly any use of remote sensing data and scientific applications (CAG, 2017).

However, since then Government sources and media reports indicate major achievements under all pillars of the mission, especially in last three years (PIB 2023 and Chengappa 2023). Increased sightings of aquatic animals like Gangetic dolphins and turtles are often cited as indicaters of improvement in water quality ("$4.5 Billion investment", 2023). However, some media reports also paint a more sobering picture while pointing out the enormity of the task. For instance, in the seven years since the unveiling of the programme, the sewage treatment infrastrucure created and upgraded by the Government is able to treat just 20% of

the sewage generated in the five major States that lie along the river. This is expected to increase to about 33% by 2024 and to 60% by December 2026 (Koshy, 2023).

2.3. **Stakeholder Engagement**

Stakeholder engagement and public participation are essential for the success of any mass programme like *Namami Gange*. Two of the five pillars of the programme namely, *Jan Ganga* and *Arth Ganga* are aimed at promoting citizen connect. However scholars have warned that very often public participation gets reduced to a pro-forma exercise to defend pre-determined decisions rather than serving as a genuine platform for the affected public to influence decision making. Diduck et al. (2013) have underscored the necessity of public participation for the success of planning, assessment, mitigation and sustainable human-environmental interactions. Meaningful public participation makes environmental decisions more democratic, which improves their quality and enhances their legitimacy. Das and Tamminga (2012) argue that rethinking the relationship between pollution control and people's everyday relationship with the river should not be overlooked in shaping policy. Public participation is successful when the religious practices and livelihood of people living along the river are accommodated within the scientific approaches of conservation. Menon and Hartz-Karp (2019) have found that capable third party facilitators like NGOs can effectively integrate the public into civic decision-making.

Writing in context of Community Based Natural Resource Management (CBNRM) in Africa, Ribot (2002) argues that 'democratic decentralisation' is essential for institutionalising and scaling up popular participation to make environmental programmes effective. However, currently most 'decentralization' reforms are characterised by insufficient transfer of powers to local institutions, with tight Central Government oversight. Tyagi (2018) on the other hand points

out that in the absence of normatic frameworks, there are practical difficulties in quantifying and assessing the adequacy of stakeholder engagement while framing public policy. She points out the complexities of accommodating the perspectives of people from varying social, economic and political backgrounds.

2.4. **Conservation Challenges in Uttarakhand**

Various studies have brought out that holistic river basin planning and management is essential for sustainable development. Pollution and extraction of riverine water resources for various purposes is inevitable, therefore effective planning and policy implementation are needed to strike a balance between development and sustainability (Srinivas et al. 2020).

This assumes significance for a State like Uttarakhand. Located in the lap of the Himalayas, this scenic State also has several prominent temples that grant it the sobriquet, 'Abode of Gods.' It is particularly famous for the *Char Dham* pilgrimage circuit that includes the shrines of Yamunotri, Gangotri, Kedarnath and Badrinath. The hill state with a population of just 1.1 Crore saw a tourist footfall of 5.35 Crores in 2022 out of which over 50 Lakh tourists visited the *Char Dham* shrines (Singh, 2023). Uttarakhand has been facing severe unemployment and out-migration for past several years. The present State Government has prioritised tourism as one of the main drivers of development and employment generation. During a Global Investors Summit in 2023, it outlined a target contribution of 15% to the State GSDP from tourism alongwith targeted employment of 10 lakh people in the sector. It is planning to develop more tourist circuits besides the temple trails to attract at least 7 Crore tourists annually by 2030 (Khosla, 2023) (U'khand Govt, 2023 and Khosla, 2023). A controversial project of four-laning the *Char Dham* circuit roads has received massive priority not just from the State Government but also by the Centre (Mudur, 2023).

Experts warn that ‘Climate Change’ is leading to rising temperatures, receding glaciers, drying up of springs and erratic rainfall in the Himalayas. Uttarakhand particularly is reeling under the impact of frequent natural disasters like flash floods as well as unusual dry spells (Nandi, 2023). The volume of water in the rivers is shrinking, especially in the lean season. Climate change affects the water temperature, pH, concentration of dissolved oxygen, dissolved organic matter and type of micro-organisms. This in turn impacts water quality, biodiversity and other ecological processes. Therefore plans related to the pollution control in the Ganga need to be intermingled with climate change management efforts by employing better policy planning (Jain and Singh, 2018).

Environmental activists have continually raised concerns about the revenue driven over exploitation of the tourism sector at the cost of pollution and ecological hazards. The infrastructure in Uttarakhand is proving incapable of sustaining the present tourist footfall, leave aside future estimates (Inzamam and Qadri, 2023). The Central Pollution Control Board (CPCB) has pointed out severe limitations on part of Urban Local Bodies in the State to handle solid waste which is set to rise exponentially (Goldar and Mukherjee 2023). The National Green Tribunal (NGT) recently imposed a fine of Rs 200 Crores on the State Government over its failure to curb discharge of untreated sewage into various rivers (“Improper Waste Management”, 2023). Samples of fish taken from the Ganga between Devprayag to Haridwar in Uttarakhand have found plastic, cloth and thermocol inside their bodies which point to solid waste contamination (Sethi, 2023). In a study, Chandra and Kumar (2021) conclude that the prevailing practices of rampant tourism and unplanned development are not compatible with the fragile ecology of the State. However, if sound policies and strategies are adopted, the region has the potential to transform into an environmentally sustainable business model.

In the context of sustainable development policies and major environmental campaigns, Dash and Dash (2021) attribute the success of the *Swachh Bharat*

Abhiyan to a combination of institutional alliances, public participation and media integration. Sia and Wilson (2022) have analysed the *Swachh Bharat Abhiyan* using the Social Identity Model of Collective Action (SIMCA) model. The model has been used before in understanding social movements and protests. The outreach strategies and models adopted for the discourse of *swachhata* (cleanliness) hold lessons for the propagation of *Namagi Gange* as well.

Another strategy which has emerged as one of the most powerful platforms for promotion of any idea is the use of social media. In their work on role of social media in promoting sustainable eco-tourism in the Himalayas, Rawat and Dani (2021) conclude that the potential is huge and that it has a special connect with the younger generation. A study by Rapada et al. (2021) on consumer behavior towards plastic consumption in China concludes that social media can effectively influence users if the information presented is from credible sources and can easily translate into tangible results based on user action.

2.5. **Conclusion**

The review highlights that apart from Government reports there are very few independent studies on the *Namami Gange* programme so far. There have been many attempts in the past to clean the Ganga, without much success. *Namami Gange* aims for a 'bottom-up' approach by empowering the District Ganga Committees (DGCs). Whether it has made a difference has not been analysed so far. Cleaning and rejuvenating the Ganga calls for a massive behavioural change among people. Whether it is happening needs to be examined. Pollution and environmental damage from uncontrolled tourism in Uttarakhand can impact the programme. Whether engagement of all stakeholders in the state is being done to build resilience into the programme needs to be studied.

CHAPTER 3
RESEARCH METHODOLOGY

3.1 Research Strategy

The research is exploratory in nature. A mixed research strategy was adopted involving both qualitative and quantitative approaches. A field visit was undertaken to places along the main stem of the Ganga in Uttarakhand. A survey was also conducted using a questionnaire to assess public awareness about the programme and perception about environmental challenges confronting the state. The responses to the questionnaire were correlated and analysed with the inputs gathered from ground truthing.

3.2 Primary Data Sources

Personal Observation and Interaction. The State capital, Dehradun and five out of the six districts along the main stem of the Ganga were visited over a period of one week (i.e. 11 to 18 February 2024). Stopovers made at important Ganga towns and villages to include Haridwar, Rishikesh, Devprayag, Srinagar, Rudraprayag, Gauchar, Karnaprayag, Chamoli and Joshimath. All sites where infrastructure has been created under the programme were visited. Extensive interaction was carried out with NMCG / Government officials at the state and district levels. Interaction was also carried out with people from a cross section of the society like community leaders, NGOs, students, shopkeepers, hotel owners, taxi drivers and tourists to get their perspective.

Survey & Questionnaire.

(a) A Google Form was administered to collect responses. The survey had 15 questions (both in Hindi and English). the questionnaire was designed to assess three aspects – (i) awareness about the programme and its impact; (ii) perspective on tourism and environmental challenges faced by the state, and (iii) impact of media and social media in influencing behaviour. A copy of the questionnaire is attached at **Appendix A**.

(b) Stratified sampling technique was used. The survey targeted people from all sections of the society including common masses, government servants, private employees, students, locals and tourists. Care was taken to restrict the survey to only people staying in the six districts that fall along the main stem of the Ganga in Uttarakhand i.e. Haridwar, Tehri, Pauri, Rudraprayag, Chamoli and Uttarkashi. It also included some tourists and people visiting the six districts for work. Due diligence was exercised to ensure gender inclusivity in the survey.

(c) For a confidence level of 95% and a margin of error of 5% the minimum sample size required was 385. Accordingly a total of 410 responses were collected. The breakdown of the respondents is as follows:-

(i) Age Profile

Age Bracket	No of Respondents	Percentage	Remarks
Under 20	74	18%	
20 to 60	311	76%	Working age group
Over 60	25	6%	

(ii) Educational Background

Age Bracket	No of Respondents	Percentage	Remarks
Upto Class 12	202	49%	
Graduate	122	29%	
Post Graduate	88	22%	

(iii) Residential Status

Age Bracket	No of Respondents	Percentage	Remarks
Permanent Residents	326	80%	
Temporary Residents	54	13%	
Tourists / Visitors	30	7%	

(iv) Profession

Employment Status	No of Respondents	Percentage	Remarks
Students	130	32%	College students and those in Class XI & XII
Regular job	199	48%	Government service or private employee
Self Employed	81	20%	Farmer/Business

3.3 Secondary Data Sources

Data from websites of various Government Ministries / Departments, NMCG, Central Pollution Control Board (CPCB), Uttarakhand Pollution Control Board (UK PCB), National Green Tribunal (NGT) etc. was analysed. Besides books and journals, articles in various online resources were accessed.

3.4 Research Methodology

Correlation of observations with primary and secondary data was carried out. The main method adopted for different chapters are as follows –

(a) Chapter 4. Overview of Namami Gange Programme and Orientation to Uttarakhand - *Secondary data*.

(b) Chapter 5. Working of SGC & DGCs - *Observations and interactions during field visit*

(c) Chapter 6. Public Awareness and Perception. - *Analysis of questionnaire*

(d) Chapter 7. Impact of Tourism- *Analysis of questionnaire*

3.5 Limitations of the Data and Study

The visit and data collection took place in the month of February and March 2024. It is winter time when the higher reaches in the state are snow bound and all major religious shrines are closed. The number of pilgrims and tourists is at its lowest. Therefore pollution levels and stress on infrastructure and public services is also low. This may have impacted observations and responses to an extent but care was taken to be mindful of this fact during analysis.

CHAPTER 4

OVERVIEW OF THE NAMAMI GANGE PROGRAMME AND ORIENTATION TO UTTARAKHAND

It is important to understand the broad contours of the *Namami Gange* programme before analysing its effectiveness at the state and district level. It is also important to understand the topography of Uttarakhand, the course followed by the Ganga and its head streams and the location of important places in the state for better correlation. Therefore an overview of the *Namami Gange* programme and the state of Uttarakhand is outlined in this chapter.

A. NAMAMI GANGE PROGRAMME

4.1. Evolution

Institutionalised efforts towards cleaning the Ganga started in 1985 with the launch of the Ganga Action Plan (GAP) as a centrally funded scheme by the Ministry of Environment and Forests (MoEF). It was followed by GAP-II in 1993 and the National River Conservation Plan (NRCP) in 1995. The two main sources of pollution of the river have been discharge of untreated sewage and untreated industrial effluents. A major reason for pollution in the Ganga has been insufficient environmental flow (e-flow) due to diversion of waters for irrigation, domestic and industrial use and development. Therefore, despite creation of significant infrastructure under GAP-I &II and NRCP, the river was unable to carry out adequate flushing action. This realisation prompted a shift in strategy where-in the entire river basin was taken as the unit of planning and implementation (NMCG Annual Report, 2022-23).

The paradigm shift was marked by recognition of Ganga as the National River in 2008 and the constitution of the National Ganga River Basin Authority (NGRBA) in 2009 as an empowered planning, financing, monitoring and coordinating body under Section 3 of the Environment Protection Act, 1986. The NGRBA was chaired by the Prime Minister and the members included concerned Union Ministers and the Chief Ministers of the States through which the Ganga flowed.

The National Mission for Clean Ganga (NMCG) started as a Project Management Group (PMG) under the NGRBA for seeking $1 Billion assistance from the World Bank for cleaning the Ganga. In 2011, it was registered as a Society under the Societies Registration Act 1860, to act as the implementation arm of NGRBA.

In 2014, the Ministry of Water resources was reconstituted as Ministry of Water Resources, River Development & Ganga Rejuvenation (MoWR, RD & GR). The work related to Ganga & its tributaries was transferred from MoEF to MoWR, RD & GR. In 2015, the *Namami Gange* Programme was launched as a centrally sponsored scheme with 100% funding by the Central Government with a definite timeline of five years, up to 2020, and a non lapsable budgetary support of Rs 20,000 Crores.

The River Ganga (Rejuvenation, Protection and Management) Authorities Order, 2016 promulgated vide Notification No. S.O. 3187 (E) dated 07 October 2016 led to the constitution of the National Ganga Council (NGC) and the dissolution of the NGRBA. The order also led to the reconstitution of NMCG as an Authority under the Environment (Protection) Act, 1986.

In place of NGRBA a five tiered structure was created. At the top is the National Ganga Council (NGC) under the chairmanship of the Prime Minister, which is overall responsible for the management and control of the entire Ganga

basin. At the second rung is the Empowered Task Force ETF) headed by the Minister of Jal Shakti for inter-ministerial coordination. The NMCG as the implementation authority is at the third rung. The State Ganga Committee (SGCs) headed by Chief Secretaries of Ganga Basin states and the District Ganga Committees (DGCs) headed by the District Magistrates comprise the fourth and fifth rungs.

4.2. **Ganga Basin**

The Order of 2016 defines 'River Ganga' as the entire length of six head-streams in the State of Uttarakhand namely - Alaknanda, Dhauli Ganga, Nandakini, Pindar, Mandakini and Bhagirathi starting from their originating glaciers up to their respective confluences at Vishnu Prayag, Nand Prayag, Karn Prayag, Rudra Prayag and Dev Prayag as also the main stem of the river thereafter up to Prayag Raj and Ganga Sagar.

Tributaries of the Ganga have been defined as those rivers or streams which flow into the Ganga and include the - Yamuna, Son, Mahananda, Kosi, Gandak, Ghaghara and Mahakali River and their tributaries or such other rivers which may be notified by the NGC.

The jurisdiction of the NMCG extends to the states of Uttarakhand, Himachal Pradesh, Haryana, Uttar Pradesh, Madhya Pradesh, Chhatisgarh, Jharkhand, Bihar and West Bengal.

Figure 4.1 The Ganga Basin *(Source: www.wikipedia.com)*

4.3. Structure of NMCG

The NMCG is an empowered organisation having powers of both administrative appraisal and financial approval. It has a two-tiered structure. The Director General, NMCG, heads both the tiers. The Governing Council of NMCG includes representatives from various ministries/departments/agencies like Jal Shakti, Urban Development, Environment, Expenditure, Niti Aayog; Central Pollution Control Board and main stem Ganga States. The Executive Committee is constituted from select members the Governing Council. Its primary role is appraisal and approval of projects up to Rs 1000 crores. The NMCG also provides secretarial support to the NGC.

4.4. **Objectives**

Namami Gange was designed as an umbrella programme, aimed at integrating ongoing NGRBA projects and supplementing them with more comprehensive and better coordinated interventions. It was launched with the following objectives (NMCG Annual Report 2022-23):-

(a) To ensure effective abatement of pollution and rejuvenation of the river Ganga by adopting a river basin approach. Promote inter-sectoral co-ordination for comprehensive planning and management.

(b) To maintain required ecological flows in the river Ganga with the aim of ensuring water quality and environmentally sustainable development.

4.5. **Five Pillars**

The Namami Gange approach differs from earlier attempts as it incorporates multi-sector and multi-agency interventions such as - pollution abatement (*Nirmal Ganga*); improving ecology and flow (*Aviral Ganga*); strengthening people river connect (*Jan Ganga*); research, scientific mapping and evidence-based policy formulation (*Gyan Ganga*); and enhancing people-river connect by boosting economy and livelihood (*Arth Ganga*). *(Refer Figure 4.2)*

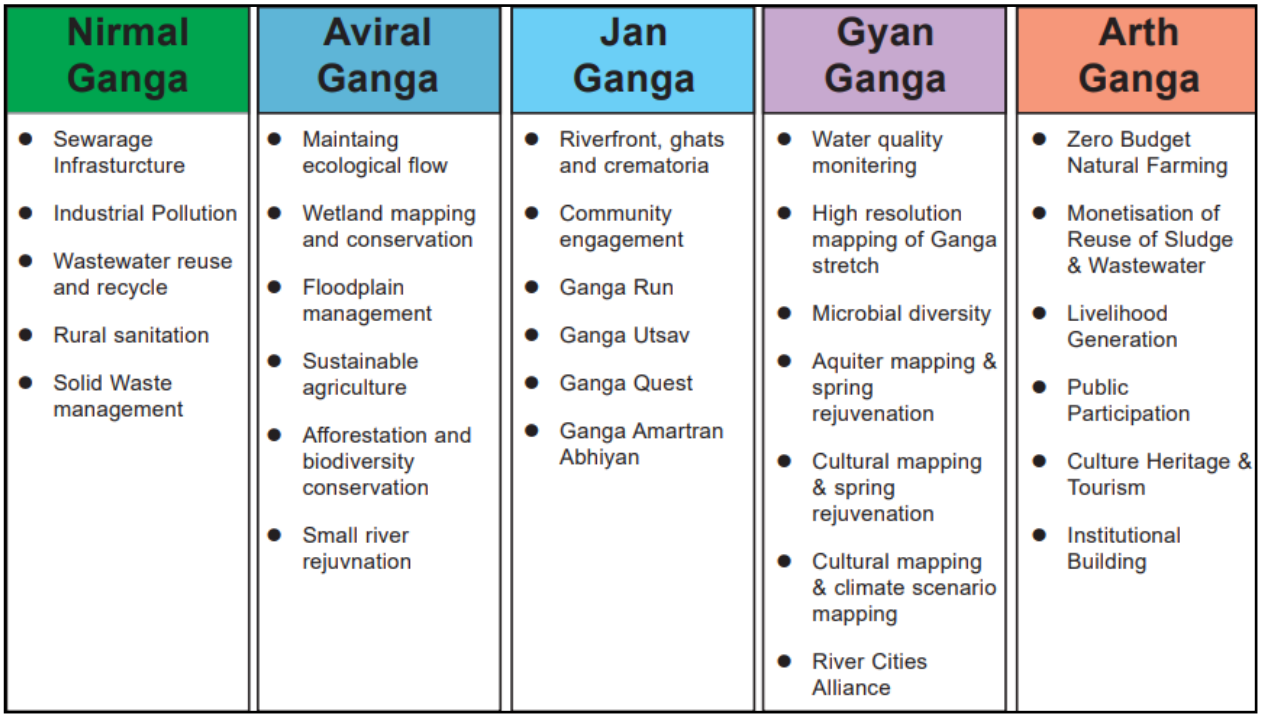

Figure 4.2 Five Pillars of Namami Gange Programme

(Source: NMCG Annual Report 2022-23)

4.6. Major Initiatives

Phase I of the programme ended in 2021. Phase II (upto 2026) is presently underway. The focus in Phase II is on creation of sewerage infrastructure in Ganga tributaries, scaling up of Public Private Partnership (PPP) efforts, circular water economy model and fecal sludge and septage management. The major initiatives undertaken in the programme so far are outlined.

(a) Sewage Treatment. Sewage from habitations accounts for 70% of the pollution flowing into the river. Therefore top priority was accorded to creating sewage treatment capacity along 97 towns and cities along the main stem river. Though sewage management of towns is the mandate of the concerned Urban Local Bodies (ULBs), they had not been able to create adequate infrastructure due to of shortage of funds and lack of technical expertise. Also, significant treatment capacity that was created under earlier

schemes remained either non-functional or operated at sub-optimum levels due to poor operation and maintenance of the assets by the ULBs. Till December 2023, over 292 projects were undertaken at a cost of 30220 Crores which have created 5238.29 km of sewerage network and capacity of treating 5933.37 million litres per day (MLD) of sewage in the five Ganga states (NMCG Annual Report 2022-23).

(b) Solid Waste Management. Floating solid waste in rivers bothers everyone more than dissolved pollution as the sight of floating plastic materials, rotting garbage and animal carcasses is visually repulsive. The responsibility of managing solid waste primarily lies with the Urban Local Bodies and various State Departments. Towards this end, ULB shave been directed to ensure scientific solid waste management with special attention to the following –

(i) No solid waste is disposed in the riverbanks.
(ii) Removal of waste dumps near drains and the river.
(iii) Fitting of screens and filters on drains to trap solid waste.
(iv) Regular cleaning of river banks and bathing ghats.
(v) Posting of anti-littering messages and provision of litter bins.

(c) Industrial Pollution Abatement. The contribution of industrial pollution in the Ganga, is about 20% volume wise. But owing to its toxic and non-biodegradable nature, it assumes much greater significance. The major contributors are tanneries, distilleries, paper, textile and sugar mills. The Central Pollution Control Board (CPCB) and State Pollution Control Boards (SPCBs) are the principal agencies for monitoring water quality. They monitor and enforce discharge standards by the industries and take action against defaulting units. The reports are shared with the NMCG.

(d) Rural Sanitation. Villages in the vicinity of River Ganga also contribute a significant pollution load to the river. The Department of Drinking Water & Sanitation constructed 10,83,688 Individual Household Latrines (IHHLs) in all 4465 villages in 1662 Gram Panchayats along the Ganga and declared all of them Open Defecation Free (ODF), for which NMCG provided Rs. 829 Crores. Further improvement of solid and liquid waste management practices in villages is being taken up under the Swachh Bharat Mission (Grameen) Phase II.

(e) Riverfront Development. River banks in India have always been a part of daily life and culture. Ghats on rivers are used for religious ceremonies, bathing and cremation of the dead. Riverfront development under *Namami Gange* is meant to enhance connect of the people with the river. A total of Rs 1470.13 Cr was sanctioned for development of 223 ghats, 63 crematoria and 9 kunds in the state. Out of these, 196 ghats, 50 crematoria and 9 kunds have been completed (Annual Report 2022-23).

(f) E-Flow. In 2018, for the first time, the E-flow was notified for the Ganga – starting from all the head streams in Uttarakhand to Unnao in Uttar Pradesh. The notification specifies minimum flow to be maintained notwithstanding diversion of water for irrigation, hydropower, domestic, industrial and other requirements. The Central Water Commission has been designated as the authority responsible for supervision, monitoring and regulation of flows. It has been mandated to inspect all hydroelectric projects and barrages and submit quarterly reports to the NMCG.

(g) Rejuvenation of Water Bodies. Wetland onservation, rejuvenation of water bodies and re-use of treated wastewater contribute to increasing the flow in the river. Therefore recharging of springs, protection and conservation of flood plains, conservation of ponds and other water bodies are an important component of ensuring *Aviral Dhara*. Towards this end

the NMCG has partnered with Ministry of Rural Development to dovetail rejuvenation of water bodies into MNREGA activities.

(h) Afforestation. 'Forestry Interventions' are an important component for enhancing the productivity and diversity of the forests in the headwaters of the Ganga and its tributaries. Forest Research Institute (FRI), Dehradun prepared a Detailed Project Report (DPR) for afforestation in 1,34,106 hectares in the five Ganga States at an estimated cost of Rs. 2,293.73 Crores. The NMCG allotted Rs 269.78 Crores for afforestation up to 2020 in around 20,340 hectares.

(j) Conservation of Aquatic Biodiversity. The Ganga river ecosystem supports more than 25,000 flora and fauna species. Biodiversity of any ecosystem is threatened foremost by the loss or degradation of its habitat. NMCG in partnership with Wildlife Institute of India (WII), Dehradun has worked out plans for each species and their habitats.

(k) Ganga Grams. The concept of 'Ganga Grams' involves developing 'model villages' that incorporate sustainable sanitation and cleanliness practices. Besides sanitary excellence, they will promote brand 'Ganga' in their handicrafts, organic farm products and tourism. As a pilot project, 25 Ganga Grams were taken up for development in five states with an aim to subsequently replicate the model across all 4465 Ganga villages.

(l) Arth Ganga. The Arth Ganga model aims to improve the quality of life of people in Ganga Basin and strengthen the public-river connect. Multi-sectoral interventions like promotion of natural farming, promotion of cultural & heritage for tourism, monetisation of sludge and treated wastewater, improving livelihood and economic activities etc. are envisaged.

(m) Ganga Praharis. The NMCG has sponsored a project by Wildlife Institute of India (WII), Dehradun to create a cadre of motivated and trained volunteers known as Ganga Praharis. They are meant to act as the leaders of the public residing in Ganga towns and villages. The aim is to raise awareness about ecological issues and promote conservation of bio-diversity. By 2023, 3772 Ganga Praharis had been trained by WII.

B. BRIEF ORIENTATION TO UTTARAKHAND

4.7. Regions and Districts.

Uttarakhand was carved out of Uttar Pradesh in November 2000. The state capital is Dehradun. The geographical area of the state is 53,483 sq. km. As per the 2011 census, the population of was 1.01 Crores with an average density of 189 persons per sq km (Census, 2011).

The state is endowed with abundant natural beauty, forests and wildlife besides a vibrant culture. It is also popularly called *Devbhumi* (land of Gods) due to the presence of numerous famous temples and religious sites. Religious tourism forms a major portion of the tourism in the state. The most significant draw of the state are the *Char Dham* shrines of Badrinath, Kedarnath, Gangotri and Yamunotri.

The state comprises of two regions and 13 districts. The **Garhwal Region** comprises of the districts of Uttarkashi, Chamoli, Pauri, Rudraprayag, Tehri, Dehradun and Haridwar. While the **Kumaon Region** comprises of the districts of Udham Singh Nagar, Nainital, Almora, Pithoragarh, Champawat and Bageshwar. (*Refer Figure 4.3*)

Figure 4.3: District & Road Map of Uttarakhand *(Source www.mapmyindia.com)*

4.8. Terrain, Vegetation & Natural Drainage

The terrain is mountainous (86% area) with a narrow strip of Terai plains (14% area) in the South West all along the border with Uttar Pradesh. The Great Himalayas run North West to South East. A series of lower ridges run parallel to the Himalayas separated by deep valleys. There is a great variation in altitude ranging from 300m to over 7000m.

The climate and vegetation vary greatly with elevation. The state is home to famous wildlife parks like Jim Corbett, Rajaji, Valley of Flowers, Gangotri and Nanda Devi National Parks. The state has 45% area under forests (Economic Survey 2023).

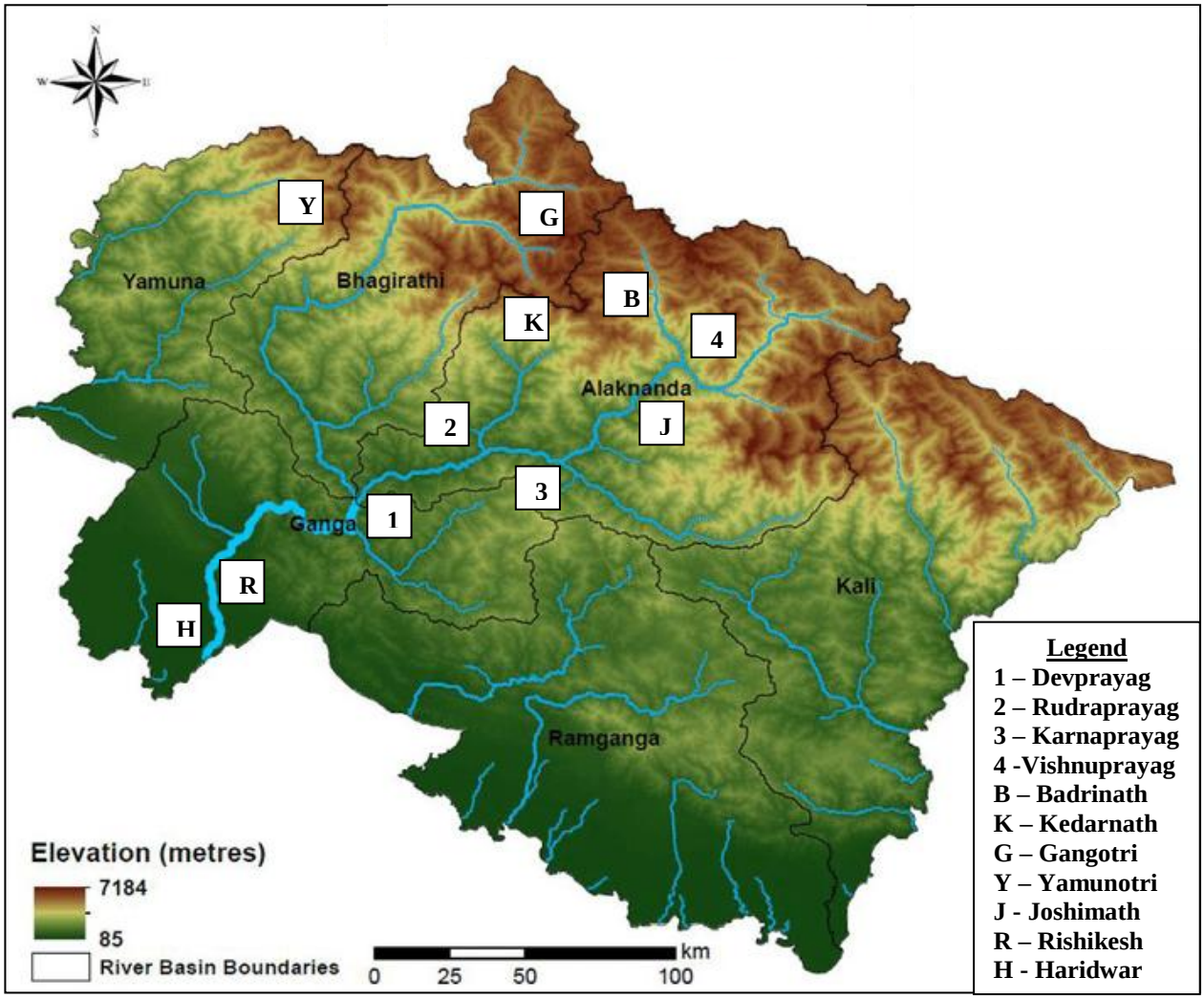

Figure 4.4: Uttarakhand Physical, Natural Drainage and Important Places

(Source: www.researchgate.net) (annotation by author)

The Garhwal region is drained by the Ganga and its tributaries. The Ganga is formed by the confluence of Bhagirathi and Alaknada at Devprayag. It flows South West to Rishikesh and Haridwar for approximately 100 km where it enters the plains. The headwaters of the Ganga are formed by six streams. The Bhagirathi originates from Gangotri Glacier. The Alaknanda originates from the watershed near Badrinath. It is joined by the Dhauli Ganga at Vishnuprayag, Pindar at Karnaprayag and the Mandakini at Rudraprayag before it meets the Bhagirathi. (*Refer Figure 4.3*)

In the extreme North West of the state, the Yamuna originates from the Yamunotri Glacier and forms a separate watershed. It is joined by many streams that originate in Himachal Pradesh. The Kali, Kosi and Ramganga originate in the Kumaon region and flow towards the South and South East. They eventually meet the Ganga in Uttar Pradesh.

4.9. **Major Towns & Road Network**.

The major towns in the state with a population of over one lakh as per 2011 census are – Dehradun (7,14,223), Haridwar (3,10,562), Roorkee (2,73,502), Haldwani (2,32,060), Rudrapur (1,54,485), Kashipur (1,21,610) and Rishikesh (1,02, 138). All the major towns are in the foothills and Terai belt. Except Haridwar and Rishikesh, all towns that lie along the Ganga are small with population less than one lakh. The major tourist and pilgrim centres are marked in Figure 4.3.

The state has 14 National Highways consisting of 2,091 km road length and 4,517 km of State Highways. The road network in the state usually follows the river valleys. NH 34 and NH 7 are two main National Highways that follow the Bhagirathi and Alaknanda valleys respectively.

In 2016, the Central Government sanctioned a project for widening (four-laning and strengthening) of 889 km of National Highways in the state including the roads leading to the *Char-Dham* shrines of at a cost of Rs 12,000 Crores (e-uttaranchal, 2024).

4.10. **Economy**

Uttarakhand has recorded good economic growth since its foundation. According to the Economic Survey of Uttarakhand 2023-24, the contribution of various sectors to the state economy was – Primary Sector

(9.99%), Secondary Sector (46.84%) and Tertiary Sector (43.17%). The GSDP of the state in 2022-23 was Rs 2,30,994 Crores which was expected to rise to Rs 2,60,201 Crores in 2023-24. The Growth Rate in 2023-24 was expected to be 7.58% making it one of the fastest growing states in the country (Economic Survey 2024).

However, the development trajectory is marked by a widening disparity between the hill and plains areas of the state. The per capita income in the hill region is less than half of that of the three plain districts. This has been largely due to the over-concentration of economic opportunities and quality social infrastructure in the plains. Out migration from interior areas is a major challenge in the state. The main reasons are lack of employment opportunities, quality education and health facilities. Agriculture is the largest employer in the state, employing 47% of the workforce though contribution of agriculture to the state SDP is less than 10%.

Tourism is a big contributor to the state economy. The state is also witnessing massive infrastructure development in form of hydropower projects, highways and railway. Imapct of these on the Namami Gange programme is dealt in detail in Chapter 7.

CONCLUSION

The chapter has provided an overview of the *Namami Gange* programme and an orientation to the state of Uttarakhand. It will help understand and better analyse the programme outcomes in the hill state.

CHAPTER 5
WORKING OF STATE AND DISTRICT GANGA COMMITTEES

Decentralisation of authority to the state and district level is one of the main differences between the *Namami Gange* programme and earlier schemes to clean the Ganga. Towards this end, the State and District Ganga Committees have been set up. There are six districts in Uttarakhand along the main stem of the Ganga, namely – Haridwar, Tehri, Uttarkashi, Pauri, Rudraprayag and Chamoli. The state capital Dehradun and important Ganga towns along the main stem were visited as part of a field trip. The observations and impressions from the visit and interaction with officials at the state and district level are outlined in this chapter.

A. STATE GANGA COMMITTEE (SGC)

5.1. Organisation of SGC

The Uttarakhand State Ganga Rejuvenation, Protection and Management Committee, also called the State Ganga Committee in short, is headed by the Chief Secretary and has eight heads of concerned departments as ex-officio members and five domain specialists as nominated members. The composition of the committee is as follows (SPMG, n.d.):-

(a) Ex-officio Members

(i)	Chief Secretary	- Chairman
(ii)	Principal Director, Department of Drinking Water & Sanitation	- Convenor

(iii) Principal Director, Department of Finance
(iv) Principal Director, Department of Urban Development
(v) Principal Director, Department of Irrigation
(vi) Principal Director, Department of Water Supply
(vii) Principal Director, Department of Environment and Forests
(viii) Principal Chief Conservator of Forests
(ix) Chairman, Uttarakhand Environment Protection & Pollution Control Board

(b) Six nominated members (changed every two years)

The SGC is the highest body in the state that is responsible and empowered to take all necessary actions for conservation and rejuvenation of the Ganga. It exercises superintendence, direction and control over the DGCs and its decisions are binding over every government department. The SGC meets once in three months.

5.2. **State Programme Management Group (SPMG)**

The SPMG (also known as the State Mission for Clean Ganga or SMCG) is the implementation arm of the SGC in the same way as the NMCG is for NGC. In Uttarakhand, the Department of Drinking Water & Sanitation (*Uttarakhand Pey Jal Nigam*) has been nominated as the nodal department for *Namami Gange* programme (SPMG, n.d.). The Principal Director of the department is also the Programme Director of SPMG. He is assisted by a team of officers from his own department and specialists employed by NMCG. (*Refer Figure 5.1*).

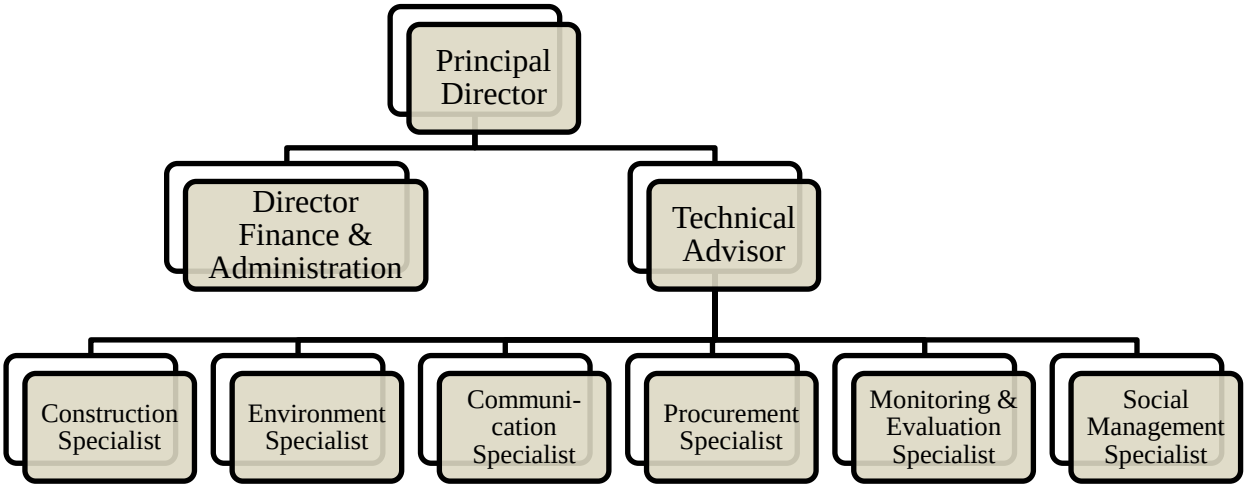

Figure 5.1: Outline Organisation of the SPMG (*Illustration by author***)**

The SPMG carries out planning, management and monitoring of all projects in the state and provides secretarial support to the SGC. The DGCs submit their proposals to the SPMG which processes them for consideration by the SGC and sanction by the NMCG. The SPMG also suo moto initiates projects as per requirement. The projects and activities broadly fall under five major heads as follows –

(a) Pollution control

(b) Riverfront development

(c) Information, Education and Communication (IEC)

(d) Forestry interventions

(e) Economic and livelihood related initiatives

All proposals by the DGCs are vetted by the SPMG to include technical evaluation of the Detailed Project Reports (DPRs), evaluation of environmental compliances and social impact assessment. A construction project undergoes 15 major steps. (*Refer Figure 5.2*).

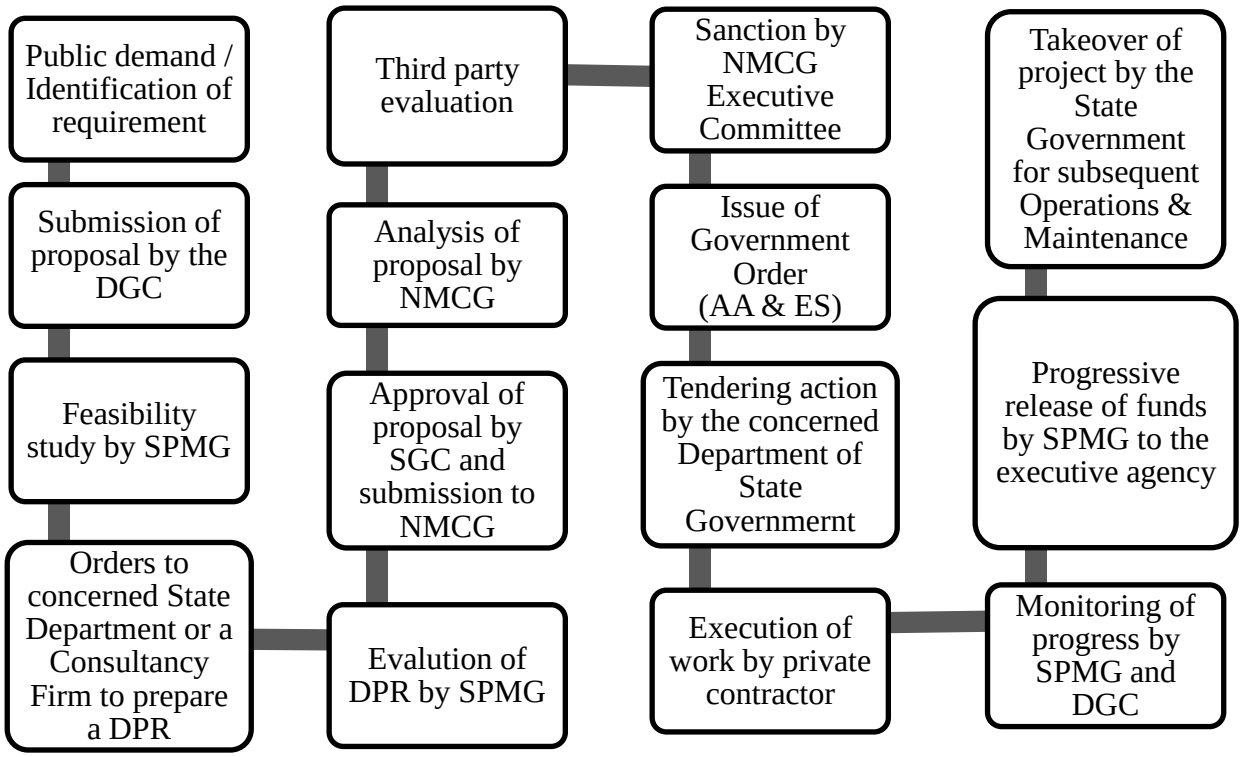

Figure 5.2: Flowchart showing major steps involved in processing of projects (*Illustration by author*)

The cost of all projects and activities is borne entirely by NMCG. There are no projects funded by the State. However the revenue expenditure is shared between the centre and state in the ratio of 70:30. This mainly includes establishment costs like salaries of staff and administrative expenses.

5.3. **Pollution Control**

Pollution control in context of the Ganga involves - treatment of industrial effluents; treatment of sewage; management of municipal solid waste; rural sanitation; and river surface cleaning. Uttarakhand does not have any major polluting industries along the main stem of the Ganga. Solid waste management is being addressed by Urban Local Bodies (ULBs) under the *Swachh Bharat Mission (Urban)*. Rural sanitation is being addressed under the *Swachh Bharat Mission*

(Rural) where-in Uttarakhand became Open Defecation Free (ODF) in 2017. As the flow of Ganga is quite fast in the state, river surface cleaning using trash skimmers is not required. Therefore, the main thrust area of pollution control activities in the state has been on the treatment of sewage.

(a) **Sewage Treatment**.

Treatment of sewage involves two aspects - (i) Interception and Diversion (I&D) of drains and nalas carrying sewage; and (ii) construction of Sewage Treatment plants (STPs). Earlier, at places not covered by a sewerage network, waste water was invariably discharged into drains and nalas that ultimately joined the Ganga. I&D implies tapping of all such drains and nalas and diversion of their flow to STPs.

Decentralized Sewage Treatment Systems convey, treat and dispose wastewater from small communities and dwellings in remote areas in relatively close vicinity to the source of generation. Small decentralized STPs and on-site treatment facilities have been constructed under the programme at Devprayag, Kirtinagar, Karanprayag, Nandprayag, Chamoli and Gopeshwar in the state. (*Refer Figure 5.3).*

Out of the 17 Ganga towns, Haridwar (population 3.10 lakhs) and Rishikesh (population 1.02 lakhs) are the largest (Census 2011). Owing to the population and religious significance which attracts lakhs of pilgrims, the Haridwar-Rishikesh zone contributes about 80% waste load into the Ganga in Uttarakhand (NMCG, n.d.). Therefore the upgradation of existing STPs, construction of new ones and the tapping of all drains in the two towns has been accorded high focus. This includes the commissioning of the two mega STPs at Jagjeetpur and Sarai in Haridwar that were built under the Hybrid Annuity Public-Private- Partnership Model (HAM). Under this model 40% of the capital cost is paid to the contractor on

completion of construction while the remaining 60% of the cost is paid over 15 years as annuities along with O&M expenses. The payments are linked to the performance of the STP which leads to better accountability.

The capacity of the STPs at Jagjeetpur is 68 million litres per day (MLD) and that of Sarai is 14 MLD. In addition, an old STP at Jagjeetpur (27 MLD) has been upgraded and two new STPs of 26 MLD and 7.5 MLD have been constructed at Lakkadkhad and Muni-ki-Reti in Rishikesh. All these projects completed in 2020 have greatly contributed in the controlling pollution in the Rishikesh- Haridwar zone (PIB, 2020).

Not all new STPs in the state are being built under HAM. So far, only Jagjeetpur and Sarai are the two STPs under HAM. Other PPP models continue for smaller STPs and O&M of older ones. The construction of infrastructure related to drinking water supply and sewage in the state is handled by the *Uttarakhand Pey Jal Nigam.* After construction, the Operations and Maintenance (O&M) of the facilities and provision of services to the end user is done by the *Uttarakhand Jal Sansthan*.

Uttarakhand attracts lakhs of tourists every year and the state government has a liberal policy to encourage building of home-stays, hotels and resorts. However the construction of a private STP has been made mandatory for all rental accommodation having more than 20 rooms. The details of STP and I&D projects sanctioned up to 2023 are given at Table 5.1.

Table 5.1 Sewerage Related Projects sanctioned up to 2022				
	No of Projects Sanctioned	**Cost in Rs Crores**	**Capacity of STPs in MLD**	**Sewage Network in Km**
Sanctioned	41	1581.59	223.14	196.23
Completed	36	-	164.50	174.91
In Progress	5	-	58.64	21.32

(*Source: SPMG***)**

All new STPs have a designed life of 30 years and the capacity being created is meant to cater for the population requirements up to 2040. Supervisory Control and Data Acquisition Systems (SCADA) and cameras are being installed in all big STPs to facilitate effective and real time monitoring of their operations. It will prevent malpractices like bypassing the flow without treatment.

Operators of all STPs are required to maintain a record of the quality of treated water. In addition, there is random and independent testing by multiple bodies like the *Jal Nigam / Sansthan*, Central Pollution Control Board (CPCB), Uttarakhand Pollution Control Board (UK PCB) and the National Green Tribunal (NGT). The treated water is either released into the Ganga or into irrigation canals. The sludge from STPs is either sold or given free of cost to farmer cooperatives and to the Forest Department as manure.

(b) **Water Quality**.

The water quality in all major rivers, canals and lakes is regularly monitored by the UK PCB which has 75 monitoring stations across the state. The month wise data of all stations is uploaded on its website.

According to the data, the average water quality has shown improvement since 2015. The overall water quality of the Ganga is Class A (fit for drinking) at all places up to Rishikesh and Class B (fit for bathing) in Haridwar (UK PCB 2024). The prescribed parameters for drinking and bathing by NMCG and UK PCB are given at Table 5.2.

Table 5.2 Prescribed standards of water for drinking & bathing

Parameter	Drinking	Bathing
pH	6.5 to 8.5	6.5 to 8.5
Dissolved Oxygen	6 mg per litre or more	5 mg per litre or more
Biochemical Oxygen Demand (BOD)	2 mg per litre or less	3 mg per litre or less
Faecal Coliform (FC)	50 MPN per 100 ml or less	2500 MPN per 100 ml or less
Faecal Streptococci (FS)	100 MPN per 100 ml or less	500 MPN per 100 ml or less
Overall Class	A	B

(Source: UK PCB)

(c) **Solid Waste Management**.

The Urban Development Directorate is responsible for Solid Waste Management (SWM). Door to door collection of garbage is being arranged by all ULBs. The concept of neighbourhood garbage bins and landfills has been done away with. Municipal waste is collected, processed and compacted at Material Recovery Facilities (MRF) that have been set up in all big towns. The compacted waste is sold to private scrap dealers.

Under Swachh Bharat Mission (Urban) all legacy dumpsites are to be remediated and converted into green zones. The removal of legacy waste

is in progress. UK PCB and NGT are actively monitoring the unauthorised dumping of garbage and construction debris and imposing fines where required.

5.4. Riverfront Development

Riverfront development includes construction and upgradation of bathing ghats and crematoria. It also includes landscaping of the area and provision of facilities like toilets and changing rooms. The construction of *Chandi Ghat* and renovation of *Har ki Pairi* at Haridwar at a cost of Rs 66.74 Crores and Rs 33.85 Crores respectively are major achievements. The details of Riverfront development works in the state upto Dec 2023 are given at Table 5.3.

Table 5.3 Riverfront development projects sanctioned up to 2022

District	Bathing Ghats		Crematoria	
	Completed	In Progress	Completed	In Progress
Haridwar	4	2	6	-
Tehri	4	-	2	-
Uttarkashi	3	-	6	-
Pauri	3	-	5	-
Rudraprayag	5	-	2	-
Chamoli	1	5	5	-
Others	2	-	-	-
Total No	**24**	**7**	**26**	**Nil**
Total Cost	**328.59 Cr**			

(*Source: SPMG***)**

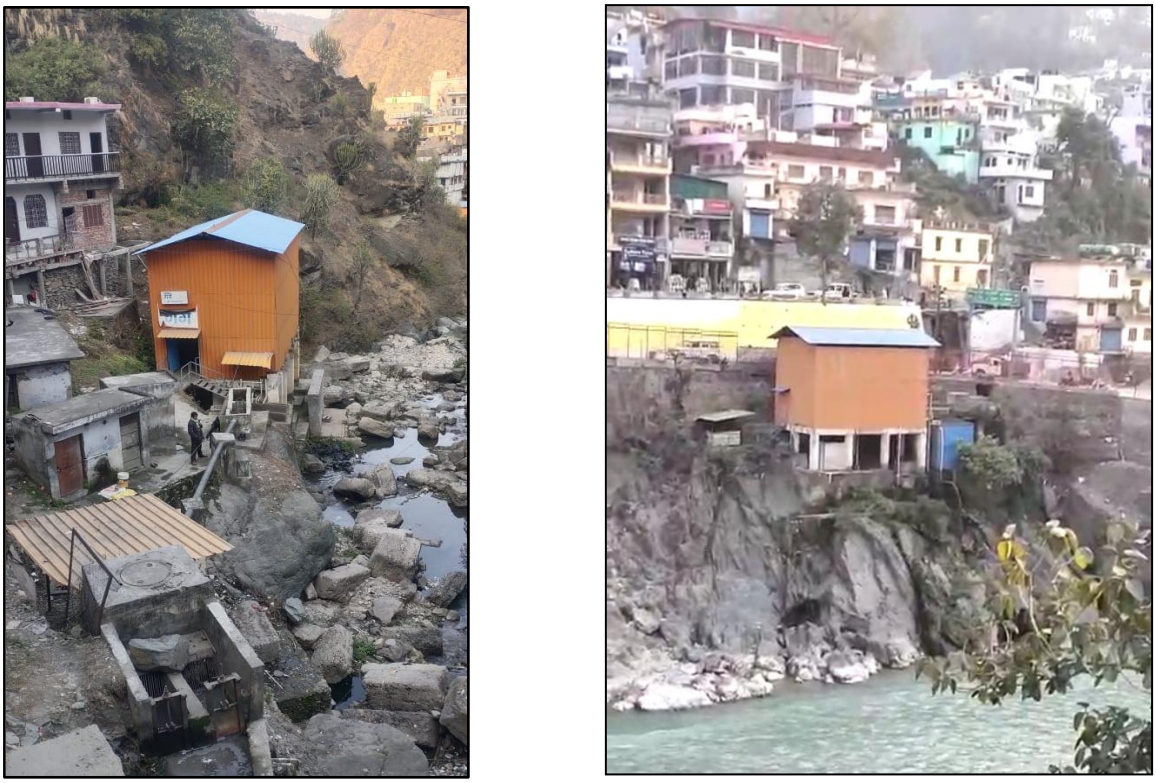

Figure 5.3 (a) & (b): Standalone STPs constructed on steep mountain slopes

Figure 5.4: Upstream view from Chandighat, Haridwar
(*Pictures by author***)**

5.5. **IEC Activities**

IEC activities involve spreading awareness and establishing connect between the people and the river. As part of IEC activities, the SPMG organizes two major events every year. These are the *Swachhta Pakhwara* from 15 to 31 March every year and *Swacchta hi Sewa* from 15 Sep to 02 Oct culminating in Gandhi Jayanti. In addition, *Ganga Utsav* is celebrated on 04 November every year. The activities organised during these events include, public rallies, sports & games, quiz competitions, cultural programmes, run, yoga, river rafting and tree plantation.

The SPMG issues a clandar of events to the DGCs for the whole year. The DGCs plan and execute activities at their own end for which they get funds from the SPMG. Many activities are conducted in the ghats developed under the programme. Over 34 colleges and 70 schools in the state have been empanelled by the SPMG. The DGCs also partner with other State Departments at the local level for cleanliness drives, plantation drives and outreach activities.

The state has on average been getting an amount of Rs 5 Crores every year for IEC activities. It is further allotted to the DGCs as per their demand / proposals.

5.6. **Forestry Interventions**

Forestry interventions are aimed at ecological conservation and restoration of the natural landscape. These include afforestation, spring shed management, rejuvenation of streams, wetland conservation and conservation of biodiversity. The State Forest Department carries out these activities while the funding is by NMCG.

However, the direct funding for forestry interventions has practically stopped in Phase II of Namami Gange. Instead all states have been asked to use source their activities from the Compensatory Afforestation Fund (CAF) set up under the Compensatory Afforestation Fund Management and Planning Authority (CAMPA) Act, 2016. Even in Phase I, the allotment for forestry interventions was a fraction of what was proposed in a DPR prepared by Forest Research Institute (FRI), Dehradun. Uttarakhand got Rs 144.40 Crores which is approximately 16.29% of the projected requirement. The works undertaken from 2016 to 2023 in the state under *Namami Gange* Phase-1 are outlined in Table 5.4.

Table 5.4 Forestry Interventions under Phase 1

Activity	**Amount Projected** (in Rs Crores)	**Amount Released** (in Rs Crores)	**Area Proposed to be Targeted (in Hectares)**	**Area Actually Targeted (in Hectares)**
Conservation Interventions	141.01	19.75	7967	1128
Natural Landscape	546.82	108.31	30303	10417
Agricultural Landscape	53.13	3.75	15180	1433
Urban Landscape	134.24	10.72	1406	91
Supporting Activities	10.70	1.86	-	-
	Rs 885.91	Rs 144.40	54855	13068

(*Source: Uttarakhand State Forest Department***)**

B. DISTRICT GANGA COMMITTEES

5.7. Composition

The District Ganga Protection Committees, or the District Ganga Committees - DGCs in short, were set up in the state in 2017 following directives from the NMCG in 2016. The composition varies slightly from district to district but broadly follows the NMCG guidelines and is as follows:-

(a) Seven Ex-officio Members

- (i) District Magistrate (DM) - Chairman
- (ii) Nominated Divisional Forest Officer (DFO)- Convenor
- (iii) Officer from Uttarakhand *Pey Jal Nigam*
- (iv) Officer from Uttarakhand *Jal Sansthan*
- (v) Officer from Uttarakhand Irrigation Department
- (vi) Officer from Uttarakhand Public Works Department
- (vii) Officer from Uttarakhand Environment Protection & Pollution Control Board

(b) Six Nominated Members (changed every two years)

- (i) One to two Presidents of Urban Local Bodies (ULBs) / Gram Sabhas
- (ii) One to two officers from other departments like Health, Agriculture, Labour etc.
- (iii) One to two representatives from local social organisations, business associations, NGOs or noted environmentalists

(c) District Projects Officer (DPO), Namami Gange - Secretary

(d) Invited members (as deemed necessary)

5.8. **Meetings and Agenda**

In 2022, the NMCG directed that meetings of the DGC shall be 'Mandatory, Monthly, Minuted and Monitored' (4M). This is being followed in the state and the meetings are held on the second Friday of each month. The minutes of the meetings are shared with the SMCG and all departments of the State Government. They are also uploaded on the Ganga District Performance Monitoring System (GDPMS) portal of the Ministry of Jal Shakti.

The NMCG has prescribed a format for the meetings which includes three heads namely national agenda, local agenda and seasonal agenda. In practice, the issues that are typically covered in the meetings are as follows:-

(a) Progress of construction of STPs and I&D projects and their O&M.
   (i) Construction of STPs and their taking over by the State Government.
   (ii) Progress of connecting sewer lines to STPs.
   (iii) Work performance of STPs including real time monitoring.
   (iv) Sludge management.

(b) Review of compliance of directions on –
   (i) Collection and disposal of Municipal Solid Waste (MSW).
   (ii) Legacy waste disposal.
   (iii) Income from compost and compacted solid waste.
   (iv) Income from imposition of fines on littering and use of plastics.

(c) Progress of works of riverfront development and their O&M.

(d) Progress of forestry intervention activities.

(e) Miscellaneous issues.

However, the format is not strictly adhered to and there is considerable variation in the degree of details in recording the minutes of DGC meetings between districts.

5.9. Administrative and Financial Powers

The DGC has adequate administrative powers as it is headed by the DM of the district. It derives its powers from the powers vested in the DM. The members are officers from all stakeholder departments, ULBs and Gram Sabhas. Compliance of decisions taken / directions is mandatory and status is reviewed in the meeting of the following month.

However, the DGC does not have any financial powers. It does not handle any funds except those meant for IEC activities. It can propose projects which are vetted by the SPMG, approved by the NMCG and executed by the selected agency (Irrigation Department, Public Works Department (PWD) or WAPCOS). It can monitor progress of work and recommend release of payments to the executing agency by the SPMG. But it has no funds of its own to undertake any work or conduct any activity at its own level.

5.10. Enforcement of Rules and Regulations

Namami Gange is a cross-cutting programme. Activities of different departments directly and indirectly contribute to Ganga conservation and rejuvenation. The DGCs are basically a coordination mechanism at the functional level. Adequate laws and rules exist for controlling pollution, curbing environmental degradation and ensuring sanitation, public health and hygiene. However it is enforcement of these laws by respective departments that is often lacking. The DGC acts as a forum for the DM to review their enforcement.

Some of the areas where DGCs are making a difference are –

(a) Timely completion of works related to construction of STPs and sewerage network - by *Pey Jal Nigam*.

(b) Ensuring optimum functioning of STPs and monitoring the quality of discharged water by *Jal Sansthan*.

(c) Enforcement of waste segregation at source, door to door collection of garbage and scientific disposal of municipal solid waste - by ULBs.

(d) Removal of legacy waste from unauthorised landfills - by ULBs.

(e) Enforcement of ban on plastics & fines for littering - by ULBs.

(f) Curbing dumping of construction waste and debris in rivers - by PWD.

(g) Curbing discharge of industrial effluents - by UK PCB.

(h) Stopping encroachment of land in flood plains of rivers - by Irrigation Department.

(j) Forestry interventions to restore degraded landforms - by Forest Department.

(k) Conduct of awareness and community engagement activities - by SDMs and Education Department.

(l) Stop any activity from taking place that is endangering the river and refer the matter to the SGC / SPMG - By DM

5.11. **Initiatives by Award Winning DGC**

The DGC of Chamoli received the Prime Minister's Award for Excellence in Public Administration for the year 2020. Good leadership by the DM and proactive initiatives by other members led to the district making tangible gains in programme implementation. The specific activities and best practices where the district scored over other districts are highlighted (inputs provided by DPO Chamoli).

(a) **Timely Completion of STPs**. Chamoli is a remote district with very rugged terrain that includes permanent snow clad peaks and glaciers. Owing to heavy snowfall and low temperatures, the time available for executing works in most places is limited. Moreover, construction material and skilled labour have to be brought from far off places as local resources are scarce. Construction is difficult in steep slopes necessitating design modifications. Yet the district completed 15 out of 16 planned STPs within the designated timeframe of 2020. One STP that got delayed was due to a landslide that washed away the access road.

(b) **Solid Waste Management**. There are 10 Ganga towns in the district. A detailed mapping of households, shops and hotels in each ward was carried out for effective door to door collection of waste. As a result of proactive measures for cleanliness and proper disposal of municipal solid waste, three towns in the district (Gauchar, Joshimath and Karnaprayag) ranked among top 10 in the country in the *Swachh Sarvekshan* of 2020.

(c) **Springshed Management**. Afforestation activities and check dam construction was undertaken in six watersheds to recharge springs, aquifers and streams. The increased water availability was tapped to provide piped water supply to over 3275 people residing in 33 hamlets and 12 villages. It reduced the average distance for fetching water from 2.5 km to 100m.

(d) **Rejuvenation of Mothugad**. Mothugad is a small rain-fed river in the district unlike most other streams that are snow fed. It flows through Gairain Block which is a water scarce area. Owing to developmental activities, deforestation and reducing rainfall pattern, the perennial Mothugad turned into a seasonal nala. Rejuvenation of the stream involved undertaking a scientific study to identify 12 recharge zones. In each zone, specific works were undertaken which included tree plantation, construction of infiltration holes, check dams, trenches, *chal-khal* and bio-percolation barriers. All the works were geo-tagged using latest GIS technology for mapping and subsequent monitoring. MNREGA and CAMPA funds were utilised to execute the works with active participation of local communities and school children. As a result, the nala has once again become a perennial stream. Moreover, the works undertaken were standardised by a group of experts to include size of trenches and dams, their inter-se distances, type of trees to be planted alongwith the labour and cost involved. This has facilitated scalability and replication of the similar projects elsewhere.

(e) **Community Engagement and Livelihood**. Besides the famous shrine of Badrinath, the district has numerous other temples and places of religious significance. A project to convert flowers offered in the temples into *dhoops* and *agarbattis* was started for waste to wealth creation. Community participation was ensured during all activities like cleanliness drives, afforestation, springshed management and Mothugad rejuvenation to strengthen stakeholder engagement.

C. OBSERVATIONS AND IMPRESSIONS

The overall standard of cleanliness observed across towns was good. No major sources of pollution or any polluting activities were seen. The dates of the visit did not coincide with the dates of the DGC meeting, however besides interaction with officials, the minutes of the last three meetings of all DGCs were studied to get an understanding of the issues confronted at the grassroots level.

5.12. Working of DGCs

Though the mandate of all DGCs is the same, there is a difference in their style of working and effectiveness. Apart from the varied conditions in each district, the difference also stems from the leadership and priorities of the District Administration and the initiative of the committee members. *Namami Gange* is one among many pressing issues that require the attention at the district level. In some districts the DGC meetings are often presided over by the DFO instead of the DM. Examination of the agenda points and minutes of the DGC meetings of all districts also indicates considerable variation. In some districts even small details like amount generated from imposition of fines and monetization of sludge are recorded. In others, besides progress of STPs and I&D works, the other dimensions are hardly discussed.

The members of the DGC are all ex-officio members who keep getting transferred. Therefore the performance of districts varies over time. The award earned by DGC Chamoli in 2020 is indicative of the imagination and effort displayed the DM and members of that time.

5.13. **Working in Silos and Sharing of Best Practices**.

The focus of most DGCs appeared to be on STPs and I&D works. Possibly it stems from the fact that the nodal department is *Pey Jal Nigam*. With adequate infrastructure coming up, the focus needs to shift to other dimensions. Though the DGCs are meant to be the nodal forum for all activities related to the Ganga, they are often out of the loop. Many state departments are undertaking activities like promotion of organic farming, livelihood schemes, IEC and cultural activities etc. But as they are not represented in the DGC, no record / data of their efforts and achievements is maintained by the DGC. It indicates a tendency to work in silos.

Apart from initiatives taken by Chamoli district, the efforts by DGC Haridwar also deserve mention. In Haridwar, representatives from organisations like Ganga Sabha and Shanti Kunj which manage religious sites like *Har ki Pairi*, as also various NGOs and social organisations like *Ganga Vichar Manch* and *Vivekanand Janhit Trust* and representatives from the media are invited to DGC meetings. The Senior Superintendant of Police (SSP) and the District Tourism Development Officer (DTDO) also invariably attend in capacity of invited members. Haridwar is the gateway to the hills and receives very heavy tourist and pilgrim footfall. The involvement of all stakeholders makes the deliberations in the DGC more substantive. Another good practice being followed in Haridwar is the administering the 'Ganga pledge' during *Ganga Aarti* in all the prominent ghats in the town. The idea was first mooted in a DGC meeting. Another practical suggestion that came up similarly was to encourage use of cloth bags and glass bottles at religious sites instead of plastics and polybags.

Presently, there appears to be no mechanism for sharing of best practices between DGCs in the state. The initiatives of Chamoli (spring shed management and seasonal stream rejuvenation) and Haridwar (broad based DGC with invited members) have not been replicated elsewhere. The presence of SSP and DTDO in the DGCs is another good practice that can greatly contribute to enforcement of

regulations during the tourist season. The SPMG is best placed to take the lead and facilitate better collaboration and lateral flow of information between districts.

5.14. **Staffing of SPMG & DGCs** .

The top three officers in the SPMG i.e. the Principal Director, the Finance Director and Technical Advisor are all State Government officers posted with the *Uttarakhand Pey Jal Nigam*. Overseeing the Namami Gange programme is an additional responsibility assigned to them over and above their normal duties. As such they divide their time between the State Secretariat and the Namami Gange office. The only full-time staff at the SPMG are the specialists and support staff. However they are employees of NMCG and are not Government officers. As such they do not have any executive powers. The day to day work at the SPMG requires a lot of inter agency coordination. The specialists, owing to their status, face limitations in seeking inputs from government departments and working proactively. Appointing one to two State Government officers of adequate seniority to work full time in the SPMG will greatly enhance its output. It will improve oversight over work being done and also facilitate coordination with outside agencies.

At the district level, the DPO is the only official in the DGC who is not an ex-officio member of some department. He or she brings a holistic view point and continuity to the efforts of the DGC. However being an employee of the NMCG, he/she too faces similar challenges. The DPO works under the Convenor (DFO) and provides secretarial support to the DGC. The workload on DPO is quite a lot which includes making of all plans, proposals and reports; compiling follow up action on DGC meetings; replying to notices by the NGT; and coordinating the conduct of all IEC activities. This leaves no time for field visits and site inspections to monitor works and gather inputs for projects. Most DPOs admitted that they had never travelled beyond the District Headquarters. Therefore there is a

necessity of either deputing an additional officer as Assistant DPO or at least one to two clerical staff to assist and share the office load.

The SPMG website is not updated and besides background information, no data on status of various projects is available. Even during personal interaction, only the data related to sewage projects and IEC activities was readily available. Data related to other departments like forestry interventions had to be sought from respective departments. Possibly this shortcoming is a fallout of the staffing practices in SPMG where a full time officer is not posted. As a nodal body the website of the SPMG should be fully updated after taking inputs from all concerned departments.

5.15. **Unaddressed Sources of Pollution**

Despite considerable efforts for controlling pollution in the Ganga, challenges remain. Some of the sources of pollution observed during the visit or brought to notice by local stakeholders are highlighted.

(a) **Sewage**. Some amount of untreated sewage is still getting discharged into rivers and streams at places. The reasons for this are -

Many smaller nalas in towns still remain to be tapped, often due to lack of space. Moreover, the volume of flow in many tapped nalas is more than the intake capacity of pipes leading to STPs. As a result only part of the discharge gets treated and the rest joins the Ganga. e.g. STP at Muni-ki-Reti in Rishikesh. (*Refer Figure 5.5 & 5.6*)

So far, sewage infrastructure has mainly focussed on towns along the main stem of the Ganga. The towns on the tributary streams remain to be addressed. e.g. the Song River origintates near Dehradun and joins the Ganga between Haridwar and Rishikesh.

Considering that the river water is fit for drinking in Rishikesh but not in Haridwar points to untreated waste getting added in the Rishikesh – Haridwar zone.

Despite being banned, construction has been happening on the immediate river bank and flood plain of the Ganga and its tributary streams. At many places illegal slums have come up on dry nala beds. These unauthorized settlements do not have septic tanks and often do not even have proper bathrooms or toilets. The waste water is directly discharged into the rivers. Moreover in all old towns, the houses are built very close to the river. Many of them are so located that there is no space to tap the drains or make septic tanks. (*Refer Figure 5.7 & 5.8*).

The *Namami Gange* programme is mandated to only carry out I&D of major nalas and drains. It is not responsible for constructing or upgrading the sewer network in towns which remains the responsibility of the ULBs. The sewer network is old in most towns. Leakages and flow from smaller nalas that are yet to be tapped finds its way to the river.

(b) **Solid Waste**.

Though door to door collection of waste has been made mandatory in all towns, waste segregation at source is not happening. This makes disposal difficult. Material Recovery Facilities (MRF) have been set up in big towns where municipal solid waste is being compacted. However there are no compactors in smaller towns and unauthorised dumping of waste in ditches and landfills is still happening. (*Refer Figure 5.9*).

The NGT has also ordered removal of all legacy waste from unauthorised landfills. There is 1366 tonnes of legacy waste at Joshimath and 2789 tonnes at Karnaprayag and will take time to remove. However fresh illegal dumping of garbage at the sites is still happening and compounding the problem. (*Refer Figure 5.10*)

There is no arrangement for waste collection in rural areas although they generate significant amounts of plastic and non-biodegradable waste. While towns are relatively clean, the villages in Uttarakhand are littered with non-biodegradable waste. In case of many villages this waste ends up in the river.

At religious sites discharging *puja* items and discarding old clothes into the river as part of rituals is a common practice. Similarly during festivals like Ganesh Chaturthi and Durga Puja the immersion of thousands of idols takes place in the Ganga, especially in Haridwar. Despite encouraging people to use idols made of clay, the use of idols of plaster continues. Also despite advisories to do immersion in specially made ponds, thousands of idols are immersed in the Ganga. While such practices are linked to sentiments of people, they pollute the river banks for many miles downstream.

Cities like Haridwar witness a surge of devotees during important festivals. While there is grant of adequate funds for the *Kumbh Mela* and *Ardh Kumbh Mela* (once every 6/12 years) alongwith elaborate arrangements, there is no such assistance for other events like the *Kanwar Yatra* which too attracts lakhs of pilgrims over a whole fortnight every year. Such religious gatherings greatly add to the generation of solid and liquid waste.

Figure 5.5: Example of partial tapping of a nala at Mun-ki-Reti, Rishikesh

Figure 5.6: Part flow of nala treated by STP while balance remains untreated. Both joining the Ganga at Muni-ki-Reti, Rishikesh

(*Pictures and annotation by author*)

Figure 5.7: Construction in floodplain and nala bed in Rishikesh
(*Picture by author***)**

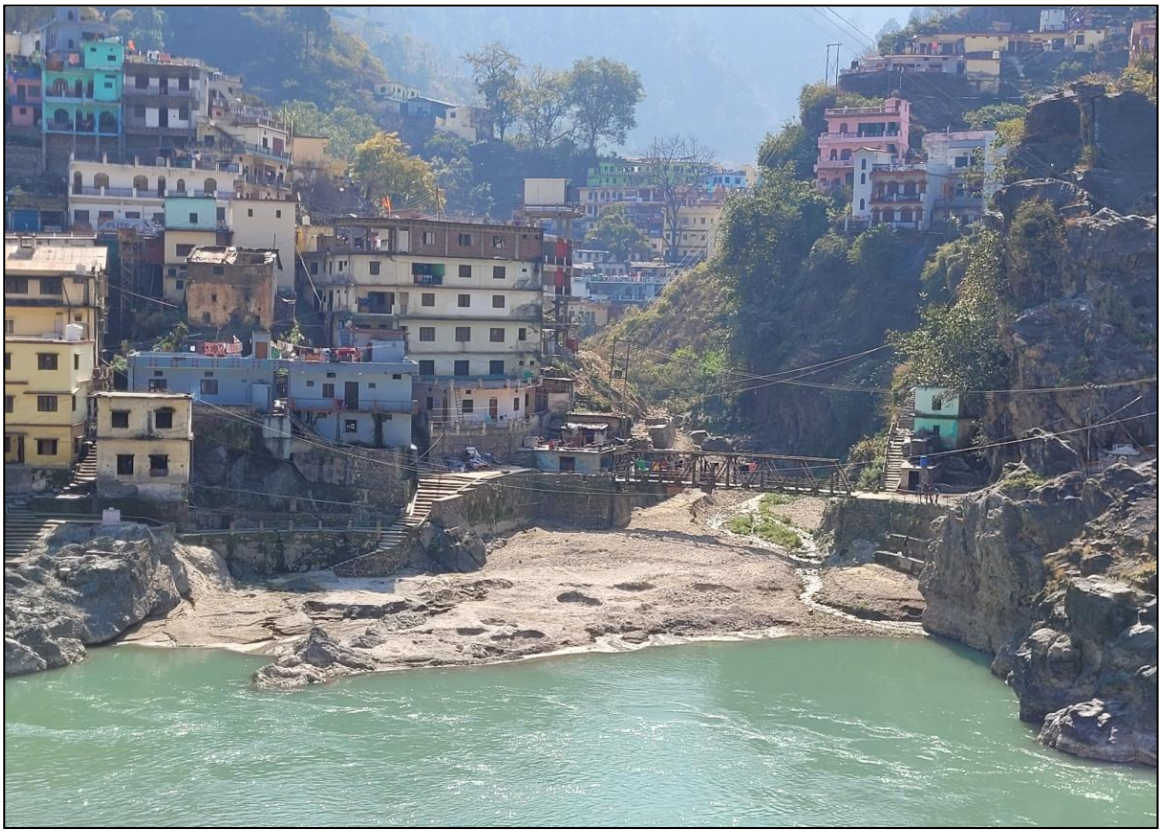

Figure 5.8: Houses on immediate riverbank at Rudrapryag
(*Picture by author***)**

Figure 5.9: Illegal dumping and burning of garbage by riverside at Agastmuni

Figure 10: Dumping of garbage in open at Joshimath
(*Pictures by author***)**

(c) **Waste Generated by Floating Population**. The state attracts lakhs of tourists between April and October. The infrastructure for waste management has been created for the permanent population. All Ganga towns have a population of barely a few thousand but they receive many times more visitors every day during the tourist season which overwhelms the system. Another segment of the floating population are labourers working on hundreds of ongoing infrastructure development projects in the hills like dams, railway line, tunnels and roads. The temporary camps where these labourers stay are also sources of unaddressed pollution.

(d) **Temporary Shacks**. Thousands of temporary shacks come up along all roads and tracks in the state during the tourist season. They highways get dotted with a continuous stretch of food-stalls and dhabas. As per local officials these shacks are one of the biggest sources of pollution, both solid and liquid. The waste is dumped into the closest ditches and streams. As these shacks are outside the limits of towns, the municipal bodies have no jurisdiction over them. The village panchayats overlook them as they are a source of income for the local villagers.

5.16. Forestry Interventions and CAMPA

The Compensatory Afforestation Fund (CAF) controlled by the CAF Management and Planning Authority (CAMPA) was created for mitigating the impact of diversion of forest land for non forest uses. It is meant to be spent on afforestation activities, regeneration of ecosystems, wildlife protection and creation of forest inf rastructure.

Forest officials highlighted many problems in getting funds from CAMPA as versus allotment of funds by the NMCG. CAMPA funds are meant for many uses and Namami Gange is just one of them, so there is a limit to the funds that can be allotted. Also the process of allocation is quite tedious. Forestry

interventions fall under four heads namely – conservation interventions, natural landscape, agricultural landscape and urban landscape. The latter two are not core forestry activities as they are executed by the agriculture and horticulture departments. Therefore getting CAMPA funds for them will prove difficult.

Moreover conservation intervention activities no longer form part of the charter of Forest Department after the creation of Spring and River Rejuvenation Authority (SARRA) under the Watershed Management Directorate by the State Government in 2023 (UL WMD, n.d.). Forest officials have highlighted that the only remaining feasible activity by the forest department under Namami Gange is afforestation. However, scope for that is limited as Uttarakhand already has 45% area under forests. Therefore, no major initiatives have been planned under Phase 2 of Namami Gange in Uttarakhand.

5.17. **Management of Assets**

Assets created as part of Riverfront Development are handed over to the State Government after completion. It is seen that the assets are not maintained and their condition has deteriorated rapidly. Also, some bathing ghats and crematoria got damaged in floods in 2021 and 2023 but have not been repaired thereafter. The STPs and I&D infrastructure have so far not faced such a situation as they are under contractual liability of the developer for 5 to 15 years. The lack of maintenance support by the State Government can have a dampening effect on the gains made by the programme so far. Repairs should be carried out and adequate funds should be earmarked for sustenance of the assets. (*Refer Figure 5.11 & 5.12*)

Figure 5.11: Damaged and neglected ghat near Kirtinagar

Figure 5.12: Damaged ghat and polluted riverfront at Srinagar
(*Pictures by author***)**

5.18. **Arth Ganga**

Though some initiatives have been taken to promote local Self Help Groups (SHGs) and link them to the Ganga, a sustainable economic model that provides viable livelihood opportunities has not emerged. Projects like waste to wealth largely remain on paper and organic farming etc is yet to take off in a big way. The subject is also hardly discussed in any of the DGC meetings. However, seen from another perspective, the Ganga is inherent in religious tourism in the state. Tourism itself is the best example of Arth Ganga as it sustains thousands of livelihoods.

5.19. **Ganga Grams and Ganga Praharis**

Ganga Grams have been notified in the state in 2023. However so far no major activities related to them have taken off. Similarly, Ganga Praharis were conceived as motivated and trained volunteers who would mobilise communities for ensuring cleanliness and conservation of biodiversity along the river. Though some volunteers from Ganga villages were trained by WII, Dehradun there is little interface between them and the DGCs and SPMG. Presently, there are just a handful of Ganga Praharis in each district and they are working under the directions of WII. The DGCs have not been dovetailing them into various activities.

CONCLUSION

A considerable amount of infrastructure has been created in the state under the programme which started fructifying only after 2020 and the impact is now visible in terms of improved water quality and cleaner riverfront. The implementation of the Swachh Bharat Mission (urban and rural) in a similar time

frame has had a complementary effect on *Namami Gange* owing to better management of solid and liquid waste which otherwise invariably found its way into the river. .

The functioning of the SGC and DGCs has evolved over the last eight years and they are working effectively. The DGC is a good coordinating mechanism that brings together all stakeholders regularly. The devolution of responsibility along with the 4M model of DGC meetings has brought about greater accountability. However there is scope for improvement. There is a variation in the diligence with which the programme is being pursued in different districts that stems from competing priorities at the local level and personality factors. A mechanism for sharing of best practices among districts needs to be worked out. The staffing of the SPMG and DGCs can be improved by deputing full time officers and clerical staff. Over reliance on NMCG employees has its limitation.

There is a need to consolidate on the gains and focus on unaddressed sources of pollution. Tributary streams of the Ganga, smaller untapped nalas in towns, slums, encroachments on flood plains and old sewer networks in cities are some of the continuing sources of untreated liquid waste that deserve attention. Though ULBs are striving for proper collection and disposal of solid waste, unauthorized dumping of garbage is happening at places. Heavy rush of visitors during the tourist season and during religious festivals greatly adds to the garbage levels. The problem is more acute in villages where there is no system of garbage collection and disposal.

Certain other areas for improvement are better maintenance of assets like ghats by the State Government after they are handed over, a rethink on funding of forestry interventions out of CAMPA and strengthening the *Jan and Arth Ganga* pillars by more effective IEC activities.

CHAPTER 6
PUBLIC AWARENESS AND PERCEPTION

6.1. **Introduction**.

The Ganga is a highly stressed river due to immense pressure from human activity all along its course. Cleaning and rejuvenating the Ganga is a complex task that calls for a massive behavioural change in the public, besides other things. The priorities and perception of all stakeholders need to be aligned with the goals of the programme. The general public is the biggest stakeholder.

In order to assess whether the *Namami Gange* programme is succeeding in mobilising and sustaining public support a survey was conducted through a questionnaire using Google Form. The survey was conducted in the months of February and March 2024 in all districts along the main stem of the Ganga in Uttarakhand. Stratified sampling technique was used to collect responses from all sections of the society including salaried employees, government servants, self employed, students, shopkeepers and tourists. Care was taken to ensure gender inclusivity in the survey.

For a confidence level of 95% and a margin of error of 5% the minimum sample size required was 385. Accordingly a total of 410 responses were collected from across six districts.

The questionnaire had 15 questions. The first 10 questions in the questionnaire were aimed at assessing the awareness levels, participation levels and perception of people about *Namami Gange* programme in general and pollution and environmental concerns in general. Special care was taken to administer the questionnaire both in English and Hindi language for maxium outreach and wider participation.

The analysis of the response to each question has been done by correlating it with inputs gathered during the field visit. A copy of the questionnaire is placed at **Appendix A**.

6.2. **Findings and Analysis of the Survey**.

Question 1. Namami Gange is a flagship programme of the Government. What is it related to? *(Refer Figure 6.1)*

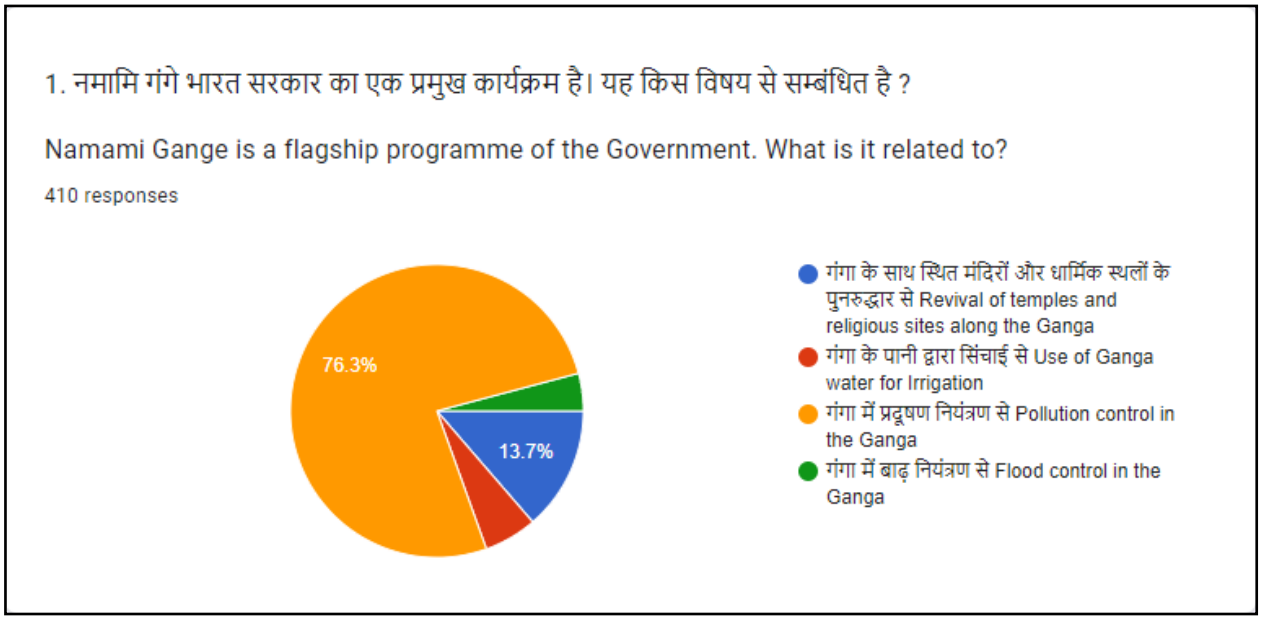

Figure 6.1: Response to Question 1

The question was targeted at assessing awareness about the aim and objectives of the programme. A high majority of 76% stated that it was related to pollution in the Ganga. However 14% also associated it with renovation of temples, 6% with irrigation and 4% with flood control.

However, considering the fact that the programme has been operational for past eight years, the awareness level was expected to be higher. It indicates requirement of greater focus on outreach and IEC activities. As ghats are invariably located near famous temples, it is likely that some people associated

their renovation under the programme with a religious activity. The massive construction of hydropower projects across the state may also have led people to associate the programme with flood control and irrigation. Uttarakhand has frequently been ravaged by devastating floods in recent years.

During the field visit it was observed that there were very few signboards related to the programme along the highways in the state. A few signboards that were seen, were mainly at the sites of STPs and bathing ghats. On the other hand, signages and information related to other central and state Government schemes like Swachh Bharat Abhiyan, Sarva Shisha Abhitan etc. were a lot more. The programme can gain visibility by having more signages, slogans and public information along highways. It is a low cost way of connecting with local people as well as with lakhs of visitors to the state. Cautionary signages at tourist places can deter throwing of waste into the river and also help in behavioural change by constant iteration.

Question 2. From where did you learn about Namami Gange? *(Refer Figure 6.2)*

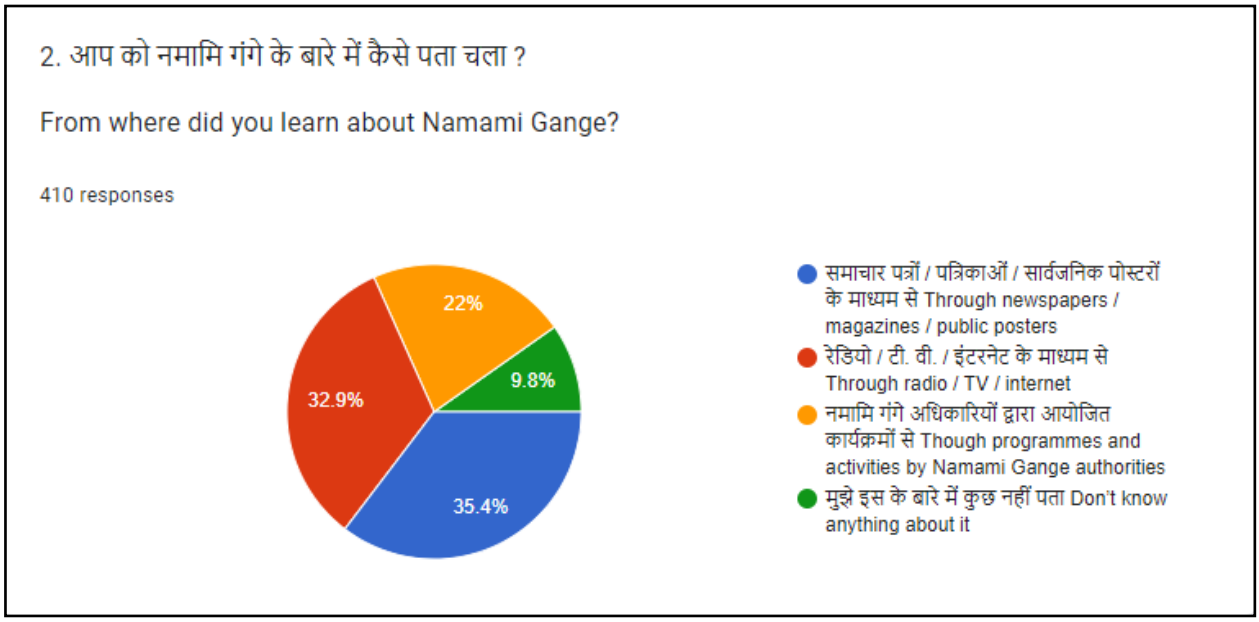

Figure 6.2: Response to Question 2

The question was aimed at assessing the effectiveness of different means of public outreach. Only 22% people learnt about the programme through activities conducted by the local administration. Close to 10% had not heard about the programme. Out of the 68% who were aware, learnt about it from print and electronic media.

The responses were gathered from all over the districts and not necessarily from Ganga Towns and Ganga Grams. The response indicates that IEC activities have mainly centered along places along the main stem of the Ganga. It indicates a requirement to reach out to more places in the interior as well as increase the number and type of participatory activities. It also highlights the relevance of traditional media in the state.

Question 3. Have you ever participated in any activities related to Namami Gange programme? *(Refer Figure 6.3)*

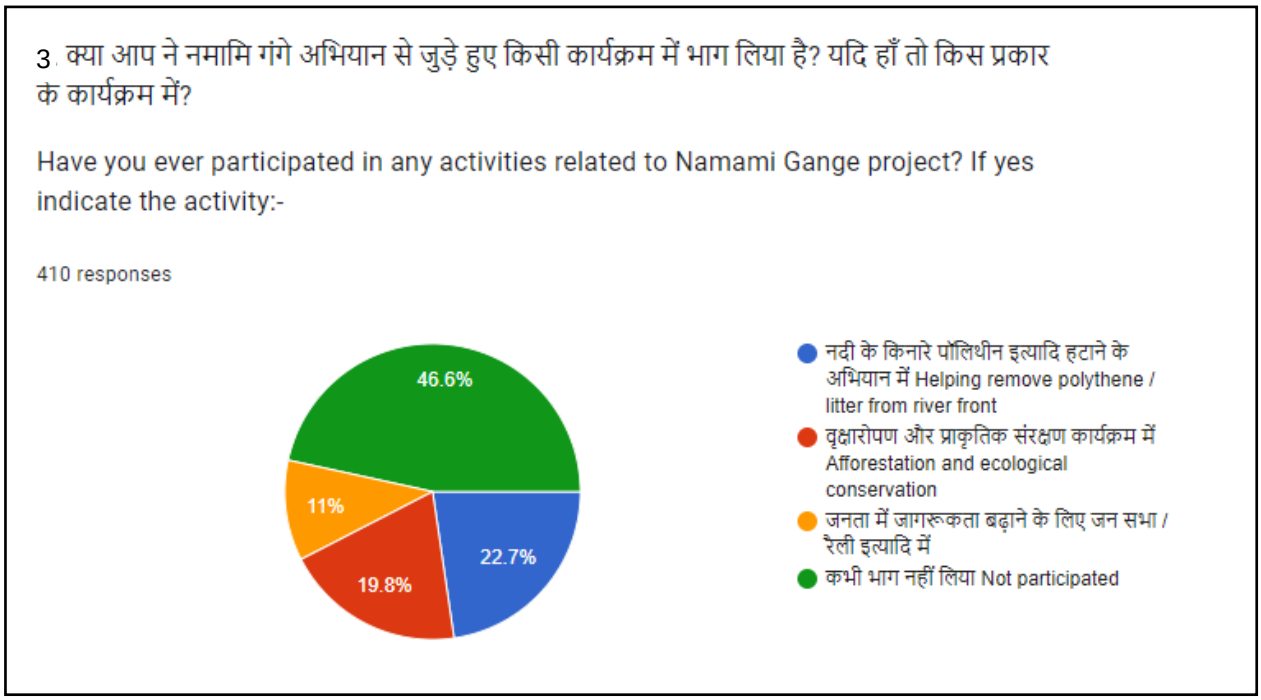

Figure 6.3: Response to Question 3

The question was a follow up to the previous one. Over 46% people said that they had not participated in any activity related to *Namami Gange*. Amongst those who did participate, most had done so in removal of plastic waste from riverfront and afforestation work.

The responses reinforce the analysis of the previous question that the scope and geographical spread of IEC activites should increase. During the field visit it was highlighted that the SPMG has partnered with numerous schools and colleges for building awareness. In this context, the merits of engaging with the same institute again and again versus more and diverse institutions over a wider area need to be considered. The reach out to diverse institutes shall also help in incorporating the saturation model.

Question 4. How much does pollution of rivers and damage to environment bother you? *(Refer Figure 6.4)*

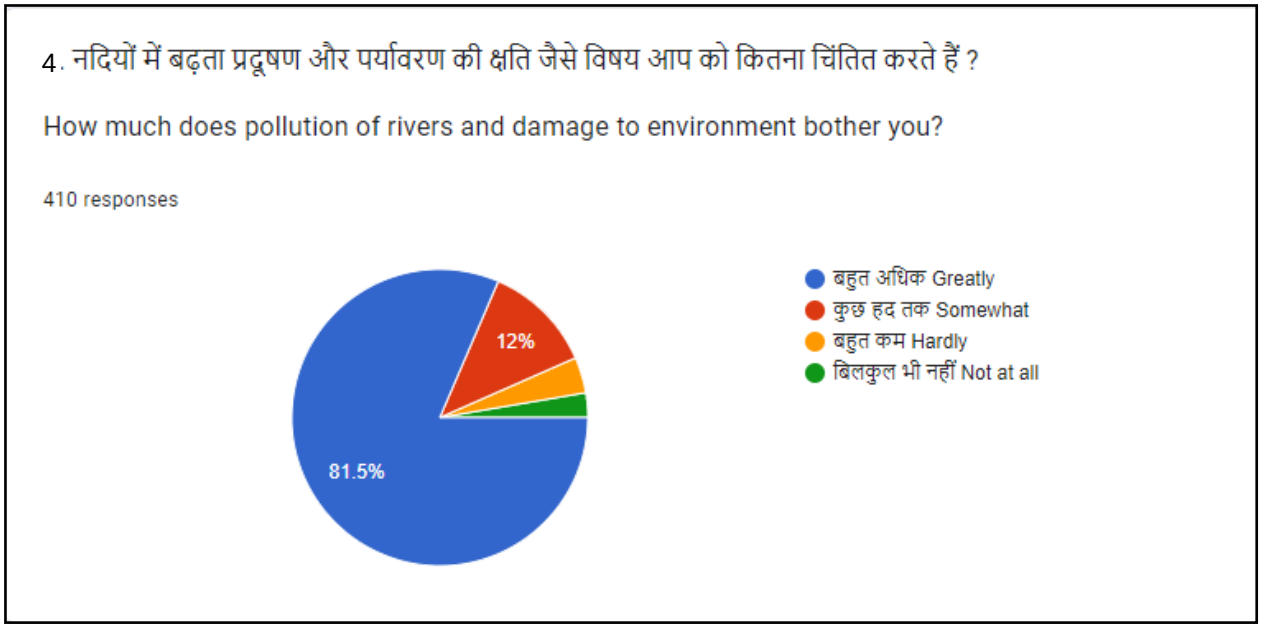

Figure 6.4: Response to Question 4

The question was aimed at assessing the concern shared by local people towards the environment. Over 81% people said that pollution and environmental degradation was a high concern for them while another 12% said that such things did bother them. Therefore, on the whole the subject resonated with over 93% of the people.

Uttarakhand has repeatedly been ravaged by natural disasters over the past few years. Therefore there is a high realisation about the dangers of neglecting the environment. The state was home to the *Chipko* movement in the past. The high public concern can easily be harnessed for building support for environmental causes and for inculcating behavioural change.

Question 5. Have you observed any change in public awareness and attitude towards environmental issues in last five years? Especially towards Ganga conservation? *(Refer Figure 6.5)*

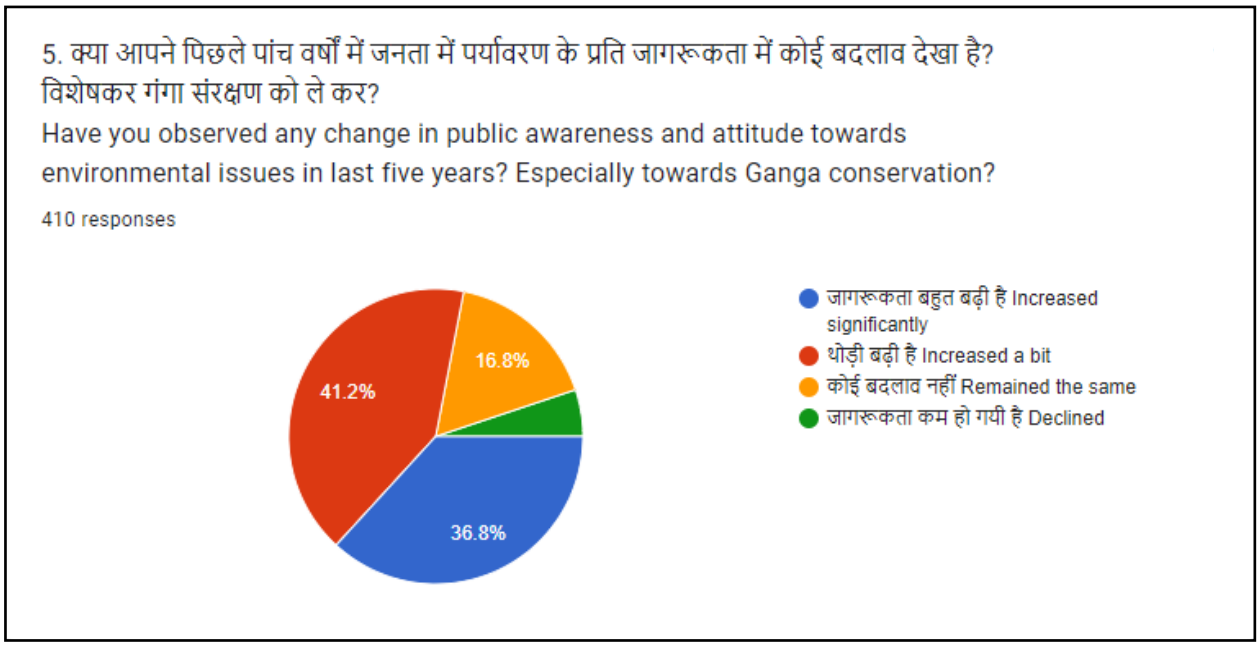

Figure 6.5: Response to Question 5

The question was linked to the previous one. While Question 4 was aimed at assessing what the respondent felt personally, Question 5 aimed at assessing whether the respondent noticed any change in attitude of others. 37% respondents felt that the awareness about environmental issues has increased significantly while 41% felt it had increased somewhat.

The response reinforces the assessment that awareness levels are high and initiatives to conserve the environment are likely to enjoy a high degree of public support.

Question 6. What happens to the solid waste generated in your house / locality? *(Refer Figure 6.6)*

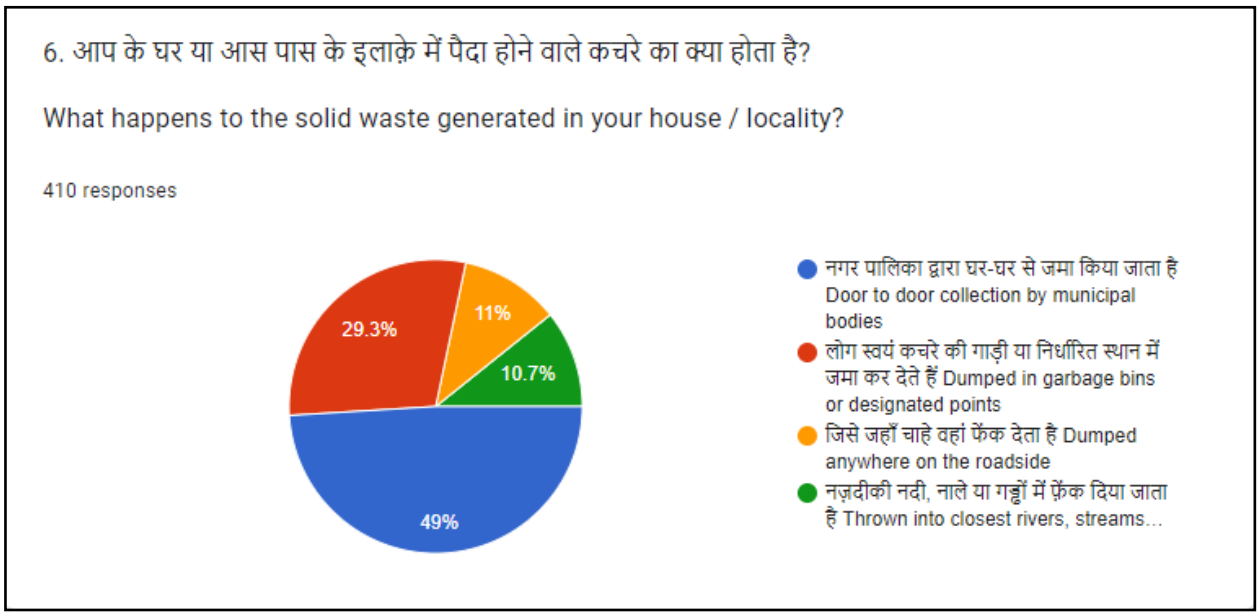

Figure 6.6: Response to Question 6

The question was related to solid waste management. Altogether, 78% of people said that there was an organised system of garbage collection and disposal. However 22% also said that garbage was thrown in the open – by the road side or into rivers and streams.

The response matches the observation during field visit. On the whole the standard of cleanliness in the towns was good. Door to door collection of solid waste was taking place though segregation at source was not taking place. Unauthorised dumping of waste and construction debris was observed at many places, usually in small towns. It was also observed that there is no organized system of garbage collection in villages. The 22% respondents who said that garbage is thrown in the open are likely to be from villages and small towns.

Solid waste management is not addressed under the *Namami Gange* programme. The problem needs to be tackled under Swachh Bharat Abhiyan (Rural). However the problem highlights the interdependence between different government schemes where outcomes in one, affect the other.

Question 7. What happens to the sewage generated in your house / locality? *(Refer Figure 6.7)*

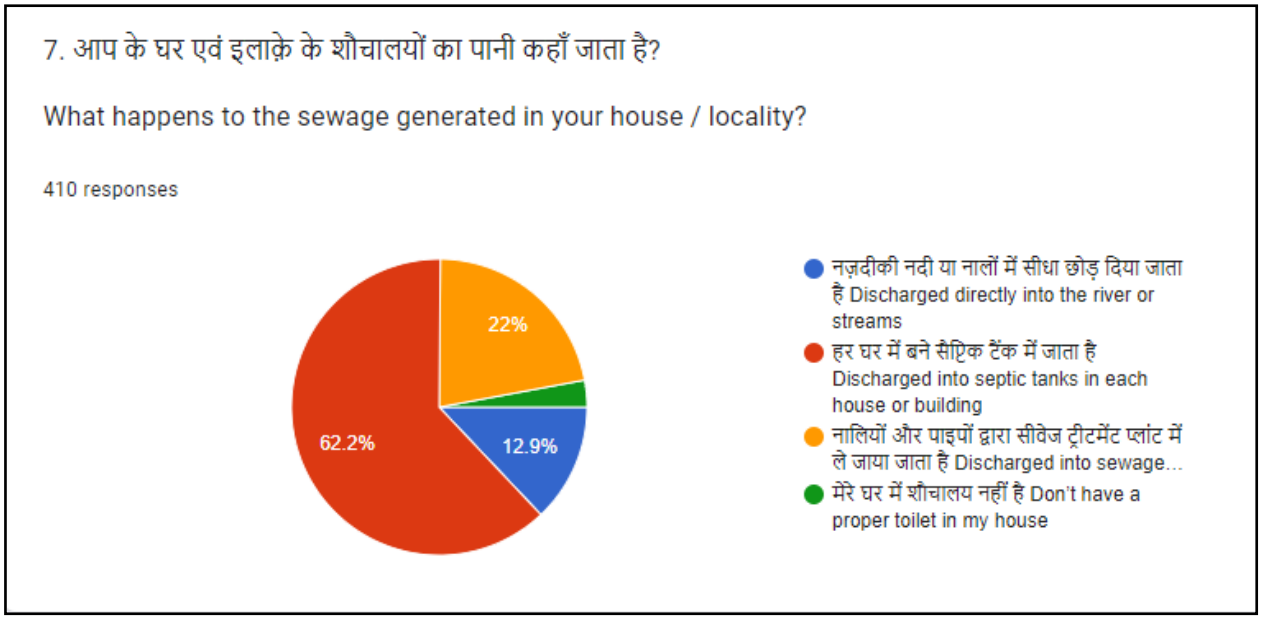

Figure 6.7: Response to Question 7

The question was related to management of sewage. 62% respondents said that they have a septic tank at home while 22% said that their houses were linked to a sewer network. However 13% also said that untreated discharge from their homes is released into rivers. 3% also said that they did not have a proper toilet at home.

Septic tanks are the predominant means of sewage treatment in the hills as houses are far apart and the terrain is undulating. Sewer networks exist only in the towns and there too they cover only parts of the towns. The 13% houses without septic tanks would either be those located right next to the river or at places where construction of septic tanks is not feasible. The miniscule number who do not have toilets are likely to be slum dwellers or migrant labourers.

Considering that the main thrust of the programme has been on creation of sewage infrastructure, the above statistics can improve further. Although laying of sewage network within towns is not the mandate of the programme, being the charter of ULBs, it has an impact on programme outcomes. This is especially relevant in case of cities like Haridwar and Rishikesh. Therefore upgradation of sewerage networks should get priority either through *Namami Gange* itself or through separate schemes.

The proper disposal of sludge from septic tanks forms part of the *Namami Gange* programme. However during the field visit it emerged that not much is being done about it in the state. Considering that over 60% households rely on septic tanks, the proper management of septage sludge needs greater focus by setting up more Fecal Sewage Treatment Plants (FTSP).

Question 8. Is there any overall change in standard of cleanliness in your locality in last five years? *(Refer Figure 6.8)*

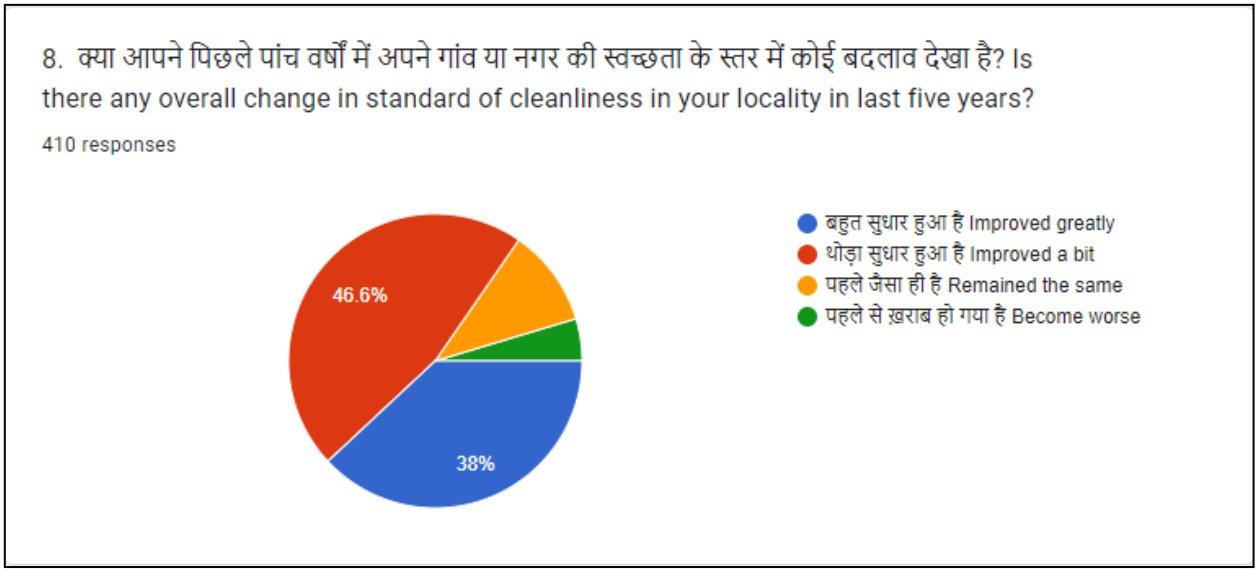

Figure 6.8: Response to Question 8

The question was related to improvement in overall standards of cleanliness. 38% respondents felt that the improvement was significant whereas 47% felt there was some improvement. Therefore a significant majority of 84% felt a positive change.

The response points to reasonably high effectiveness of ULBs in managing municipal solid waste. Overall improvement in standards of cleanliness is an indicator of reduced pollution of the countryside and the river.

Question 9. Have you seen any change in the standard of cremation ghats, bathing ghats and river front in your locality in the last five years? *(Refer Figure 6.9)*

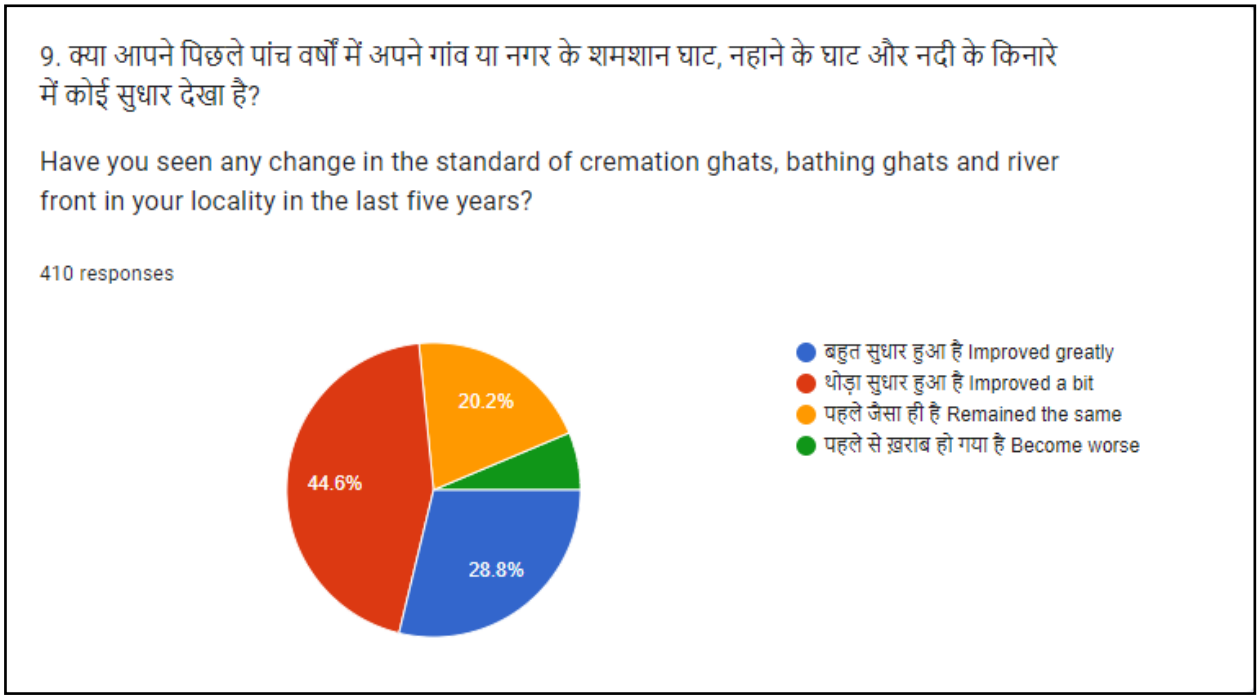

Figure 6.9: Response to Question 9

The question was related to whether respondents had noticed any change in the infrastructure created as part of riverfront development i.e. bathing ghats and cremation ghats. 29% respondents felt that the standards had improved significantly while 45% felt that there was some improvement.

Ghats and crematoria are important for building a connect between the people and the river. The bathing ghats are predominantly used by the pilgrims from outside while the crematoria are predominantly used by the local people. Both are important. The fact that 74% respondents have felt a positive change indicates that this dimension of the programme has touched people's lives.

During the field visit some of the ghats and crematoria were found to be damaged and neglected. There is a need for the State Government departments to ensure proper maintenance of assets that have been created under the programme.

Question 10. In case you want to lodge complaint or give suggestions about cleanliness, pollution or environmental issues in your locality, whom would you approach first? *(Refer Figure 6.10)*

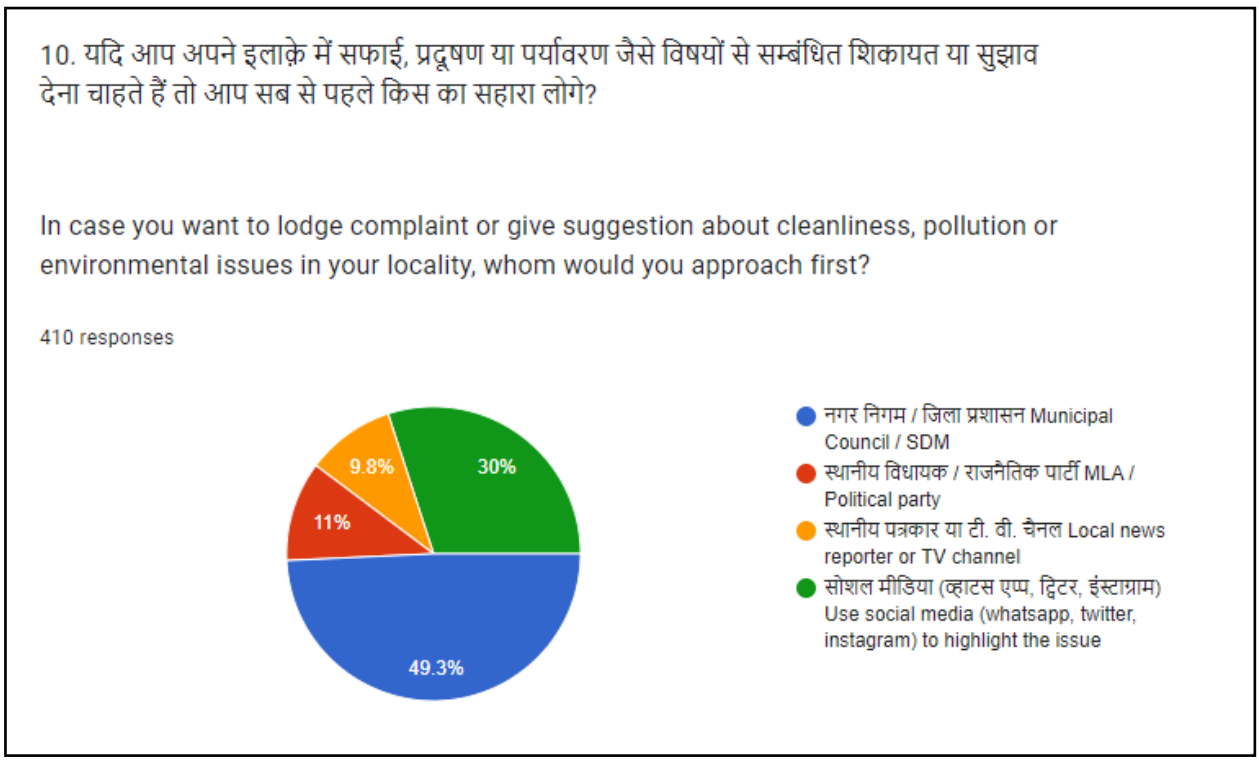

Figure 6.10: Response to Question 10

The last question in this segment was on the preferred choice of grievance redressal with respect to pollution and environmental concerns. 49% respondents said that they would approach the local municipal or civil authorities. 30% respondents said that they would take recourse to social media to highlight the problem while only 21% thought of traditional media or politicians.

Half the people reposing their faith in public authorities is a healthy sign and indicative of a responsive administration. The heads of ULBs are members of the DGCs. The SDMs report to the DM who chairs the DGC. It shows that public feedback is reaching the DGCs. Though the public is hardly aware of the existence of a body like the DGC, it does not matter. What matters is that channels for stakeholder engagement exist and they are working well.

One third of people relying on social media to air grievances is reflective of changing times. It also shows a high degree of penetration of internet and smart phones even in the remotest parts of the state. This fact was experienced even during the field visit where good mobile phone connectivity was available everywhere in the state. This can be exploited for spreading awareness, changing perception and mobilizing public support.

6. **Conclusion**.

On the whole the responses to the questionnaire indicate a high concern for pollution and environmental issues. This can be used to inculcate behavioural change towards sustainable eco-tourism.

The awareness about *Namami Gange* programme is fairly high, however there is scope for more public outreach. Most people feel that there has been a definite improvement in cleanliness, pollution control and riverfront development. Presently activities appear to be more along the Ganga Towns and Ganga Villages which need to spread to all parts of the districts.

The responses also indicate that though a lot of efforts have been put in place for effective solid and liquid waste management, gaps remain that need to be addressed.

CHAPTER 7
IMPACT OF TOURISM

7.1 Introduction.

Environmentalists have for long been decrying the rising pollution and environmental damage from unabated tourism in Uttarakhand. However, it is important to understand the perspective of the local people. They are the biggest stakeholder in the debate on conservation versus tourism. The questionnaire administered was framed intentionally to cater to this pressing problem. In this context questions 11 to 15 of the questionnaire were designed to elicit responses towards this aspect and are discussed in this chapter.

In order to set the context for the questions, a brief background on the magnitude of tourism and development activities taking place in the state are highlighted first.

7.2 Tourism in Uttarakhand.

Tourism has been an important contributor in revenue generation, job creation and reversing out migration in Uttarakhand. Unemployment in Uttarakhand has always been higher than the national average. With limited employment opportunities in the hills and agriculture not being remunerative enough, people - and the youth in particular - have been migrating out of the state for past several decades.

In recent years, and especially after the COVID set back, the state economy is looking up with a growth rate of around 7.5%. Tourism along with infrastructure development has emerged as the fastest growing sectors at a rate of

12%. Tourism contributes 2.96% to the state GDP and accounts for 11.8% of the employment (UK Economic Survey 2023). If the indirect linkages of tourism with other sectors of the economy are taken into account, these figures work out to 6.59% of GVA (Gross Value Added) and 26.8% of employment (Joshi & Nag, 2024).

However the tourism and hospitality standards in the state are mostly low end or do not provide premium experiences. Most of the visitors are low budget tourists and pilgrims. In 2023, around 200.18 Lakh people visited the state out of which only 15,000 were foreign tourists. Out of the domestic tourists, around 88.41 Lakh visited the state only for pilgrimage to various religious sites. A total of 50.29 Lakh tourists visited the Char Dham shrines alone. The official number of visitors to the four shrines in 2023 was Badrinath – 15.90 Lakhs; Kedarnath 17.08 Lakhs, Gangotri 8.57 Lakhs and Yamunotri 6.94 Lakhs (UTDB, 2024).

The comprehensive new 'Tourism Policy 2030' of the Uttarakhand Government unveiled in 2023 has three objectives – (i) realizing the state's latent potential as a diversified tourist destination by providing a blend of heritage, religion, nature, wildlife, health and wellness experiences (ii) serving as an all-weather destination including trips even in winter; and (iii) achieving high length of visitors. The policy aims to build tourism infrastructure in clusters using a 'hub-and-spoke' approach, modeled along the lines of Himachal Pradesh. By 2030, the State Government expects the number of tourists to touch 700 Lakh annually (UTDB, 2023).

The Government has announced up to 50% subsidy for investments made in destinations that are not yet well-known to tourists. In addition, investments in adventure, caravan, heli-tourism and electric taxi services will receive a 100% tax subsidy. In 2023 the Chief Minister announced the launch of 'Manas Khand Mala Mission' to draw devotees to the Kumaon region. This project aims to connect 16 well-known temples by building a strong road network and theme-based attractions. However the project also entails chopping down over 5000 *Deodar*

trees for widening roads some of which are over 500 years old. The move has led to massive protests from local people which underscores the debate between development versus conservation (Mishra, 2024).

Uttarakhand's unique geography and topography make it particularly vulnerable to natural disasters. The state is prone to earthquakes, landslides, cloudbursts, flash-floods, avalanches and forest fires. In the past decade it has witnessed major floods in 2012, 2013, 2021 and 2023. The glacial lake outburst at Kedarnath in 2013 led to a flash flood in the Mandakini valley that killed over 5000 people, mostly tourists. It was the worst natural disaster in India since the tsunami of 2004.

Traditionally houses in the hills were constructed away from rivers with only agricultural fields next to the streams. However with growth of tourism, people have started constructing houses, shops, hotels and home stays all along the roads. As the roads in hills mostly follow the banks of rivers and streams, it has led to rampant construction along banks of rivers and even in the flood plains and dry beds. The flash flood in 2013 was particularly devastating as it swept away everything along the banks and flood plain of the Mandakini.

In 2014, an expert panel constituted by the Supreme Court suggested that the number of visitors should be capped at 5,000 per day in Kedarnath, 6,000 in Badrinath, 3,500 in Yamunotri and 4,000 in Gangotri. Prodded by the committee, the Government did impose a daily limit to the four shrines, but revoked it before the start of the yatra season next year.

The population of Uttarakhand in 2001 was 84.89 Lakhs which rose to 1.01 Crores by 2011 and is presently estimated to be 1.17 Crores (Census, 2011). However the growth of infrastructure and civic facilities has not kept pace with the growing number of people. The presence of lakhs of tourists from May to October every year puts a severe strain on the infrastructure for solid and liquid waste

disposal. The funds and resources are allotted based on the permanent population of towns which is quite low. But every town along the tourist circuit handles the load of a large floating population. In 2017, the State Government created a separate Development Authority for Kedarnath and in 2020 for Badrinath. This has improved the civic infrastructure in these two major pilgrim centres but the excess load on other towns remains.

7.3 **Development Activities**.

There is a rush for infrastructure development in the state, primarily to support tourism. Besides tourism, hydropower has been identified as a priority sector in Uttarakhand. When the state was formed in 2000, it was envisaged as an *Urja Pradesh* (power state) because of its high hydropower potential. The state has an estimated potential of 24,551 MW out of which projects for about 16,000 MW capacity have been processed so far. Currently, 37 hydropower projects are operational and 87 more are in different stages of planning and construction. The current installed capacity is 4,183 MW but the state still imports around 50% of its power.

The 2013 Kedarnath floods severely damaged Phata-Byung, Singoli-Bhatwari, and Vishnuprayag HEPs. In 2021, a rock and ice avalanche entirely destroyed the Rishi Ganga project and severely damaged the Vishnugad-Tapovan HEP, leaving over 200 dead, and with estimated losses of Rs 1500 crores. It was the second large-scale tragedy in the same area within a span of fewer than eight years (Khanna et al., 2021).

Following the Kedarnath flash floods of 2013 the Supreme Court had imposed a moratorium on development of hydropower projects in the state pending a review by the Ministry of Environment and Forests and Climate Change (MoEF & CC). A 17-member expert committee set up by the ministry concluded that 23 of the 24 projects in the Ganga Basin in Uttarakhand had led to

an ‘irreversible impact’ on the ecology of the region. The National Institute of Disaster Management too in its report on the Kedarnath disaster explicitly stated that anthropogenic activities including hydropower projects were responsible for escalating the impact of the floods (NIDM, 2015).

In January 2023, Joshimath town in Chamoli district made headlines after 868 houses developed sudden cracks due to land subsidence (sinking). Experts believe that the reason could be the construction of 12-kilometre long head race tunnel of the Tapovan Vishnugad hydropower project. In November 2023, a 57 metre long section of a 4.5 km long under-construction road tunnel in Silkyara in Uttarkashi district collapsed and trapped 41 workers. They were rescued after 17 days. The success of the rescue operation overshadowed the fact that construction norms were flouted by the agency to speed up completion and cut costs. Glaringly, a mandatory requirement like an escape passage was not complied with (Upadhyay, 2024).

Besides roads and hydropower, another massive project going on in the state is the construction of railway line from Rishikesh to Karnprayag. Out of a total distance of 126 km, over 105 km comprises of tunnels and includes 16 major bridges (RVNL, n.d.). The massive construction and excavation work has altered the landscape of the entire route. In August 2023, 114 workers got trapped 300m inside when water from an underground stream flooded an under construction railway tunnel. Luckily they were rescued in time before they could drown.

The examples highlight how reckless development is leading to man-made disasters in Uttarakhand. River conservation under *Namami Gange* cannot be seen in isolation as it is affected by developmental activities.

7.4 **Findings and Analysis of the Survey**.

Question 11. The number of tourists visiting Uttarakhand is increasing every year. Is it good or bad for the state? *(Refer Figure 7.1)*

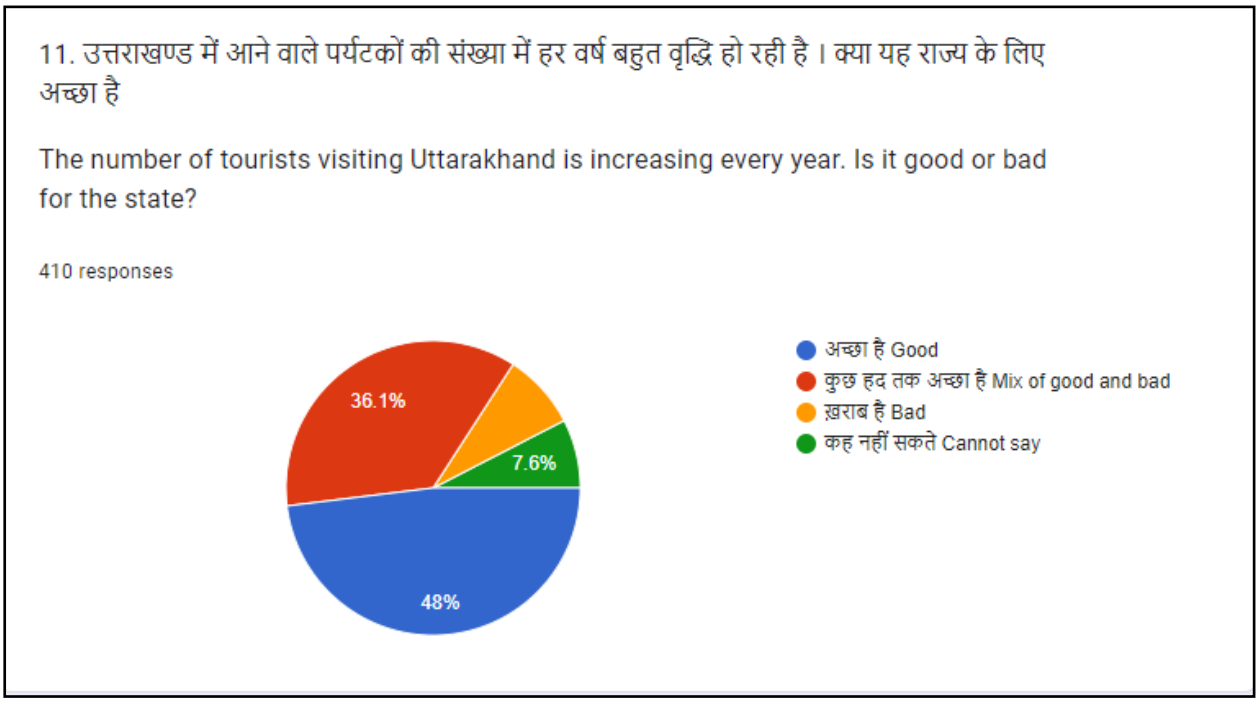

Figure 7.1: Response to Question 11

The question was aimed at assessing the perception of the respondents to rising tourist activities in the state which was leading to higher number of visitors every passing year. 48% of the respondents felt it was good while 36% felt it was a mix of good and bad. 8% felt it was bad and an equal number was unsure about the impact.

The fact that 84% of the respondents felt that more tourists were good for the state underscores the importance of tourism in sustaining livelihoods. It also implies a high degree of support for the State Government policy to aggressively expand and diversify tourism. In response to Question No 4 in the previous chapter, over 93% of the respondents had indicated a high degree of concern for environmental issues and rising pollution. Seen together with Question No 11, it

indicates that people are likely to support practices for sustainable eco-tourism for which imaginative IEC activities are essential.

Question 12. "Unplanned development and disregard for the environment is behind frequent natural disasters in Uttarakhand". Do you agree with this statement? *(Refer Figure 7.2)*

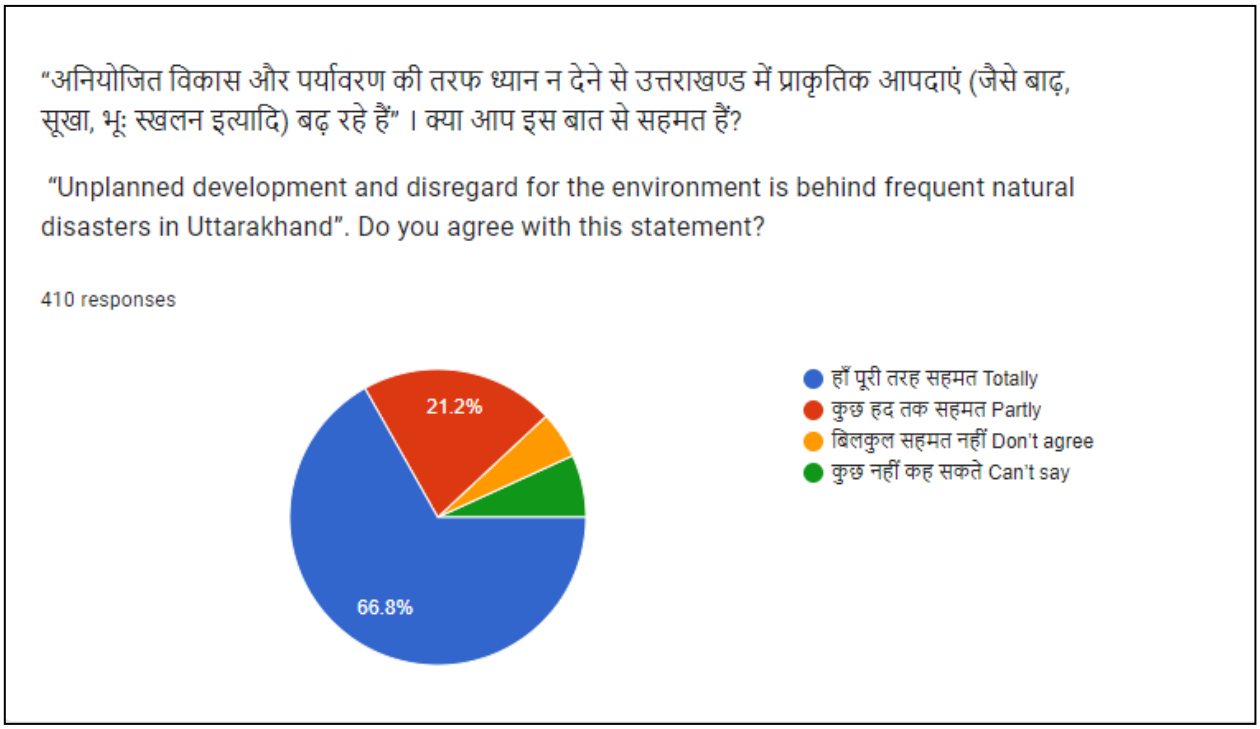

Figure 7.2: Response to Question 12

This was a follow up question to the previous one considering that much of the infrastructure development in the state is happening with the aim of supporting tourism. This includes widening of roads, extension of railway line from Rishikesh to Karnprayag, liberal policy for setting up hotels and resorts etc. The massive construction of hydropower projects along all major streams is another activity that has altered the natural landscape in the state.

Considering that the state has frequently witnessed destruction from natural calamities, 67% of the respondents strongly agreed with the statement and 21%

agreed partly. Around 6% did not agree and another 6% were unsure. On the whole it again points to a high degree of support for sustainable development.

Question 13. Who is most responsible for pollution and environmental degradation in Uttarakhand? *(Refer Figure 7.3)*

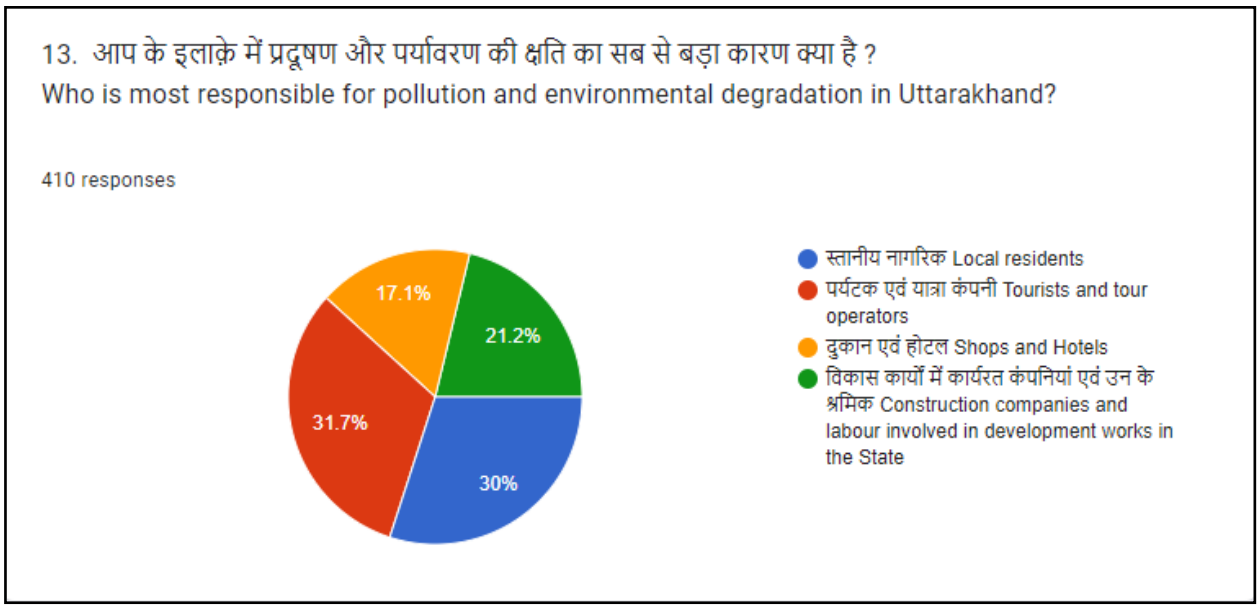

Figure 7.3: Response to Question 13

The question was aimed at assessing accountability for polluting activities in popular perception. 32% respondents blamed tourists and tour operators but an almost equal number blamed local residents. 21% blamed construction companies while 17% blamed shops and hotels. The mixed response indicates that everyone is a contributor and no single segment can be blamed wholly.

The fact that 30% of the respondents blamed local residents indicates an honest admission that they themselves often break rules. Shops and hotels are also run by local residents. Taken together it constitutes 47% of the respondents. It indicates a need to further sensitize local people to desist from practices that lead to pollution. Often such behaviour is due to lax enforcement of rules and lack of proper arrangements for waste disposal. Behavioural change requires sustained

efforts before it becomes second nature. Therefore IEC activities accompanied by strong deterrence need to continue.

If tourists and labourers engaged in construction activities are taken together it constitutes 53% of the respondents. This segment is essentially a floating population in the state. Behaviour change takes time and inculcating it in a floating population is difficult. Therefore to curb pollution by visitors there is a requirement of strict enforcement of rules and regulations at tourist places. Deployment of Ganga Praharis at tourist places to monitor polluting practices guide people and promote eco-friendly best practices can pay rich dividends.

Question 14. What is the primary means by which you remain aware about news and public issues? *(Refer Figure 7.4)*

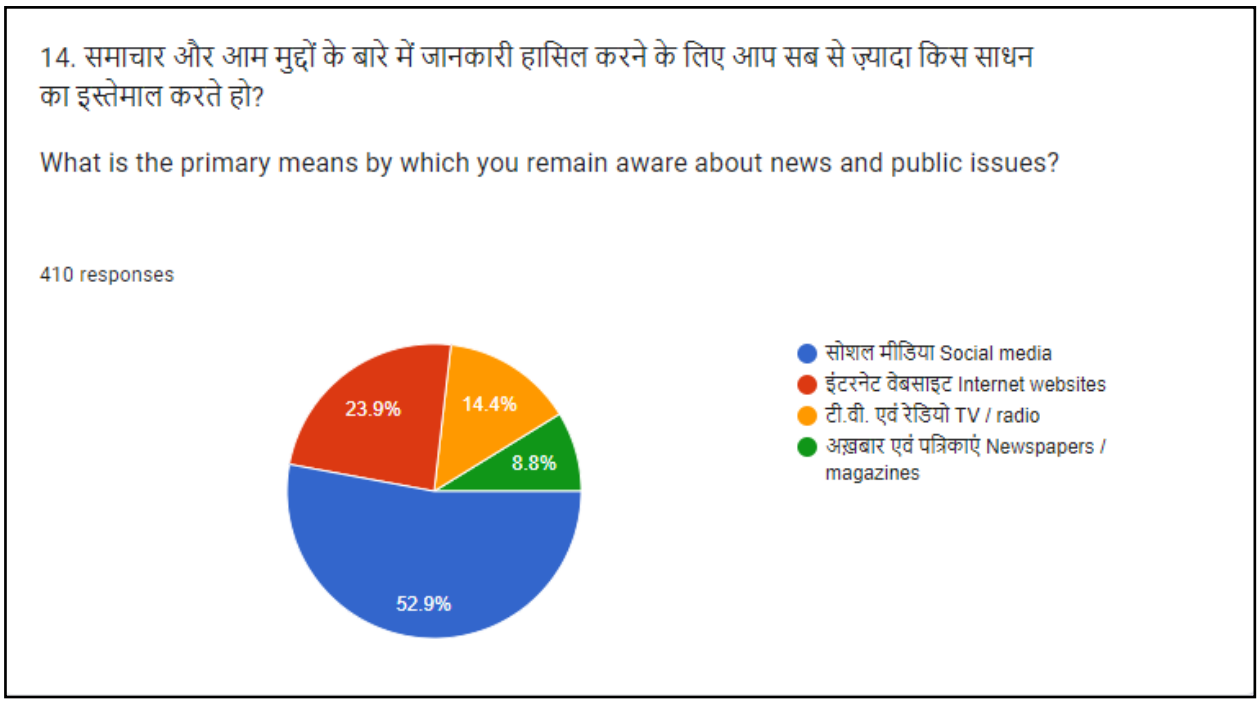

Figure 7.4: Response to Question 14

The question was aimed to assess the preferred means of communication in the state for getting news and remaining updated. The efficacy of IEC activities depends a lot on the medium of dissemination. The actual conduct of activities on ground needs to be complemented by exploiting other means of communication.

The response indicates that 53% of the people primarily rely on social media for staying updated. Another 28% relied on internet and websites. Only 23% relied on traditional print and electronic media.

It complements the response to Question 10 in Chapter 6 where 30% people indicated social media as their preferred means of airing grievances and concerns. It shows that despite the rugged terrain and distances, mobile and internet connectivity in the state is good and people are digitally well connected. Therefore, mobile phones and social media can greatly help in IEC activities.

Question 15. How much do messages received on social media (whatsapp / facebook / instagram etc.) affect your opinion and behaviour? *(Refer Figure 7.5)*

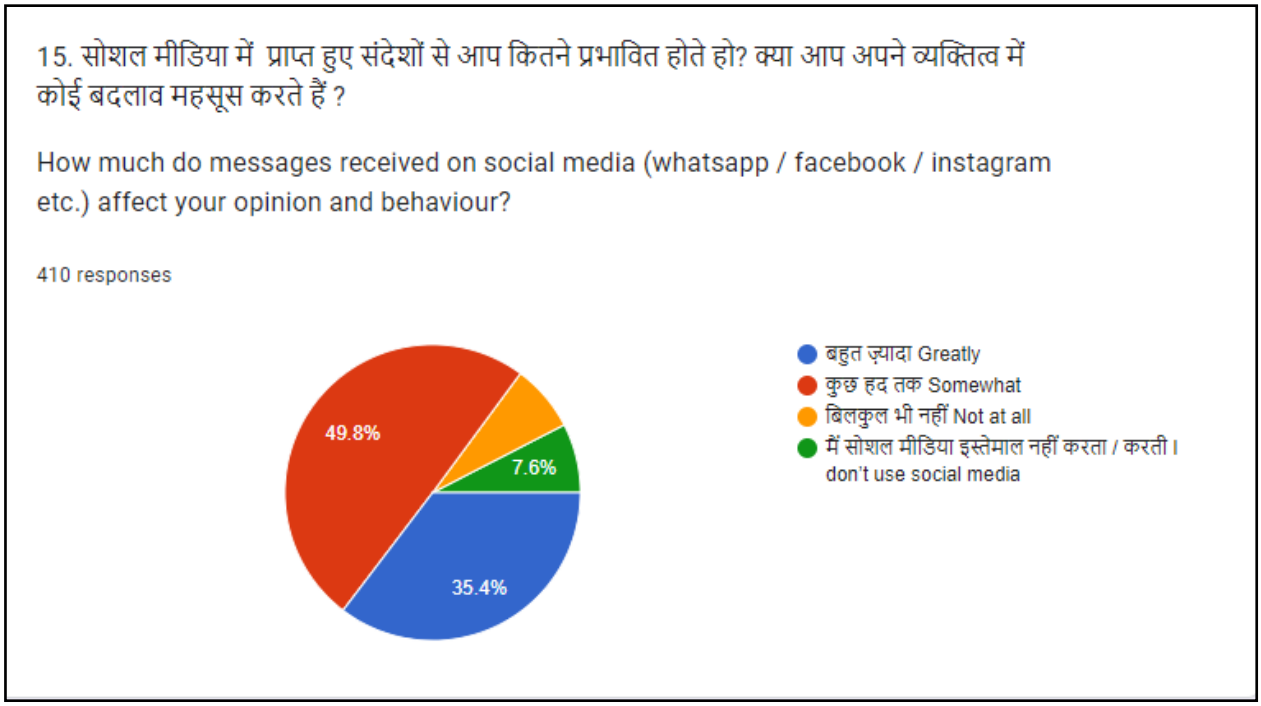

Figure 7.5: Response to Question

The question was aimed to assess to what degree the respondents felt they were influenced by social media. 35% felt that they were greatly influenced while 50% felt that they were somewhat influenced. The question was linked to the

previous one. It indicates that most people rely on social media to remain updated and are significantly influenced by the contents.

The findings have implications for IEC activities. Social media can play a big role in influencing public behavior in the state. It can mobilize people to adopt eco friendly practices and help promote sustainable eco-tourism. NMCG should invest in subtle influencing through social media.

7.5 **Conclusion**.

The survey has highlighted that while tourism and development activities in Uttarakhand pose a risk to river conservation, there are also several trends that can turn this vulnerability into an opportunity. The high concern among people for environmental causes and an admission that they themselves at times break rules and cause pollution are positive indicators.

The State Government has also brought out a comprehensive policy to transform tourism from pilgrimage-centric to more broad-based packages offering wholesome experiences. The policy also talks about promoting sustainable eco-tourism. However, it should not remain merely on paper. The survey shows that the biggest stakeholders i.e. the local people are ready to embrace behavioural change and adopt sustainable and eco-friendly practices. The Government needs to harness this potential and turn it into reality.

Presently, the Ganga is under stress from reckless development and expansion of tourism. A shift to sustainable tourism and development will automatically strengthen efforts for Ganga conservation and rejuvenation under the *Namami Gange* programme. The survey also shows that with changing times, social media has become a major influence in the state. If harnessed correctly it can play a big role in IEC activities and support for conservation efforts.

CHAPTER 8
FINDINGS AND RECOMMENDATIONS

A. FINDINGS

Programme Outcomes in Uttarakhand

8.1 Pollution Control.

Pollution control in context of the Ganga involves – (i) treatment of industrial effluents; (ii) treatment of sewage; (iii) management of municipal solid waste; (iv) rural sanitation; and (v) river surface cleaning.

Uttarakhand does not have any major polluting industries along the main stem of the Ganga. The two main sources of pollution in the state are discharge of untreated sewage and dumping of solid waste into the river. The management of Municipal Solid Waste is being addressed under the *Swachh Bharat* Mission, therefore the main thrust of the *Namami Gange* programme has been on creation of infrastructure for the treatment of sewage.

The study indicates that a considerable amount of infrastructure has been created in the state under the programme. The impact is now visible in terms of improved water quality and a cleaner riverfront. The water in the Ganga is fit for drinking from source to Rishikesh and is fit for bathing at Haridwar.

A lot of effort has also gone towards construction and upgradation of bathing ghats and crematoria all along the river as part of Riverfront Development. Information, Education and Communication (IEC) activities are regularly being undertaken to spread awareness and strengthen the connection between the people

and the river. Considerable forestry interventions have also been undertaken to restore the natural landscape and recharge natural springs.

Solid waste from habitations close to the river remains a challenge. Though Urban Local Bodies (ULBs) are striving for proper collection and disposal of solid waste, unauthorised dumping of garbage is happening at places. The problem is more acute in villages where there is no organised system of garbage collection and disposal. Construction debris from massive infrastructure development projects going on in the state is also a problem.

The state attracts lakhs of tourists between April and October. The infrastructure for waste management has been created for the permanent population. All Ganga towns have a population of barely a few thousand but they receive many times more visitors every day during the tourist season which overwhelms the system.

The discharging of *puja* items and discarding old clothes into the river as part of rituals is a common practice at religious sites like Haridwar and Rishikesh. This practice alongwith the immersion of thousands of idols into the river during festivals is a big source of pollution. The surge of devotees during important festivals like the annual *Kanwar Yatra* adds to the pollution.

8.2 **Other Facets of the Programme**.

Forestry Interventions. Afforestation activities and biodiversity conservation under the programme are executed by the State Forest Department and funded by the NMCG. However the direct allotment for funds under this head has practically ceased and states have been asked to source their activities from the Compensatory Afforestation Fund (CAF) set up under the Compensatory Afforestation Fund Management and Planning Authority (CAMPA) Act, 2016.

Forest officials highlighted many problems in getting funds from CAMPA as versus allotment of funds by the NMCG. CAMPA funds are meant for many uses and Namami Gange is just one of them and there is a limit to the funds that can be allotted. Also the process of allocation is quite tedious and does not cover all the activities envisaged under the programme.

Arth Ganga. This pillar of the programme envisaged linking the local economy to the Ganga in multiple ways like promotion of local Self Help Groups (SHGs) and marketing local products. However a sustainable economic model that provides viable livelihood opportunities has not emerged. Projects like waste to wealth largely remain on paper and organic farming etc is yet to take off in a big way. The subject is also hardly discussed in any of the DGC meetings.

Ganga Grams and Ganga Praharis. Ganga Grams were notified in the state in 2023. However, so far, no major activities related to them have taken off. Similarly, Ganga Praharis were conceived as motivated and trained volunteers who would mobilise communities. However there is little interface between them and the DGCs. Presently, there are just a handful of Ganga Praharis and they are working under the directions of Wildlife Institute of India (WII), Dehradun who sponsored their training.

Maintenance of Assets. Assets created as part of Riverfront Development are handed over to the State Government after completion. At places the assets are not maintained properly and their condition has deteriorated rapidly. Many bathing ghats and crematoria got damaged in floods in 2021 and 2023 but have not been repaired thereafter. Timely repairs and maintenance of assets is important.

Functioning of the State and District Ganga Committees

8.3 Decentralisation and Coordination.

The functioning of the State Ganga Committee (SGC) and District Ganga Committees (DGCs) has evolved over the last eight years and they are working effectively. The DGC is a good coordinating mechanism at the grass root level that brings together all stakeholders regularly. The devolution of responsibility to the DGCs along with the 4M model (monthly, monitored, mandatory and minuted) of meetings has brought about greater accountability.

The DGC has adequate administrative powers as it is headed by the DM of the district. The members are officers from all stakeholder departments, ULBs and Gram Sabhas. Compliance of decisions taken / directions is mandatory and status is reviewed in the meeting of the following month.

However, the DGC does not have any financial powers. It can propose projects which are vetted by the SPMG, approved by the NMCG and executed by the selected agency. It can monitor progress of work and recommend release of payments. But it has no funds to undertake any work or conduct any activity at its own level.

Namami Gange is a cross-cutting programme. Activities of different departments directly and indirectly contribute to Ganga conservation and rejuvenation. The DGCs are basically a coordination mechanism at the functional level. It acts as a forum for the DM to review enforcement of regulations by different departments.

8.4 **Shortcomings**.

There is a variation in the diligence with which the programme is being pursued in different districts. It stems from competing priorities at the local level and also personality factors. *Namami Gange* is one among many pressing issues that require the attention at the district level. In some districts the DGC meetings are often presided over by the DFO instead of the DM. Examination of the agenda points and minutes of the DGC meetings of all districts also indicates considerable variation.

Though the DGCs are meant to be the nodal forum for all activities related to the Ganga, they are often out of the loop. Many state departments are undertaking activities like promotion of organic farming, livelihood schemes, IEC and cultural activities etc. But as they are not represented in the DGC, no record / data of their efforts and achievements is maintained by the DGC. It indicates a tendency to work in silos. Similar tendency is seen at the SPMG level also. As the SPMG functions under the *Pey Jal Nigam*, there is a tendency to give prominence to Sewarage infrastructure, which is the charter of the department. However, data on other facets of the programme which are handled by other departments is not readily available.

There is little sharing of best practices among districts. The initiatives of District Chamoli (spring shed management, rejuvenation of streams and waste to wealth programmes) which won the Prime Minister's Award for Excellence in Public Administration have not been replicated elsewhere.

8.5 **Best Practices**.

Apart from initiatives taken by Chamoli district for which it got awarded, the efforts by DGC Haridwar also deserve mention. In Haridwar, representatives from organisations like Ganga Sabha and Shanti Kunj which manage religious

sites like *Har ki Pairi,* as also various NGOs and social organisations like *Ganga Vichar Manch* and *Vivekanand Janhit Trust* and representatives from the media attend DGC meetings as invited members. The Senior Superintendant of Police (SSP) and the District Tourism Development Officer (DTDO) also attend in capacity of invited members. The involvement of all stakeholders makes the deliberations in the DGC more substantive. Another good practice being followed in Haridwar is the administering the 'Ganga pledge' during *Ganga Aarti* in all the prominent ghats in the town. Another practical suggestion that came up similarly was to encourage use of cloth bags and glass bottles at religious sites instead of plastics and polybags.

8.6 **Staffing of SPMG and DGCs**.

The SPMG is the executive arm of the SGC. However it is staffed predominantly by consultants from National Mission for Clean Ganga (NMCG). The State Government officers deputed to the SPMG are not full time as they have to attend to their primary duties in their department. The day to day work at the SPMG requires a lot of inter agency coordination. The specialists, not being Government Officers, face limitations in seeking inputs from government departments and working proactively. This leads to many functional problems.

Similarly at the district level, the District Plans Officer is an employee of the NMCG and not a Government official. Owing to the load of office work, they are left with no time for field visits and site inspections to monitor works and gather inputs for projects. Most DPOs admitted that they had never travelled beyond the District Headquarters.

8.7 **SPMG Website**. The SPMG website is not updated and besides background information, no data on status of various projects is available. Though it is a nodal body, data related to other activities like forestry interventions had to be sought from respective departments. Possibly this shortcoming is a fallout of

the staffing practices in SPMG where a full time officer is not posted. It is also a manifestation of working in silos.

Unaddressed Sources of Pollution.

Despite considerable efforts for controlling pollution in the Ganga, challenges remain. Some of the sources of pollution observed during the visit or brought to notice by local stakeholders are highlighted.

8.8 **Sewage**. Some amount of untreated sewage is still getting discharged into rivers and streams at places. The reasons for this are as follows –

Many smaller nalas in towns still remain to be tapped, often due to lack of space in congested towns. Moreover, the volume of flow in many tapped nalas is more than the intake capacity of pipes leading to STPs. As a result only part of the discharge gets treated and the rest joins the Ganga.

So far, sewage infrastructure has mainly focussed on towns along the main stem of the Ganga. The towns and habitations on the tributary streams remain to be addressed.

Despite being banned, construction has been happening on the immediate river bank and flood plain of the Ganga and its tributary streams. At many places illegal slums have come up on dry nala beds.

The sewer network is old in most towns. Leakages from drains and flow from smaller nalas that are yet to be tapped finds its way to the river.

8.9 **Solid Waste**.

Though door to door collection of waste has been made mandatory in all towns, waste segregation at source is not happening. There are no compactors in smaller towns and unauthorised dumping of waste in ditches and landfills often takes place.

Fresh illegal dumping of garbage at legacy landfill sites is still happening and compounding the problem.

With rising consumption, the generation of garbage in villages is also substantial. However there is no arrangement for waste collection and disposal in rural areas. While towns are relatively clean, the villages are often littered with non-biodegradable waste which often ends up in the river.

Cities like Haridwar witness a surge of devotees during important festivals. While there is grant of adequate funds for the *Kumbh Mela* and *Ardh Kumbh Mela* (once every 6/12 years) alongwith elaborate arrangements, there is no such assistance for other events like the *Kanwar Yatra* which too attracts lakhs of pilgrims for over a whole fortnight every year. Such religious gatherings greatly add to the generation of solid and liquid waste.

Waste Generated by Floating Population. The state attracts lakhs of tourists between April and October. All towns have a population of barely a few thousand but they receive many times more visitors every day during the tourist season which overwhelms the system. Another segment of the floating population are labourers working on hundreds of ongoing infrastructure development projects in the hills like dams, railway line,

tunnels and roads. The temporary camps where these labourers stay are also sources of unaddressed pollution.

Temporary Shacks. Thousands of temporary shacks come up along all roads and tracks in the state during the tourist season. They highways get dotted with a continuous stretch of food-stalls and *dhabas*. These shacks are one of the biggest sources of pollution, both solid and liquid.

Perceptions of Different Stakeholders

These findings are based on the correlation of response to the questionnaire with observations during the field visit.

8.10 Awareness About the Programme.

A high majority of 76% people knew about the aim and objectives of the *Namami Gange* programme. However 14% also associated it with renovation of temples and around 10% with irrigation or flood control. Considering the fact that the programme has been operational for past eight years, the awareness level should have been near total. It indicates requirement of greater focus on outreach and IEC activities.

Over 46% people said that they had not participated in any activity related to *Namami Gange*. 68% people learnt about the programme from print and electronic media while 22% became aware through rallies and contact programmes. The response indicates a requirement to reach out to more places in the interior as well as increase the number and type of participatory activities.

Over 81% people said that pollution and environmental degradation was a high concern for them while another 12% were concerned to an extent. On the whole the subject resonated with over 93% of the people.

37% respondents felt that the awareness about environmental issues has increased significantly while 41% felt it had increased somewhat. The high public concern can easily be harnessed for building support for environmental causes and for inculcating behavioural change.

8.11 **Impact of the Programme**.

The overall standard of cleanliness observed in the towns was good. Altogether, 78% of people said that there was an organised system of garbage collection and disposal in their town. However 22% also said that garbage was thrown by the road side or into rivers and streams. The response matches the observation during field visit.

62% respondents said that they have a septic tank at home while 22% said that their houses were linked to a sewer network. However 13% also said that untreated discharge from their homes is released into rivers. Considering that the main thrust of the programme has been on creation of sewage infrastructure, the above statistics can improve further. As over 60% households rely on septic tanks, the regular inspection of these tanks for functionality and proper management of septage sludge needs greater focus by setting up of more Fecal Sewage Treatment Plants (FTSPs).

In terms of overall improvement in standards of cleanliness in towns, 38% respondents felt that the improvement was significant whereas 47% felt there was some improvement. Therefore a significant majority of 84% felt a positive change. Similarly in case of ghats and crematoria, 29% respondents felt that the standards

had improved significantly while 45% felt that there was some improvement. The fact that 74% respondents have felt a positive change indicates that this dimension of the programme has touched people's lives.

The last question in this segment was on the preferred choice of grievance redressal with respect to pollution and environmental concerns. 49% respondents said that they would approach the local municipal or civil authorities. Half the people reposing their faith in public authorities is a healthy sign and indicative of a responsive administration. The heads of ULBs are members of the DGCs. The SDMs report to the DM who chairs the DGC. It shows that public feedback is reaching the DGCs.

On the whole the responses indicate a high awareness level and high concern for pollution and environmental issues. The high public concern can be harnessed for inculcating behavioural change and adopting eco-friendly practices.

Impact of Tourism

8.12 Public Perception About Tourism.

84% of the respondents felt that more tourists were good for the state. It underscores the importance of tourism in sustaining livelihoods. It also implies a high degree of support for the State Government policy to aggressively expand and diversify tourism. In response to another question over 93% of the respondents had indicated a high degree of concern for environmental issues and rising pollution. Seen together it indicates that people are likely to support practices for sustainable eco-tourism for which imaginative IEC activities are essential.

In response to the statement that “Unplanned development and disregard for the environment is behind frequent natural disasters in Uttarakhand”, 67% of the respondents strongly agreed with the statement and 21% agreed partly. Considering that the state has frequently witnessed destruction from natural calamities, there is realization that development is happening at a high environmental cost.

In response to the question, “Who is most responsible for pollution and environmental degradation in Uttarakhand?”, 32% of the respondents blamed tourists and tour operators but an almost equal number blamed local residents. 21% blamed construction companies while 17% blamed shops and hotels. The mixed response indicates that everyone is a contributor and no single segment can be blamed wholly.

8.13 **Role of Social Media**.

53% of the people stated that they rely on social media for getting news and staying updated. Another 28% relied on internet and websites. 35% felt that they were greatly influenced by social media while 50% felt that they were somewhat influenced. In reply to another question, 30% people had indicated social media as their preferred means of airing grievances and concerns. It shows that despite the rugged terrain and distances, mobile and internet connectivity in the state is good and people are digitally well connected. Therefore, mobile phones and social media can greatly help in IEC activities.

8.14 **Tourism versus Development**.

The responses highlight that while tourism and development activities in Uttarakhand pose a risk to river conservation, there are also several trends that can turn this vulnerability into an opportunity. The high concern among people for

environmental causes and an admission that they themselves at times break rules and cause pollution are positive indicators. The survey shows that the biggest stakeholders i.e. the local people are inclined to embrace behavioural change and adopt sustainable and eco-friendly practices. The Government needs to harness this potential and turn it into reality.

The survey also shows that with changing times, social media has become a major influence in the state. If harnessed correctly it can play a big role in IEC activities and support for conservation efforts. It can mobilize people to adopt eco friendly practices and help promote sustainable eco-tourism. A shift to sustainable tourism and development will automatically strengthen efforts for Ganga conservation.

B. RECOMMENDATIONS

8.15 **Specific Recommendations**.

Keeping in mind the findings and assessment, the following specific recommendations are made with respect to the *Namami Gange* programme in Uttarakhand:-

(a) There is a need to consolidate on the gains made so far and focus on unaddressed sources of pollution. Habitations along the tributary streams of the Ganga, smaller untapped nalas in towns, slums on flood plains, encroachment of river banks and leakages from old sewer networks in cities are some of the sources of untreated liquid waste that deserve attention.

(b) Although laying of sewage network within towns is not the mandate of the programme, being the charter of ULBs, it has an impact on

programme outcomes. This is especially relevant in case of big cities like Haridwar and Rishikesh. Therefore upgradation of sewerage networks should get priority either through *Namami Gange* itself or through separate schemes.

(c) Management of municipal solid waste needs to be further strengthened under the Swachh Bharat Mission (Urban) as it impacts the outcomes of *Namami Gange*. Material Recovery Facilities and compactors should be provided in all towns. Unauthorised dumping of garbage in depressions and legacy landfill sites needs to be addressed.

(d) Swachh Bharat Mission (Rural) needs to focus on solid waste management as the state is now ODF. A viable plan with adequate funding needs to be devised for garbage collection and disposal especially in Ganga villages and the riverside.

(e) Adequate funds should be provided to ULBs to create surge capacity to handle waste load during *Yatra* season. This includes additional toilets, litter bins, sanitation staff and sanitary inspectors. Towns like Haridwar and Rishikesh that bear the brunt of *Kanwar Yatra* every year should get additional funds for the event akin to *Kumbh Mela*.

(f) A comprehensive policy should be made to regulate the temporary shacks that spring up during the Yatra season. The shacks should be made accountable for the solid and liquid waste generated by them.

(g) With adequate sewerage infrastructure coming up under Phase 1 of the programme, in Phase II the focus should shift to other dimensions like *Jan Ganga* and *Arth Ganga*. The concept of Ganga Grams and needs to be invigorated. The role and scope of activities of Ganga Praharis also needs

to be reviewed. They need to be actively dovetailed into activities by the DGCs.

(h) Forestry Interventions through CAMPA needs to be reviewed. The lack of direct funding by NMCG has practically stopped any major forestry interventions under the programme.

(i) State Government should maintain the assets under the programme once taken over by it. Timely repairs and allotment for funds for maintenance are essential.

(j) A mechanism should be put in place for sharing of best practices among DGCs. The SPMG should facilitate flow of information between districts. The concept of having invited members in DGC meetings alongwith the SSP and DTDO should be followed by all districts.

(k) Appointing one to two State Government officers of adequate seniority to work full time in the SPMG will greatly enhance its output. It will improve oversight over work being done and also facilitate coordination with outside agencies.

(l) At the DGC level, there is a necessity of either deputing an additional officer as Assistant DPO or at least one to two clerical staff to assist and share the office load.

(m) The SPMG website should be updated with latest data from all departments.

(n) Funding for IEC activities should increase. The IEC activities need to reach out beyond the main stem of the Ganga to more places in the interior as well. There should be an increase the number and type of

participatory activities. Engagement with greater number of people over a wider area should be done.

(o) There is a need to give more visibility to the programme by having more signages, slogans and public information along highways.

(p) More cautionary signages should be at tourist places to deter throwing of waste into the river and also help in behavioural change by constant iteration.

(q) Social media can play a big role in influencing public behavior in the state. It can mobilize people to adopt eco friendly practices and help promote sustainable eco-tourism. The programme should invest more in harnessing social media as a vehicle of change.

(r) The State Government should make sustainable eco-tourism and environment friendly activities mandatory in the state. This includes banning wasteful and harmful activities and shift to cleaner technologies. It is likely to get good public support for such initiatives.

C. CONCLUSION

Cleaning and rejuvenating the Ganga is a massive and complex task that requires political, scientific and technological interventions. At the grassroots level, developing awareness, sense of ownership and sustained public support are vital for the success of the programme. However achieving these have proved difficult in the past. The *Namami Gange* attempts to do so through empowered local bodies and by inculcating a behavioural change in the people. Studying these aspects in a small state like Uttarakhand has brought forth useful lessons for conservation efforts on a wider scale.

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APPENDIX - A

QUESTIONNAIRE FOR THE PUBLIC

NAMAMI GANGE PROGRAMME IN UTTARAKHAND

मैं भारतीय लोक प्रशासन संस्थान, नई दिल्ली में अध्ययन कर रहा हूँ। यह सर्वेक्षण मेरे शोध का भाग है जो कि उत्तराखण्ड राज्य में नमामि गंगे कार्यक्रम पर आधारित है । सर्वेक्षण में आप का नाम या कोई भी व्यक्तिगत जानकारी नहीं ली जाएगी । कृपया 10 मिनट दे कर अपने विचार साझा करें।

प्रश्नावली में 15 प्रश्न हैं । हर प्रश्न के उत्तर में चार विकल्प दिए गए हैं । कृपया केवल एक विकल्प चुनें जो आपके विचारों से सब से ज़्यादा मेल रखता हो।

I am undergoing a course at the Indian Institution of Public Administration (IIPA), New Delhi. This survey is part of my research on the Namami Gange programme in Uttarakhand. Your name or personal details are not required. Please spare 10 minutes to share your views.

There are 15 questions. In each question choose one option that best describes your opinion.

Background of Respondent

Q1. आप कि आयु क्या है?
Please indicate your age:-

20 वर्ष से कम
Under 20 years

20 to 60 से वर्ष के बीच
Between 20 and 60 years

60 वर्ष से अधिक
Over 60 years

Q2. आप कि शैक्षिक योग्यता क्या है?
Please indicate your education level:-

कक्षा 12 या उस से कम
Class 12 or lower

स्नातक
Graduate

स्नातकोत्तर या अधिक
Post Graduate or higher

Q3. उत्तराखण्ड में निवास के आधार पर आपका वर्ग क्या है?
Please describe your resident status in Uttarakhand:-

स्थायी निवासी
Permanent resident

नौकरी या व्यवसाय के लिए अस्थायी निवासी
Temporary resident for work / business

पर्यटक / अन्य
Tourist / others

Q4. आप क्या करते हैं?
Please describe your occupation:-

छात्र
Student

सरकारी / प्राइवेट नौकरी
Government service / Private sector

स्व-रोजगार / व्यापार
Self employed / Business

Questions

Q1. नमामि गंगे भारत सरकार का एक प्रमुख कार्यक्रम है। यह किस विषय से सम्बंधित है ?
Namami Gange is a flagship programme of the Government. What is it related to?

गंगा के साथ स्थित मंदिरों और धार्मिक स्थलों के पुनरुद्धार से
Revival of temples and religious sites along the Ganga

गंगा के पानी द्वारा सिंचाई से
Use of Ganga water for Irrigation

गंगा में प्रदूषण नियंत्रण से
Pollution control in the Ganga

गंगा में बाढ़ नियंत्रण से
Flood control in the Ganga

Q2. आप को नमामि गंगे के बारे में कैसे पता चला ?
From where did you learn about Namami Gange?

समाचार पत्रों / पत्रिकाओं / सार्वजनिक पोस्टरों के माध्यम से
Through newspapers / magazines / public posters

रेडियो / टी. वी. / इंटरनेट के माध्यम से
Through radio / TV / internet

नमामि गंगे अधिकारियों द्वारा आयोजित कार्यक्रमों से
Though programmes and activities by Namami Gange authorities

मुझे इस के बारे में कुछ नहीं पता
Don’t know anything about it

Q3. क्या आप ने नमामि गंगे अभियान से जुड़े हुए किसी कार्यक्रम में भाग लिया है? यदि हाँ तो किस प्रकार के कार्यक्रम में?
Have you ever participated in any activities related to Namami Gange programme? If yes indicate the activity:-

नदी के किनारे पॉलिथीन इत्यादि हटाने के अभियान में
Helping remove polythene / litter from river front

वृक्षारोपण और प्राकृतिक संरक्षण कार्यक्रम में
Afforestation and ecological conservation

जनता में जागरूकता बढ़ाने के लिए जन सभा / रैली इत्यादि में
Attended meeting / seminar / public rally to support Ganga conservation

कभी भाग नहीं लिया
Not participated

Q4. नदियों में बढ़ता प्रदूषण और पर्यावरण की क्षति जैसे विषय आप को कितना चिंतित करते हैं ?
How much does pollution of rivers and damage to environment bother you?

बहुत अधिक
Greatly

कुछ हद तक
Somewhat

बहुत कम
Hardly

बिलकुल भी नहीं
Not at all

Q5. क्या आपने पिछले पांच वर्षों में जनता में पर्यावरण के प्रति जागरूकता में कोई बदलाव देखा है? विशेषकर गंगा संरक्षण को ले कर?
Have you observed any change in public awareness and attitude towards environmental issues in last five years? Especially towards Ganga conservation?

जागरूकता बहुत बढ़ी है
Increased significantly

थोड़ी बढ़ी है
Increased a bit

कोई बदलाव नहीं
Remained the same

जागरूकता कम हो गयी है
Declined

Q6. आप के घर या आस पास के इलाक़े में पैदा होने वाले कचरे का क्या होता है?
What happens to the solid waste generated in your house / locality?

नगर पालिका द्वारा घर-घर से जमा किया जाता है
Door to door collection by municipal bodies

लोग स्वयं कचरे की गाड़ी या निर्धारित स्थान में जमा कर देते हैं
Dumped in garbage bins or designated points

जिसे जहाँ चाहे वहां फेंक देता है
Dumped anywhere on the roadside

नज़दीकी नदी, नाले या गड्ढों में फ़ेंक दिया जाता है
Thrown into closest rivers, streams and ditches

Q7. आप के घर एवं इलाक़े के शौचालयों का पानी कहाँ जाता है?
What happens to the sewage generated in your house / locality?

नज़दीकी नदी या नालों में सीधा छोड़ दिया जाता है
Discharged directly into the river or streams

हर घर में बने सैप्टिक टैंक में जाता है
Discharged into septic tanks in each house or building

नालियों और पाइपों द्वारा सीवेज ट्रीटमेंट प्लांट में ले जाया जाता है
Discharged into sewage lines and taken to Sewage Treatment Plant (STP)

मेरे घर में शौचालय नहीं है
Don't have a proper toilet in my house

Q8. क्या आपने पिछले पांच वर्षों में अपने गांव या नगर की स्वच्छता के स्तर में कोई बदलाव देखा है? Is there any overall change in standard of cleanliness in your locality in last five years?

बहुत सुधार हुआ है
Improved greatly

थोड़ा सुधार हुआ है
Improved a bit

पहले जैसा ही है
Remained the same

पहले से ख़राब हो गया है
Become worse

Q9. क्या आपने पिछले पांच वर्षों में अपने गांव या नगर के शमशान घाट, नहाने के घाट और नदी के किनारे में कोई सुधार देखा है?
Have you seen any change in the standard of cremation ghats, bathing ghats and river front in your locality in the last five years?

बहुत सुधार हुआ है
Improved greatly

थोड़ा सुधार हुआ है
Improved a bit

पहले जैसा ही है
Remained the same

पहले से ख़राब हो गया है
Become worse

Q10. यदि आप अपने इलाक़े में सफाई, प्रदूषण या पर्यावरण जैसे विषयों से सम्बंधित शिकायत या सुझाव देना चाहते हैं तो आप सब से पहले किस का सहारा लोगे?

In case you want to lodge complaint or give suggestion about cleanliness, pollution or environmental issues in your locality, whom would you approach first?

नगर निगम / जिला प्रशासन
Municipal Council / SDM

स्थानीय विधायक / राजनैतिक पार्टी
MLA / Political party

स्थानीय पत्रकार या टी. वी. चैनल
Local news reporter or TV channel

सोशल मीडिया (व्हाटस एप्प, ट्विटर, इंस्टाग्राम)
Use social media (whatsapp, twitter, instagram) to highlight the issue

Q11. उत्तराखण्ड में आने वाले पर्यटकों की संख्या में हर वर्ष बहुत वृद्धि हो रही है । क्या यह राज्य के लिए अच्छा है

The number of tourists visiting Uttarakhand is increasing every year. Is it good or bad for the state?

अच्छा है
Good

कुछ हद तक अच्छा है
Mix of good and bad

ख़राब है
Bad

कह नहीं सकते
Cannot say

Q12. "अनियोजित विकास और पर्यावरण की तरफ ध्यान न देने से उत्तराखण्ड में प्राकृतिक आपदाएं (जैसे बाढ़, सूखा, भूः स्खलन इत्यादि) बढ़ रहे हैं" । क्या आप इस बात से सहमत हैं?

"Unplanned development and disregard for the environment is behind frequent natural disasters in Uttarakhand". Do you agree with this statement?

हाँ पूरी तरह सहमत
Totally

कुछ हद तक सहमत
Partly

बिलकुल सहमत नहीं
Don't agree

कुछ नहीं कह सकते
Can't say

Q13. आप के इलाक़े में प्रदूषण और पर्यावरण की क्षति का सब से बड़ा कारण क्या है ?
Who is most responsible for pollution and environmental degradation in Uttarakhand?

स्तानीय नागरिक Local residents

पर्यटक एवं यात्रा कंपनी Tourists and tour operators

दुकान एवं होटल Shops and Hotels

विकास कार्यों में कार्यरत कंपनियां एवं उन के श्रमिक Construction companies and labour involved in development works in the State

Q14. समाचार और आम मुद्दों के बारे में जानकारी हासिल करने के लिए आप सब से ज़्यादा किस साधन का इस्तेमाल करते हो?

What is the primary means by which you remain aware about news and public issues?

सोशल मीडिया
Social media

इंटरनेट वेबसाइट
Internet websites

टी.वी. एवं रेडियो
TV / radio

अख़बार एवं पत्रिकाएं
Newspapers / magazines

Q15. सोशल मीडिया में प्राप्त हुए संदेशों से आप कितने प्रभावित होते हो? क्या आप अपने व्यक्तित्व में कोई बदलाव महसूस करते हैं ?

How much do messages received on social media (whatsapp / facebook / instagram etc.) affect your opinion and behaviour?

बहुत ज़्यादा
Greatly

कुछ हद तक
Somewhat

बिलकुल भी नहीं
Not at all

मैं सोशल मीडिया इस्तेमाल नहीं करता / करती
I don’t use social media