



ENGAGING STAKEHOLDERS IN GANGA BIODIVERSITY CONSERVATION

BIODIVESITY CONSERVATION AND GANGA REJUVENATION

Component 5: Community Based Conservation Programme for Species Restoration in Ganga River

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List of Abbreviations:

CSR	-	Corporate Social Responsibility
MOEFCC	_	The Ministry of Environment, Forest and Climate Change
NGOs	_	Non-Government Organizations
NMCG	_	National mission for clean ganga
NRLM	_	National Rural Livelihood Mission
NYKS	_	Nehru Yuva Kendra Sangathan
RSETI	_	Rural Self Employment Institute
SPMG	_	State Project Management Group
SRLM	_	State Rural Livelihoods Mission
UREDA	_	Uttarakhand Renewable Energy Development Agency

Engaging Stakeholders in Ganga Biodiversity Conservation



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Executive Summary

Ganga River supports lives of 43% of the Indian population with a total length of 2525 kms covering five states: Uttarakhand, Uttar Pradesh, Bihar, Jharkhand and West Bengal. The literacy rate and population density of these states except the state of Uttarakhand is below the Indian average of 74.04% (Census, 2011) which indicates that the communities in these states are possibly not very well developed and the level of awareness on the impact of pollution on the Ganga river is limited. The natives of the five Ganga states use the river for household chores such as bathing and laundry and also, they use the river resources for their livelihood. This shows that the stake of local people in the project is particularly high and it is very important to get these stakeholders fervently involved in the conservation efforts.

Through this project, we aimed to ensure the stakeholder involvement in the conservation process and increase the effectiveness of the conservation activities. Keeping this in mind we conducted a need assessment baseline survey in all the five Ganga states and designed the participation strategy for the stakeholders. The strategy includes various activities for the identified stakeholders based on their stakes in the Ganga biodiversity conservation. The implementation of these activities aligned with the mandate of stakeholders.

The team conducted several consultation meetings to identify the stakeholders and to assess their area of interest. The team also built alliances with forest department, district administration, local NGOs, private organization and other key stakeholders to ensure their participation. The activities under 'Component 5- Community Based Conservation Programmes for Species Restoration in Ganga River' of project 'Biodiversity Conservation and Ganga Rejuvenation' were conducted between June 2016 - December 2019 in all the communities of the five Ganga states: Uttarakhand, Uttar Pradesh, Bihar, Jharkhand and West Bengal.

A total of 55178 people from different stakeholder categories of all five Ganga state were engaged and sensitized about the aquatic life of the river Ganges, and their direct and indirect dependency on the river. In total 45% of the participants were men and 55% were women. Followed by 47% communities and 20% students' participation, the highest participation was shown by Ganga Praharis with 18.6% of the total participation. The projects with high level of participation are more likely to have attitudinal success than projects with no or low levels of participation. Hence high participation as a predictor of attitudinal change, shows the success of this project.

As an impact of trainings and awareness activities, local people and other stakeholders started taking initiatives at individual level, and mobilized 5683 people during 333 conservation activities. One of the fortes of this project is that it brought a range of different organizations such as rural self-employment institutes, USHA Ltd. and National Rural Livelihood Mission (NRLM), state forest department, district administration etc. together at one platform contributing towards the goal conservation. From the field experience it can be concluded that participatory processes have the capacity to transform adversarial relationships and find new ways for stakeholder participation in conservation projects. This may lead to a sense of ownership over the process and outcomes leading to sustainable conservation efforts and addressing the conservation-development dilemma.

Engaging Stakeholders in Ganga Biodiversity Conservation



1. Introduction

Conservation issues are characteristically multifaceted, ambiguous, multiscale, and affect various stakeholders and agencies. A demand for an efficient policy making can be noticed from the project, which is flexible to altering conditions and embracing the diversity of knowledge and values. To justify this demand, stakeholder participation is progressively being trailed to strengthen the conservation efforts, from local to international scales (Stringer et al., 2007). However, involving stakeholders in decisions is inevitably overwhelming and overpriced – and it may not be successful. The instances of failed attempts and challenges faced while involving stakeholders are not uncommon.

However, advocates of participatory methods argue that many pragmatic benefits could be gained by working with stakeholders. They argue that the reason for failed attempts of stakeholder participation in conservation is that people have not done it right. The decisions, taken in consultation with stakeholders, were of advanced quality and are more robust. Decision's quality can be higher if decision-makers have access to a wider range of often-higher quality first-hand information rather than relying solely on textbook answers from researchers (McIntosh, 2011). By getting a wholesome picture in this way, inadvertent consequences may be projected and avoided.

For instance, by establishing common ground and trust among stakeholders and appreciating each other's viewpoints, participatory processes can transform adversarial relationships and find new ways to raise the sense of ownership among the stakeholders over the process and outcomes. If this is shared by the collaboration with local stakeholders, long-term support and active implementation of decisions may be enhanced. Depending on the nature of the initiative, this may significantly reduce implementation costs. Surely, even if a few of these additional benefits can be realised, it is worth trying to engage stakeholders in conservation. Therefore, conservationists are interested in adopting participatory approach. The reason is, whether it works or not, there is a strong argument that we should develop a platform for those who are affected by, or who can affect projects, to have their say. Increasingly this right is being protected in the law. According to the Aarhus Convention, all environmental decision-making procedures are obligated to take stakeholders interest into consideration. Local communities are now involved in decision-making worldwide (Luyet et al, 2012).

1.1. Need of stakeholder engagement in Biodiversity Conservation and Ganga Rejuvenation

Ganga is one of the largest rivers of India, flowing through five states covering about 26% of the country's area. The river supports the lives of 43% of Indian population with a total length of 2525 kms. The population density of the five Ganga states is as follows: 190 persons per square km in Uttarakhand; 828 persons per square km in Uttar Pradesh; 1102 persons per square km in Bihar; 414 persons per square km in Jharkhand; and 1029 persons per square km in West Bengal (Census, 2011). This indicates that the areas along the Ganga river stretch of four states have a higher population density than the average population density of India, i.e. 328 persons per square km. The literacy rate in the states of Uttar Pradesh, Bihar, and Jharkhand is below the Indian average of 74.04% (Census, 2011). These numbers, as the social indicators, suggest that the communities in these states are not highly developed and the level of awareness on sensitive issues like Ganga river pollution and its impact on the aquatic biodiversity is limited hence, it can be said that the low rate of literacy is one of the major contributors in the increasing pollution of the Ganga River.

The natives use the river for bathing, laundry and water supply. People from the five states also have an economic dependency on the resources of the river. The river not only supplies water but also serves as a dynamic resource for electricity generation, agriculture, and industrial consumption. Another major use of the river resource is in the form of commercial fishing, which is one of the most important contributors to the economy of these states, especially in Bihar and West Bengal. In addition, a major population depends on the river for their livelihoods (Hasan et al.,2017).

Throughout the mainstem and basin of the Ganges, all kinds of festivals are celebrated on the bank of the river. This social and economic dependence threatens the ecological integrity of the river and the livelihood of the locals. It can be said that the river, either in polluted or pure form, affects a wide range of stakeholders including anglers, farmers, and other local communities. Therefore, the stake of local people in the project is particularly high and it is more important to get these stakeholders fervently involved in the conservation efforts, and engage them in the Biodiversity Conservation and Ganga Rejuvenation activities.

1.2. Literature Review

Biodiversity Conservation has been measured as a critical element of sustainability (SCBD 2010; GRI 2007; Jones and Solomon 2013). Previous researches have revealed that participation of local stakeholders is important for effective and sustainable on-ground implementation of conservation activities. At present conservation interpolations foster additional tasks including the need to discuss the actions with actors from the global to local scale, stakeholder participation, promoting sustainable livelihoods, and adaptive management. The popularization of stakeholder participation has raised a dispute over whether participation is predominantly an empowerment tool or a method to implement a better project (Oakley 1991). Some reviewers observed that the studies have got diverted in focusing on participatory tools and techniques, to the detriment of nuanced and politically sensitized analyses of the actors in conservation and development (Leach et al. 1999; Guijt and Kaul Shah 1998). The studies highlight simplistic analyses that, in fact, highly heterogeneous groups continue to plague community-based conservation efforts (Agrawal and Gibson 1999; Brosius et al. 1998). We focused on two key questions in the discourse on the participation of local stakeholders in conservation:

1. How can the complexity of stakeholder groups be depicted?

2. How can the understanding of complexity help facilitators and potentially generate better initiatives?

The role of local organizational arrangements in averting the 'tragedy of the commons' has received close attention from common property theorists. Factors such as community and individual resource user characteristics (Ostrom 1998), group process and membership (Ostrom 1992), physical and biological characteristics of the resources (Oakerson 1992), and tenure (Hobley 1996; Alcorn and Lynch 1994) exert an important influence on local capacity. Many community-based conservation programs today try to promote biodiversity conservation by addressing the social and economic needs of people.

The community-based conservation was also criticized for being intricated in its implementation, and too ambitious in its aims often trying to report many challenges simultaneously (Danielsen et al., 2006). NGOs focusing on conservation have been blamed for becoming developmentfocused, sometimes spending more resources. It has been proposed that tradeoffs between conservation and development could result in criticizing conservation as a priority and in that

way decreasing the effectiveness of conservation activities (McShane & Wells, 2004). There are also a huge number of examples and successful stories related to local stakeholder involvement in the previous studies. A study by Oldekop et al. (2016) highlighted the impact of stakeholder involvement through mutual authority, local communities' empowerment, reducing the unemployment and increasing equal access to cultural, economic and livelihood benefits, on the association of local people with the conservation process.

Similarly, a review of 20 case studies of protected area management in Europe also concluded that success of conservation plan is related to local involvement and local benefits (Hirschnitz-Garbers & Stoll-Kleemann 2011). Brooks et al. (2013) found during his study on community-based conservation projects that successful projects, were related to community engagement. The researchers engaged with local communities, their customs, and organizations, enhancing the relevant skills of the stakeholders and institutional capacity. This also emphasized and ensured equal access to intangible, non-economic benefits. A review research by Sterling et al. (2017) found that identifying stakeholders, building active partnerships, engagement, identifying stakeholder values and institutions, capacity and knowledge building among the stakeholders, encouraging their participation and, ecological knowledge, were all related with success of the conservation projects.

However, local involvement does not always have equal impact on the success can also be a matter of perspective (Stern & Dietz 2008; Brooks et al. 2013; Bennett 2016; Sterling et al. 2017). Involving multiple stakeholders in an implementation phase of a project can also look very discouraging and possibly unfavorable. The reason is that bringing the individual with different perspective and interests together can slow down the process of implementation, and, can create unnecessary conflict. Whereas on the practical side, integrating stakeholder suggestions and local knowledge into a project planning and decision-making process can be beneficial by providing early feedback and gathering consensus before the implementation of new policies, regulations or decision takes effect. This can promote a more coordinating and symphonic process by avoiding unnecessary conflict. Though it can be observed that stakeholders stand against a project if they have been left out of the process, or were not properly well- versed on the several aspects and negotiations made before their participation (Mascia et al. 2003; Jones & Burgess 2005; Peterson et al. 2007). If they recognized that their suggestions and inputs (rightly or wrongly) were not given fair attention, conflicts can develop and creates issues in the project (Jentoft & McCay 1995; Madden & McQuinn 2014). Consequently, nurturing

stakeholder's ownership can lead to an increased support in the implementation of the project (Richards et al. 2004).

For instance, Brooks et al. (2013) found that there are more successful community-based conservation projects than failed ones, but the number of failures was still large. Some studies claimed that stakeholder participatory approach was resisted because of high expectations and the communities could not get enough benefits out of conservation initiatives (McShane & Newby 2004), whereas others studies found highly successful projects with a truth that it also failed to provide economic benefits, and attributed their success to noncash benefits like enhanced community confidence (Salafsky et al. 2001). Some studies found that stakeholder participation process can be time consuming and expensive may also increase conflict due to difference in thinking, viewpoints and perspectives, lack of knowledge and capacity. Also lack of commitment may reduce support (Stern & Dietz 2008; Ward et al. 2018). The project kept all the findings in mind to effectively implement the Participatory approach.

1.3. Importance of the Stakeholders' engagement in Ganga conservation

An important aspect of the project was to involve various stakeholders from the beginning of the project. It is not just to inform them about the project, but to increase the knowledge on the importance of their role in the conservation of the Ganges and its biodiversity, and to improve coordination between different sectors.

Stakeholder participation and consultation offer ways to raise local stakeholders' knowledge on conservation and ongoing conservation efforts. Each effort has a different potential for facilitating stakeholder engagement in decision-making. There are numerous ways of conceptualizing stakeholder participation in conservation. Previous studies called it a 'ladder of participation' to explain different stages of participation from zero engagement (one- way communication), through more consultative levels to community empowerment at the top of the ladder (Arnstein,1969; Hurlbert & Gupta,2015). More recently, this has been re-introduced as a 'wheel of participation', focusing on the importance of stakeholder participation on different levels of participation in different contexts (Davidson, 1998; Richards et al.,2004). In some contexts (e.g. informing stakeholders about policy and implementation), communication may be the most appropriate course of action.

Nevertheless, stakeholder participation is more than any of these representations. It is a method that values and attempts to resolve multiple (often differing) perspectives, to facilitate learning

and progress. Even though the previous statements that are made for stakeholder participation have been tested, which proved that it could augment the value of decisions, perhaps due to more inclusive informative inputs. However, the quality is strongly dependant on the nature of the process leading to stakeholder participation. For these sorts of approaches to become entrenched in management practice, stakeholder participation must be institutionalised, creating organizational structure that can facilitate processes where objectives are discussed and consequences are uncertain. Therefore, the participatory approaches may seem very tricky, but there is strong evidence that if planned well, these alleged risks may be worth taking.

Findings from this chapter will provide a better understanding of the effectiveness of stakeholder participation in community-based conservation interventions along the river in five Ganga states. It will inform decision-making and policy at regional and national level and assist in designing likely successful implementation projects in future.

2. Aim

To elicit participation of stakeholders in the process of Ganga biodiversity conservation.

3. Objectives

The objectives of this project are to support the abovementioned aim to:

- **1.** Ensure and maximize stakeholder participation and cross-sectoral coordination for biodiversity conservation and Ganga rejuvenation
- Determine the effectiveness of the stakeholders' involvement in meeting the goal of biodiversity conservation and Ganga rejuvenation.
- **3.** Determine the impact of stakeholder engagement in biodiversity conservation activities on community participation and their well-being.

4. Scope and Limitations

4.1. Scope

This project covers the local communities of the areas situated along the river Ganga with special focus on rural areas of the five Ganga states: Uttarakhand, Uttar Pradesh, Bihar, Jharkhand, and West Bengal, which was lacking in the previous Ganga conservation projects. Very few studies have been conducted on stakeholder's participation in the conservation of Gangetic flora and fauna. The project provides suggestions for more studies on stakeholders' participation and

primary stakeholders' participation in particular because there is lack of empirical data or experiences to provide information on best practices in collaborative Biodiversity Conservation in the river Ganga.

Due to the remaining gaps in the current governance agendas and increasing pressures, the necessity for cross-sectoral coordination and management of sustainable conservation practices for Biodiversity conservation is being increasingly realized. Stakeholders' participation enables positive relationships between local people and conservationists while inaugurating a method for combination of ecological knowledge from the experiences of local communities, as well as best practices towards sustainably implemented conservation action plan. This was observed by analyzing local communities' participation and examining factors influencing various levels of stakeholders' participation in conservation activities of Ganges and its biodiversity. The research findings may contribute to government policy reforms and participatory management guidelines for restoration of different rivers in the country including Ganga.

4.2. Limitations

Stakeholder involvement in biodiversity conservation has been widely adopted in the form of community participation and cross-sectoral coordination with common goals. It became the choice of institutions and conservationists in many countries, including India. Members of local communities can be mobilized and empowered to achieve conservation by providing capacity building trainings and offering incentives to involve them in the project activities and other practical initiatives that strengthen the social solidity. At the same time providing trainings and involving them in monitoring biodiversity conservation activities generates a feeling of ownership among them.

However, their success, both in terms of their ability to conserve biodiversity, support and improve personal well-being, is still poorly understood and there has been criticism of the failure to produce sufficient evidence of their success (Garcia & Lescuyer, 2008). There is a lack of conditionality in the arrangement between local communities and their performance in conservation activities, and the support they receive. The other limitations we found during the project activities are mentioned below:

Time and money constraints for stakeholders: Many stakeholders, including local communities, institutions or other active line agencies, lack the time or financial resources to keep themselves engaged in the Biodiversity conservation and Ganga rejuvenation process for a long time. Their

involvement will generally incur an immediate cost in terms of time and sometimes money and might also bring sustainability in achieving the project objectives. These are particularly important considerations where local stakeholders are poor. In many cases, incentives or compensation will be required to secure their inputs.

Education: Low levels of education, and the 'technical' nature of many development-related issues, can be a major barrier to effective participation. The literacy rate of the targeted areas was low, which makes the verbal interaction in the local language necessary to sensitize them on the conservation issues and their role in it.

Cultural and Language Barriers: These can be particularly acute where indigenous groups are stakeholders. Communication difficulties were observed not simply because of different language and education, but also because these communities often hold entirely different belief systems and ways of perceiving any issue. For example, it was observed that at some places, communities gave the status of a mother to the river but the belief that 'A mother always forgives', makes them believe that they are free to pollute the river. Also, the cultural values like dumping of religious waste such as broken sculptures and paintings of idols in the river are considered holy rituals by the native communities, which were proved to be a barrier during the conservation efforts.

Gender: Insensitivity to gender issues, and particularly to the lower status accorded to women in decision-making in many parts of the world, is a common constraint to effective stakeholder involvement. It is found, that major changes in attitude and conventional approaches are required. The team also faced issues in bringing out the women folk to work for Ganga conservation. At places where women do not sit in front of men, the team tried to extract their views.

Disaster prone areas: In the villages, which are in close proximity of the Ganga, floods are common in monsoon, especially in the lower Ganga stretch, which generates a gap between team and communities during that period of the year. The existing trend suggest that during this time of the year, they shift in the safe zones far from the river and come back there again in winters.

5. Material and Methodology

The project activities on Biodiversity Conservation and Ganga Rejuvenation were conducted between June 2016- December 2019, in all the communities of the five Ganga states: Uttarakhand, Uttar Pradesh, Bihar, Jharkhand and West Bengal.

5.1. Strategy Design

The participation strategy was designed based on literature review and a scoping process. A pilot research and scoping exercise was carried out prior to the actual design of the stakeholder's participation (Fig.1). Searches were conducted in the first year of the project. The non-participant process was used to identify and establish contacts with the local stakeholders, communities (Bessette, 2004).



Figure 1 Stages involved in Stakeholder Participatory Approach

(Concept: Reed et al., 2008)

The team conducted several consultation meetings, workshops with different stakeholders including local communities, NGOs, Educational Institutions, government and private

institutions to assess their area of interest. Informal talks were carried out with the local communities in order to know the ground situation, threats to biodiversity, steps that need to be undertaken and threats driven factors for Gangetic biodiversity.



Figure 2 Stakeholder Identification

Once the stakeholders were identified (Fig.2), they were categorised based on a range of methods following two approaches:

(i) Top-down 'analytical categorisations', where researchers categorize the stakeholders based on their observations and 'some theoretical perspective on how a system functions' (Hare and Pahl-Wostl, 2002, p. 50)

(ii) Bottom-up 'reconstructive methods' in which stakeholders categorize themselves, so that the stakeholder analysis better reflects the perceptions of the stakeholders themselves (Hare and Pahl-Wostl, 2002).

5.2. Inclusion/exclusion process for Stakeholders

Inclusion criteria were as follows:

1) Related to Ganga and its biodiversity conservation,

2) Related to stakeholder engagement actions initiated by outside groups or by self-organized groups, and

3) Interventions undertaken at local scale for development, livelihood opportunities and education.

References that did not match with the above-mentioned criteria based on objectives were excluded, and the stakeholders who matched the criteria were sorted and contacted further to get more details about their objectives. The process was followed by signing of memorandum of understanding, which ensured the collaboration with the stakeholders for biodiversity conservation of the Ganges.

5.3. Engaging Stakeholders in Ganga and Biodiversity Conservation

Alliances for Conservation

Most of the lasting impacts r major failures of the previous projects relate directly to the degree of stakeholder support for project outputs and processes, and the extent of their agreement to follow a set of rules for the implementation.

Incorporating stakeholder's engagement in on ground actions by including NGOs, local communities, forest department, administrations and other line agencies in project implementation, the team was able to meet some of the needs and priorities of these stakeholders, to develop allies, and to begin developing a shared vision of the Biodiversity Conservation and Ganga Rejuvenation. Alliances have been developed with active line agencies, departments and private sectors keeping the interest of local communities in mind.

Stakeholder Participation process: The appraisal process for the project was highly participatory and helped to build support for the notion of 'river with people'. But, during implementation the project took very different approaches to citizen participation.



Figure 3 Strategy used to engage stakeholders in biodiversity conservation

A low participation of stakeholders in policymaking, project implementation, and excessive centralization of decision-making results in lack of project ownership and dissatisfaction among stakeholders. Thus, not only did the team succeed in building alliances among local communities, NGOs, and other key stakeholders, but it also generated a sense of ownership by conducting sensitization workshops, campaigns, plantations, surveys and capacity-building programmes to involve them as a partner in conservation.

Inclusion of the private sector: The inclusion of these powerful actors resulted in opportunities to enhance project sustainability, and sometimes support project activities and strengthened the achievement of project goals.

5.4. Implementation of Stakeholder Engagement Techniques

In a study by Borovnik et al (2014), it was recommended that connection should be established as early as possible with the targeted stakeholders by involving the local institutions including the village head, NGOs working in the area, other researchers who may have worked in that community and government agencies. Other options suggested by Borovnik et al (2014) included personal visits, telephone contacts, or writing of introduction letters. For this project, initial contacts were made through personal visits and the writing of introduction letters to the communities, agencies, and persons that were identified to be part of the research. The personal visits and introduction letters introduced the objectives of the project and outlined what was expected from the stakeholders in the project activities. The techniques used for effective crosssectoral coordination and communication with stakeholder have been mentioned in Table 1.

Table 1 Stakeholder Engagement Techniques

S. No.	Engagement Technique	Application
1	Information	Through published literature, brochures, reports etc.
	Dissemination	
2	Correspondence by	Project Information and updates to government officials,
	Phone/Email/	organizations, agencies and companies
	Text/Messaging	Invited stakeholders to decision making meetings and
		interactions
3	One to one interview	Solicited views and opinions
		Encouraged stakeholders to speak freely and confidentially
		about controversial and sensitive issues
		Trust building and personal relations with stakeholders
4	Electronic and Print	Disseminated project information to large audiences, and
	Media	illiterate stakeholders
		Informed stakeholders about consultation meetings
5	Formal Consultative	Presented project information to a group of stakeholders
	Meetings	Open invitation to the group of stakeholders to provide
		their views and opinions
		Impersonal relations with high level stakeholders
		Distribution of technical documents and publish informative
		material
		Facilitated meetings using PowerPoint presentations
		Improvement through discussions, comments/questions
		raised and responses
6	Survey	Gathered opinions and views from individual stakeholders.
		Collection of baseline data
		Managed Data
		Development of a baseline database for monitoring impact
/	Focus Group Meetings	Discussion with a smaller group of between 8 and 15 people
		information
		Built relationships with neighboring communities
		Lised a focus group interview guideline to facilitate
		discussions
		Observed the responses
8	Workshops	Presented project information to a group of stakeholders
		Observed their views and opinions
		Used participatory exercises to facilitate group discussions.
		brainstorm issues, analyse information, and develop
		recommendations and strategies
		Observed the responses
9		Organized cleanliness drive to motivate the communities

	Other Conservation	Organized plantation programme to sensitize them on the
	Activities	importance of trees for the Ganga river
		Awareness rally to spread the message around
		Involved the people in the conservation activities to give
		them a feeling of ownership in the project
10	Public Meetings	Presented project information to a large audience of
		stakeholders, and in particular communities
		Allowed the group of stakeholders to provide their views
		and opinions
		Relationship building with neighboring communities
		Distributed non-technical project information
		Facilitated meetings using PowerPoint presentations,
		posters, models, videos and pamphlets or project
		information documents
		Recorded discussions, comments/questions raised and
		responses
11	Trainings	Need Analysis
		Technical trainings by organizing trainings on different
		monitoring and handling techniques and helping the team
		in ecological survey
		Livelihood training for local communities as per the need
		analysis outcomes along with sensitization sessions

The same approach was adopted followed by interaction activities in the targeted rural areas. A subset of capacity building, knowledge and skill development trainings are crucial to community participation for Biodiversity conservation and Ganga rejuvenation project. There are many methods and techniques available to achieve it but it is important to choose the best suitable approach for addressing the needs of stakeholders along with involving them in the conservation process. Skill can be developed through training in a formal or informal way by involving them in research activities based on learning by doing method. The most common education and training approaches adopted during the project are briefly presented here. (Fig.4)



Figure 4 Stakeholder Engagement Activities

Activity 1. Consultative meetings: The team conducted one to one interview with the local stakeholders including Panchayati Raj officials, Government and Non-Government departments, private organizations to disseminate the information about the project objectives and look how their interest can match our project objectives. To what extent the stakeholder can participate in the conservation activities along with accomplishing their targets. We targeted the following points (Table 3):

Table 2 Discussed points in Consultation meetings

S. No.	Stakeholders	Points discussed
1.	Panchayati Raj officials	 Schemes implemented in the villages for employment, sanitation, Livelihood, Farmers, Education, Health. Beneficiaries Access to Resources from the rivers and their views. Possibilities of collaboration.
2.	Government Officials	 Running projects specially in villages along the river Does it involve local communities? If yes how. Are they targeting Ganga conservation as a part of their projects? How the projects are benefitting the locals? Limitations, Achievements etc. Possibilities of collaboration.
3.	Non- Government Officials	 Areas targeted Extent of Local people participation Local communities Response How they raise livelihood option with increasing awareness? Possible ways to collaborate for increasing community participation to conserve Ganga and its biodiversity and for villagers' well- being.
4.	Private Sector (Industries etc.)	 CSR activities conducted by the organization Their access to the villages situated along the river Budget for CSR activities Possibilities for support in community-based conservation activities

Activity 2: Workshops

Sensitization Workshops: Sensitization and awareness workshops were conducted for various stakeholders including local communities, educational institutions, local institutions and other line agencies to sensitize them on the project objective, and vision for achieving the target to establish sustainable conservation and restoration plan for the river Ganga and its biodiversity. Issues and their interest regarding the biodiversity conservation were also discussed.



Figure 5 Sensitization Workshops for Educational Institutions and Local communities

Training Workshops: Training workshops including monitoring techniques, first responder training of Rescue and Rehabilitation, etc. were organized to build the capacity of self-motivated volunteers – 'Ganga Praharis' and enable them to contribute actively in conservation activities with local institutions and other organizations working with the same vision. In addition, it developed a platform for them for generating alternate livelihood options.

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Figure 6 Training workshops for Ganga praharis and local communities

Activity 3: Mobilization

- 1. Direct Involvement: During the fieldwork in all five Ganga states, sensitized and trained people from the targeted communities who are willing to participate in the conservation activities were identified as field assistants. The use of the community representative was essential as they knew who the farmers, fishers, and loggers were and where and how to locate them. The assistant also facilitated the meetings with the target population and their presence enhanced the cooperation of the local people along with increased participation. They also acted as explainers as several different languages are spoken in the river stretch.
- 2. Ganga Pahari's Cadre: Ganga Prahari is a cadre of motivated conservationist from the communities who participate in the conservation activities and the projects of community well-being regularly as a volunteer with social cohesion. For the sustainable implementation of the conservation activities, the Ganga Praharis have been identified through a series of consultative meetings and community interactions held in the villages of all five Ganga states. The Ganga Praharis support local institutions in Ganga conservation activities and monitor them by sensitizing and mobilizing the local communities further to participate and support in conservation activities (For details refer to Chapter 4).



Figure 7 Ganga Praharis

Activity 4: Socio-economic Survey: A Socio-economic survey was conducted using semistructured interviews (on other issues not already covered in the questionnaire) to assess the dependency of local communities on the extracted river resources. The questions from the questionnaire were mostly open-ended so that the participants could expand their explanations using their own narratives. Again, in many instances, the questions had to be asked in various ways, to ensure that the participants had understood their meaning, after which an in-depth discussion would be used to explore the questions in detail. This allowed the participants to focus on those issues of most importance to them, and help to prevent researcher bias.



Figure 8 Socio-economic survey at Narora, Uttar Pradesh

Activity 5: Ecological Survey: The trained volunteers in the training workshops also assisted the researchers in the fields for biodiversity assessment survey, which works as 'hands on training' for them in monitoring of aquatic species. In addition, it increased awareness, interest in conservation and a sense of relationship with aquatic species.



Figure 9 Ganga Praharis assisting in Ecological Survey

Activity 6: Plantation and Cleanliness Drives: The plants have their own importance in cleaning of rivers. To motivate the local people for active participation in Ganga conservation activities, medicinal plants were planted along the riverbanks with the support of Forest Department of all five states and distributed among the local communities to raise the sense of ownership in the project.



Figure 10 Plantation Drive in Kunnao, Uttarakhand



Figure 11 Cleanliness Drive in Kahalgaon, Bhagalpur, Bihar

On and around the Ghats of the river, numbers of cleanliness drives were organized with Ganga Praharis to sensitize them about the importance of sanitation and clean surroundings. In addition, a sense of emotional connection with the river was developed as they worship the river and treat it as a mother.

Activity 7: Livelihood Activity: The participation of local women was lacking due to male dominance, restrictions and domestic responsibilities. The women do not egress of their homes until it is not about their family welfare or livelihood. After regular interactions, it was felt that there is a need to create a platform to engage women in the conservation activities using indirect methods After discussions, skill development centres came out as an opportunistic option. To ensure/seek equal participation of women in biodiversity conservation of Ganga River, livelihood trainings including sewing and stitching, Prasad and incense stick making, Health and wellness, Fruit preservation, Bakery and Handicrafts etc. have been conducted in villages situated along the Ganga River in collaboration with District Administration and local institutions. Whereas males were trained in the skills based on their areas of interests, such as Eco tourist guide and nursery making. The trainings are still ongoing in different villages of three states Uttarakhand, Uttar Pradesh and Jharkhand.



Figure 12 Certification in Stitching training at Maskalaiyan, Sahibganj

Figure 13 GSDP Training

As a result, women and young girls, who were not coming out of their homes, turned out in a big number in these training centres. These centres have become a platform to generate

alternate livelihood options to reduce their dependency on the Ganga River and create awareness about the importance of Ganga Biodiversity and its conservation, as regular awareness sessions and drives are conducted in these trainings.

Activity 8: Cultural Activity: River Ganga is a lifeline for more than five million people and has a special place in their lives. Different rituals and festivals in different communities are related to the Ganga such as Chhath Puja, Dev Deepawali, and Maghi Purnima. Above all, since ancient times every four years, Kumbh Mela has been organized along the river. We used these occasions as a platform to interact and sensitize different communities. We established awareness camps, stalls, organized exhibitions, cleanliness drives, Ganga Aartis, Kalash Yatra, Cultural Dance, Nukkad Natak on Biodiversity conservation, and Ganga rejuvenation to spread the word to ensure large-scale support from the communities.

Figure 14 Cultural Activities

5.5. Data Analysis

After a pragmatic database was recognized, all state-wise data was uploaded to the excel spreadsheets and the analysis was started. This analysis consisted of five steps. The analysis started with sorting, error rectification, and then was converted into a format for efficient analysis. Subsequently, emergent coding was formulated and analyzed. Later all the activities were coded into 14 categories:

- 1. Awareness Programme
- 2. Cleanliness Drives
- 3. Consultative Meetings
- 4. Cultural Activities
- 5. Ecological Surveys
- 6. Livelihood Activities
- 7. Mobilization Workshop

- 8. Orientation
- 9. Plantation Drive
- 10. Rescue and Rehabilitation
- 11. Sensitization Workshop
- 12. Socio-economic Surveys
- 13. Training Workshops
- 14. Others (Participation in conservation programme organized by other stakeholders)

Whereas stakeholders were coded in 14 categories:

- 1. Local Communities
- 2. Panchayati Raj Institution
- 3. Forest Department
- 4. Educational Institutions
- 5. Block Administration
- 6. Pravasi Ganga Prahari
- 7. Other Line Agencies (USHA, Rural Self Employment Institutes etc)
- 8. District Administration
- 9. Bal Ganga Praharis
- 10. Local Businesses
- 11. Visitors
- 12. State Government Officials
- 13. Media Officials
- 14. Ganga Praharis

Detailed of stakeholder analysis was given in Chapter 2.

To explore the importance of role of stakeholders in biodiversity conservation, we relied on the data of conservation interventions implemented with an aim to raise stakeholder participation. The data was further categorised into two categories:

1. Input Activities: Those activities, that were conducted by the team included sensitization workshops, awareness program, cleanliness and plantation drives, monitoring of biodiversity, training of rescue and rehabilitation as first responders etc. to increase the feeling of ownership among the locals.

2. Output Activities: Those activities, which were conducted by a group of sensitized people such as Ganga Praharis, Students. Due to increased sensitization, the people understood the

alarming need of a participatory approach to conserve the river Ganga and its biodiversity and started sensitizing other people in their communities. In addition, they also started volunteering for other conservation activities.

Firstly, we separated and sorted out the data using Excel software. Then descriptive statistics was used to assess different types of variables for participation perceived by stakeholders and we related them with the different categories of activities conducted. The information was analysed following the method of qualitative content analysis (Miles and Huberman, 1994). Frequencies were used to group different stakeholders involved in Biodiversity Conservation into the envisaged groups: Local Communities, Educational Institutions, District Administration and Forest Department etc. We used cross-tabulation to assess the differences in the opinions and understanding of the stakeholders on the project objectives and its on-ground implementation.

A content analysis of behavioral and attitudinal change through the activities was conducted by observing the trend of participation in the project activities. The data of the activities was recorded in a summary transcript and then analyzed using thematic content analysis (Corbin and Strauss, 2008; Taylor-Powell and Renner, 2003). We then checked the correlation between the collaboration with stakeholders and local community participation. In addition, we also assessed the impact of the activities conducted by local people and Ganga Praharis themselves.

For qualitative analysis, we followed an approach suggested by Laws et al (2013) which says that the organization and analysis of data can start from the point at which it is collected in the field, and the collected data reflects the qualitative characteristics in order to make analysis more meaningful.

5.6. Data Extraction

Stakeholder participation in the conservation of biodiversity: Although the participation strategy describes this objective broadly, the process focused mainly on the areas situated along the Ganga River. The process was incremental, with growing public interest and (formal or informal) participation as the project gained momentum. Project reports, extracted from the overall stakeholder participation, confirm that a wide range of stakeholders were engaged. A total of 1895 activities (*Appendix 1*) were conducted in the five states, of which 766 were consultative meetings, 271 were awareness programmes activities followed by 263 sensitization workshops among many others (*Table 4*). The participation from the local communities was found to be higher with 48% of overall participation. The forest department of all five states showed active participation and played a key role in increasing community participation. The table shows that the students with a participation of 20% of overall participants were educated and sensitized on the subject to make the project more sustainable and to spread the word around among a large number of populations through making this a part of education system (Table 3; Fig.16).

Stakeholders	ipants om itional utions	Praharis	Officials	ipants State nment	tors/ 'ists/ rims	cal ssmen	3anga haris	ipants Other gencies	i Ganga naris	trict stration cials	ock stration cials	cal unities	rest tment cials	yati Raj cials
State	Partic fro Educa Institu	Ganga I	Media	Partic from Gover	Visi Tour Pilg	Lo Busine	Bal (Pra	Partic from inline a	Pravas Pral	Dis Admini Offi	Ble Admini Offi	ro Comm	Foi Depar Offi	Pancha Offi
Bihar	847	788	5			9		2		25	1	1092	8	7
Jharkhand	5034	1545	21	2		3		127		107	23	1778	197	93
Uttar Pradesh	3825	6940			3305			384	17	920	358	20977	491	717
Uttarakhand	1194	678		4		19	62	121	38	138	10	2076	250	143
West Bengal	52	305			320					3		101	14	2
Grand Total	10952	10256	26	6	3625	31	62	634	55	1193	392	26024	960	962

Table 3 State wise number of stakeholders involved in conservation

Table 3 shows that minimum participation was in West Bengal due to less focus on communitybased conservation strategies in the state. The fig. 15 shows that the state Uttar Pradesh has the largest stretch of the river flowing in it and passes through many urban and rural areas, thus contributing more to river pollution. Therefore, the project maximized the concentration in the state of Uttar Pradesh (Table 3, Fig. 15 and Fig.16).

Figure 15 Prioritized Targeted Areas

Figure 16 Location of Activities conducted in five Ganga states and prioritized areas

Maximum participation was observed in sensitization workshops with 13216 participants in 263 activities, followed by 11187 participants in 271 awareness programmes and 6726 participants in 766 consultative meetings (Table 4; Fig.17).

Type of Activities	Awa Progr	reness amme	Clean Dr	liness ive	Consu Me	Itative eting	Cul Act	tural ivity	Ecolo Sur	ogical vey	Liveli Act	ihood ivity	Mobil Wor	Mobilization Workshop		Orientation		Others		Plantation Drive		ution toring	Rescue and Rehablitation		Sensitization Workshop		n Socio-econom Survey		Training Workshop		Тс	otal
Year	No. of Activities	Total No. of Participants	No. of Activities	Total No. of Participants	No. of Activities	Total No. of Participants	No. of Activities	Total No. of Participants	No. of Activities	Total No. of Participants	No. of Activities	Total No. of Participants	No. of Activities	Total No. of Participants	No. of Activities	Total No. of Participants	No. of Activities	Total No. of Participants	No. of Activities	Total No. of Participants	No. of Activities	Total No. of Participants	No. of Activities	Total No. of Participants	No. of Activities	Total No. of Participants	No. of Activities	Total No. of Participants	No. of Activities	Total No. of Participants	No. of Activities	Total No. of Participants
2016															3	32															3	32
2017	11	504	3	100	199	1158	1	40			1	59	9	446	15	265			14	597			2	20	98	3681	1	31	6	231	360	7132
2018	113	4053	64	1682	316	2977	1	101	14	74	45	1760	26	658	14	228	7	314	89	2393	2	55	22	230	119	4856	1	69	31	1295	864	20745
2019	147	6630	25	592	251	2591	6	5832	6	31	33	1666	27	656	15	526	53	2556	22	447			13	15	46	4679	8	127	16	921	668	27269
Grand Total	271	11187	92	2374	766	6726	8	5973	20	105	79	3485	62	1760	47	1051	60	2870	125	3437	2	55	37	265	263	13216	10	227	53	2447	1895	55178

Table 4 Trend in activities and stakeholder participation during the project tenure (2016-19) in Five Ganga States

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Figure 17 District-wise presence of project activities

Results from the participants' record for the state of Uttarakhand, as shown in Table 5 indicate that there has been a noteworthy shift in the representation of stakeholders' during the different conservation activities. A total of 344 activities were organized in Uttarakhand to engage local stakeholders. Stakeholder representation in the 62 Sensitization Workshops with 1407 participants followed by 211 Consultative meetings with 1092 participants, and 28 Awareness programme with 1063 participants, was high comparatively. Table 5 indicates that nine training workshops were conducted to train 590 participants from the local communities, which enhanced their ability to adopt alternate livelihood options and contribute to conservation efforts.

Type of Activity	Awareness	Programme	Cleanlin	ess Drive	Cleanlin	ess Drive	Consultat	ive Meeting	Ecologie	al Survey	Livelihoo	od Activity	Mobilizatio	n Workshop	Ot	hers	Plantat	ion Drive	Sensitizatio	on Workshop	Socio econ	omic Survey	Training	Workshop	Τα	otal
Districts	No. of Activities	Total No. of Participant s																								
Dehradun									1	1															1	1
Almora	1	76																							1	76
Chamoli	2	37					38	165					1	31					10	229					51	462
Dehradun							4	51							13	200			2	55			1	254	20	560
Haridwar	6	235					19	82									5	120	5	113					35	550
Pauri Garhwa	5	220					57	288	1	2	2	51	2	56	1	14			17	389	1	32	4	230	90	1282
Pithoragarh							1	35																	1	35
Tehri Garhwa	1	51					30	103	1	2									10	205			1	4	43	365
Uttarkashi	13	444	1	21	1	7	62	368					1	6			1	12	18	416	2	26	3	102	102	1402
Grand Total	28	1063	1	21	1	7	211	1092	3	5	2	51	4	93	14	214	6	132	62	1407	3	58	9	590	344	4733

 Table 5 Conservation Interventions conducted in Uttarakhand state

The state of Uttar Pradesh has many pilgrims' hotspots and industries along the river stretch. Also, the state grabbed maximum focus due to the distance Ganga covers in Uttar Pradesh. In Uttar Pradesh, 1133 activities were organized to raise stakeholder engagement. Stakeholder participation in the awareness programmes was recorded to be comparatively higher with 6705 participants in 157 activities followed by Sensitization Workshops with 6481 participants in 163 activities, Cultural Activity with 5872 participants in 7 activities, Consultative meetings with 4427 participants in 380 activities, and 3215 participants in 70 Livelihood activities (Table 6).

Type of Activities	Awar Progra	eness amme	Cleanline	ess Drive	Consu Mee	ltative eting	Cultural	Activity	Ecologic	al Survey	Livelihoo	d Activity	Mobil Wor	ization kshop	Orien	itation	Ot	hers	Plantati	ion Drive	Pollu monit	ution toring	Resc Rehabi	cue & ilitation	Sensit Worl	ization kshop	Socio-eo Sur	conomic vey	Trai Worl	ining kshop	То	tal	
Districts	No. of Activities	Total No. of Participants	Table 7																														
Bijnor	3	48			1	25							1	83																	5	156	
Bulandshahr	42	2066	29	749	78	596	4	214	5	43	4	221	5	248	1	23	3	67	12	253			3	7	49	2263	1	18	13	471	249	7239	
Chandauli	1	3			4	15									1	12			2	120					1	115					9	265	
Farrukhabad	16	499	16	442	4	59									1	83			17	719			2	12	3	88					59	1902	
Fatehpur	3	87											1	33							1	15									5	135	
Hapur	1	6															1	10													2	16	
Hardoi	1	71			2	18			1	37															2	75					6	201	
Kannauj	12	180	8	118	9	71	1	40					1	39	1	15	1	32	19	592					2	68			1	26	55	1181	
Kanpur	3	127																	3	66									1	60	7	253	
Lucknow					1	4							1	50																	2	54	
Mirjapur					1	2																									1	2	
Prayagraj	9	863	1	1	29	251			1	1	2	37	12	252	7	46	8	1623	1	1			12	102	2	76			2	427	86	3680	
Raibareily																1							1	10							1	10	
Sambhal					2	4											1	69													3	73	
Sultanpur					1	13																									1	13	
Varanasi	66	2755	26	871	248	3369	2	5618	4	6	64	2957	31	795	28	451	19	605	25	923	1	40	6	54	104	3796	3	140	15	374	642	22754	
Grand Total	157	6705	80	2181	380	4427	7	5872	11	87	70	3215	52	1500	39	630	33	2406	79	2674	2	55	24	185	163	6481	4	158	32	1358	1133	37934	

presents the activities conducted along with the number of participants from the different stakeholder categories observed during the project duration. A total of 147 activities were conducted in which 2781 participants marked their presence. The table indicates the maximum participation in Sensitization Workshops with 653 participants in 6 sensitization workshops, 454 participants in 24 awareness programmes, 452 participants in 34 plantation drives along the Ganga river followed by other activities.

Table 7 Conservation Interventions in the Bihar state

Type of Activities	Awaro Progra	eness amme	Clean Dr	liness ive	Consu me	Iltative eting	Ecolo Sur	ogical vey	Mobil Worl	ization kshop	Orien	tation	Oth	ners	Plantati	on Drive	Resc Rehat	ue and litation	Sensi Wor	tization kshop	Trai Worl	ning ‹shop	To	tal
Districts	No. of Activities	Total No. of Participants																						
Bhagalpur	23	419	5	77	45	404	1	1	3	131	6	391	6	58	34	454	10	17	6	653	3	114	142	2719
Munger					1	1																	1	1
Patna					2	8															1	21	3	29
Samastipur	1	35																					1	35
Grand Total	24	454	5	77	48	413	1	1	3	131	6	391	6	58	34	454	10	17	6	653	4	135	147	2784

Table 8 presents the block wise details of the participation interventions undertaken in the Sahibganj district of Jharkhand state. The data has been distributed block-wise, as Sahibganj is the only district of Jharkhand situated on the bank of river Ganga and plays an important role in providing habitat to aquatic biodiversity of the Ganga River. The table shows a higher participation in Sensitization workshops with 4603 participants in 30 activities followed by 2493 participants in 52 awareness programmes. 236 people from the local communities were trained in different skills including Stitching, Prasad and Incense making, and fruit processing. In addition, Ganga Praharis were trained for monitoring of aquatic species of Ganga River, ecological and socio-economic survey.

Type of Activities	Awa Progr	reness amme	Clean dri	liness ive	Cons me	ultative eting	Cul Act	tural ivity	Ecole Sur	ogical vey	Liveli Act	ihood ivity	Mob n Wo	ilizatio orkshop	Orie	ntation	Ot	hers	Plant Di	ation ive	Reso Rehal	cue and pilitation	Sensi Wo	itization rkshop	So ecor Sur	cio iomic ivey	Trai Worl	ining kshop	Тс	tal
Blocks in District Sahibganj	No. of Activities	Total No. of Participants																												
Taljhari	21	721	3	74	23	248					4	126			1	16							9	1999			1	20	62	3204
Barharwa					1	2																							1	2
Borio	1	199			2	6															1	57	2	385					6	647
Rajmahal	17	831			19	115							1	14			1	5	1	57			5	892					44	1914
Sahibganj	13	742			74	356	1	101	1	2	3	93			1	14	3	164	2	50			13	1226	3	11	4	289	118	3048
Udhwa					2	8															2	6	1	101					5	115
Grand Tota	52	2493	3	74	121	735	1	101	1	2	7	219	1	14	2	30	4	169	3	107	3	63	30	4603	3	11	5	309	236	8930

Table 8 Conservation intervention conducted in Sahibganj district of Jharkhand state (block wise)

Table 9 shows the presence of stakeholder involvement activities in West Bengal, which will be focused on for further activities in Phase II. In Phase I, the project engaged 797 participants from different stakeholder categories in 35 different activities.

Table 9 Conservation Interventions conducted in the state of West Bengal

Type of Activities	Awar Progra	eness amme	Cleanlin	ess Drive	Consu Mee	Itative eting	Ecologic	al Survey	Mobili Worl	ization (shop	Plantati	ion drive	Plantati	ion Drive	Sensit Worl	ization kshop	Training \	Norkshop	Oth	ners	То	tal
Districts	No. of Activities	Total No. of Participants																				
Hoogly	1	1	1	5	1	20													1	8	4	34
Kolkata	6	386	1	9	1	8											1	19	1	14	10	436
Nadia	2	40			4	31	4	10	2	22	1	37	1	29	2	72	1	15			17	256
North 24 Parganas											1	4					1	21			2	25
Barddhaman	1	45																			1	45
Murshidabad																			1	1	1	1
Grand Total	10	472	2	14	6	59	4	10	2	22	2	41	1	29	2	72	3	55	3	23	35	797

6. **Results and Discussion**

This chapter categorized the results and discussion in two main categories, which are as follows:

a) factors influencing primary stakeholders' participation in the project (Outputs), and,

b) the extent of primary stakeholder's participation in Biodiversity Conservation and Ganga Rejuvenation project and long-term impacts of the conservation interventions (Outcomes).

6.1. Outputs:

Participation in Biodiversity Conservation and Ganga Rejuvenation activities: The project came up with a Participation strategy, one of the main tangible outputs of the project. From the data analysis, it was observed that more than fifty thousand people were sensitized about the aquatic biodiversity of the river Ganges, and their direct and indirect dependency on it. The participatory methods have increased the awareness in the villages situated along the river. Some of the difficult stakeholders who were against it, ended up contributing as Ganga Praharis, which can be, inferred from the inputs of the Sensitization activities.

Participation in Socio-economic surveys and Ecological surveys contributed in increasing the knowledge and understanding of local communities about the ecosystem services and the critical contribution that Ganga makes towards human well-being. Figure 18 shows that 55178 people of different stakeholder categories participated in the biodiversity conservation activities in planning and implementation process, and of this 45% were men, and 55% were women (Fig.20). From the overall participants involved through the participatory approach, 47% participants belong to local communities of the targeted areas followed by 20% students and 18.6% of Ganga Praharis (Table 3; Fig.18; Fig.19).

Figure 18 Stakeholder Participation

Figure 19 Location of Stakeholders involved in project activities in all five Ganga states

The data indicates highest participation in Awareness programme and Sensitization workshops due to people's connection with the river and their ability and curiosity to relate with the species they observe in their daily life in the river. Table 4 shows that the project also involves a wide range of people with special focus on women, approximately 11% of the total participation in training activities: both national and state level. This added significantly to the effective implementation of the project and its sustainable legacy of increased local capacity in generating livelihood opportunities, contributing in conservation projects and human well-being. The women participation was observed slightly higher than men due to nature of skill development interventions as shown in Fig. 20.

Figure 20 Effect of Skill Development Activities and Livelihood Interventions on Participation

Ganga Praharis benefitted from the trainings subsequently and became a team member of the researchers' team, 'significantly strengthening its capacity and ensuring conservation activities sustained during and after the project' (Sanders, 2008), while other Ganga Praharis have been involved on temporary assignments with the researchers.

6.2. Outcomes

Behavioural and Attitudinal change towards conservation: The participant's data of the participatory interventions reported that the stakeholder participation increased with the increased presence, conservation interventions in the targeted sites. Increase in number of activities from 2016 to 2018, shows the increased efforts to raise stakeholder participation, resulting in increased participation from 2016 to 2018. Even though, the number of organized activities decreased in 2019 compared to 2018, the participation increased from 20745 participants in 2018 to 27629 in 2019 (Fig.21). This can be attributed to the continuous presence of project activities, conservation interventions and collaboration with local institutions that were carried out on a regular basis at the field sites. For instance, Participation (high) is a significant predictor of attitudinal outcomes. The significant coefficient for Participation (high) suggests that projects with high levels of participation are more likely to have attitudinal success than projects with no or low levels of participation.

Figure 21 Impact of Regular Interaction on Participation (2016-19)

Increased community participation opened a platform to share perspectives on Biodiversity Conservation and Ganga Rejuvenation: The interaction with local communities found that a majority of population have a feeling that everyone has a role to play in Ganga conservation activities. Despite this, people did not think about it ever and most reported that they had never taken part in decision making or planning activity for Ganga conservation. By the end of the phase, after various sensitization and awareness session, this changed as several hundred people had played an active role in the conservation and management. In addition, people have become much more conscious of and vocal about the issues and threats for aquatic fauna as they reported many rescues of aquatic species. A deliberate feeling was developed that they have a right to have a say. Moreover, this applied to other sectors as well, which indicates that this project not only increased awareness of the value of aquatic flora and fauna of the Ganga but also generally raised an overall sense of empowerment.

Self-Mobilization: As an outcome of trainings, increased sensitization and awareness, the motivated participants from local communities and other stakeholders' categories started taking initiatives independently with the help of other local people. They developed contacts with external institutions and Wildlife Institute of India for the required resources and technical advice and started working to conserve Ganga River and its biodiversity.

Figure 22 Self mobilization of motivated people to sensitize the local communities further

Like a chain, by organizing the awareness and sensitization activities along with Cleanliness /plantation drives, this set of motivated and trained people further sensitized people on a very large scale, which can be treated as one of the main outcomes of the project. The table 10 shows the number of Output activities conducted by the trained people in which 5683 people participated in

333 activities and sensitized their communities through different activities. The activities conducted by these motivated people were higher in Uttar Pradesh, followed by Bihar and Jharkhand. That indicates higher stakeholder participation is co-related to regular interaction, village visits, and consultative meetings on different issues (Table 10).

Table 10 Output activities

Type of Activities	Awar Progr	eness amme	Clean Dr	liness ive	Consu Mee	Itative eting	Cult Act	ural ivity	Ecolo Sur	ogical vey	Liveli Acti	ihood ivity	Mobil Worl	ization (shop	Plant Dr	ation ive	Resc Rehabi	ue & litation	Sensit Worl	ization (shop	Oth	iers	Trai Worl	ning Ishop	Total Co Typ Mee	ount of e of ating
State	No. of Activities	Total No. of Participants	No. of Activities	Total No. of Participants																						
Uttarakhand	12	173	2	28	4	33			3	5	2	51			6	132									29	422
Uttar Pradesh	53	1058	33	567	13	168	4	214	5	7	1	40	0	0	13	117	13	16	5	390			4	110	144	2687
Bihar	21	242	5	77	1	5			1	1			1	31	34	454	10	17	4	453			1	21	78	1301
Jharkhand	27	629	2	53	30	113							1	14	1	57	2	60							63	926
West Bengal	8	238	2	14					4	10					3	70					2	15			19	347
Grand Total	121	2340	44	739	48	319	4	214	13	23	3	91	2	45	57	830	25	93	9	843	2	15	5	131	333	5683

The Fig.23 shows the maximum participation in Awareness programmes (42 %), whereas ecological

survey noted the lowest participation due to lack of adequate technical expertise.

Figure 23 Participation in the activities conducted by stakeholders

Partnership developed with the stakeholders: One of the evident fortes of this project is that it brought together a wide range of partner organizations, with harmonizing capabilities and contributions to work on a common agenda.

Alliances with line agencies:

The main strength of the project was its ability to bring a range of different organizations together on a platform with different capacities and contributions. Some of them were already working on the sites. The participatory approach linked the local people with these organizations such as the rural self-employment institutes, and National Rural Livelihood Mission. In addition, it engaged new additional organizations, such as USHA, whose involvement under their CSR activity organized skill development trainings to the local communities in collaboration with the project.

Increased Stakeholder Involvement in Biodiversity Conservation and Ganga rejuvenation project: The participatory approach enhanced the stakeholder's knowledge of biodiversity conservation. By the end of phase 1, the stakeholder realized that everyone has a role to play in the Ganga conservation process. Key stakeholders were identified and involved in high-level microplanning and decision-making process. Details about microplanning are given in the Chapter 7. There is a philosophy underpinning stakeholders' participation that emphasises empowerment, equity, trust and learning. The Column 1 of the Fig. 24 shows stakeholders' contribution in designing the implementation strategy followed by the contribution of stakeholders at each stage of the research and implementation. The figure shows the higher stake of Education/ Research Institutions, local Institutions and local communities in the conservation efforts. The training institutes also marked a well-known indirect stake in collaborations with conservationists to achieve a common goal of Ganga conservation along with economic development and well-being of local communities.

Process	Stakeholder	District Administration	Forest Department	Religious group	NGOs	District Ganga Committee	Village Panchayat	Nagar Panchayat	Fisheries Dept.	Agricultural Dept.	Animal Husbandry	Mining Dept.	Water and sanitation	Local communities	Tourism sector	Irrigation dept.	Hydropower	Local Institutions	SPMG	Educational/Resear ch Institute	Armed forces	NYKS	Training institutes	Municipal corporations	SRLM	Small Businessmen/Ven	Media	UREDA	NMCG	MOEFCC	Ministry of rural development	Other ministries
Resear	rch Design																															
Data C	Collection																															
Impler	nentation																															
Networki	ing/Linkages																															
Training/	Awareness																															
Disser	mination																															

Figure 24 Stakeholder Contribution Chart Post Implementation

High Contribution	
Medium Contribution	
Low Contribution	
No Information on	
Contribution	
No Contribution	

Engaging Stakeholders in Ganga Biodiversity Conservation

7. Conclusions and Recommendations

This chapter shows the strict representation of stakeholders in participatory process in biodiversity conservation. It compared the results of the stakeholder participation, which depict that collaboration, or tie up with local stakeholders came up with a huge benefit for achieving the project objectives.

Figure 25 An overview of the project approach and its results

The project supports and upgrades findings of previous studies and authenticates the arguments that promoting stakeholder participation and effective collaboration in biodiversity conservation and Ganga rejuvenation is critical to development and remains highly relevant to the sustainable conservation. Implementing participatory processes takes time, resources and commitment but results in more sustained stakeholder engagement and biodiversity conservation (Fig.26). Establishing mutual trust and respect between stakeholders is essential and was facilitated in this instance by the fact that many of the partner agencies had worked in the river stretch before often, in close collaboration with local communities and institutions.

Moreover, it reveals the requirement and worth of suitable and applicable support from line agencies, including funding agencies, over a long period in achieving this. The project sets an example that National Mission for clean Ganga and other external partners make strategic investments to build local institutions at community and national level. It was found important to develop a written participation designed strategy, comprising mutually assigned values and objectives that can add to the process of forming trust and transparency and building the stakeholders' capacity with implementation. The project showed that stakeholder participation in biodiversity conservation and Ganga rejuvenation activities and restoration plans could lead to good collective outcomes, such as increased faith amongst stakeholders and improved knowledge on the subject.

Figure 26 Wall painted by local communities of Kahalgaon, Bihar

The outcomes in turn have a sustainable impact on biodiversity outcomes, for example, by leading to a greater willingness on the role of communities and other stakeholders to conserve biodiversity. This may be a sufficient reason to promote the expansion of well-designed stakeholder involvement. The project also promotes expansion of participatory monitoring of biodiversity in the river stretch (e.g. monitor important habitat, like plants and aquatic species) with the help of mobilized local people, for example Ganga Praharis. It can be further implemented in the river conservation projects.

The project also suggested that livelihood interventions through skill development and capacity building play an important role in establishing a link between the local communities and sustainable conservation. It can help them by providing a platform and source of knowledge, information, incomes, while protecting, maintaining resources, and the environment. The project evolved from one designed primarily by technical expertise, to one that was driven by needs and priorities on the ground, notably those related to livelihoods.

The project suggests various methods and models that can be adopted to similar processes in other rivers, such as the partner memorandum of understanding and collaboration; the clear terms of reference for the stakeholders; the participation strategies, the participatory development of new legislation; the participatory economic valuation and the communication strategies for primary stakeholders. This results from the project activities implementation process and analysis of data visualized, as to how participatory approach contributes in achieving the objectives of project while addressing concerns and needs of people. More of this type of on-ground implementation is required to enable sharing of lessons learned, and wider applications for all the rivers, which requires restoration in India.

The outcome of this project has highlighted several recommendations and prioritized them based on the importance of implementation for future conservation approaches in the Ganga river basin and its tributaries (Table 11).

Table 11 Recommendation prioritization

Measure to be taken	Timescale	Urgency
1. Human Factors		
It is imperative to actuate the existing government schemes and	А	1
empower the highly dependent communities along the Ganga with		
alternative livelihood skills to ensure that their interest in the river		
conservation is sustained for a long time without income as a		
hindrance.		
2. Education		
Continuous education and awareness campaigns on the importance	A	2
of biodiversity conservation as a component of the healthy Ganga		
river ecosystem. This will help in connecting people with the Ganga		
river conservation.		
Continuous education interventions such as sensitization and	А	2
awareness related to the aquatic biodiversity of the river and work		
with the local communities to take responsibility by focusing on the		
long-term benefits of river restoration.		
3. Cross Sectoral Coordination		
All sectors and policies should adopt an integrated approach with	А	2
common goal of river conservation involving the interests of local		
stakeholders for sustainable conservation. If the implementation of		
the Ganga conservation is not coordinated, conflicts will arise and the		
objectives of biodiversity conservation will be harder to achieve.		
Therefore, Biodiversity Conservation and Ganga Rejuvenation needs		
to be understood as a coherent cross-sector task with common aims,		
but specific measures.		
4. Implementation		
To ensure the use and implementation of the project outcomes	В	2
(decision support tools, best management options, and generic		

guidelines), identified key stakeholders should be actively engaged at	
strategic/decision-making level in the similar projects.	
The key outputs (publications, tools) from the project need to be	
modified in an accessible form at the different user levels, i.e.	
strategic/decision-making level and local user and ground level.	
Furthermore, training and capacity building for all stakeholder	
categories needs to be conducted to ensure the effective use of the	
tools or guidelines from the onset.	

¹ Urgency: 1 – Urgent (critical to initiate with increasing knowledge and awareness on the human impacts on the river and its biodiversity) 2 – Important (required for the conservation of Gangetic species).

² Timescale: A – Immediate (1-2 years) B – Medium-term (5 years).

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