Engaging Community for Sustainable Actions for Conserving Habitat of Ganges River Dolphin in Ganga River Basin

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Introduction

The strategies being discussed and adopted globally are now recognizing strong role of education for bringing substantial change in the way people are engaged in biodiversity conservation. The Convention on Biological Diversity has clearly affirmed and recognized the critical need to engage society individually and collectively through education and public awareness. This is critical time when we need to build strategies to move the society from awareness of biodiversity and sustainability issues to concerted action. Also recognition to the fact is important that biodiversity conservation is intrinsically linked to sustainable development.

This reflects in the recently drafted Sustainable Development Goals where Goal 15 emphasizes urgent need to act upon it. It states "Protect, restore and promote use of terrestrial ecosystem, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss". There are 09 targets under this goal and 03 sub-targets which clearly defines line of action.

In this context, people residing along River Ganga basin have opportunity of living on most fertile zone and also a challenge of sustaining the aquatic resources for human use and also flora-fauna dependent on the basin. River Ganga is known to be the most important river system, not only in India but also of the world. It is the 20th longest river of Asia and the 41st longest river in the world. Throughout its 2525 km long course from its origin at Gomukh in Himalaya to Gangasagar in Bay of Bengal, Ganga is the lifeline to millions of people. It has served as the cradle to the Indian civilization.

It has great importance in respect of culture, economy as well as ecology. The river has unique features due to the variation in altitude, climate, flora and fauna, land use and cropping pattern. The water resource of the river is used for agriculture, irrigation, power generation, human and cattle consumption, fish production, tourism, pilgrimage and recreation.

Apart from human population dependence, it is also lifeline for various species of animals and plants which thrive in and around river Ganga. The river sustains diverse group of flora and fauna supporting rich biological wealth. The river is symbolized pure with the presence of Ganges river dolphin (*Platanista gangetica gangetica*) in it. This endemic species was declared endangered in 1996 by IUCN where it was estimated that 2500-3000 individuals are left in rivers of India-Nepal and Bangladesh. Being on apex of the food chain, it is believed if the species is conserved it will not only safe guard other aquatic species but also help us in saving river ecosystem.

Ganges river dolphin *Platanista gangetica*
Courtesy Dr. Sandeep Behera

During last few decades, the river and its biodiversity is under severe danger. Instead of several efforts of government, the water quality is deteriorating day by day and developmental activities are changing course of river flow. This situation is putting danger to the survival of biodiversity found in Ganga.

Apart from rivers and river biodiversity being in danger, it is also communities which are dependent on rivers are facing major pressure from development activities such as large dams, growing pollution through point and non-point sources, encroachment of river banks, sand mining, deforestation etc. These activities are severely affecting the rivers ecological, social, economical aspects along with religious, cultural and aesthetic values. There are several factors of river water and nutrient quality which affects the freshwater aquatic biodiversity in rivers. Any development project focusing on trapping the river flow or utilizing the riverine resources directly and indirectly affects the livelihoods of poor community including farmers and fishermen in a major way.

The Ganga basin constitutes one fourth of the water resources of the India and more than 40 crore people of the country lives in the basin and they are directly or indirectly dependent on its aquatic resources. As a result there is strong pressure on the aquatic resources such as water for domestic use and irrigation along the river Ganges and its tributaries. Agriculture is a main source of livelihood of the large number of people living in Ganges river basin. People living close to river bank are also largely dependent on the fisheries for their livelihood.

After the green revolution agricultural production tremendously increased in the Ganges river basin, subsequently use of chemical fertilizer was also increased. In the year 1962-65 the average fertilizer consumption was 1.7 thousand tones per district of Ganges river basin. However, average level of fertilizer consumption per district of Ganges river basin grew up tremendously to a level of 102.6 thousand tones during the period 2003-2006. With the increase in consumption of chemical fertilizer, use of pesticide in Ganges basin was also increased many folds. These chemical fertilizers and pesticides are serious threat to the river Ganga and its aquatic biodiversity because they have become one of the main sources of river and ground water pollution. These chemical fertilizers are also threat to sustainable agriculture.

Sand islands of river Ganges and its tributaries are also very fertile for agriculture especially for growing cucurbits. Farming on the sand island is one of the main sources of livelihood for the large number of farmers living close to river bank. Farmers grow water melon, musk melon, cucumber and pumpkin on the sand islands in large scale especially in dry season (October to June). These farmers are also using large amount of chemical fertilizers and pesticides. Chemical fertilizers and pesticides are directly reaching to the river due to agricultural run-off and polluting the river water which is one of the major threats to the Ganges river dolphin and other aquatic species.

Fishing pressure is very high in river Ganga especially in lower Ganges. Fishing is a main source of livelihood for the large number of poor fishermen living close to the river. Use of monofilament nylon nets has been widely spread out in this region. Exploitation of small fishes through these nets is considered as a major cause of prey base depletion of Ganges river dolphin. Fish resources of river Ganga is also declined in last few decades due to over exploitation, river pollution and diversion of river water. The average catch of fishes per kilometer of the river Ganga at Allahabad was 1344 kg/km in the

Use of gill net to catch small fishes by fishermen which is food of dolphin and also gets trapped

year 1950 which is declined to 362 kg/km in the year 2000.

Understanding this grave situation and for giving due focus to its protection and conservation, Government of India has declared river Ganga as National river in year 2008. Being the only mammalian predator of the Ganga, the Ganges river dolphin occupies the apex of the food chain and plays a vital role in maintaining and balancing of the ecosystem. In year 2009, Ganges river dolphin has been declared as National aquatic animal to save its habitat along with biodiversity of the river.

Now conservation and protection of these national symbols is a mammoth task for government. It is widely accepted that it is important to involve people in conservation movement to not only build awareness and understanding but also to sensitize them towards adopting positive sustainable actions. Centre for Environment Education (CEE) felt a need of awareness and education about rivers and Ganges river dolphin among people living close to rivers so that they should utilize the riverine resources in a sustainable manner without disturbing its ecological balance.

The Initiative

In order to aware and educate the students and communities living close to Ganges river dolphin habitat, CEE initiated Ganges river dolphin-Conservation Education Programme with the support of Ministry of Environment and Forests (MoEF), Government of India in July 2010. This initiative was undertaken as part of "The Conservation Action Plan of Ganges River Dolphin - 2010-2020". Education and awareness was enlisted as one of the action component among 8 areas.

While working with schools, it was felt that riverside community needs to be reached out with the conservation education message for long term sustainable impact. Phase II was initiative in year 2014 with the support from National Mission for Clean Ganga (NMCG) an autonomous body of National Ganga River Basin Authority (NGRBA) under Ministry of Water Resources, River Development and Ganga Rejuvenation, Government of India. This phase envisaged to cover over 750 schools along Ganga basin in UP and Bihar and also looked in to engaging community which is dependent on riverine resources for their life and livelihood from both the States.

It was envisaged in the project, river eco-development will be done in dolphin project villages where fisherman, farmers, youth and women usually migrate in search of livelihood. Through skill based trainings and alternative option demonstration, community will be trained and adopt practices for generating income through various sustainable options.

Community Engagement

CEE with the support from NMCG is working with 10 Gram Panchayats at two selected sites of Ganges river basin in UP and Bihar. In Uttar Pradesh, these villages are located in Bahraich along Ghagra river and in Bihar, villages of Bettiah-West Champaran along Gandak river with potential Ganges river dolphin population was identified for interventions. Both the project areas are economically and socially backward where migration, illiteracy and poverty are very high. Thus focus was given to marginal farmers and fishermen of the project villages.

Advocacy and Empowerment

Reaching to unreached people with right kind of information and knowledge is need of the hour. This project began with this foundation and started its work by assessing needs of people in terms of livelihood and training needs. To find out the ground situation baseline and series of village level consultative meetings were conducted by CEE team. In order to get everyone's active and equal participation, a 'Souns Sanrakshan Samiti' (Dolphin Conservation Committee) was formed. A youth from each village was identified to anchor the meeting and to motivate stakeholders for adopting alternative livelihood options. Campaigns on environment related days involving local schools were conducted to spread the message and to encourage communities to come forward and take action for conservation of Souns and its habitat.

Sensitization of Community

River dependent communities during last few

Community training on organic faming

Vermi-compost ready for application

decades have been forced to adopt certain practices which have starting harming river biodiversity and its water quality. Farmers are now dependent on chemical based farming which ends up in the river with water runoff. This affects not only water quality but results into bioaccumulation in freshwater fishes. A fish catching calendar was followed traditionally by fishermen who have disappeared due to poverty and other social factors. CEE team in series of discussion and meetings with community have sensitized and convinced them for adopting organic farming and also going back traditional calendar of fish catching. Also traditional practices with present requirement were considered for adoption. Information, education and communication materials were designed, displayed and distributed among community to make them understand the species and purpose of the intervention.

Sustainable Livelihood Interventions

Organic agriculture is a way to fight with poverty and get better quality products. Introducing community with the concept of caring for its soil, adapting vermi composting practices, preparing bio-pesticides, using water management practices, etc. was helpful in making agriculture affordable to poor farmer families.

Riverbed farming can be used to increase household income and to improve the food security of landless and land-poor households in the Dolphin Project locations. The annually flooded riverbeds are seasonally dry (from September to May) and are a generally unused land resource. Landless and land- poor farmers can use this land to cultivate seasonal vegetables that are adapted to the environmental conditions prevalent on riverbeds. Several advantages of river bed cultivation, which includes: early yield, ease in irrigation, low cost, high net return per unit area and high yield, less mineral requirement due to high fertility, limited weed growth, easy in control of pest and disease by cultural, means, low cost labour facilities and additional crop.

Alternate Energy options is a way which directly helps improve the condition of rural women as it reduces drudgery and also reduces indoor air pollution. Smokeless stoves and solar energy lanterns help in improving living standards.

Alternative Livelihood options are being introduced among community members such as mushroom cultivation, integrated fish farming, animal husbandry, backyard vegetable cultivation, bamboo craft etc. These alternatives are introduced with skill based training which helps in building capacity as well empower riverside community.

Bio-shield plantation and river friendly practices are also being promoted to help conserve the river side villages and improvement in river ecology. Government schemes and skill development programmes are linked with the intervention villages to maximize the benefits of adopting other options.

Impact and Way Forward

This initiative is focused on education and communication for conservation of a species and its habitat through the involvement of river dependent community. As per national biodiversity education strategies, the possible action plan of India states "Train communities in innovative conservation practices and multiple skills to practice alternate livelihood options to enhance their role in conservation". The core idea of this intervention is to improve understanding of river side community about river ecology and its biodiversity in order to empower them for protecting and preserve their and river's future. We need to mainstream the river side community which faces much more grave danger than of losing their land and livelihood due to river floods and river bank erosion.

It is believed that Ganges river dolphin is like tiger of the Ganga river. Thus eco development plans made for Forest protection and conservation have consideration of the community residing around forest areas. To preserve aquatic biodiversity, it is important to adopt river focused eco-development which improves habitat for the biodiversity and also at the same time benefits local river dependent communities.

Alternative livelihood options introduced

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