



*TO ENHANCE CAPACITIES OF KEY STAKEHOLDERS FOR
BIODIVERSITY CONSERVATION*

Assessment of capacities and training needs of key stakeholders and to develop framework to enhance capacities of key stakeholders to implement effective long-term biodiversity conservation for SECURE Himalayan Project landscapes in districts of Sikkim

Indian Institute of Public Administration, New Delhi

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EXECUTIVE SUMMARY

The Ministry of Environment, Forests and Climate Change (MoEF&CC), Government of India along with UNDP is implementing a Global Environment Facility (GEF) funded project “SECURE Himalaya (Securing Livelihoods, Conservation, Sustainable Use and Restoration of High Range Himalayan Ecosystem)” in the states of Jammu and Kashmir, Himachal Pradesh, Uttarakhand and Sikkim, which aims to support the Government of India to effectively promote sustainable land and forest management in Alpine pastures and forests in high range Indian Himalayan ecosystems by adopting landscape based approach.

Under the aegis of SECURE Himalayan project, Indian Institute of Public Administration (IIPA), New Delhi executed a project titled “Assessment of capacities and training needs of key stakeholders for long-term effective biodiversity conservation, development and implementation of a capacity building framework to enhance capacities of key stakeholders in SECURE Himalayan Project in Sikkim” sponsored by UNDP. This aimed to target key stakeholders such as government line departments, research and training institutions, community institutions and NGOs in Sikkim for long term biodiversity conservation. The present study has carried out training need assessment involving gap analysis to develop a strategy to train different stakeholders with a focus to bridge the gaps at various levels.

This report presents the details of the assessment conducted, methodology used and the findings based on the response of key stakeholders and expert consultations. Based on consultations conducted and expert’s opinion, recommendations and comments are summarised in the given report. The project deliverable includes three training modules developed with the objective to enhance the capacities of key stakeholders of Sikkim. The first module is generic in nature and provides basic information regarding biodiversity, conservation and mainstreaming. As per the State demand and request the other two sector specific modules focussing on Agriculture and Biodiversity, and Sustainable Tourism respectively were developed. The outlines of the three modules are detailed in this report.

1. INTRODUCTION

India is amongst the world's seventeen mega diverse countries. With a mere 2.4 percent of world's land area, India accounts for 7-8 percent of all recorded species, including over 45,000 species of plants and 91,000 species of animals. The country's diverse physical features and climatic conditions have resulted in a variety of ecosystems such as forests, wetlands, grasslands, deserts, coastal and marine ecosystems which harbour and sustain high biodiversity and contribute to human well-being. Four of the 34 globally identified biodiversity hotspots namely, The Himalayas, the Western Ghats, the North-East, and the Nicobar Islands, are found in India.

India consists of ten bio-geographic zones and twenty-five biotic provinces which have sixteen major forests types and over two hundred subtypes. Sikkim falls under Himalayan bio-geographic zone and Central Himalaya biotic province (Forest, Environment & Wildlife Management Department, Government of Sikkim, 2010).

Sikkim is one of the most beautiful states in India located in the eastern Himalayas. The state is situated between 27°04' 46" and 28°07' 48" north latitudes and 88°00'58" and 88°55'25" east longitude. It is flanked by Tibetan plateau in north, Bhutan in east, Nepal in west and in south it makes boundary with Darjeeling district of West Bengal. The distance between the northern most point of Sikkim and the southern point of Sikkim is around 112km whereas the distance between the east- west stretches is around 64km. The state of Sikkim is divided in four districts namely north district, east district, south district and west district. (Environmental Information System [ENVIS] Centre Sikkim, n.d.).

Sikkim is extremely rich in natural resources. It is home to nearly half of the nation's biodiversity. One third of the countries flowering plants are found in Sikkim. The state of Sikkim is gifted with enormous water resources. The two major rivers of Sikkim are Teesta and Rangit. There are around 84 glaciers in Teesta river basin. The crowning glory of the state is the presence of the world's third highest mountain peak- Mt. Khangchendzonga (8,596 m). It has five satellite peaks: Jano (7,710 m), Kabru (7,338 m), Pandim (6,691 m), Narsing (5,825 m) and Siniolchu (6,888 m). The other important peaks are Rathong (6,087 m), Simvo (6,811 m) and Tolung (7,349). The northern portion of Sikkim, particularly beyond Chungthang, is the highest region of the state, which is sparsely populated with the Lachen and Lachung valleys being the only main centers of human settlements (Forest Environment & Wildlife Management Department, Government of Sikkim, 2016).

Sikkim is divided into the following physiographic zone (forest department¹):

- a) Lower hills: 300m to 1800m and has hilly topography with flat cultivated lands in Patches
- b) Upper hills: 1800m to 3000m, major forest areas are found in this zone
- c) Alpine zone: 3000m to 4500m, it is covered with scrubs and grassland
- d) Snow land: 4500m and above, is perpetually snow covered area and is without vegetation

¹ <http://www.sikkimforest.gov.in/docs/Sikkim/Natural%20Resources%20of%20Sikkim%202007.pdf>

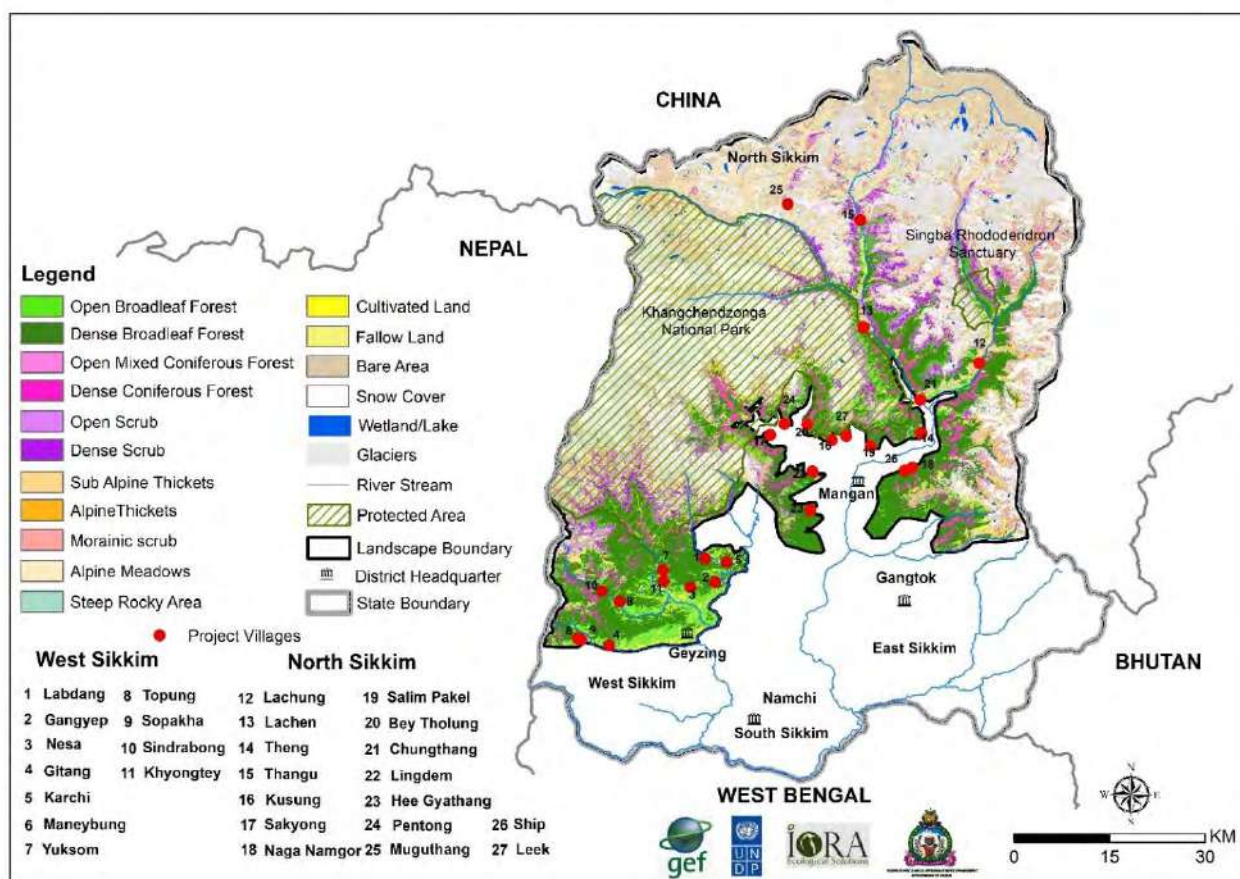


Figure 1.1: Map showing project landscape area

Sikkim is known for its rich and diverse flora and fauna supported by unique climate created by topography of Himalayas. The State is covering just 0.2 % of the geographical area of the country, has 26% of the country's total biodiversity and has been identified as one of the HOT-SPOT in the Eastern Himalayas (Sikkim Biodiversity Action Plan, 2012). The vegetation ranges from Sal (*Shorea Rubusta*) and its associates in the low elevations, and gradually transitions to oaks, low altitude pines, firs, and finally the high-altitude alpine grasslands and meadows.

Over the years Sikkim has seen an increase in the number of tourists along with prompt infrastructural development. Growing urban population combined with industrial development also pose a serious challenge to the environment. The impact of climate change has become a universal phenomenon and Sikkim is no exception. The climate change has led to melting up of glaciers, drying up of local springs, erratic rainfall patterns and migration of species to higher elevations. A change in climate can have far reaching consequences on diverse species, their distribution and ecology as a whole. Sikkim is known for its rich biodiversity and bounty of natural resources. Biodiversity boosts the productivity of ecosystem. It brings with it a number of aesthetic, economic and cultural benefits. Biodiversity is extremely important for healthy living because our health depends on the health of ecosystem. It also contributes to the livelihood of local people. Most of the tribal communities depend directly on biodiversity for their survival and well-being.

Therefore, the biodiversity of Sikkim is not only important for the people of Sikkim but also for the nation. It is a common property resource of the nation. The present study aims to access the training needs and capacities of key stakeholders for long term biodiversity conservation and Natural Resource Management (NRM).

1.1 Approach and importance of SECURE Himalaya

The Himalayas are our greatest heritage. They are storehouse of hundreds of endemic plants species and some of the world's rarest wildlife species. It is one of the world's richest ecosystems in terms of biological diversity. The biological, hydrological and socio-cultural values of Himalayas are not hidden from anyone. Despite this the Himalayan ecosystem is under severe threat. Pressures of economic growth, high dependence of local communities on natural resources, selective removal of aromatic and medicinal plants and looping threats of wildlife crime and illegal wildlife trade. Climate change is a leading threat to both ecosystem and communities located in the Himalayas.

The project titled **“Securing livelihoods, conservation, sustainable use and restoration of high range Himalayan ecosystems (SECURE)”** aims to address these threats by adopting landscape-based approach. The project's importance lies in promoting the sustainable management of forests and alpine pastures in the high range Himalayan ecosystems that secures conservation of snow leopard and their prey along with other associated and threatened species. The project also focuses on sustainable use of natural resources and diversification of livelihoods. The conservation actions should also be aimed at maintaining the stability of ecosystem along with ameliorating the impacts of climate change.

1.2 Overview of the project

The Ministry of Environment, Forests and Climate Change (MoEF&CC), Government of India along with UNDP is implementing a new Global Environment Facility funded project: SECURE Himalaya in the states of Jammu and Kashmir, Himachal Pradesh, Uttarakhand and Sikkim, which aims to support the Government of India to effectively promote sustainable land and forest management in Alpine pastures and forests in high range Indian Himalayan ecosystems that secure sustainable livelihoods and community resilience and ensures conservation of globally significant biodiversity and threatened species.

The project entitled **“Assessment of capacities and training needs of key stakeholders for long-term effective biodiversity conservation, development and implementation of a capacity building framework to enhance capacities of key stakeholders in SECURE Himalayan Project landscapes in selected districts of Sikkim”**, is implemented by Indian Institute of Public Administration, New Delhi. The objectives of the assignment are:

- To assess the capacities and training needs of key stakeholders for long-term biodiversity conservation, livelihood enhancement and Natural Resource Management (NRM)
- To develop a framework and strategies for capacity development of the target stakeholders

- To validate baseline data and refinement of capacity building indicators
- To develop easy to understand modules and curriculum on identified areas/sectors
- To conduct pilot training (Training of Trainers) programme in the project landscape

The Training Needs Assessment shall facilitate in achieving the overall outcomes of the SECURE Himalayan Project, that are:

- Improved management of high range Himalayan landscapes for conservation of Snow Leopard and other endangered species and their habitats for sustaining ecosystem services
- Improved and diversified livelihood strategies and improved capacities of community and government institutions for sustainable natural resource management and conservation
- Enhance enforcement, monitoring and cooperation to reduce wildlife crime and related threats
- Effective knowledge management and information systems established for promotion of sustainable management practices in the High range Himalayan ecosystems.

2. Study Landscape

The Khangchendzonga – Upper Teesta Landscape falls within biogeographic province 2C and 1C of India (Rodgers & Panwar 1988), located in North Sikkim District. This landscape spans over an area of about 3600 Km². In the north, the landscape forms international boundary with Tibetan Autonomous Region of China while in the east and west it is bordered by Bhutan and Nepal respectively. The landscape includes Khangchendzonga National Park and Singba Rhododendron Sanctuary as Protected Areas and also the Tso-Lhamu Plateau in the northern Trans-Himalayan zone as a proposed conservation area.

Mount Khangchendzonga, the third highest peak in the world, and adjacent Singalila range strongly govern the relief features on the western part of the landscape while Chola range plays prominent role in determining physiography on the eastern part. The entire landscape is above 4000m and the highest point is the summit of Mount Khangchendzonga at 8586m. The chief ridge



of Khangchendzonga range is aligned in north-south inclination with west-east running transverse spurs.

Figure 2.1: Tso Lhamu Plateau

The major valleys in the southern and south-eastern part of the park are oriented north-south thereby creating east and west aspects. On the other hand, the valleys in the central and northern portions of the park are east west oriented having mostly north and south aspects.

Together, these ranges strongly influence the atmospheric circulation and regional climate in the region but also affect the climate of adjacent regions.

The Khangchendzonga National Park (KNP) was notified in the year 1977, lies entirely along the Sikkim-Nepal border and includes the Khangchendzonga Range from the South Lhonak Glacier in trans-Himalayan Sikkim down to Barsey Rhododendron Sanctuary in the South Sikkim. It occupies 25% of the total geographical area of Sikkim and is the highest altitude wildlife protected area in India with flora from lowland subtropical forests to alpine meadows and snow-capped peaks and glaciers. It is also included in UNESCO world heritage site. The KNP contains many mammal species including *Moschus* (musk deer), *Panthera uncia* (snow leopard), *Hemitragus jemlahicus* (Himalayan tahr) as well as reptiles including *Pantherophis obsoletus* (rat snake) and *Daboia russelii* (Russell's viper).

The Sikkim Trans-Himalayan region of Tso Lhamo is home to a number of mammals, predominantly ungulates that are listed as 'endangered' (Schedule I) in the Indian Wildlife (Protection) Act, 1972. This small region stands out in the eastern Himalayas because of its ecological and geographical uniqueness. Ecologically, this region lies above 4300m and characterized by a unique topography (extensive rolling plains and scree mountains) and climate (extremely cold winters and mild summers, but dry all year round) and a diverse assemblage of plants which are adapted to extreme climatic conditions. Prominent among mammalian fauna are the *Tibetan Argali*, *Tibetan gazelle*, and *Pseudois nayaur* (Bharal or Blue sheep).

Shingba Rhododendron wildlife sanctuary is very popular attraction and famous protected area in Sikkim State. It is situated in the famous Yumthang Valley in North Sikkim and bordered with high rugged Chuba- Sagochen mountain ranges on the east and Chomzomei Tso extending up to Lava pass on the west. The picturesque Yumthang Chu (river) flows through the wide valley offering a breath-taking landscape. Lachung is the last frontier village before reaching the wild life sanctuary. Approximately 40 species of Rhododendrons have been recorded from here including the endemic *Rhododendron nevium* the state tree of Sikkim) found naturally only in this protected area. Rhododendron trees laden with trailing lichens provide good habitat for avifauna and flora.



Figure 2.2: Shingba Rhododendron Sanctuary

Khangchendzonga Landscape has an immense and unmatched resource wealth, nurturing thousands of lives. With the rich biodiversity, the area attracted many tourism in past three decades. The major portion of the park lies in the North District and 1/3 area lies in West District. Many settlements like Lachen, Lachung, Thangu, Naga, Bey, Sakyong, Muguthqung, Theng, Saffo (in North district) and Yuksom, Uttarey, Chongri, Kyongtey,

Labdang, Karji (West district), surrounds the national park and depend upon natural resources for subsistence living. The trekking and mountaineering activities are very much popular in the landscape. The high altitude forests and rangeland environment of the landscape are vital to the local people of the area and down below as the glaciers and rivers of the area are important source of water for people downstream. Common livelihood practices in the area includes traditional farming, pastoralism and tourism activities. The traditional economic activity of local people of western part of the area (majorly Yuksam) transformed to attract increasing numbers of mountaineering and trekking groups after the introduction of Dzungri trek. Major tourist attraction are the Green Lake trek, Dzungri trek and Kishong trek. Besides trekking and expedition in this site is good for study of floristic and faunal composition and in view of such significance, researchers and botanist also visit this place for academic purpose. Tourism associated activities supports significant source of income and improved living conditions of local community. Tourist lodges in particular are now an important part of the local economy. There are negative economic effects also, such as inflation caused by tourism hurts those not benefiting from tourism. At times there are fewer hands available for traditional farming practices. There may be economic immigration into the tourist township in future, bringing associated social and environmental pressures².

3. Approach for Capacity Development & Framework for implementation of the Project

The process of capacity development requires identifying key capacities that already exist and what additional capacities may be needed in the system. For this, the approach for capacity building includes the identification of stakeholders, conduct training and capacity need assessment and on the basis of this, modules were developed. The key area includes: biodiversity conservation, natural resource management, wildlife conservation, sustainable livelihood, sustainable harvesting of resources, management of common property resources, institution building for conservation. Considering key areas, concerned stakeholders were mapped as line departments, Research & Training Institutions, Non-Governmental Organisation and Community Institutions. The capacity needs assessment was carried by analysing and evaluating the outcome of gap analysis, the relevant details are given in the subsequent section.



Identification of stakeholders

The initial months of the assignment were dedicatedly used to identify the stakeholders and project landscape in consultation with Forest, Environment and Wildlife Management division and local community representatives. The key stakeholders were identified and prioritized which include:

² Management Plan of the Khangchendzonga National Park 2008-2018 (updated during-2014)

- Senior, middle and frontline staff of Government line departments including forest, wildlife, animal husbandry, horticulture, agriculture, training institutions, rural development and other relevant departments.
- Individuals including farmers, pastoralist, Non-Timber Forest Product (NTFP) collectors, medicinal plant cultivators/collectors, local traders etc.
- Community based organizations (Biodiversity Management Committees, Self-Help Groups (SHGs), Forest Management Committees, etc.)
- Local NGOs and training institutions.

Detailed stakeholder list is attached at Annexure I.

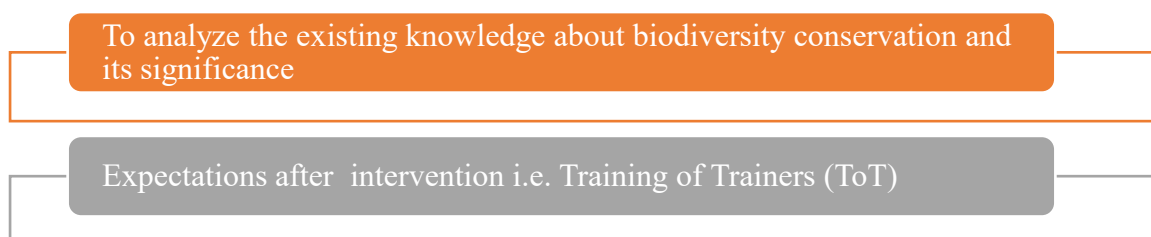


Training Need Analysis (TNA)

“Training Needs Analysis” is the method of determining if a training need exists and, if it does, what training is required to fill the gap. This process facilitates in identifying accurately the levels of the present situation in the target surveys, interviews, secondary data and group discussions. The gap between the present status and desired status is translated into capacity need.

It involves the assessment of capacities of government agencies and community institutions and other relevant key stakeholders involved in natural resource management for sustainability of the biodiversity resources in the landscapes. Assessment of training requirements of a target group in terms of: number of trainees; their educational and professional background; their present level of competencies and job functions and the desired behaviour or skill level acquired at the completion of training.

In order to ascertain the understanding of biodiversity issues of the key stakeholders a set of two detailed questionnaires consisting of 25 and 49 questions were developed for senior and middle level forest officials and for senior and middle level non forest officials respectively. These two questionnaires (Annexure IIA and IIB) were used to elicit response from the above-mentioned stakeholders and used as basic tools for determining Training Need Assessment requirements of the concerned stakeholders.



TNA strategy adopted in the study is shown in Figure 3.1, following a bipartite process until gap analysis. One part involves identification of training institutes and further analysis of capacities of departments/institutes for Biodiversity conservation. Another part involves the stakeholder as identified in Sikkim, and using various TNA tools for primary and secondary data collection. Forest department being the most important stakeholder for biodiversity conservation is dealt in detail.

Strategy for Gap Analysis

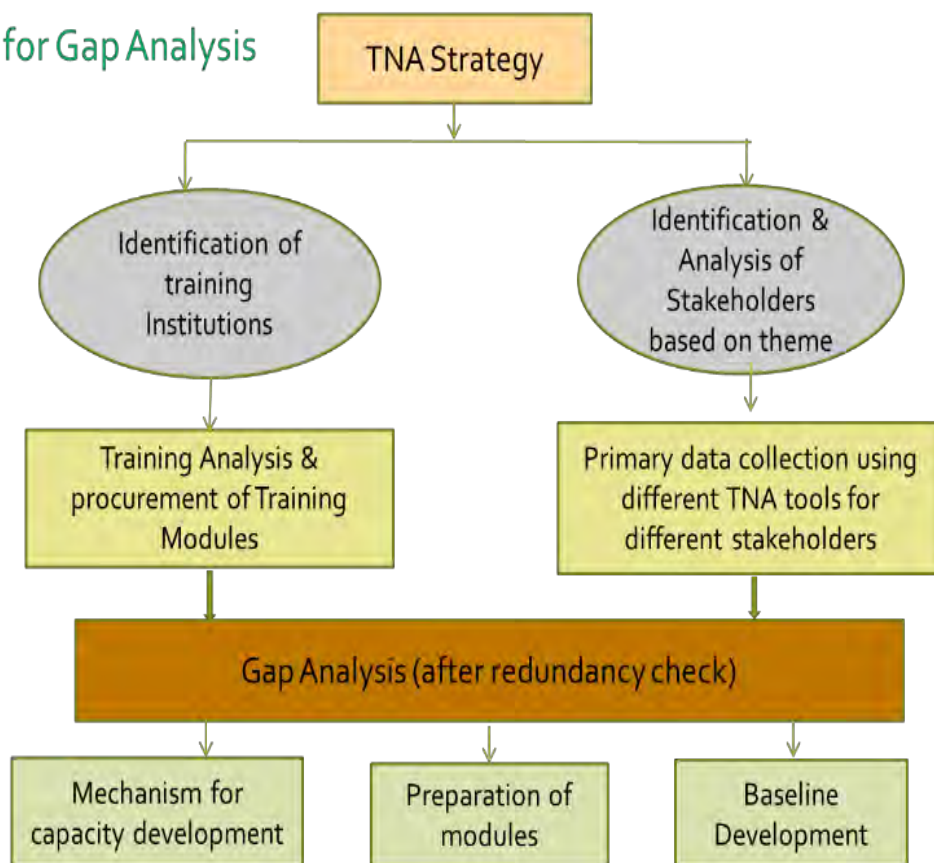


Figure 3.1: TNA Strategy for Gap Analysis

Using the UNDP capacity development scorecard the baseline was established for various stakeholders. The scorecard is a tool that attempts to quantify a qualitative process of capacity change using appropriate indicators and their corresponding ratings. Based on the primary and secondary data collected during the field visits, the scores were given to each stakeholder. The analysis of scorecard has been done by adding the scores of all stakeholders. This process is further explained in methodology sections.

After detailed assessment, tailor-made modules were developed taking the inputs from state nodal agency and training-cum-consultation workshop was conducted for finalization of draft ToT modules. Three modules were prepared:



General Module : Biodiversity Conservation in Sikkim



Sector specific Module: Biodiversity and Agriculture



Sector Specific Module: Sustainable Tourism for biodiversity Conservation

The themes were chosen depending upon the discussions held with key stakeholders. The first module is generic in nature, which provides an overview of the importance of biodiversity conservation goals. The Sikkim Himalaya is part of 22 agrobiodiversity hotspots in India. Therefore, considering the importance one module is dedicatedly prepared on agriculture and biodiversity for sustainable agricultural development. The tourism sector in Sikkim has seen a growth in past decades and has emerged as key drivers of the state economy. Accordingly, sustainable tourism module has been developed for mainstreaming biodiversity conservation concern in the sector.

4. Methodology and Analysis

The methodology for capacity development and Training Needs Analysis (TNA) was designed to correspond with the objectives of the project. It was a combination of field surveys, consultation workshops and expert meetings supplemented by extensive desktop research.

4.1 Identification and Classification of Stakeholders and Institutions having biodiversity interface.

Capacity development projects depend on selecting stakeholders with whom synergistic work done towards goals will contribute towards fulfilling the objectives of the study. The complete participation of stakeholders in both project design and implementation of is a key to – but not a guarantee of – success. Stakeholders relevant to this project in the state were identified based on their direct or indirect relevance for Biodiversity Conservation, Natural Resource Management (NRM) and Livelihood Enhancement. Based on these criteria, stakeholders were categorized as follows:

Table 4.1 Classified List of Stakeholders: Relevant for Biodiversity Conservation and NRM in Sikkim

S. No.	Name of Department/Institute	Focus Area (to strengthen Biodiversity conservation and NRM)	Key observations for mainstreaming biodiversity conservation and NRM/ capacity needs
Line Departments			
1	Forests, Environment and Wildlife Management Department, GoS	Biodiversity Conservation, Forestry, wildlife management and Eco-tourism Implementation of Sikkim Biodiversity Conservation & Forest Management Project, JICA assisted	Two pronged emphasis on both forestry and biodiversity maybe adopted this would help in mainstreaming biodiversity and would churn in a lot of synergy. Capacity building of senior level officers is required for mainstreaming biodiversity concerns in development planning through convergence with other departments. It is also recommended that field level officers should be sensitized well about biodiversity too along with forest management so as to come with aligned outcomes.
2	Food Security and Agriculture Development Department, GoS	Propagating and advocating farmers to adopt new and modern technology of organic farming system and proper crop management. Highlighting the contribution of pollinators to agriculture and the importance of wild plants and vegetation and to minimize biodiversity loss.	Capacities of extension wing or KVKs should be built upon, who can further sensitize farmers related to biodiversity and how its conservation can be beneficial for farming community. It should be disseminated that the capacitating would be a win- win situation for the farmer in terms of earning more revenue and further augmenting the biodiversity thus making it sustainable.
3	Horticulture and Cash Crop Development Department, GoS	Promoting production of fruits, traditional vegetables, spice crops. Promotion of non-traditional practices such as bee-keeping and medicinal plants to add greater diversification. This improves land-use and promotes crop	The Extension department should be sensitized their role play for biodiversity conservation. The short video film developed by IIPA on Bumble Bee can be used for all capacity building purposes by the extension

S. No.	Name of Department/Institute	Focus Area (to strengthen Biodiversity conservation and NRM)	Key observations for mainstreaming biodiversity conservation and NRM/capacity needs
		diversification. Also, strengthens sustainability of mountain farming system	workers.
4	Department of Animal Husbandry, Livestock, Fisheries and Veterinary Services, Sikkim	Growth and development of livestock sector and to provide sustainable economic upliftment to the rural masses	Animal husbandry plays an important role in shaping biodiversity like landscape and species diversity. The main target group will be Farmer Training Institution.
5	Sikkim State Council of Science & Technology	Research and Development related to Bio-Technology, Glaciers, Climate Studies; Environment Information System, Capacity Building & Skill Development programmes.	The council can play important role in developing science-policy-practice link for biodiversity conservation. Research studies using GIS and RS can facilitate other departments in NRM. Senior level officials should be trained so that they can deploy their expertise in biodiversity conservation as think tanks or in form of trainings to implementers.
6	India Meteorological Department, Sikkim	The main role is to take meteorological observations and to provide current and forecast meteorological information for optimum operation of weather-sensitive activities.	Advisories will be helpful to other departments like agriculture and forest department. The now cast and the forecast could be used by the other departments to plan and crop accordingly to maximize the yield and live in synergy with nature.
7	Human Resource Development Department, GoS	No specific biodiversity conservation programme/theme has been taken up	Master trainers can be trained from this department which can take the agenda of biodiversity conservation further up to school level as it is known fact that the youth of today are more adapt and vocal about the

S. No.	Name of Department/Institute	Focus Area (to strengthen Biodiversity conservation and NRM)	Key observations for mainstreaming biodiversity conservation and NRM/ capacity needs
			environmental concerns be it global or local. We have many budding Greta Thunberg's who can be oriented in the right direction by proper training.
8	Rural Management and Development Department, GoS	Development and progress of rural Sikkim. No specific biodiversity conservation programme	Senior level officers can be sensitized to mainstreaming biodiversity conservation lens in development projects
9	Energy and Power Department, GoS	Not directly involved in biodiversity conservation	Biodiversity concerns while developing hydroelectric projects and biodiversity based energy sources
10	Building and Housing Department, GoS	The Department is not focused on biodiversity and NRM	Steps should be taken in to bring in the policy measures which can improve and make provision for the sprawling domesticated biodiversity which generally surrounds human beings. Some of the examples are of House Sparrow and Bumble Bees which play a pivotal role in the pollination of Big Cardamom, a very important cash crop of Sikkim.
11	Tourism and Civil Aviation Department, GoS	Eco-tourism, Sustainable tourism	The department must work in tandem with other departments. For e.g. officers can be trained to work with NGOs, SHG to adopt ecotourism activities and generate awareness amongst the tourists and guides towards responsible tourism. "Vocal for Local" should

S. No.	Name of Department/Institute	Focus Area (to strengthen Biodiversity conservation and NRM)	Key observations for mainstreaming biodiversity conservation and NRM/ capacity needs
			be mantra to be adopted, the short video Clip developed by IIPA highlighting the importance of “GLOCAL” should be adopted for wider outreach.
Research and Training Institution			
12	Sikkim Himalaya regional center, Gangtok (BSI)	Knowledge Management for floral biodiversity conservation	Important for conservation of rare/endangered/threatened species for e.g Rhododendron both by in-situ and ex-situ measures. Approximately 40 species of Rhododendron have been found at Singba Rhododendron Sanctuary. Therefore, it is important to disseminate information & monitoring about such important species specially at landscape area.
13	Regional Ayurveda Research Institute, Gangtok	Clinical trials for Ayurvedic drugs and survey regarding new drug resources available in the state	In today’s scenario of pandemic, Ayurveda is providing very promising alternatives. But depleting biodiversity in form of medicinal plants may pose threat to its survival. Therefore, plays a crucial role in conservation.
14	State Institute of Rural Development (SIRD)	Conducts various training and research activities pertaining to local self-governance and rural development including sanitation, zero waste, watershed development etc.	Potential institute for training for Rural development, BMCs, JFM etc. Biodiversity conservation module can be incorporated in regular training agenda which are being provided to varied stakeholders
15	State Institute of Capacity Building	Imparting training, transfer of knowledge and	Biodiversity and Conservation themes should

S. No.	Name of Department/Institute	Focus Area (to strengthen Biodiversity conservation and NRM)	Key observations for mainstreaming biodiversity conservation and NRM/ capacity needs
		building stronger capacities	be adopted and disseminated keeping indigenous issues as the case studies so as to establish and instant connect with the masses.
16	Government B.Ed College, Soreng	No specific biodiversity based courses has been included in the curriculum	Train Master Trainers which can further provide awareness among school children and aspiring teachers who can lay a strong foundation.
17	Himalayan Mountaineering Institute, Darjeeling	No specific biodiversity conservation courses	Attempt should be made in the direction to come up with Biodiversity conservation courses. IIPA developed modules which are generic and agriculture and tourism specific can be utilized as Foundation Courses.
18	Indian Himalayan Center for Adventure & Eco Tourism (IHCAE), Govt. of Sikkim	Eco-tourism Entrepreneur and Development Courses, Eco-Tourism Interpretative Guide Course, Forest Learning Adventure Course for School Children	There is need to make this rich content to the youth of Sikkim and this could be done easily if the Courses are developed in vernacular languages. More youth would thus be attracted towards the Tourism industry and thus generate employment. As the tourist footfall is to admire the natural ambience, biodiversity of the place must be kept intact,
19	District Institute of Education and Training, Gangtok	No specific course for biodiversity conservation	Training Module for biodiversity conservation can be added to train Master Trainers and conduct refresher course
20	National Research Centre for Orchids (NRCO), Pakyong	-Orchid breeding center Adhoc training related to sustainable	Such trainings can be conducted on regular basis catering different batches of farmers

S. No.	Name of Department/Institute	Focus Area (to strengthen Biodiversity conservation and NRM)	Key observations for mainstreaming biodiversity conservation and NRM/ capacity needs
		agriculture and for doubling farmers income	
21	Sikkim University, School of Life Sciences	Ongoing research work on biodiversity related issues	Research may be done in policy perspective to facilitate informed decision making
22	G.B Pant National Institute of Himalayan environment and Sustainable Development, Panthang	Biodiversity conservation studies in Khangchendzonga Landscape Biosphere Reserve and other sensitive areas; human dimension studies in conservation areas; biotechnological applications for conservation of <i>Rhododendron</i> species. Also, institute works with research intensive agencies such as IBSD, BSI, GSI and the like	Master trainers can be trained to facilitate/execute training programmes for biodiversity conservation for varied stakeholders
23	Administrative Training Institute Gangtok	No regular trainings are being conducted	potential institute to conduct orientation training related to biodiversity conservation for district level officers
Non-Governmental Organization			
24	Mutanchi Lom Aal Shezum, Mangan	Eco-tourism, community development, NGO Capacity Building, rural development	Representatives from NGOs should be trained to sensitize local people, community groups, SHGs. They are target group for taking the government's agenda of biodiversity conservation down to the local level.
25	The Mountain Institute, Gangtok	Ecosystem services, climate change impacts & adaptive measures, agrobiodiversity and biodiversity conservation, assessment, monitoring & documentation	
26	WWF Sikkim	Biodiversity conservation	
27	Ecotourism and Conservation Society of Sikkim (ECOSS)	To develop and promote Sikkim as an Ecotourism destination; awareness building, research in the areas of conservation,	

S. No.	Name of Department/Institute	Focus Area (to strengthen Biodiversity conservation and NRM)	Key observations for mainstreaming biodiversity conservation and NRM/ capacity needs
		environmental impact of developmental projects, Ecotourism and sustainable development.	
28	Kangchendzonga Conservation Committee	Work in order to mitigate the negative effects of tourism	
Community Institution			
29	Biodiversity Management Committees	To understand the unique features of Sikkim biodiversity and the importance of biodiversity conservation for socio-economic welfare of the local communities.	Mainstreaming at grass-root level
30	Eco Development Committees	To highlight the importance of biodiversity for eco-development and ecological security.	Mainstreaming at grass-root level
31	Joint Forest Management Committees	Encourage livelihood options for communities through reforestation, social forestry, NTFPs, ecotourism and allied activities	
32	Gram Panchayat units	People's participation in conservation	Mainstreaming at grass-root level
33	Himal Rakshaks	Honorary mountain guardians for conservation of Park	Mainstreaming at grass-root level
34	Self Help Groups	People's participation in conservation	Mainstreaming at grass-root level
Enforcement Agencies			
35	Sikkim Police	These Organizations are not directly involved in biodiversity conservation but may be sensitized about biodiversity conservation. These agencies are important for biomonitoring of protected area. The General	Do not have adequate manpower, training, mobility and required equipment to prevent or take cognizance of offence involving biodiversity like landmine casualties and over harvesting of medicinal plants by outside
36	Indian Army		
37	Indo-Tibetan Border Police (ITBP)		
38	Sashastra Seema Bal (SSB)		

S. No.	Name of Department/Institute	Focus Area (to strengthen Biodiversity conservation and NRM)	Key observations for mainstreaming biodiversity conservation and NRM/ capacity needs
		module maybe useful for them	agency
39	Border Road Organization		Although the BRO is not directly involved with Biodiversity conservation but the frontline personnel can be sensitized regarding safeguarding biodiversity while performing development works and also stricter vigilance for poaching of wildlife including plants, timber, etc. by non-native people

Table 4.1 provides an overview of stakeholders in the state based on their focus area/area of work (to strengthen biodiversity conservation and natural resource management). Some of the departments/ institutions do not have any direct role in biodiversity conservation e.g., Border Road Organisation. While, some departments are not catering to specific biodiversity conservation programme but their activities have implications for biodiversity and can play a crucial role by building their capacities e.g. Rural Management & Development Department. Accordingly, stakeholder analysis and matrix preparation were undertaken to identify and state the mode of involvement of all primary and secondary stakeholders, having a role in the themes of biodiversity conservation and natural resource management. The goal of stakeholder analysis is about developing a strategic view of the human and institutional landscape, and showcasing the relationships between the different stakeholders and the issues they care about most.

As explained above, a stakeholder matrix is prepared, as shown in figure 4.1. Based on the level of interactions required for project objectives, primary government departments are ascertained to be most impacted upon and having high influence for resource management and conservation, thus requiring regular dialogue. Consultations with secondary government department and community institution were undertaken as these are highly impacted in their operations from conservation measures but has limited influence in terms of authority and legitimacy for resource management. Information is sought from Training and Research institutions so as to cut down redundancy. Information gathered from local community and local NGOs would aid in understanding the major gaps at grass-roots level.

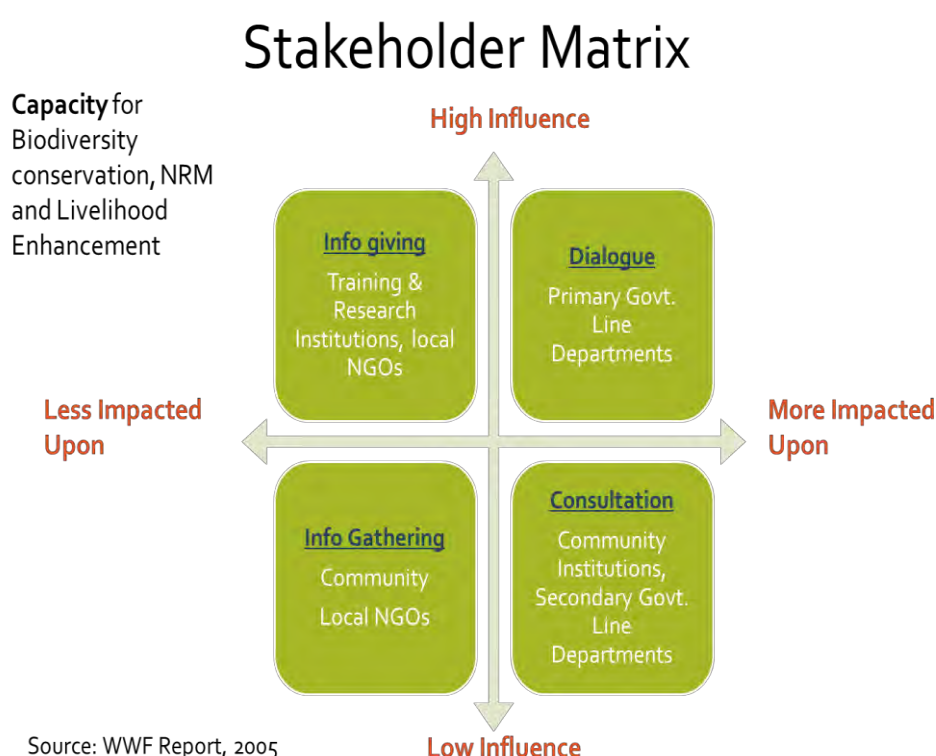


Figure 4.1 Stakeholder Matrix

Also, communications were made with all the potential training institutes at national level, which were involved in imparting trainings to officials of Sikkim state. These institutes conduct trainings in various stages of service to forest department officials. A list of institutes contacted is given in Table 4.2.

Table 4.2 Institutes contacted regarding biodiversity related trainings

S. No	Level	Institute
1	Within Sikkim	Forest Guard training in Police Training Centre, Yangyang
2	National level	IGFNA Dehradun, ESRC Kurseong, CASFOS Burnihat, CASFOS Dehradun, CASFOS Coimatore
3	State level	FTI & RC, Sundernagar, KADAM Maharashtra, TSFA Telangana, UFTA Haldwani, TFA Coimbatore, FTI Gungargatti
4	Research Institutes	IIFM Bhopal, WII Dehradun, FSI Dehradun, ICFRE and its affiliated research centers

In addition to that, field visits to major institutes in Dehradun were made to collect information regarding training schedule and structure. These included: Directorate of Forest Education (DFE), ICFRE, Forest Research Institute (FRI) Dehradun, WII, Forest Survey of India (FSI), Indira Gandhi National Forest Academy (IGNFA) and CASFOS Dehradun. List of modules and courses along with their schedules/syllabus were obtained from the above institutions. DFE was able to provide list of number of participants from Sikkim who have attended training at DFE in the last five years. Details of syllabus and course given for Probationers and MCT was obtained from IGNFA. CASFOS Dehradun has conducted a TNA for SFS officers which includes brainstorming conference on improving in-service training modules for SFS officers, evaluation and remodelling of in-service training for SFS officers and further designing appropriate In-service training modules. The basic themes covered in the modules includes:

- General Refresher Course
- Community Forestry and Joint Forest management.
- Wildlife Management
- Training of Trainers
- Legal Issues in Forestry and Wildlife
- Human Resource Management

WII has conducted a Management Effectiveness Evaluation (MEE) analysis in 2014-15 for national parks and sanctuaries in Sikkim, which was informed during a field visit to WII campus. Apart from this WII have a regular Post Graduate Diploma in advanced wildlife management For IFS and SFS officers. This course cover topics such as: Conservation Biology, Tools & Techniques for Conserving Wildlife, Advanced Wildlife Management Practices and Integrated Wildlife Management Planning. There are also few certificate courses in wildlife management for in-service Range Forest Officers/Deputy Range Officers

or of equivalent ranks working within wildlife and NRM. Short term training courses are being conducted by various departments of FRI Dehradun in many thematic areas of forestry. They also include low-cost short-term training for field staff, farmers and artisans.

4.2 Flow of information and Training Need Analysis (TNA) strategy

Capacity development and TNA analysis at systemic level requires the engagement of stakeholders at various levels. In this study, the stakeholder group includes relevant government departments, local community-based institution, local Non-Governmental Organisations and research & training institutions in Sikkim. The flow of information as shown in Figure 4.2, involves all the stakeholders, whereby knowledge gaps are deciphered and combined with available knowledge to eventually strengthen the training institution.

Flow of Information

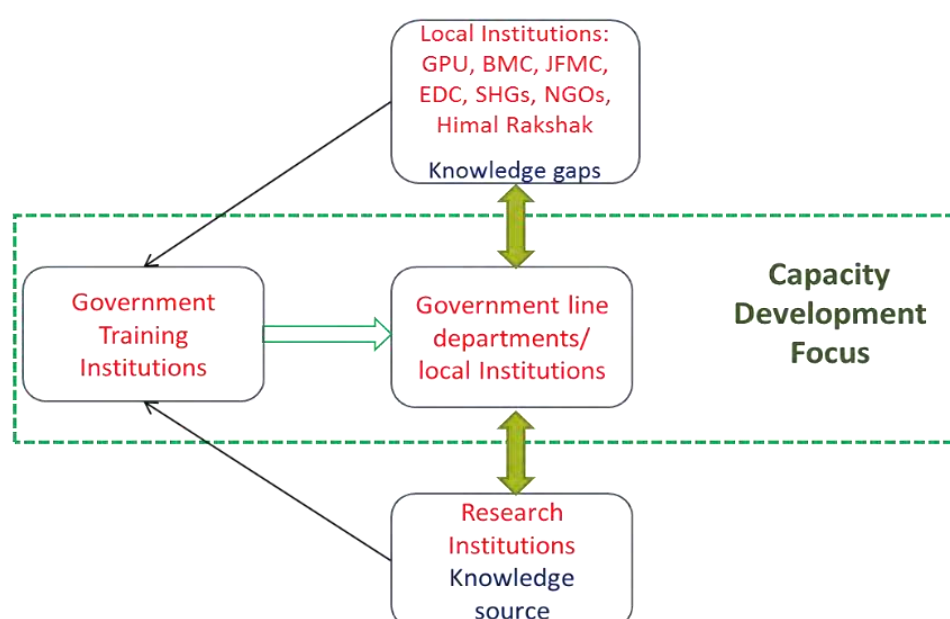


Figure 4.1 Flow of information for Capacity building and Need analysis

Due to lack of systematic TNA, trainings often fail to meet the requirements and there is need to identify specific problems to be addressed by trainings. There are many strategic gaps in environment management related trainings in India, which need to be plugged (DIFE, 2016). Therefore, the study involves a strategy to incorporate a wide range of stakeholders and focus on bridging gaps at various levels.

4.3 Primary Data

For the study purpose both primary and secondary data were used. The primary data collected from all the primary government departments, training and research institutes and local NGOs in Sikkim. The primary data are related to understanding and awareness about biodiversity conservation and Natural Resource Management. It includes response of representatives from primary government departments: junior, middle and senior level, heads

of the department or senior officials as may be assigned by the head of departments. These data used in combination as per need of the study. The various primary data collection tools used for TNA and method of stakeholder involvement is shown in figure 4.3. In the initial stage, suggestions were taken from key state agencies regarding existing capacities and expectation from the assignments. Accordingly, questionnaires were developed and interviews were taken.

In Structured Interviews the questions are asked in a set / standardized order and the interviewer would not deviate from the interview schedule or probe beyond the answers received (so they are not flexible). These are easy to replicate as a fixed set of closed questions are used, which are easy to quantify – this means it is easy to test for reliability. Semi-structured Interviews are more like a ‘guided conversation’ than a strict structured interview. They are sometimes called informal interviews.

Stakeholder	Structured Interviews	Questionnaire	Semi-Structured Interviews	Brainstorming Sessions
Local NGO'S and Training Institutions				
Middle level Govt. Official				
Junior level Govt. Official				
Senior level Govt. Officials				

Figure 4.3 TNA tools used in the study

Questionnaire consisted of a series of questions for the purpose of gathering information from the respondents related to biodiversity, natural resource management and capacity building. It was prepared separately for forest and non-forest government departments after rigorous brainstorming sessions to account for gaps, needs and understanding of government employees for the thematic area.

4.4 Secondary Data

The secondary data collected from websites of the government agencies, annual reports, research publications and other published documents available. Key documents reviewed includes government policy documents, background studies, books, documents of some ongoing biodiversity conservation projects in Sikkim (SBPF-JICA). Some key documents are as follows:

- Sikkim State Biodiversity Strategy & Action Plan.(2003). Department of Forests, Environment & Wildlife Management, Government of Sikkim

- Biodiversity Action Plan (2012): SBFP-JICA project, Forest, Environment and Wildlife Management Department Government of Sikkim
- Arrawatia, M., & Tambe, S. 2012. Climate change in Sikkim
- Management Effectiveness Evaluation of National Parks and Wild Life Sanctuaries of Sikkim, Process and Outcomes.(2015).Wildlife Institute of India
- Arrawatia, M., & Tambe, S. (2011). Biodiversity in Sikkim
- ENVIS Sikkim Newsletter 2018: Pandas Volume 1-11
- State of Environment Report Sikkim, 2016.

4.5 Baseline Scorecard Development

Using the UNDP capacity development scorecard the baseline has been established for various stakeholders for e.g., Forest department, agriculture department, horticulture department, tourism department, Sikkim University, Gram Panchayat units, self-help groups etc. The stakeholders are categorized into government line departments, research and training institutions, non-governmental organizations (NGO's) and community institutions. The scores have been given for 5 indicators. These 5 indicators contain 15 sub indicators which outline the capacities for biodiversity conservation.

CR 1: Capacities for engagement

- 1.1 Degree of legitimacy/ mandate of lead environment organizations
- 1.2 Existence of operational co-management mechanisms for environment
- 1.3 Existence of cooperation with stakeholder groups for environment management

CR 2: Capacities to generate, access and use information and knowledge

- 2.1. Degree of Environmental awareness of stakeholders
- 2.2. Access and sharing of environmental related information by stakeholders
- 2.3 Extent of inclusion/use of traditional knowledge in environment decision-making
- 2.4. Existence of Environmental awareness and education programs
- 2.5. Extent of the linkage between research/science and environment policy development

CR 3: Capacities to strategy, policy and legislation development

- 3.1. Extent of environment planning and strategy development process
- 3.2. Existence of an adequate environment policy and regulatory frameworks
- 3.3. Adequacy of the environmental information available for decision-making

CR 4: Capacities for management and implementation

- 4.1. Existence and mobilization of resources by relevant organizations
- 4.2. Availability of required technical skills and technology transfer

CR 5: Capacities to monitor and evaluate

- 5.1. Adequacy of the bio-security monitoring process
- 5.2. Adequacy of the bio-security evaluation process

Table 4.3: Baseline Scorecard

Indicators		1	2	3	4	5
Stakeholders		Forests, Environment & Wildlife Management Dept., Sikkim	Food Security and Agriculture Development Department, Sikkim	Horticulture and Cash Crop Development Department, Sikkim	Dept of Animal Husbandry, Livestock, Fisheries and Veterinary Services, Sikkim	Department of Science and Technology and Climate Change, Sikkim
CR 1: Capacities for engagement						
1.1	Degree of legitimacy/ mandate of lead environment organizations	3	2	2	2	3
1.2	Existence of operational co-management mechanisms for environment	2	1	1	1	1
1.3	Existence of cooperation with stakeholder groups for environment management	2	1	1	1	2
CR 2: Capacities to generate, access and use information and knowledge						
2.1	Degree of Environmental awareness of stakeholders	3	2	2	2	3
2.2	Access and sharing of environmental related information by stakeholders	2	2	2	2	2
2.3	Extent of inclusion/use of traditional knowledge in environment decision-making	2	1	1	1	1
2.4	Existence of Environmental awareness and education programs	2	1	1	1	2

2.5	Extent of the linkage between research/science and environment policy development	2	1	2	1	2
CR 3: Capacities to strategy, policy and legislation development						
3.1	Extent of environment planning and strategy development process	2	0	0	0	1
3.2	Existence of an adequate environment policy and regulatory frameworks	2	1	1	1	2
3.3	Adequacy of the environmental information available for decision-making	2	1	1	1	2
CR 4: Capacities for management and implementation						
4.1	Existence and mobilization of resources by relevant organizations	2	2	2	2	3
4.2	Availability of required technical skills and technology transfer	3	1	1	1	3
CR 5: Capacities to monitor and evaluate						
5.1	Adequacy of the biosecurity monitoring process	0	0	0	0	0
5.2	Adequacy of the biosecurity evaluation process	0	0	0	0	0

Indicators	6	7	8	9	10	11	12
Stakeholders	Meteorological Center, Sikkim	Human Resource Development Dept. Sikkim	Rural Management and Development Department, Sikkim	Energy and Power Department, Sikkim	Building and Housing Department, Sikkim	State Institute of Rural Development and Panchayati Raj, Jorethang, Sikkim	Tourism and Civil Aviation Department, Sikkim
CR 1: Capacities for engagement							
1.1	3	2	1	2	2	1	1
1.2	1	2	1	1	1	0	1
1.3	2	1	1	2	2	0	1
CR 2: Capacities to generate, access and use information and knowledge							
2.1	3	1	1	2	2	1	1
2.2	3	2	1	2	1	0	0
2.3	0	1	2	0	0	0	0
2.4	1	3	0	0	0	1	0
2.5	0	3	0	2	0	0	1
CR 3: Capacities to strategy, policy and legislation development							
3.1	0	2	0	0	0	0	2
3.2	0	3	0	1	1	0	1
3.3	3	2	0	2	1	0	1
CR 4: Capacities for management and implementation							
4.1	2	2	2	2	1	1	0
4.2	3	2	1	0	0	1	0
CR 5: Capacities to monitor and evaluate							
5.1	0	0	0	0	0	0	0
5.2	0	0	0	0	0	0	0

Indicators	13	14	15	16	17	18	19
Stakeholders	District Institute of Education and Training, Gangtok, Sikkim	G.B Pant National Institute of Himalayan Environment and Sustainable Development, Sikkim	Indian Cardamom Research Institute (ICRI) RRU, Tadong	National Research Center for Orchids, Sikkim	Regional Ayurvedic Research Institute, Sikkim	Sikkim Government B.ed College, Soreng	Sikkim University
CR 1: Capacities for engagement							
1.1	1	3	1	2	1	1	3
1.2	0	1	1	1	1	1	1
1.3	2	1	1	1	0	0	1
CR 2: Capacities to generate, access and use information and knowledge							
2.1	1	3	3	2	0	1	3
2.2	0	1	1	1	0	0	1
2.3	1	2	2	1	2	0	2
2.4	3	3	1	1	0	1	3
2.5	0	0	0	0	0	0	0
CR 3: Capacities to strategy, policy and legislation development							
3.1	0	2	0	0	0	0	2
3.2	0	0	0	0	0	0	0
3.3	0	2	2	1	2	1	2
CR 4: Capacities for management and implementation							
4.1	1	3	1	0	1	0	2
4.2	1	3	2	2	0	0	2
CR 5: Capacities to monitor and evaluate							
5.1	0	0	0	0	0	0	0
5.2	0	0	0	0	0	0	0

Indicators	20	21	22	23	24	25	26
Stakeholders	Ecotourism and Conservation Society of Sikkim	Khangchendzonga Conservation Committee, Sikkim	The Mountain Institute Sikkim	WWF, Sikkim	Biodiversity Management Committee	Eco Development Committee	Gram Panchayat Units
CR 1: Capacities for engagement							
1.1	3	3	3	3	2	2	0
1.2	1	1	1	1	2	2	0
1.3	2	2	2	2	1	1	1
CR 2: Capacities to generate, access and use information and knowledge							
2.1	3	3	3	3	2	1	1
2.2	1	1	1	1	1	0	2
2.3	2	2	2	2	1	1	0
2.4	2	1	2	2	0	0	0
2.5	0	0	0	0	0	0	0
CR 3: Capacities to strategy, policy and legislation development							
3.1	2	2	2	2	0	0	0
3.2	0	0	0	0	2	1	0
3.3	2	2	2	2	2	0	0
CR 4: Capacities for management and implementation							
4.1	1	1	1	2	2	1	1
4.2	1	1	1	2	1	1	0
CR 5: Capacities to monitor and evaluate							
5.1	0	0	0	0	0	0	0
5.2	0	0	0	0	0	0	0

Indicators	27	28	29	30	31
Stakeholders	Joint Forest Management Committee	Self Help Groups	Border Road Organization, Sikkim	Defense	Himalayan Mountaineering Institute, Darjeeling
CR 1: Capacities for engagement					
1.1	2	0	0	1	0
1.2	2	0	0	0	0
1.3	1	0	0	0	0
CR 2: Capacities to generate, access and use information and knowledge					
2.1	1	1	0	1	1
2.2	0	2	0	0	0
2.3	1	0	0	0	0
2.4	0	0	0	0	1
2.5	0	0	0	0	0
CR 3: Capacities to strategy, policy and legislation development					
3.1	0	0	0	0	0
3.2	1	0	0	0	0
3.3	1	0	0	0	0
CR 4: Capacities for management and implementation					
4.1	1	1	0	0	0
4.2	1	0	0	0	0
CR 5: Capacities to monitor and evaluate					
5.1	0	0	0	0	0
5.2	0	0	0	0	0

5. Findings

5.1 Existing Capacity Assessment using Scorecard Analysis

The scorecard is a tool that attempts to quantify a qualitative process of capacity change through the use of appropriate indicators and their corresponding ratings. The scorecard presents descriptive sentences for each capacity development indicator with four numerical ratings (0 to 3). The scores were given to each stakeholder from 0 to 3 on the basis of primary and secondary data collected during the field visits. The analysis of scorecard has been done by adding the scores of all stakeholders vertically and by adding the total scores of all indicators horizontally. The graphs were then plotted to analyse the scorecard.

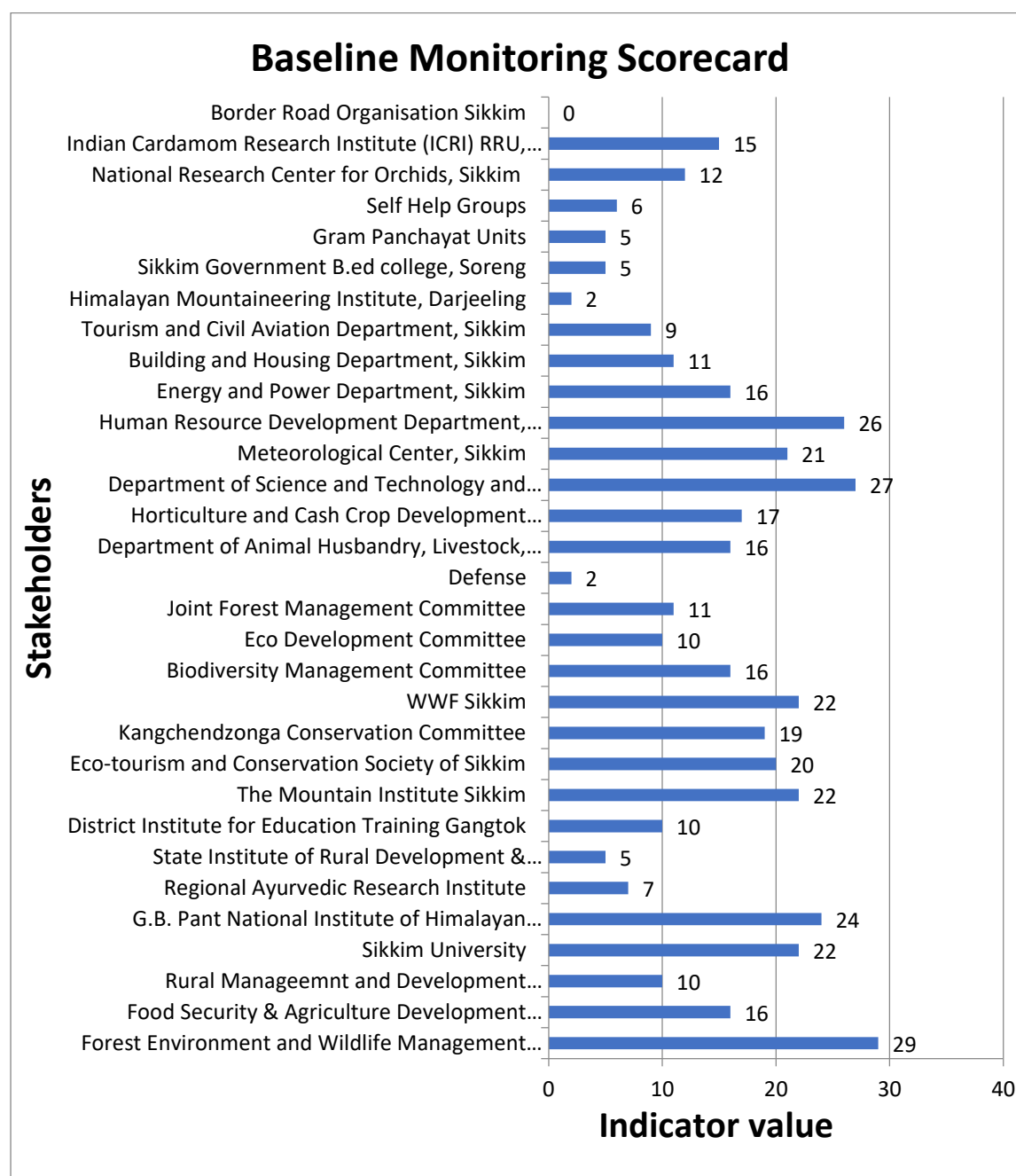


Figure 5.1: Graph-1 Baseline for different stakeholders in Sikkim

The above graph represents the stakeholders on the y axis and indicator values on x axis. The final scores were calculated by adding the scores of all fifteen indicators. The maximum score for an indicator is 3. Therefore, the maximum score of all the 15 sub indicators is 45. The score at national level is 18 (UNDP, 2017). The graph depicts that the scores of 10 stakeholders are more than the national average and the scores of 21 stakeholders are less than the national standard. Hence, these are the stakeholders that require to strengthen their existing capacities. Table 5.1 lists the 10 stakeholders having score more than the national average and 21 stakeholders having score less than the national average.

Table 5.1: Comparison of stakeholder score with national score

S.No	Stakeholders	Score
Stakeholders having score more than the national average		
1	Forest Environment and Wildlife Management Department, Gangtok	29
2	Sikkim University	22
3	G.B. Pant National Institute of Himalayan Environment and Sustainable Development Sikkim	24
4	The Mountain Institute Sikkim	22
5	Eco-tourism and Conservation Society of Sikkim	20
6	Kangchendzonga Conservation Committee	19
7	WWF Sikkim	22
8	Department of Science and Technology and Climate Change, Sikkim	27
9	Human Resource Development Department, Sikkim	21
10	Meteorological Center, Sikkim	26
Stakeholders having score less than the national average		
1	Food Security and Agriculture Development Department, Sikkim	16
2	Horticulture and Cash Crop Development Department, Sikkim	17
3	Department of Animal Husbandry, Livestock, Fisheries and Veterinary Services, Sikkim	16
4	Rural Management and Development Department, Sikkim	10
5	Energy and Power Department, Sikkim	16
6	Building and Housing Department, Sikkim	11
7	State Institute of Rural Development and Panchayati Raj, Jorethang, Sikkim	5
8	Tourism and Civil Aviation Department, Sikkim	9
9	District Institute of Education and Training, Gangtok, Sikkim	10
10	National Research Center for Orchids, Sikkim	12
11	Indian Cardamom Research Institute (ICRI) RRU, Tadong	15
12	Regional Ayurvedic Research Institute, Sikkim	7

13	Sikkim Government B.ed College, Soreng	5
14	Biodiversity Management Committee	16
15	Eco Development Committee	10
16	Gram Panchayat Units	5
17	Joint Forest Management Committee	11
18	Self Help Groups	6
19	Border Road Organization, Sikkim	0
20	Defense	2
21	Himalayan Mountaineering Institute, Darjeeling	2

Interpretation of Graph 2 (Figure 5.2)

The following graph shows the 15 sub indicators on the y axis and the individual indicator score on the x axis. The total score of an indicator is obtained by adding the scores of all stakeholders for that particular indicator. For e.g. the total score of indicator 1.1 can be obtained by adding the values of all 31 stakeholders for indicator 1.1. The value comes out to be 51.

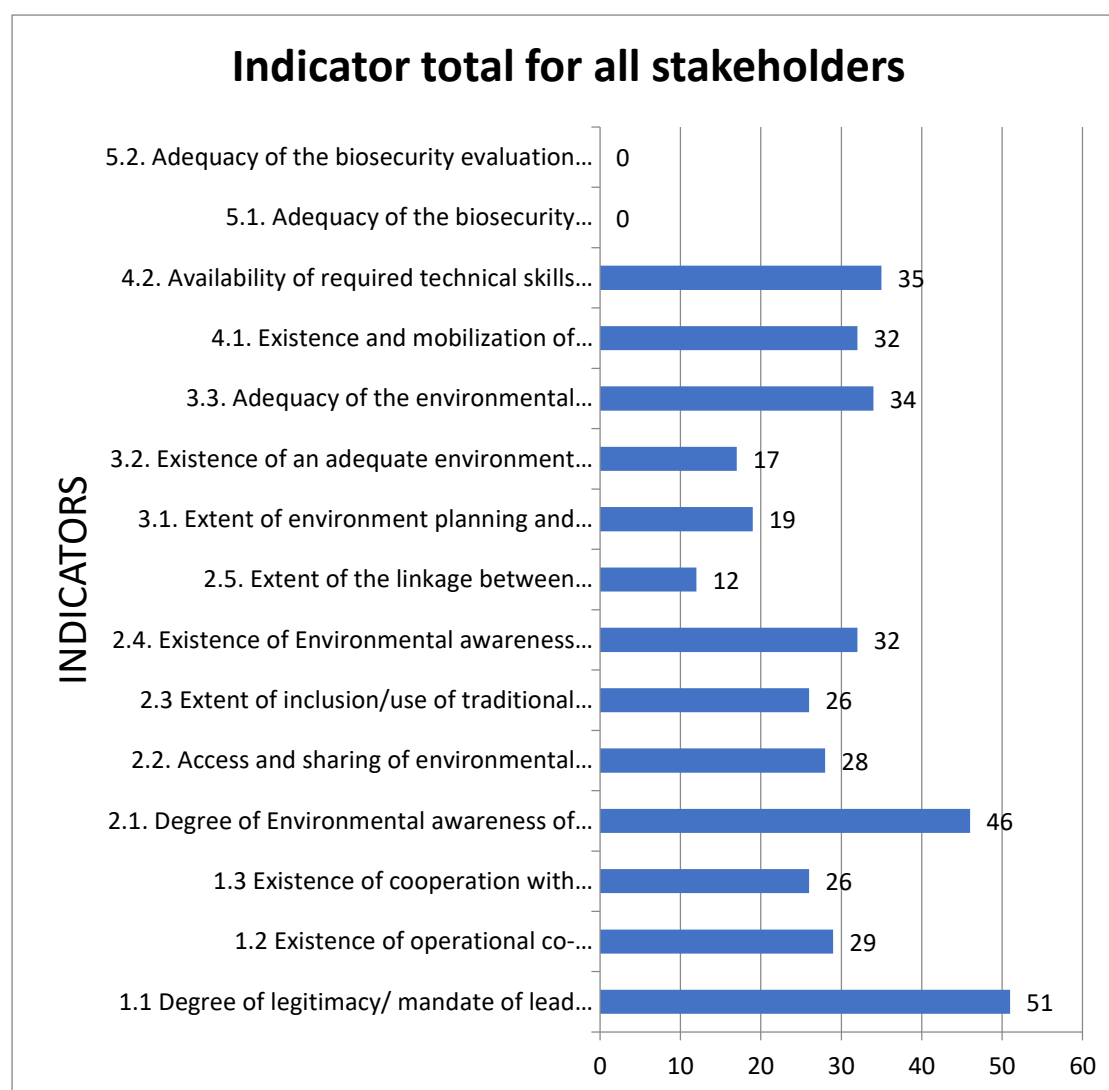


Figure 5.2: Graph 2 Indicator total for all stakeholders

As it is observed, currently there is no mechanism or process regarding evaluation and monitoring of bio-security in Sikkim. The scores are very low for the extent of linkage between research science and environment policy in the state. It is justified by the lack of policy focused studies in Sikkim. So, it can be stated that there is a need for better alignment of research and policies in Sikkim. In terms of degree of environmental awareness a good total score of 46 shows a decent environmental understanding among the stakeholders and the importance given to environmental conservation in Sikkim. This is justified by the initiatives taken by the state government for the protection and conservation of environment. The government of Sikkim has played a very proactive role in spreading awareness about the environmental challenges by launching programmes such as ‘State Green Mission’ in 2006, ‘Ten Minutes To Earth’ in 2009, ‘Paryavaran Mohatsav’ in 2013 etc. All these programmes have been instrumental in increasing environmental awareness.

A moderate score of 26 for extent of inclusion/use of traditional knowledge in environment decision making shows the lack in incorporation of traditional knowledge by government departments due to irregular collection of this knowledge. Similarly, moderate score of 28 for access and sharing of environmental related information by stakeholders, which is justified with the lack of information and outdated information for various schemes and programmes in stakeholder websites or other modes of communication. Likewise, moderate score of 26 and 29 for stakeholder cooperation and operational co-management for environment respectively, shows the need for better coordination among department via multilateral project planning or MoUs for enhancement of cooperation mechanisms. As informed by various government departments, most of the departments are working in silos which does not allow for convergence of related schemes/programmes at ground level.

5.2 Capacity Assessment of Biodiversity Management Committees (BMCs) and Joint Forest Management Committees (JFMC):

For safeguarding biodiversity, ground level implementation of conservation measures are very crucial and thus making the role of BMCs and JFMCs important for mainstreaming biodiversity concerns at grassroot level. This also facilitates in strengthening link between biodiversity conservation and sustainable livelihood options. To assess the capacities of BMCs and JFMCs, selected GPUs were visited during the field visit to project landscape. The capacities were assessed on the basis of 10 parameters:

- i. Awareness about the significance of biodiversity
- ii. Awareness of biodiversity related acts and rules
- iii. Importance of People’s Biodiversity Register (PBR)
- iv. Knowledge of preparing PBR
- v. Experience of Making Action Plan
- vi. Experience of preparing annual report
- vii. Awareness about access and benefit sharing
- viii. Knowledge about Intellectual Property Rights (IPRs)
- ix. Knowledge about Geographical Indicator
- x. Feedback to State Biodiversity Board (SBB)

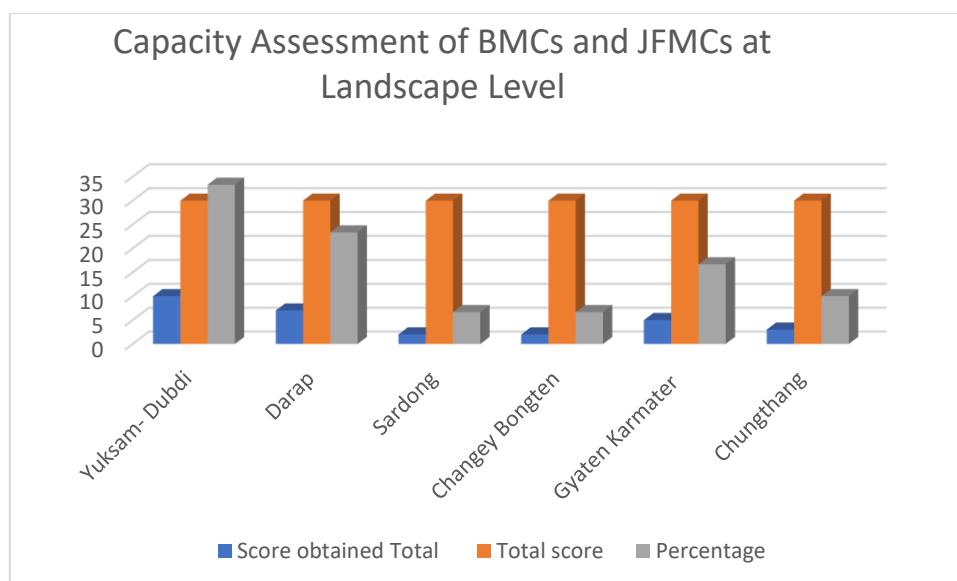


Figure 5.3: Graph 3 Capacity Assessment of BMCs at Landscape level

Figure 5.3 showing capacity assessment of BMCs (Yuksam-Dubdi, Darap, Gyaten Karmater, Chungthang) and JFMCs (Sardong and Changey Bongten). It clearly shows that marks obtained against above mentioned 10 parameters are comparatively less than total marks. This can be inferred as that there is more need to build capacities at ground level.

5.3 Capacity gaps and Training needs related to Biodiversity Conservation in Sikkim

Based on assessment department wise gaps and training needs were assessed. The method which was followed includes questionnaires, semi-structured interviews and focused group discussions with relevant stakeholders. The approach was based on department wise but within same department different level of governance operates depending upon the designated roles and responsibilities. Majorly two bifurcations has been done, one is managerial groups which includes senior and middle level officers and second one is executive groups covering ground level officers (in the landscape). Table 5.2 presents detail analysis of training programmes conducted for each stakeholders and accordingly gaps and training needs are being mentioned which are being taken into consideration for developing training modules.

Table 5.2: Stakeholder's gaps and training needs related to biodiversity conservation

S.No.	Stakeholder	Training programs conducted	Institution providing Training	Gaps		Training Needs (based on TNA)
				Senior & Middle level officers	Ground level officers	
Training Programmes with Pan India scope and number of participants varies accordingly						
1.	Forest Environment and Wildlife Management Department, Gangtok	Forest Guard training in Police Training Institute, Yangyang Training to BMC By State Biodiversity Board Training infrastructure is also available	Various National & State level training institutes across India like WII, FRI etc	Main emphasis is given on forestry only and not biodiversity as a whole. There is need to incorporate the importance of landscape-based approach for biodiversity and natural resource conservation.	Lack of awareness among officials for: actual state of biodiversity loss, agrobiodiversity, linkages in ecosystem & biodiversity.	Interdepartmental synergies are required especially with RMDD, frontline officers should be motivated to work in close coordination with local bodies. Training facility is available which can be used to conduct interdepartmental trainings
2.	Food Security & Agriculture Development Department	No regular training pertaining to biodiversity conservation Training infrastructure exist ATMA programmes at District level; and SAMITI programmes at headquarter level on various agricultural and farming related themes to farmers & community	National Institute of Agriculture Extension Management (MANAGE), Hyderabad; National Seed Research and Training Centre, Varanasi; Extension Education Institute, Jorhat	Limited awareness regarding the importance and role of agrobiodiversity for agriculture sustainability	More emphasis should be laid on organic farming, importance of bio-fertilizer & use of bio-pesticide for controlling pests and diseases.	Sensitize farmers regarding Importance of Agro-biodiversity, training should be provided

S.No.	Stakeholder	Training programs conducted	Institution providing Training	Gaps		Training Needs (based on TNA)
				Senior & Middle level officers	Ground level officers	
3.	Rural Management and Development Department	Trainings to community on themes related to natural resource management Training infrastructure available	NIRD, Hyderabad	Mainstreaming biodiversity concerns in ongoing projects/ programmes	Biodiversity perspective needs more attention in its activities in the field of NRM	Strengthen biodiversity conservation measures at grass-root level.
Trainings conducted within state						
4.	Sikkim University	Project based training on various themes of environment and agriculture to community, GPUs, BMC, etc. Training infrastructure available	ND	Usually project based trainings are conducted which limit the scope of follow-up and beneficiary assessment		To conduct policy-based research, provision of spatial and resource information base for planning, implementation and monitoring of forest and biodiversity management
5.	G.B. Pant National Institute of Himalayan Environment and Sustainable Development	Trainings to community on farm-based technologies, bio-composting, water harvesting structures, improvised large cardamom curing kiln and bio-globules, disaster management; Science Motivation and Awareness for talented High School; short to long term training for research students Training infrastructure available	ND	Regularity of training to integrate biodiversity conservation in sectoral programmes may be promoted		Training of Trainers and/or refresher training programme
6.	Sikkim Regional Ayurveda		ND	Adhoc training pertaining to Biodiversity Conservation		

S.No.	Stakeholder	Training programs conducted	Institution providing Training	Gaps		Training Needs (based on TNA)
				Senior & Middle level officers	Ground level officers	
	Research Institute, Tadong					
7.	State Institute of Rural Development & Panchayati Raj, Jorethang	Rural development training for government dept., Panchayati Raj training for elected village representatives, training and awareness work in various themes for awareness including menstrual health, sanitation, mental health, zero waste, watershed development etc.	ND	Importance of biodiversity conservation and NRM theme are lacking in regular trainings programmes.		Specific trainings for biodiversity conservation should be conducted for senior and junior level officers and also for representatives of BMC & GPUs
8.	District Institute for Education Training Gangtok	No regular training pertaining to biodiversity conservation Pre-service and on-service training for teachers to be employed upto class 8 level; Diploma in Elementary Education Programme	One-week orientation programme on forest & environment as conducted by resource person from forest dept.	Biodiversity conservation and NRM themes are lacking in the training programme		Sensitization of local community for biodiversity conservation
9.	The Mountain Institute Sikkim	No regular training pertaining to biodiversity conservation	ND	Convergence with other departments for strengthening knowledge management		Can organize regular programmes for community-based organization on biodiversity conservation
10.	Eco-tourism and Conservation Society of	Awareness for Eco-tourism, waste management and sustainable livelihood	ND			Requires training of trainers programme which can further provide handholding to local

S.No.	Stakeholder	Training programs conducted	Institution providing Training	Gaps		Training Needs (based on TNA)
				Senior & Middle level officers	Ground level officers	
	Sikkim, Gangtok			Due to lack of regular programmes and monitoring process, the objective need more appropriate mapping. They are potential target group which are crucial for bridging gap between government and community participation		community
11.	Kangchendzonga Conservation Committee, Yuksom	No regular training pertaining to biodiversity conservation				Capacitate more on local community groups for biodiversity conservation
12.	WWF Sikkim	No regular training pertaining to biodiversity conservation				Capacitate more on local community groups for biodiversity conservation
13.	Biodiversity Management Committee	No regular training pertaining to biodiversity conservation	Training under the GEF funds for ABS and NBA funds for PBR training by state Biodiversity Board			Mainstreaming at grass-root level
14.	Eco Development Committee	No regular training pertaining to biodiversity conservation	Training by forest department under JICA project			Mainstreaming at grass-root level
15.	Joint Forest Management Committee	No regular training pertaining to biodiversity conservation	Training by forest department under JICA project			Strengthen relationship between local community and Govt. officials
16.	Defense	No regular training pertaining to biodiversity conservation	Indian Army Environment and Ecology Cell (IAEEC) coordinates all activities associated with	Limited knowledge regarding biodiversity		Sensitization about offence regarding biodiversity

S.No.	Stakeholder	Training programs conducted	Institution providing Training	Gaps		Training Needs (based on TNA)
				Senior & Middle level officers	Ground level officers	
			environment conservation and awareness			
17.	Indian Cardamom Research Institute (ICRI) RRU, Tadong	Conduct training programmes for Board's Development Department staff and impart scientific skill to agriculturists and unemployed youths on Good Agricultural Practices (GAP) for quality spice production.	ND	No regular training pertaining to biodiversity conservation		
18.	Border Road Organisation Sikkim	No regular training pertaining to biodiversity conservation	ND	Policy intervention regarding biodiversity safeguarding		Sensitization about offence regarding biodiversity
19.	Department of Animal Husbandry, Livestock, Fisheries and Veterinary Services, Sikkim	No regular training pertaining to biodiversity conservation Training related to dairy, poultry and piggery management and production. Training infrastructure is also available	Capacity building for up-gradation of knowledge/Skill for technical officers and field functionaries		Lack of awareness among the frontline staff regarding the significance of Sikkim Biodiversity	Mainstream biodiversity concerns in on-going trainings related to livestock and poultry Management & Production
20.	Horticulture and Cash Crop Development Department,	No regular training pertaining to biodiversity conservation Training related to production	ND	Synergy with forest department	Strengthen agrobiodiversity in production system	Strengthen agrobiodiversity in production system

S.No.	Stakeholder	Training programs conducted	Institution providing Training	Gaps		Training Needs (based on TNA)
				Senior & Middle level officers	Ground level officers	
	Sikkim	of horticulture products				
21.	Department of Science and Technology and Climate Change, Sikkim	No regular training pertaining to biodiversity conservation	ND	Biodiversity concern in research and training related work		Department has infrastructure facility to conduct trainings, should focus on awareness programmes on biodiversity conservation
22.	Meteorological Center, Sikkim	Workshops / Seminars in Schools related to weather and climate	ND	The connect between climate change and biodiversity should be emphasis upon		Not directly linked with biodiversity conservation, updated data should be provided for planning process
23.	Human Resource Development Department, Sikkim	No regular training pertaining to biodiversity conservation	Training institutes for teachers (Environment Education is taught in courses)	Stakeholder engagement should be increased and trainings should have monitoring and evaluation mechanism		Stakeholder engagement should be increased and trainings should have monitoring and evaluation mechanism
24.	Energy and Power Department, Sikkim	No regular training pertaining to biodiversity conservation	ND	Lack of awareness regarding biodiversity conservation in energy sector		General sensitization about biodiversity and its importance
25.	Building and Housing Department, Sikkim	The department organizes training and conducts seminars on new emerging technologies like GRIHA	ND		Lack of awareness regarding plantation/vegetation while construction activities	Biodiversity conservation lens should be put in development project
26.	Tourism and Civil Aviation Department, Sikkim	No regular training pertaining to biodiversity conservation	ND	Collaborations with other line departments	Lack of mechanism for training to local guides for livelihood enhancement	Promote Eco-tourism and secure livelihood needs of locals
27.	Himalayan		ND	No regular training pertaining to		About Eco-tourism

S.No.	Stakeholder	Training programs conducted	Institution providing Training	Gaps		Training Needs (based on TNA)
				Senior & Middle level officers	Ground level officers	
	Mountaineering Institute, Darjeeling			biodiversity conservation		
28.	Sikkim Government B.ed college, Soreng	Environmental education is taught in courses	ND	Biodiversity conservation is not included in courses		Train Master Trainers which can further provide awareness among school children
29.	Gram Panchayat Units	No regular training pertaining to biodiversity conservation	ND	Lack of sensitization about economic benefits of maintaining biodiversity		Sensitize general masses
30.	Self Help Groups	No regular training pertaining to biodiversity conservation	ND	Lack of proper training regarding ecotourism		Skill development training/ livelihood options based on local biodiversity
31.	National Research Center for Orchids, Sikkim	One week national level training program on commercial cultivation of Orchids; Jal shakti abhiyan programme on awareness generation; Awareness cum training programme on intellectual property rights; Five day training on cultivation of orchids and other cut flowers; ICAR Sponsored Training Under Pt. Deen Dayal Upadhyaya Unnat Krishi Siksha Yojna was Organised by	ND	No regular training pertaining to biodiversity conservation		Promote research & innovation

S.No.	Stakeholder	Training programs conducted	Institution providing Training	Gaps		Training Needs (based on TNA)
				Senior & Middle level officers	Ground level officers	
		ICAR NRC for Orchids. Exhibition on biodiversity utilization for ecotourism as an enterprise; Workshop on “Biodiversity and Sustainable Agriculture for Doubling Farmers Income in Sikkim				
32.	Sikkim Police	No regular training pertaining to biodiversity conservation	ND	Lacking biodiversity concerns at policy as well as implementation level		Regarding joint patrolling along with forest rangers, sensitization regarding community and governance, Conserving local biodiversity from outsiders and human-wildlife conflict
33.	Indo-Tibetan Border Police					
34.	Sashastra Seema Bal (SSB)					
Legend ND: No data						

The above table no 5.2 vividly shows that except Forest Department none of the stakeholders are conducting any regular training on biodiversity conservation related aspects. The trainings provided by other government line department are ad hoc in nature. The research and training institutions in Sikkim also do not provide any regular training on biodiversity related aspects and the ad hoc trainings seldom deal with issues related to biodiversity conservation. The NGO's in Sikkim sometimes organise short training programmes on different topics selected on basis of prevailing interests of funding agencies, on adhoc basis for small groups. Such trainings have limited short-lived impact which fails to demonstrate a close nexus between biodiversity- vegetation and wildlife- with societal wellbeing.

Based on the assessment, capacity gaps were identified for senior level and grassroots level officers (wherever applicable). For the cross-sectoral group of senior level officers (policy and planning stage), gaps identified are as follows:

- Limited networking and knowledge sharing amongst respective departmental projects
- Lack of monitoring and evaluation mechanism
- Different departments/institutions are working in *silos*
- Difference in vision of sustainable development between various stakeholders
- Gap in policy based research work
- Strategic framework for sustainability of increasing tourism

Accordingly training needs at senior level of relevant stakeholders are:

- Inclusion of conservation of biodiversity mandatory in all governmental schemes
- Strengthening biodiversity monitoring system in protected areas
- Evaluation of biodiversity as an integral part of any development project and ensure ensuring minimal loss of biodiversity
- Interdepartmental synergies and strong institutional coordination
- The economics of ecosystem services for sustainable livelihood options

Whereas, at grassroots level, the implementers simply execute the orders received from senior level therefore strengthening of community and governance link is important at this level. They are the first responders for any conservation and should be capacitate to multiply interventions in light of biodiversity conservation. It is important to realise the enormous potential of local community-based institutions such as Gram Panchayat Units in promoting public awareness about ecological understanding to promote participatory conservation of biodiversity at grass root level in the State of Sikkim. However, there is a clear need for a structured biodiversity training module to educate key stakeholders including Gram Panchayat members and local leaders.

6. Module Development

On the commencement of the project, stakeholder workshop was conducted for consultation regarding current capacity & knowledge gaps for biodiversity conservation and related training requirements for state forest department. It was suggested that modules be based on grass-root level requirements, showcasing practical and region-specific information with quantitative figures. Based on such stakeholders' consultations and gap analysis, it was proposed to prepare three modules for strengthening capacities of key stakeholders in biodiversity conservation.



Figure 6.1: Modules developed to enhance capacities of key stakeholders

General module to provide an overview of the importance of biodiversity conservation goals. It describes specific methods and approaches for mainstreaming of biodiversity concerns into different development plans and programmes. This module consists of five sub modules. The first sub module is an introductory part that describe the concept of biodiversity and emphasises its importance for human well-being and ecosystem sustainability. It also highlights the uniqueness of Sikkim's biodiversity and threats to it. The second sub-module titled "Methods of Conservation" elaborates about the need, methods, strategies and actions plans for biodiversity conservation. The third sub-module "Community & Governance" explains the importance of community participation for conservation of biodiversity. For catering to importance and need for mainstreaming biodiversity at all levels, fourth sub-module titled "Mainstreaming Biodiversity" was prepared. The fifth sub-module titled "SWOT Analysis", explaining simple and highly effective tool, which will help participants to identify strengths, weaknesses, opportunities and threats in each specific sector.



Figure 6.2: Sub-modules under General Module

General Module: Training Module on Biodiversity Conservation caters to all stakeholders and provides general introduction about the sector to the target group. Sikkim agriculture and tourism are important sectors from environmental and economic prospective. Therefore, two separate modules one for agrobiodiversity and the other on tourism have been prepared taking into account the recommendations of the state agency.

Sector Specific Module: Agriculture and Biodiversity- Agriculture remains as an important sector for maintaining environmental sustainability in an ecosystem. Local community plays crucial role including farmer's traditional knowledge, land-use practices and decisions, livelihood systems and the role of local institutions. This module plays a crucial role in implementing agrobiodiversity agenda. **Sector Specific Module: Sustainable Tourism-** Tourism in Sikkim depends heavily on recreational opportunities provided by the mountainous environment. From last decade the tourism inflow in Sikkim has increased considerably and this sector has become one of the important drivers of the state economy. However, in the absence of a long-term vision for tourism in the state, this sector has developed largely in an unplanned manner and has veered inadvertently towards promoting mass tourism which has given rise to many challenges (State Tourism Policy, 2018). Therefore, there is a need to strengthen and align the tourism with environmental conservation objectives to minimise the adverse ecological impact of tourism related activities and for maintaining environmental sustainability.

7. Workshops and Stakeholder Consultations

A series of workshops and stakeholder consultations, were arranged at different stages during the Period of the project for ensuring active interaction with the stakeholders. In addition, interviews and consultation workshops were conducted to assess the existing capacities and requirements of training needs.

- I. A **stakeholder consultation** workshop was conducted on 12th June, 2019 under the chairmanship of Sh. M. L. Srivastava, PCCF, Sikkim. Detailed discussion was held regarding existing capacity and knowledge gap in biodiversity conservation and related training requirements for the state Forest Department. Recommendations from the workshop are given at Annexure III.
- II. **Pilot Trainings/Workshops in Gram Panchayat Units (GPUs) of Project Landscape.**

The pilot training programmes/workshops were conducted in three GPUs of project landscape. In west Sikkim district one day pilot training was conducted in Darap and Yuksam Dubdi Gram Panchayat Units each in the month of December 2019. In north Sikkim district the pilot training was conducted in Chungthang Village. The trainings were conducted:

- To highlight the uniqueness and significance of Sikkim biodiversity
- To test the efficacy of training modules
- To increase awareness regarding biodiversity related issues
- Capacity building of key institutions in the realm of biodiversity conservation

The pilot training programme was conducted into two sessions. After the introductory session, in the first session the participants were briefed about the Sikkim's biodiversity profile followed by presentation of the Agriculture and Biodiversity Module. The second session was devoted to the presentation of "Sustainable Tourism for Biodiversity Conservation". Two short videos developed under the project, one based on importance of agrobiodiversity covering a case study of bumble-bee and other related to sustainable tourism were also screened at the workshop for the participants. The videos depicted local issues and were prepared in local language, which was highly appreciated by participants.

III. Preliminary training-cum-consultation workshop at Gangtok

A workshop was conducted under the Chairmanship of Shri Bhuvan Pradhan CCF, Forest, Environment and Wildlife Management Development on 3rd March 2020 to share the project activities with key stakeholders and discuss the details of draft training modules for biodiversity conservation for their finalization. Representatives from key departments attended the



Figure 7.1: Interactive session during workshop

workshop, the list of participants is at Annexure IV. Participants were briefed about the methodology used under the project and key findings derived. Detailed discussions were held on the draft training modules. The minutes of the meeting are given at Annexure V.

IV. VIP (Virtual Internet Participation) Training Programme for Biodiversity Conservation in Sikkim

A three day VIP (Virtual Internet Participation) training programme for key stakeholders for biodiversity conservation in Sikkim was organised from 9th-11th September 2020. The training aimed at sensitization of key officials and piloting of tailor-made modules. Around Thirty Participants from priority sectors like forestry, rural development, horticulture, animal husbandry and the like attended the training. The training inaugurated on 9th September with the online WebEx session wherein Prof. V. K. Sharma and Dr. Shyamli Singh, Project Investigators, IIPA provided the overview of the training programme and blended learning programme. First two days was self-paced, wherein online modules was provided to participants along with briefing videos and presentations. First Day included general introduction to biodiversity, its conservation and mainstreaming. Apart from this, specific modules pertaining to agro-biodiversity and sustainable tourism modules was prepared and covered in Second Day. Participants were asked to study the modules on self-paced mode and attempt corresponding assignments accordingly. Third day *i.e* 11th September 2020 was conducted through video conferencing, eminent field experts delivered sessions followed by valedictory session. The comments and suggestions received from participants were incorporated in the training module.



Figure 7.2: Glimpses of Valedictory session of VIP Training Programme

8. Conclusions and Recommendations

As mentioned in previous sections, a thorough training need analysis has been undertaken which involves identifying stakeholders, assess their current capacities and gaps between the current and desired capacities to meet the objective. The TNA exercise adopted for the study focused on covering all relevant technical, managerial and other aspects of the organizational working. This comprehensive assessment has yielded a clear view of the present scenario in respect of biodiversity conservation in the state. Different stakeholders are having different capacities and needs for mainstreaming biodiversity conservation into their respective departmental programmes and activities. Accordingly, stakeholders has been divided into following groups based on organizations existing mandates and potential for mainstreaming biodiversity interventions.

- **Core Line Departments:** Forest, Environment and Wildlife Management Department; Food Security & Agriculture Development Dept.; Horticulture & Cash Crop Development Department; Department of Animal Husbandry, Livestock, Fisheries & Veterinary Services; Rural Management and Development Department, Tourism and Civil Aviation
- **Core Enforcement Agencies:** Border Road Organization, Sikkim police, Indian Army, Indo-Tibetan Border Police (ITBP), *Sashtra Seema Bal* (SSB), Defence
- **Non-Core Line Departments:** Human Resource Development Department; Indian Meteorological Department, Sikkim; Energy and Power Department, Sikkim; Building and Housing Department, Sikkim
- **Core Hand-holding Training Institutes/potential training implementers:** Sikkim University; G.B. Pant National Institute of Himalayan Environment and Sustainable Development, Sikkim; The Mountain Institute Sikkim; Department of Science, Technology and Climate Change, Sikkim; State Institute of Rural Development and Panchayati Raj, Jorethang, Sikkim; District Institute of Education & Training, Gangtok, Sikkim; National Research Centre for Orchids, Sikkim; Indian Cardamom Research Institute (ICRI) RRU, Tadong; Regional Ayurvedic Research Institute, Sikkim; Sikkim Government B.ed College, Soreng; Himalayan Mountaineering Institute, Darjeeling
- **Community-Based organisations/Non-Governmental organisations:** Biodiversity Management Committee; Eco Development Committee; Joint Forest Management Committee; Self Help Groups; Eco-tourism and Conservation Society of Sikkim; Kangchendzonga Conservation Committee; WWF Sikkim

The line department groups has been further demarcated in senior and grassroot level officers on the basis of role and responsibilities performed with in department. Following section highlights the suggested themes/modules for respective stakeholders.

8.1 Training and capacity building areas at different levels

FOR CORE LINE DEPARTMENT GROUP (Forest, Environment and Wildlife Management Department; Food Security & Agriculture Development Dept.; Horticulture & Cash Crop Development Department; Department of Animal Husbandry, Livestock, Fisheries & Veterinary Services; Rural Management and Development Department, Tourism and Civil Aviation)

Following modules marked as ★ has been suggested for respective stakeholders at different level of governance.

	Senior Level officers	Middle level officers	Grassroot level officers/ Extension officers
Role	Execution of Policy level interventions and interdepartmental synergies The officers are directly involved in decision making (HODs, Directors, DGs etc.)	Transferring the actionable points to grassroot level Involves in middle level management of the system	Responsible for <i>on- ground</i> Implementation Responsible for ground level implementation of projects/ programmes
Module 1: Generic Module			
Introduction to Biodiversity	This module caters to general introduction to biodiversity and important for all levels of relevant departments		
Methods for biodiversity Conservation		★	★
Acts and Bylaws related to Biodiversity Conservation	★	★	★
Community and Governance		★	★
Mainstreaming Biodiversity	★	★	★
Swot Analysis	★	★	

	Senior Level officers	Middle level officers	Grassroot level officers/ Extension officers
Module 2: Agro-biodiversity	Relevant for Agriculture & allied departments (Horticulture, Animal Husbandry and Rural Management and Development Department)		
Introduction & Importance	★	★	★
Social, Cultural & Economic factors	★	★	★
Agriculture Systems promoting biodiversity		★	★
Agro-ecosystems in Hilly terrain		★	★
Farm-biodiversity management		★	★
On-field biodiversity and its importance for ecosystem services		★	★
Biodiversity Based Solutions		★	
Mainstreaming	★		
Module 3: Sustainable Tourism	For Tourism and Rural Development Department		
Introduction to Biodiversity & Tourism		★	★
CBD Guidelines	★	★	★
The Economics of Ecosystems and Biodiversity	★		
Capacity Building		★	★

FOR CORE- ENFORCEMENT AGENCIES (Border Road Organization, Sikkim police, Indian Army, Indo-Tibetan Border Police (ITBP), Sashtra Seema Bal (SSB), Defence)

	Senior Level officers	Middle level officers	Grassroot level officers/ Extension officers
Role	Execution of Policy level interventions and interdepartmental synergies The officers are directly involved in decision making (Director General, Directors etc.)	Transferring the actionable points to grassroot level Involves in middle level management of the system	Responsible for <i>on- ground</i> Implementation Responsible for ground level implementation of projects/ programmes
Module 1: Generic Module			
Introduction to Biodiversity	Sensitization about general introduction to biodiversity is important for all levels		
Methods for biodiversity Conservation		★	★
Acts and Bylaws related to Biodiversity Conservation	★	★	★
Community and Governance		★	★
Mainstreaming Biodiversity	★	★	★
Swot Analysis	★	★	
Module 2: Agro-biodiversity			
Introduction & Importance	★	★	★
Social, Cultural & Economic factors			

	Senior Level officers	Middle level officers	Grassroot level officers/ Extension officers
Agriculture Systems promoting biodiversity			
Agro-ecosystems in Hilly terrain		★	★
Farm-biodiversity management			
On-field biodiversity and its importance for ecosystem services		★	★
Biodiversity Based Solutions			
Mainstreaming	★		
Module 3: Sustainable Tourism			
Introduction to Biodiversity & Tourism		★	★
CBD Guidelines	★	★	★
The Economics of Ecosystems and Biodiversity			
Capacity Building		★	★

FOR NON- CORE LINE DEPARTMENT GROUP (Human Resource Development Department; Indian Meteorological Department, Sikkim; Energy and Power Department, Sikkim; Building and Housing Department, Sikkim)

	Senior Level officers	Middle level officers	Grassroot level officers/ Extension officers
Role	Execution of Policy level interventions and interdepartmental synergies The officers are directly involved in decision making	Transferring the actionable points to grassroot level Involves in middle level management of the system	Responsible for <i>on- ground</i> Implementation Responsible for ground level implementation of projects/ programmes
Module 1: Generic Module			
Introduction to Biodiversity	This module caters to general introduction to biodiversity and important for all levels of relevant departments		
Methods for biodiversity Conservation		★	★
Acts and Bylaws related to Biodiversity Conservation	★	★	★
Community and Governance		★	★
Mainstreaming Biodiversity	★		
Swot Analysis	★	★	
Module 2: Agro-biodiversity			
Introduction & Importance	★	★	★
Social, Cultural & Economic			

	Senior Level officers	Middle level officers	Grassroot level officers/ Extension officers
factors			
Agriculture Systems promoting biodiversity			
Agro-ecosystems in Hilly terrain			
Farm-biodiversity management			
On-field biodiversity and its importance for ecosystem services			
Biodiversity Based Solutions			
Mainstreaming	★		
Module 3: Sustainable Tourism	For Tourism and Rural Development Department		
Introduction to Biodiversity & Tourism		★	★
CBD Guidelines	★		
The Economics of Ecosystems and Biodiversity	★		
Capacity Building	★	★	★

FOR CORE HAND-HOLDING TRAINING INSTITUTES/TRAINING IMPLEMENTERS (Sikkim University; G.B. Pant National Institute of Himalayan Environment and Sustainable Development, Sikkim; The Mountain Institute Sikkim; Department of Science, Technology and Climate Change, Sikkim; State Institute of Rural Development and Panchayati Raj, Jorethang, Sikkim; District Institute of Education & Training, Gangtok, Sikkim; National Research Centre for Orchids, Sikkim; Indian Cardamom Research Institute (ICRI) RRU, Tadong; Regional Ayurvedic Research Institute, Sikkim; Sikkim Government B.ed College, Soreng; Himalayan Mountaineering Institute, Darjeeling)

For taking the agenda of capacity building for biodiversity conservation forward, hand-holding institutes were identified. Some of them are already conducting trainings while others need to build capacities for knowledge dissemination and training of other target group. These institutes are not bifurcated in senior and grassroot level instead we are suggesting following modules/sub-modules to potential master trainers/ faculty of respective institutes.

	Potential Trainers/ Faculty
Module 1: Generic Module	
Introduction to Biodiversity	★
Methods for biodiversity Conservation	★
Acts and Bylaws related to Biodiversity Conservation	★
Community and Governance	★
Mainstreaming Biodiversity	★
Swot Analysis	★
Module 2: Agro-biodiversity	
Introduction & Importance	★
Social, Cultural & Economic factors	★

	Potential Trainers/ Faculty
Agriculture Systems promoting biodiversity	★
Agro-ecosystems in Hilly terrain	★
Farm-biodiversity management	★
On-field biodiversity and its importance for ecosystem services	★
Biodiversity Based Solutions	★
Mainstreaming	★
Module 3: Sustainable Tourism	
Introduction to Biodiversity & Tourism	★
CBD Guidelines	★
The Economics of Ecosystems and Biodiversity	★
Capacity Building	★

For Community-Based organisations/Non-Governmental organisations (Biodiversity Management Committee; Eco Development Committee; Joint Forest Management Committee; Self Help Groups; Eco-tourism and Conservation Society of Sikkim; Kangchendzonga Conservation Committee; WWF Sikkim)

	For organizations' representative(s)
Module 1: Generic Module	
Introduction to Biodiversity	★
Methods for biodiversity Conservation	★
Acts and Bylaws related to Biodiversity Conservation	★
Community and Governance	★
Mainstreaming Biodiversity	★
Swot Analysis	★
Module 2: Agro-biodiversity	
Introduction & Importance	★
Social, Cultural & Economic factors	★
Agriculture Systems promoting biodiversity	★
Agro-ecosystems in Hilly terrain	★

	For organizations' representative(s)
Farm-biodiversity management	★
On-field biodiversity and its importance for ecosystem services	★
Biodiversity Based Solutions	★
Mainstreaming	★
Module 3: Sustainable Tourism	
Introduction to Biodiversity & Tourism	★
CBD Guidelines	★
The Economics of Ecosystems and Biodiversity	★
Capacity Building	★

8.2 Mainstreaming Biodiversity Concerns at policy level

As mentioned previously, ground level implementers play an important role for biodiversity conservation at landscape. But, they are the ones who followed instructions from top level administrations. Therefore, for effective mainstreaming of biodiversity concerns in development planning, capacity building of cross-sectoral group of policy makers/HODs is also crucial. The major thematic areas which need to be focussed other than general introduction are acts and bylaws, guidelines for biodiversity conservation, mainstreaming into ongoing departmental plans/programmes, sustainable livelihood options, framework for sustainable tourism. Table 8.1 give the training outline for senior level officers for one day programme, this can be customised depending upon the participants.

S. No	Session	Duration
1	General Introduction and importance of biodiversity conservation (Sikkim specific), current status of Sikkim's Biodiversity	30 minutes
2	The economics of ecosystem and biodiversity	30 minutes
3	Challenges and opportunities of biodiversity conservation	30 minutes
4	Mainstreaming in development planning	45 minutes
5	Case studies/ successful practices for biodiversity conservation and improving livelihood options	30 minutes
6	Brainstorming session: Existing departmental mandates and scope for complimenting interventions for conservation along with developmental activities	01 hour

8.3 Strengthening of established training institutes

Administrative Trainings Institute, Gangtok is a potential institution, which can be involved in orientation training related to biodiversity conservation and natural resource management to line departments. There is a good scope to incorporate biodiversity conservation related modules in the different ongoing training programmes being run by the institute for the officials of various government departments. Training infrastructure is available and ongoing system of capacity building is very structured. The biodiversity concept can be incorporated into ongoing trainings or specific training course can be developed spending on various level of participation.

Similarly, SIRD, Jorethang which is involved in conducting orientation trainings for the representatives of community institutions including Biodiversity Management Committee (BMC), Eco-Development Committee (EDC) and Joint Forest Management Committee (JFMC). It is acting as Communication and Capacity Building Unit under Ministry of Drinking Water and Sanitation, apart from rural development functions under Rural Management & Development Department (RMDD) Sikkim. It also works for Rural Development component of Administrative Training Institute (ATI) Trainings whereby 2-3 week training is imparted; usually training is imparted to the personnel of the departments of RMDD, Agriculture, Horticulture and Forest. SIRD has outreach to grassroots level and it carries out field level programmes focussing on youth and SHGs. It is undertaking various themes for awareness including sanitation, zero waste, watershed development etc. Also its programme of "Dhara Vikas" has some link with Biodiversity services; accordingly, biodiversity concept can be included in ongoing trainings. Due to already active involvement of our primary stakeholders and training of standing committees, it is easier to introduce and incorporated the biodiversity modules for effective training of concerned stakeholders.

For easy accessibility, it is further suggested that ATI Gangtok can cater the needs for East and North District; Similarly, SIRD Jorethang can cover South and West districts.

Figure 8.1 provides the potential trainers with general outline of 5-day training agenda for biodiversity conservation in Sikkim this can be customised accordingly to the target group.

Figure 8.1 gives a general outline with suggested schedule for the training modules.

Days	Session	Topics Covered	Time
Day 1	Inaugural Session		
		Participants Introduction (Participants are expected to give brief introduction regarding institute and their job role)	20-25 min
	Session 1	Sub-module 1: Biodiversity & its importance	1 hr
	Session 2	Sub-module 2: Methods of Conservation	1 hr
	Session 3	Group exercise (Participants will be divided into groups depending upon area (e.g districts) and will be asked to identify potential threats to biodiversity in their selected region; then they will be asked to mention existing conservation measures. Brainstorm its effectiveness and suggest better feasible options) Followed by group presentation	2 hr
Day 2	Reflection from Day 1		20 min
	Session 1	Module I: Agriculture and Biodiversity	2 hr
	Session 2	Sub-module 3: Community and Governance	1 hr
	Session 3	Panel discussion: “Role of community and Governance in biodiversity conservation” Panellists: Representative of Govt. Dept (e.g Forest Dpt.) Representative of active NGO’s Representative of BMC’s/JFMC’s Followed by question and answer round	2 hr
	Exposure visit to protect area/wildlife sanctuary/village with active BMC		
Day 3	Reflection from Day 3		20 min
Day 4	Session 1	Module II: Sustainable Tourism	1 hr
	Session 2	Sub module 4: Mainstreaming Biodiversity Concerns into development planning	1 hr
	Session 3	Brainstorming Session (Participants will work in groups for identification & prioritization of “entry points” in respective sectors and have group discussions over mainstreaming)	2 hr
	Reflection from Day 4		20 min
Day 5	Session 1	Sub Module 5: SWOT Analysis	1 hr
	Session 2	Group exercise (Participants will be divided into groups depending upon area of work, and then will be asked to evaluate strengths, weaknesses, opportunities & threats of selected sectors to identify desired direction of future development)	2 hr
	Feedback and evaluation		

Figure 8.1: General Training Module

8.4 Sustainable Development Goals (SDGs) and Biodiversity

Biodiversity is at the centre of many economic and development activities, especially in an eco-fragile state like Sikkim. Major population depends directly or indirectly on biodiversity to fulfil their daily subsistence needs. With over 82% of its total geographical area under the state Forest Department, Sikkim has had an intimate history with nature and sustainability³. Sikkim is the first organic state and also first state to become a *Nirmal Rajya*, achieving total sanitation and becoming open defecation free. Moreover, Sikkim has one of the fastest growing economies, therefore there is a need to ensure strengthening of link between rich biodiversity and people's livelihood. The strategic action plan for biodiversity and sustainable development goals are mutually supportive. Conserving biodiversity and mainstreaming biodiversity concerns in development planning plays an essential in achieving the SDGs.

SDG 1- No Poverty: End Poverty in all its forms everywhere

Ecosystem services provides source of livelihood among rural and forest-dwelling household

SDG 2- Zero Hunger: End hunger, achieve food security and improved nutrition; promote sustainable agriculture

The economy of Sikkim is linked with agriculture that serves as the source of livelihood and economic security of sizeable native population. It is estimated that over 80% of the rural population depends on agriculture and allied sectors for economic, food and nutritional security.

SDG 3- Good Health & Well Being: Ensure Healthy lives and promote well-being for all at all ages

Healthy ecosystem helps in eliminating certain types of air, water and soil pollution. Agriculture biodiversity contributes to increased sustainable production, and also traditional medicines derived from biodiversity caters to health care needs.

SDG 6- Clean Water & Sanitation: Ensure the availability and sustainable management of water and sanitation for all

Ecosystem help in maintaining water supply and quality. For example Sikkim is having vast number of wetlands and play a role in surface, subsurface and ground water storage.

SDG 8- Decent work & economic growth: Promote Sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

Biodiversity underpin many economic activities like agriculture, forestry, tourism and provide livelihood to many people. Biodiversity conservation will facilitated in optimum utilisation of resources and sustainability of economic development.

SDG 15- Life on Land: Protect, restore and promote sustainable use of terrestrial ecosystem, sustainably manage forests, combat desertification and halt and reverse land degradation and halt biodiversity loss

³ Ministry of Environment, Forests and Climate Change, Government of India, India State Forest Report 2015

The conservation, restoration and sustainable use of terrestrial ecosystem is essential for sustainable development. Targets under this goal include a call to integrate ecosystem and biodiversity values into state and local planning.

SDG 17- Partnership of Goals: strengthen the means of implementation and revitalize the global partnership for sustainable development.

The strategic plan for biodiversity provides opportunities for strengthening global partnership on science, technology and innovation, dissemination of environmentally sound technologies, and for building capacities for monitoring the progress of the 2030 Agenda.

ANNEXURE I

S.No	Stakeholder	Contact details
Government line departments		
1.	Forests, Environment & Wildlife Management Department, Sikkim	Shri. D. C. Nepal, CF (Wildlife) E-mail: Dcnepal1962@gmail.com Mob: 9434117397
2.	Food Security and Agriculture Development Department, Sikkim	Shri Khorlo Bhutia, Secretary E-mail: khorlo10@yahoo.com Mob: 9434410281
3.	Horticulture and Cash Crop Development Department, Sikkim	Mr. D.K Bhandari, Secretray E-mail: padamsubbacool@gmail.com Mob: 9434408936
4.	Department of Animal Husbandry, Livestock, Fisheries and Veterinary Services, Sikkim	Dr. Kumar Bhandari, Secretray E-mail: secy-ahvs@sikkim.gov.in Mobile: 9434384575 Tel (0): 03592-231876
5.	Department of Science and Technology and Climate Change, Sikkim	Dr. K. Jayakumar , IAS (Principal Secretary) E- mail: secydst@gmail.com
6.	Meteorological Center, Sikkim	Dr. Gopi Nath Raha, Director E-mail: itsraha@gmail.com Mob: 9434077618
7.	Human Resource Development Department, Sikkim	Shri G.P. Upadhyaya , IAS, Addl. C. S Mob: 9593788333, 03592 203050
8.	Rural Management and Development Department, Sikkim	Mr. C.S. Rao, Secretary E-mail: secretaryrmddsikkim@gmail.com Mob: 9434013001
9.	Energy and Power Department, Sikkim	Mr. K.B. Kunwar (PCE cum secretary)
10.	Building and Housing Department, Sikkim	Shri R.B. Thapa (PCE cum secretary) Phone: 9733368226, 202418
11.	State Institute of Rural Development and Panchayati Raj, Jorethang, Sikkim	Mr Bishal Rai Jorethang, Director Email: bishal1608@gmail.com Mob: 9735030703
12.	Tourism and Civil Aviation Department, Sikkim	Dr. J. Jayakumar (Add. C.S) Tel: 232218
Educational and Research Institutes		
1	District Institute of Education and Training, Gangtok, Sikkim	Ms Tshering, Principal Email: tathagathasthal@gmail.com Mob: 9083004612
2	G.B Pant National Institute of Himalayan Environment and Sustainable Development, Sikkim	Dr. Rajesh Joshi (Scientist In-Charge) E-mail: sikkimunit@gbpihed.nic.in Tel: (03592) 237328

3	National Research Center for Orchids, Sikkim	Dr. D.R Singh (Director) Email: director.nrco@icar.gov.in Tel: 03592-267031(O),
4	Indian Cardamom Research Institute (ICRI) RRU, Tadong	
5	Regional ayurvedic research institute	Dr S.K. Sahu, Scientist Email: drsahu79@gmail.com Mob: 7500799915
6	Sikkim Government B.ed College, Soreng	Smt. Sabita Subba (Principal cum Joint Director) Email: sabitanugo06@gmail.com Mob: 07407380898
7	Sikkim University	Prof Jyoti Prakash Tamang (Dean) Email: deanls@cus.ac.in Telephone 03592 - 232085 Prof Bhoj Acharya (Professor: Department of Zoology) Email: bkacharya@cus.ac.in Mob: 9475009134
NGOs		
1	Ecotourism and Conservation Society of Sikkim	R.P. Gurung (Director) Email: rpgecoss@gmail.com Mob: 9733088003
2	Khangchendzonga Conservation Committee, Sikkim	Miss Tshering Uden Bhutia (President) Email: kccsikkim1996@gmail.com kinzong@gmail.com Mob: 9733158268
3	The Mountain Institute Sikkim	Dr. Ghanshyam Sharma (Program Manager) Email: banstolag@yahoo.co.in Mob: 9800491599
4	Mutanchi Lom Aal Shezum, Dzongu, North Sikkim.	Mr. Ugen Palzor (Executive Director) Email: mlasngo@gmail.com Mob: 9679178961
5	WWF, Sikkim	Ms. Priya Shrestha, Team Leader Mobile: 09434153401 Email: pshrestha@wwfinida.net

Questionnaire for Survey

(For senior and middle level Forest Dept. Officials)

PROJECT: Secure Himalayas - Assessing capacities for biodiversity conservation and Framework Development in Sikkim



Indian Institute of Public Administration

BACKGROUND INFORMATION

Name	
Age	
Sex	Female <input type="checkbox"/> Male <input type="checkbox"/>
Designation	
Education level	Bachelors <input type="checkbox"/> Masters <input type="checkbox"/> PhD <input type="checkbox"/> <input type="checkbox"/> others
Experience (in years)	
Department (Sub-Division, if any)	
Contact Details	
email	
Mobile /Landline	
Complete address	

PART A: Fundamentals of Biodiversity

1. How do you think biodiversity is contributing to welfare of the people of Sikkim?

2. Suppose you have 100 points. Kindly distribute the points in order of importance to economy as per your discretion for the following parameters with respect to Sikkim (distribution should add to total 100 points).

Tourism	<hr/>
Industrial development	<hr/>
Biodiversity	<hr/>
Hydro-energy generation	<hr/>

3. Are you aware of any local biodiversity loss (in terms of flora/ fauna species and population)?

Yes ☐ No ☐

- a) What could be the possible threats to local biodiversity?

- b) Do you discuss these issues with your

Colleagues:	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
Family:	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
Friends:	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>

4. Can you name a few threatened animal and plant species in the levels as mentioned below, due accordance with IUCN list?

Regional:

National:

International:

5. Are there any alien species in Sikkim? Yes ☐ No ☐

a) If yes, can you name a few which you think are

Useful:

Neutral:

Problematic:

6. Kindly state the differences in role played by the following categories of protected areas in your opinion?

Biosphere reserve

National park

Wildlife sanctuaries

Sacred groves

Any other, Kindly mention

7. Are you satisfied with the extent of forest conservation in North District?

Yes

☐

No

☐

Kindly state what kind of problems/threats exist regarding forests and trees in the same?

PART B: Experiential sharing

8. In your memory what kind of changes you have observed in biodiversity of Sikkim?

9. Have you ever dealt with issues pertaining to Biodiversity in your professional work?

Yes

☐

No

☐

If yes, kindly describe such biodiversity related issues along with your decisions for the same.

10. What is your opinion about scope for improvement of biodiversity conservation in your departmental work programmes?

11. Is there any specific budget allocated for addressing biodiversity issues in relation to your department programmes? If yes, kindly specify.

12. Have you ever involved local people/stakeholders for promoting your department programme/s related to biodiversity? If yes, kindly mention the area and elaborate?

PART C: Current status

13. In your opinion which of the biodiversity programme have been very prominently taken up in the state? Kindly state the reason for success of any such initiatives, if any.

14. What is your opinion about the likely impact of climate change on biodiversity?

15. What are your views about the importance of agro-biodiversity for food security?

16. What are the important non timber forest products (NTFP) which are traditionally collected and used by the local people and what is their status over the years?

a) What suggestions you would give to for sustained collection and further processing of NTFP?

17. Are you aware about the national and international importance of biodiversity in Sikkim? Kindly give few examples.

18. Have you ever interacted with Sikkim State Biodiversity Board? If yes, what are your experience about Sikkim State Biodiversity Board and its contribution to Sikkim's biodiversity?

19. Are you aware of the term Genetically Modified Organisms (GMO)? What is your opinion about GMOs?

20. Which in your opinion are threatened ecosystems in Sikkim? Kindly tick following options (could be more than one depending on your opinion).

a) Fresh water ecosystem

b) Wetlands

c) Forest Ecosystem

d) Grassland

e) Cold desert ecosystem

f) Agricultural ecosystem

g) None of the above

PART D: Training exposure

21. Have you received any training/refresher course with relevance to biodiversity conservation in the last three years?

Yes ☐ No ☐

If Yes, Kindly fill following table,

Trainings/ Refresher course Attended	Duration	Organizer	Theme

22. Were you able to use the information shared in the training in your professional work?

Yes ☐ No ☐

If not, kindly state the limitations?

23. Kindly list the divisions and sections in that you would suggest for training in your respective department for biodiversity.

24. According to you what are the gaps in the capacity building programmes related to biodiversity or otherwise?

25. Any other comments.

(Signature)

ANNEXURE II B

Questionnaire for Survey

(For senior and middle level non Forest Dept. Officials)

PROJECT: Secure Himalayas - Assessing capacities for biodiversity conservation and Framework Development in Sikkim

BACKGROUND INFORMATION

Name	
Age	
Sex	Female <input type="checkbox"/> Male <input type="checkbox"/>
Designation	
Education level	Bachelors <input type="checkbox"/> Masters <input type="checkbox"/> PhD <input type="checkbox"/> <input type="checkbox"/> others
Experience (in years)	
Department (Sub-Division, if any)	
Contact Details	
email	
Mobile /Landline	
Complete address	

PART A: Fundamental of Biodiversity

26. How do you think biodiversity is contributing to welfare of the people of Sikkim?

27. Suppose you have 100 points. Kindly distribute the points in order of importance to economy as per your discretion for the following parameters with respect to Sikkim (distribution should add to total 100 points).

Tourism _____

Industrial development _____

Biodiversity _____

Hydro-energy generation _____

28. Are you aware of any local biodiversity loss (in terms of flora/ fauna species and population)?

Yes ☐ No ☐

b) What could be the possible threats to local biodiversity?

c) Do you discuss these issues with your

Colleagues: Yes ☐ No ☐

Family: Yes ☐ No ☐

Friends: Yes ☐ No ☐

29. Can you name threatened animal and plant species of your area?

30. Are there any alien species in Sikkim? Yes ☐ No ☐ Can't say ☐

b) If yes, can you name a few which you think are problematic.

31. Kindly state the number of following protected areas in Sikkim?

• Biosphere reserve ☐

• National park ☐

• Wildlife sanctuaries ☐

• Any other, Kindly mention _____

PART B: Experiential sharing

32. In your memory what kind of changes you have observed in biodiversity of Sikkim?

33. Have you ever dealt with issues pertaining to Biodiversity in your work?

Yes ☐ No ☐

If yes, kindly describe such biodiversity related issues along with your decisions for the same

34. What is your opinion about scope for improvement of biodiversity conservation in your departmental work programmes?

Is there any specific budget allocated for addressing biodiversity issues in relation to your department programmes? If yes, kindly specify.

35. Have you ever involved local people/stakeholders for promoting your department programme/s related to biodiversity? If yes, kindly mention the area and elaborate?

PART C: Current status in Sikkim

36. In your opinion which of the biodiversity programme have been very prominently taken up in the state? Kindly state the reason for success of any such initiatives, if any.

37. What is your opinion about the likely impact of climate change on biodiversity?

38. What are your views about the importance of agro-biodiversity for food security?

39. Are you aware of the term “feral species”? If yes, can you Kindly mention the important feral species in Sikkim and its impact (Kindly mention the area)?

(Note: Feral species are those that have been established from intentional or accidental release of domestic stock that results in self-sustaining population(s).)

40. What are legislations in Sikkim related to biodiversity issues?

41. Are you aware of the term Genetically Modified Organisms (GMO)? What is your opinion about GMOs?

42. Which in your opinion are threatened ecosystems in Sikkim? Kindly tick following options (could be more than one depending on your opinion).

- a) Fresh water ecosystem
- b) Wetland ecosystem
- c) Forest Ecosystem
- d) Grassland
- e) Cold desert ecosystem
- f) Agrarian ecosystem
- g) None of these

43. Are you aware about the national and international importance of biodiversity in Sikkim?
Kindly give few examples.

44. Have you ever interacted with Sikkim State Biodiversity Board? If yes, what are your experience about Sikkim State Biodiversity Board and its contribution to Sikkim's biodiversity?

PART D: Training exposure and need

45. Have you received any training/refresher course with relevance to biodiversity conservation in the last three years?

Yes ☐ No ☐

If Yes, Kindly fill following table,

Trainings/ Refresher course Attended	Duration	Organizer	Theme

46. Were you able to use the information shared in the training in your present role?

Yes ☐ No ☐

If not, kindly state the limitations?

47. Kindly list the divisions and sections in that you would suggest for training in your respective department for biodiversity.




48. According to you what are the gaps in the capacity building programmes related to biodiversity or otherwise?

49. Any other comments

Recommendations from the stakeholder's consultation workshop:

- Need to fill intellectual gap between senior and junior level officials, lack of refresher courses for mid-level officials
- Modules be based on grass-root level requirement, showcasing practical and region-specific information with quantitative figure where available; system centric modules; local perception to be reflected in the modules
- Lack of promotion and conservation for many local varieties; need to stimulate the functioning of various boards in the state for e.g. Spice Board
- Need for awareness related to micro-climate and micro-ecosystem; BMCs role as umbrella organization to be strengthened
- Increased awareness among various departments; need to increase synergy to tackle concrete-based infrastructure development in forest areas
- Need to device parameters for monitoring ecosystem health; gap in understanding of water and biodiversity
- Minimal 2 days of training session required

Registration List

Indian Institute of Public Administration, New Delhi

REGISTRATION

Pilot ToT workshop: Finalization of ToT modules to enhance capacities of key stakeholders in SECURE Himalayan Project Landscape

Date: 3rd March 2020

Venue: Hotel Delisse Abode, Gangtok

S. No	Name & Designation	Department/Organization	Phone No. & e-mail	Signature
1	V K SHARMA	IIPA	profvinod@gmail.com	VK
2	SEKHAR CHETTRI	SCENT/EDN. DEPTT	SC-Chettri@yahoo.in 9434865182	Se
3	Ishupinder Kaur Research officer	IIPA	ishupinder@gmail.com 9090669111	Ishu
4	Tshering Yangzum, H. R. Personnel	SSDMA	yangsom_tshering@hotmail.in 9647-781665	Tsh
5	P.M. Sharma, CE	Power Deptt	9434338564	PM
6	Koshi Kapil	Rural Development Department	8016275362 koshikapilindd@gmail.com	Kapil 3/3/2020
7	S.D. Sharma	Hatcha/Am	993245305 sdsharma489@gmail.com	Sharma

S. No	Name & Designation	Department/ Organisation	Phone no. & Email	Signature
8	J.B. BASNETT. Asstt. CE	Buildings Deptt. SPWD	jbbasnett@hotmail.com #9832547706	
09.	Chandra B. Manger Family, SRD = PR	SRD = PR Raj. Govt. y Chikm	chandra.b.manger@yahoo.com 97350 99595	
10	Naitan Pradhan U.S.	SSDMA Land Revenue & D.M.	naitanpradhan.s@gmail.com	
11.	Paridhi Jain	Project Associate UNDP	paridhi.jain@undp.org	
12	Ghanashyam Sharma	TMI India	banstolag@gmail.com	
13	TASHI DOMA ACUSHLA	DIET / EDUCATION	tdacushla@gmail.com 95983 93529	
14.	Dr. G.M. RAHA	IMD	itsraka@gmail.com 94340-27618	
15.	Pasang Lepcha	WWF, Sikkim, India	9800862562 PLEPCHA@WWFINDIA.NET	

S. No	Name & Designation	Department/ Organisation	Phone no. & Email	Signature
16.	Rajesh Chakraborty	SECURE - SPMV	rajesh.chakraborty@undp.org	
17.	Mr. DC NEPAL CF (WL), Model officer	Forest, Env & wildlife Mgmt Dept.	denepal1962@gmail.com	
18.	Sh. Bhuvan Pradhan Cef	Forest, Env. & wildlife Mgmt. Dept.	ccfhgsikkim@gmail.com	
19.	Dr. THINLAY N. KHUTIA	ARTIS	thinlay@vetsbeyond borders.org	
20	U Sam Lepcha	MLHS (RBS) Dzongkhats	mlhsngo@gmail.com 9679178961	

Training-cum-consultation Workshop: Finalization of ToT modules to enhance capacities of key stakeholders in SECURE Himalayan Project Landscape, Sikkim

Indian Institute of Public Administration (IIPA), New Delhi is implementing a project “Assessment of capacities and training needs of key stakeholders for long term effective biodiversity conservation, development & implementation of a capacity building framework to enhance capacities of key stakeholders in SECURE Himalayan Project Landscapes in selected districts of Sikkim” sponsored by UNDP. The project aimed at improving the capacities of local key stakeholders for biodiversity conservation in the state. As a part of project, a sharing workshop was organised in Gangtok on 3rd March 2020 for finalizing the training modules for biodiversity conservation involving key stakeholders i.e., representatives from Forest, Environment and Wildlife Management Department, Food Security Agriculture Development Department, Education Department and the like attended the Workshop.

Ms. Ishupinder Kaur, Research Officer, IIPA welcomed the dignitaries and participants at the workshop. The workshop was conducted under the chairmanship of Mr. Bhuvan Pardhan, CCF, Forest, Environment and Wildlife Management Department. Representatives from key departments i.e., Rural Management & Development Department, State Institute of Rural Development and Panchayati Raj, Horticulture Department, Forest, Environment & Wildlife Management Department, Sikkim State Disaster Management Authority, Land Revenue & Disaster Management Department, Building Department, Power Department, Education Department and IMD, Sikkim and NGO representatives attended the workshop.

Prof. Vinod K. Sharma, Project Investigator, IIPA and Vice-chairman SSDMA gave the opening remarks for project overview and expectations from the workshop. He briefly explains the project activities performed under the project by IIPA. Mr. Rajashri Chakraborty, State Project Officer, SECURE Himalaya, Sikkim provided all the participants about background information of SECURE Himalaya Project- Securing Livelihoods, conservation, sustainable use and restoration of high range Himalayan ecosystem. The project is being implemented in four states, namely, Himachal Pradesh, Jammu & Kashmir, Uttarakhand and Sikkim. In Sikkim it is meant for a specific landscapes i.e., Kanchenjunga-Upper Teesta Valley. The key focus areas of the project are protection of snow leopard and other endangered species and their habitats and also securing livelihoods of people in the region using landscape approach. IIPA has been entrusted with the assignment of training needs assessment, gap analysis and develop a strategy to incorporate a wide range of stakeholders and focus on bridging gaps at various levels. Prof. Sharma asked the participants to provide their valuable suggestions and comments regarding training modules for biodiversity conservation in the state.

Shri. D. C. Nepal, CCF (WL), Forest, Environment & Wildlife Management division explains regarding the activities undertaken in the Sikkim under SECURE Himalaya project. Sh. Bhuvan Pradhan, CCF, Forest, Environment and Wildlife Management division stated that training needs assessment is crucial and it is important to consider that there should not be any duplicity with the work already conducted in the state. After the inaugural session, Prof. Vinod K. Sharma gave a brief presentation regarding project objectives, methodology used and the outcomes derived so far. He also presented the outline of the training modules

prepared so far and sought suggestions from the participants. The main points emerged from the discussion at the workshop are listed below:

- Shri Bhuvan Pradhan remarked that there is a State Institute of Capacity Building in the state which should be involved in the training and capacity building programme.
- Participants asked for the clarification regarding capacity building indicators which were considered for developing the baseline monitoring scorecard. It was clarified, that the indicators have been taken from UNDP guidelines. It was also explained that there are a total 5 indicators with 15 sub-indicators. For each sub-indicator, scores were given from 0 to 3 for each of the 31 stakeholders and compiled to prepare the scorecard.
- Based on the stakeholder's score and earlier suggestions received from the state, three modules have been prepared: 1) General Module on Biodiversity Conservation 2) Module Agriculture and Biodiversity and 3) Module Sustainable Tourism. There was is has been agreed by the participants as well.
- UNDP representative suggested to draft the capacity assessment methodology in a way which is understandable by varied stakeholders. And based on the assessment, the module should be prepared considering the result of gap analysis and the target audience.
- It was also suggested to include specific information regarding Sikkim's biodiversity in the introductory part of the General module.
- Shri Ghanshyam Sharma, The Mountain Institute, Sikkim informed regarding reference resources available with the institute which may be helpful in r finalization of the modules.
- It was also mentioned that biodiversity conservation data and information already exist but there is a need to prepare the modules which are need based, crisp, understandable and applicable in the state. It is important to avoid duplicity in the content.
- It was agreed that role of rural development department and forest department is very important for implementation of biodiversity conservation measures.
- As the modules are being developed for varied stakeholders, it is suggested to include a crisp chart/table featuring what modules are required for which stakeholder based on training need assessment of the stakeholders.
- The short movies prepared on bumble-bee and snow-leopard were highly appreciated by the participants.
- At per the request of the participants he draft training modules were shared with the participants via e-mail dated 5th March 2020, for their seeking their comments/feedbacks.

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