

**ASSESSING FEASIBILITY AND PREPARATION OF ACTION PLAN FOR PROMOTING ECO TOURISM IN KATARNIAGHAT, DISTRICT BAHRAICH OF UTTAR PRADESH (Ref No: Sl. No. C (v). vide sanction order No. MEF (NAEB):2-10/2007-B-IV dated 13/08/2009)**

Katarniaghat WLS, one of the last remaining Terai habitats in the country, is the home of large number of wild animals like tigers, leopards, rhinos (occasional), elephants, gharials, muggers, gangetic dolphins and plenty of avifauna. Every year a number of tourist, trekkers and researchers/students visit the area which makes a possibility to develop the area as eco-tourism centre. Despite having immense potential of developing eco-tourism no efforts has been made so far. Therefore under the study efforts have been made to identify the core sectors having potential for promotion and development of eco-tourism in Katarniaghat area involving the Eco-Development Committees (EDCs). The objectives of the present study includes

- To explore the key activities having potential for promotion and development of eco-tourism in Katarniaghat Wildlife Sanctuary (WLS)
- To assess the prospect of involvement of local people (financial/physical), their need and support in developing eco-tourism
- To prepare a road map for conserving as well developing the area in view of eco-tourism
- To study the existing policy of the State of Uttar Pradesh and also explore the possibility to rope in the same with present context
- To study the ongoing schemes of other line departments of tourism sector for adding the same with present project for giving them maximize benefits
- To prepare an action plan for establishing eco-tourism hub in Katarniaghat Wildlife Sanctuary.

**Methodology**

Participative Planning approach was adopted involving all the major stakeholders in the process and most importantly the EDC members. The site visits were done in two-phase manner, staying at the project area and extensively traveling within the project area. Primary data was collected from the EDC members including youth, women through qualitative surveys, group discussions (NGT - Nominal Group Technique) and personal interviews. Separate interactions were done with WWF-India representatives working on the management issues of the WLS. Representatives from local trade and business community were met separately for discussion on the commercial aspects of the area. Also in-depth consultation with forest officials, line department officials were done. It was followed by data analysis and preparation of action plan. Efforts have been made to identify the core sectors having potential for promotion and development of eco-tourism in Katarniaghat area involving the Eco-Development Committees (EDCs).

**Output of the study:** Some of the findings of the study are:

- The carrying capacity of Katarniaghat WLS has been calculated as 10,000 tourists per season. Presently only 1000 odd tourists visit the sanctuary per season.
- Based on the analysis of available resources development strategies has been proposed which includes infrastructure development strategy, management strategy, community participation development strategy and tourist facilities development strategy. Also phase wise implementation plan, funding modalities and role and responsibilities has also been proposed.
- The study suggests an action plan involving various stakeholders for the sustainable development of natural resources and developing the area as eco-tourism centre.

**STUDY OF CLIMATE CHANGE AND ITS ADVERSE EFFECT ON FOREST ECOSYSTEM AND ADAPTABILITY OF VILLAGERS OF ARAVALLI HILLS OF REWARI DISTRICT OF HARYANA (Ref No: SI. No. C (ix). vide sanction order No. MEF (NAEB):2-10/2007-B-IV dated 13/08/2009)**

The crucial role of mountain ecosystems to support livelihood of about 10% of the world's population is well recognized. The impact of climate change is causing serious damage to natural resources, socio-economic condition and livelihood of the mountain people. It is assumed that the impact of global climate change in mountain will have profound effect not only on hill people but also those in the adjoining plains. The same not only directly affect the human beings but also disturbed the entire eco system of the forest too. There is an urgent need to assess the adverse effects of the climate change in forest ecosystem as well as to assess the adaptation of local inhabitants in the present change scenario. As the other mountain ecosystems of the world, the Aravali hills also not untouched the effect of climate change. As such it is important to access and estimate the effect and consequences to climate change in Aravali's mountain ecosystem and more important to identify the local inhabitant cope up with these effects and sustained. Therefore the present study envisages the adverse effect of climate change on forest ecosystem and adaptability of villagers residing in the Aravalli hills area with the following objectives:

- Documentation of knowledge and experiences of local people about the pattern of climate change towards its impact on forest, agriculture, meadows, livestock and humans through participatory approaches to determine possible indicator of change.
- To conduct ecological study in forest and meadows with special emphasis on phenological variation of species to predict the response of plants towards climate change.
- To document the intensity and frequency of natural calamities over a define time frame.
- To propose mitigation strategies for conservation of natural resources of the area.

## **Methodology**

The data was generated through primary as well as secondary information. The former has been collected by conducting Focus Group Discussions (FGD) which concentrated on understanding the knowledge and experiences of the local people and the officials of Forest Department about the pattern of change in climatic conditions and its effect on forest ecosystem as well as other livelihood resources in the selected villages. Efforts were made to cover the respondent of all the age groups including women. In each villages the respondent were categorized into: (a) age group 20-40 years (b) age group year 41-50 and above, (iii) women. Apart from these, other set of interaction was held with a group of 3-5 representatives of the Forest Department including Forest Guards, Foresters and Ranger Officers. Out of total 399 villages in the district, 41 villages across 3 blocks are situated adjoining Aravalli Mountain Range. Of these 41 villages, 7 villages have been selected as sample village for the purpose of the study.

**Output of the study:** Some of the findings of the study are:

- The changing climate has affected the cropping pattern of the region. As the moong, moth are no more sown in the area and gram despite being one of the major crop of Rabi is on the verge of extinction. However as increase in agriculture production has found which is mainly due to introduction of addition inputs.
- Increased use of tubewells in the region has resulted in overexploitation of groundwater resulting in rapid decline in groundwater level and reducing water quality.
- Scarce and erratic rainfall and deteriorating soil health has resulted in loss of essential plant nutrients and decreased regeneration rate. Loss of plant and animal productivity and diversity is a subsequent effect of the same.
- Overexploitation of forest for fuel-wood and fodder coupled with scarce and erratic rainfall is a major reason for degradation of forest in the area.
- Degradation of forest results in a loss of essential environmental functions of forests including biodiversity, climate regulation, soil and water conservation including preservation of water catchment areas.
- Availability of fruits, fuel-wood, fodder, medicinal plants and other forest products has reduced significantly during the past few decades.
- A significant change in plant and animal species composition has been witnessed.

**Recommendation:** The study suggest following measures:

- Community involvement in afforestation, promotion of community fodder plantation, controlled industrialization/mining, encouragement/incentives to NGOs, corporate houses and other organizations to work in the region for sustainable development and

promotion of commercial Plantations among community. Besides rain Water Harvesting, use of Improved Irrigation Techniques, Soil and Moisture Conservation, Sustainable Agriculture Development and balance use of fertilizers has been recommended.

**BEST PRACTICES AND METHODOLOGIES ADOPTED FOR COMBATING DESERTIFICATION IN DISTRICT JAISALMAIR, STATE OF RAJASTHAN – CASE STUDY (Ref No: Sl. No. C (i). vide sanction order No. MEF (NAEB):2-10/2007-B-IV dated 13/08/2009)**

The study on combating desertification was instituted in view of the fact that desertification causes major environment and socioeconomic problems leading to negative impact on livelihood of the people. Desertification not only destroys the productive resource base, but causes loss of genetic resources, increases atmospheric dust, upsets the natural recycling of water and has adverse effect on economy leading to migration of the people. Various agencies engaged in combating desertification have adopted technologies and practices based on the past experience. The most critical factors considered important for better understanding of the problem where the traditional conservation practices and technologies adopted by the communities to survive under extremely harsh conditions. With this backdrop the present study was conducted in different villages identified from Jaisalmer and Pali districts of Rajasthan with the objective to document the best practices and methodologies adopted by local communities and various agencies to cope with the problem of desertification. The major objective of the study were:

- To conduct survey on land use pattern, agricultural practices, livestock population grazing pressure, fuel consumption to understand the degradation of arid ecosystem.
- To document the community based best practices adopted by the local people for controlling desertification.
- To document best practices and methodologies adopted by various agencies for controlling desertification.
- To identify the problems related to desertification in the socio-economic aspects.

Primary data was collected on the packages of practices adopted through FGD among the villagers. Besides, Government and Non-Government agencies, line department, research institutions etc. working on desertification was contacted for proper understanding of the processes of nature, the indigenous knowledge and traditional practices adopted in the existing agro climatic conditions and location specific technology packages designed. Beside primary data some secondary data were also collected from various departments viz. Directorate of Economics and Statistics, Thematic maps prepared by the central and state organizations, Survey of India or similar state agency, Cadastral maps of survey and settlement operations.

The baseline data collected was scrutinized and synthesized, the information gathered was analysed to make recommendations for the future guidance

### **Output of the study**

- The establishment of orans for conservation of plants and animals is the most important traditional system adopted for their protection and long term conservation of the natural plant and wildlife resources.
- People still prefer growing the hardy species which are useful for their livelihood security. Some of them are Khejari, *Azadirachta indica*, *Tecomella undulata*, *Calligonum polygonoides*, *Ziziphus nummularia*, *Tamarix articulata*, etc. These species are common in the area and play crucial role in greening desert and checking shifting sand dunes.
- The people have been very careful in utilizing wood and non wood products of these species as they get multiple benefits from them. These are the most valuable species being traditional used for various purposes as small timber for house construction and making agricultural implements, for fuel wood, fodder and medicinal purposes.
- The traditional technologies for water harvesting devised by the people are indigenous to the area. They are designed different structures i.e. *Tanka*, *Nadi*, *Talaab*, *Open well*, *Beri*, *Khadin*, *Johad* or *Johda* for catering to the water requirement of individual household to hamlets (Small group of settlements (locally called Dhanies) to small and big villages.
- The past experience of the community covered under the study has shown that desertification effect their lifestyle i.e. desertification deteriorates the natural resources, reduction in irrigation potential, health and nutritional levels of both the humans and animals, Availability of biomass for fuel, fodder and other forest and agricultural based products.

**Recommendations:** The study suggest following measures:

- Strengthening the knowledge base and developing information and monitoring systems for regions prone to desertification and drought, including the economic and social aspects of the fragile ecosystems.
- Combating land degradation through, *inter alia*, intensified soil conservation, afforestation, and reforestation activities.
- Developing and strengthening integrated development programmes for the eradication of poverty and the promotion of alternative livelihood systems in areas prone to desertification.
- Encouraging and promoting people participation and environmental education, focusing on desertification control and management of the effects of drought.
- Preservation of the traditional knowledge regarding use desert trees for fulfilling various their basic livelihood needs of food, fuel-wood, timber, fodder and other non-timber forest products.

