Annual Report 2024-25

Ecotourism and Conservation Society of Sikkim
(ECOSS)

Contents

1. NOTE FROM THE CEO

The year 2024-25 was marked by the Sikkim Assembly elections along with the India's General Elections both of which were held in April 2024 and concluded with new state and central assemblies being sworn in June 2024. For ECOSS it also marked the end of the two major projects namely the JICA supported Sikkim Biodiversity and Forest Management Project (JICA SBFP) which officially concluded after an eleven and a half years period in March 2024 and the NABARD Springshed Based Watershed Management Project in 25-Namcheybong which was sanctioned in January 2020 (pre-project activities having commenced in 2018). The seven Community Organisers and Project Coordinator under the JICA SBFP project were paid their terminal dues this year. In the case of the NABARD Springshed Project, all project activities as mandated as per their sanction letter were concluded this year. ECOSS hired a researcher to conduct a one-month long independent field survey in the four project wards of the GPU to assess the impacts and success of the project. In his final report the researcher has concluded that as per people's perceptions it was majorly agreed that spring water flows have improved as a result of the project and that they have been benefitted in being able to carry out winter agricultural activities without the water difficulties faced by them before the project period. The spring water flows have also supported new livelihoods mainly fish farming which requires a constant flow of water at all times. The numerous Capacity Building Trainings for livelihoods conducted under the project and the supply of fruit saplings, broom grass and *nakima*, and the conversion of slopes into terraced fields have also benefitted the farmers and augmented their incomes.

ECOSS is officially recognized as an institutional member and nodal organization for the State Chapter of the Integrated Mountain Initiative a pan Himalayan platform established since 2011 with the mission to mainstream concerns of the Indian Himalayan Region (IHR) and its people in the development dialogue of India with a view to inform and influence policy at the national and state level. CEO ECOSS is also the founding member and current Governing Council Member of IMI. Amongst other activities IMI also executes projects on pertinent issues concerning the Indian Himalayan Region. This year IMI applied for and was awarded a project under the National Mission on Himalayan Studies (NMHS) headed by G.B. Pant National Institute of Himalayan Environment (NIHE) under the Ministry of Environment & Forests. The project titled "Agro-ecology, Climate Resilient Farming and Livelihood Enhancement in Border Villages of Indian Himalayan Region is for a period of Three years and is being conducted in three project sites of selected villages located in the border districts of Himachal Pradesh, Uttarakhand and Sikkim. In Sikkim the project site is Dzongu and CEO ECOSS is the Co-PI for the Sikkim component of the Project. Junior Research Fellows and a Senior Research Fellow and field assistants have been recruited and undergone trainings for the project which commenced in October 2024. Two quarters of the project have been completed in this financial year.

ECOSS is also a founding member of Zero Waste Himalaya, a pan Himalayan alliance that seeks to promote principles and practices of Zero Waste to address the growing challenge of plastic pollution in the IHR. Conceived in 2010 in Bir Himachal Pradesh, ZWH has a flagship event namely The Himalayan Cleanup (THC) conducted by volunteers from June to August every year across the Himalayan States, which includes a waste and Brand audit. THC was also conducted this year in Sikkim. ZWH is seeking to revamp and strengthen its organization for which it conducted two meetings in the Buddhapada Institute in Kalimpong this year in which ECOSS participated.

I have long expressed my desire to be relieved from my executive functions since 2019 and have continued to hold onto the post at the request of GB members till suitable alternate arrangements are made. Hence the year did not see major efforts on my part to identify and take up new projects. In the aftermath of the COVID -19 pandemic and the South Lonak Glacial Lake Outburst Flood of October 2023 plus the ongoing global wars, both military and economic and other climate change impacts, it is apparent that we have entered an era of multiple crises. It is hoped that the Governing Body would soon find a new Chief Executive and infuse ECOSS with young and energetic staff and bring in new projects that are relevant to tackle the challenging times we face.

I thank the Governing Body members for bestowing their faith and confidence on me and to all project staff for their tremendous zeal and hard work in making the two concluded projects a great success.

Rajendra P Gurung

2. NABARD SPRINGSHED BASED WATERSHED DEVELOPMENT PROJECT.

The concluding field activities of this project which commenced in 2018 with pre-project activities and was sanctioned in January 2020 finally came to an end this year. The three-year project was impacted strongly immediately after sanction due to the COVID-19 pandemic and was hence delayed by two years. This was the first such project sanctioned for Sikkim by NABARD under its Springshed Based Watershed Development Scheme under its Farm Development Programme that draws its concepts and model from the successful Dhaara Vikas Programme of the Rural Development Department of the Government of Sikkim. Four wards under 25 Namcheybong GPU, East District (now Pakyong District) namely Raigaon, Basilakha, Pricklakha and Naibutar were selected for the project. The project area of 645 HA with a treatable area of 62 HA comes under the Hailkhola watershed located along side Jhandi Daara of the Karthok Reserve Forest area. Out of a total of 25 springs in the area 5 springs were chosen for monitoring under the project. The selected area has good monsoon rainfall and is well served by several springs but was experiencing increasing water stress during winter due to rising water demands fueled by growing population and increased farming activities, drying of springs and uncontrolled tapping of sources. The project proposed to improve winter discharge (regeneration) of springs through the construction of staggered trenches in the recharge area, improve water storage and distribution infrastructure through repair and construction of water tanks and installation of improved pipeline distribution system, agro forestry development for watershed treatment and livelihood enhancement through training and capacity building in diversified livelihoods such as poultry, piggery, dairy, fishery, improved agricultural practices, ecotourism, beekeeping, handicrafts making etc. Improved water resource management of the enhanced water flows and water storage capacity was an area of major focus so as to enhance village water security and improve overall agriculture-based livelihoods. Gender development measures were also taken up that included sustainable menstrual hygiene and the introduction of Improvised Cooking Stoves. As mandated under the project guidelines and for the effective management of the project, the Hailkhola Springshed Project Management Committee was formed with elected members and registered as a society with the Sikkim Government. A separate joint bank account operated jointly by the Committee and ECOSS was also opened.

As per the approved and completed project activities, under Springhead Treatment- 2,650 staggered trenches were constructed in the recharge area in Karthok RF, along with afforestation activities that comprised of the plantation of 2,264 trees including fruit trees like peach plum and pear. Under Watershed Treatment 65,000 numbers of broom grass plants were distributed and planted along with 350 bamboo saplings and the construction of a bamboo nursery for raising of bamboo plants from seeds. Watershed Treatment also included conversion of sloping land into terraces to the tune of around 8,000 sq metres that are being used for vegetable cultivation, repair of 3 Nos. old water storage tanks, and the construction of 3 new water storage tanks of capacity 10,000 litres each., and rejuvenation of a dried-up pond in the recharge area. Under project component Women and Landless Development 14 different trainings were conducted that included training on Improved cooking stoves, sustainable menstrual hygiene, bouquet making, mushroom cultivation, cooks training for homestays. This was supplemented by the setting up of an SHG unit for the production of reusable sanitary napkins. Livelihood development comprised of 20 trainings on farm-based livelihoods such as beekeeping, pisci culture, poultry, piggery, dairy farming, composting, improved agricultural practices, homestay management and exposure visits to the ICAR farm, Kamarey Model farm and the farms of some successful farmers and to the Yakten Homestay village. Awareness meetings and capacity building trainings were held also for the members of the Springshed Committee along with elected Panchayat representatives in water resource management and planning. Activities under the NABARD Springshed Project for the year are given below:

2.1 State Half Yearly Review Meet of Springshed Projects under NABARD 2024-25

This review meeting of Springshed Projects being executed in Sikkim was held on the 28th June 2024 at NABARD Conference Hall Gangtok. ECOSS participated along with NGO Bhavishya Bharat, while NGO The Mountain Institute was absent. ECOSS scored a rating of 78.62% (Good) with 93.94 % utilization of funds.

1.2 Tailoring and Designing Training Namcheybong 6th July 2025

One day training on Tailoring and designing was conducted on the 6th of July 2024 for the SHG members of Raigaon, Basilakha and Pricklakha. There were 12 participants present for the training which was conducted by Ms. Sonam Choden Bhutia well known woman entrepreneur and the founder of Taste Bud - Sikkim Homemade Chocolates based in Gangtok. Taste Buds is an enterprise affiliated with NEDFi that provides organic homemade chocolates and caters to all sections of the population. Besides Taste Buds, Sonam also runs Norlha Boutique and Norlha corn husk handmade shops in Sikkim.

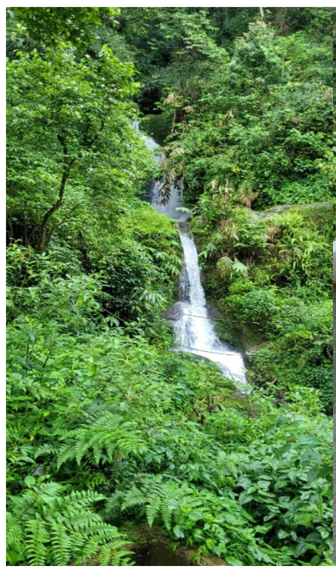
Ms. Sonam briefed the audience on how to make use of local products available to make finished cloth products, she also taught them how to design clothes using various techniques. She also informed the trainees on how to make use of Government schemes and funds to start their business. As the SHG members are already making reusable sanitary

napkins, this training was a helpful one for them to look into other ventures of cloth production like cloth bags, T-shirts, kurtis and others. This was the last pending training of the project as per the approved budget.


2.3 Field Inspection Visit by NABARD Officials on 3rd August 2024

A Field inspection of project activities and sites for the Third Year 1st phase of the project was conducted by NABARD officials on the 3rd of August 2024. Mr Subhashis Sarkar Asst. Manager and Mr Soumyaduti Dey Choudhury Consultant, attended from NABARD Gangtok office while Mr. Santosh Rai and other members of the Hailkhola Springshed Committee along with CEO ECOSS were also present. The officials inspected the recharge area in Karthok Reserve Forest where the staggered trenches are located. Also inspected were the newly constructed water storage tank in Pricklakha and the repaired water tank in Raigaon.

r places inspected were the banana plantation site at Pricklakha and the trout fishery unit in Raigaon. The NABARD team also visited the SHG sewing unit and interacted with the SHG Members and also inspected the minute's books of the Hailkhola Springshed Committee.



2.4 Independent Survey & Assessment of the Project:

During November to December 2024 ECOSS engaged an independent Researcher Dr Ujyol Rai (PhD in Vegetable Science, Uttar Banga Krishi Viswavidyala) to conduct a household cum project area field survey to assess the awareness and impacts of the project and in particular to assess the people's perception of spring flows before the project and post construction of recharge trenches carried out by the project as well as the impact of livelihood capacity building trainings and the distribution of fruit and other plants. A questionnaire survey was conducted by him with around 50 respondents.

Respondents of house hold survey.

Mr. Sanchaman Lepcha

Mrs. Sarita Rai

Mr. Dil Man Rai

Mr. Jasman Rai

Mr. Phipra Hang Subba

Mr. Suren Rai

Mr. Madan Rai

Mr. Bikash Rai

Mrs. Damayanta Sharma

Mr. Kishore Rai Panchayat President

Mr. Prashant Gurung Ward Panchayat Raigaon

Mr. Joseph Lepcha

Excerpt from Dr Ujyol Rai's Report -Concluding remarks

"According to the household survey and village level narratives, post project the discharge at auxiliary springs and the water flow in Heilkhola have largely improved, both during the rainy and in lean season. Through the report it can be proclaimed that the project had a promising outcome in the community which is extremely important as there are no alternative water sources. Apart from this, the project has succeeded in conveying to the village community the importance of water conservation and the judicious use of springs among its residents"

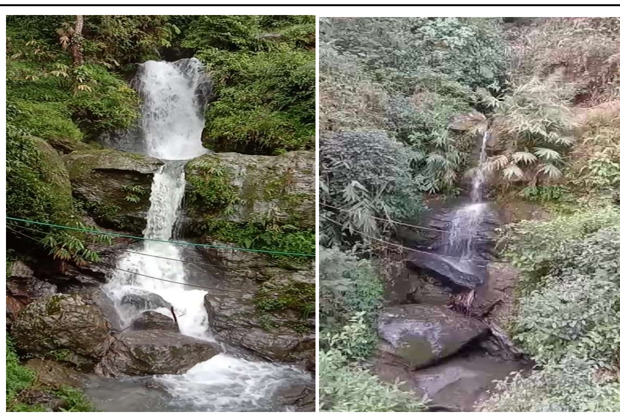
Some photographs taken during the final survey of the village.

Condition of pits at Jhandi Dara

Condition of Tank in Raigaom

Water discharge at Tuneybotay

Water discharge at kuapani



Water flow of Helkhola during rainy season (left) and during winter season (right)

Banana plantation at Pricklakha

3. IMI NMHS AGRO-ECOLOGY PROJECT:

ECOSS functions as the State Chapter of the Integrated Mountain Initiative (IMI) a civil society led network platform with the mission to mainstream concerns of the Indian Himalayan Region (IHR) and its people in the development dialogue of India. It functions as a platform to integrate the knowledge and experiences of multiple stakeholders working across the IHR, and uses this to inform and influence policy at the national and state level. (https://www.mountaininitiative.in/)

IMI as part of its functions also executes projects on the ground from time to time through diverse funding sources. This year IMI applied for and was awarded a Medium Grant under the National Mission of Himalayan Studies (NMHS) (2024-25) titled "Agro-ecology, Climate Resilient Farming and Livelihood Enhancement in Border Villages of Indian Himalayan Region" with a budget of Rs 2.13 Crores for a period of three years. Three projects sites, comprising border districts of three states, namely, Upper Satluj valley in Kinnaur District and Lower Spiti Valley (Lahaul and Spiti District) in Himachal Pradesh; Niti Valley or Upper Dhauli Valley in Chamoli and Darma and Byans Valleys in District Pithoragarh, and Dzongu Valley in Mangan (formerly North) District Sikkim were selected for the project. Mrs Binita Shah, Treasurer IMI, founder SARG India, an organic/Biodynamic farmer and Social Entreprenuer and Agriculture Development Professional is the Principal Investigator for the project and will also look at the Uttarakhand component while Dr Rajan Kotru lead strategist at Redefined Sustainable Thinking (REST) and senior international research and sustainable development expert is the Co Pi for Himachal Pradesh, while CEO ECOSS is the Co PI for the Sikkim component of the project. Dr Gopal Singh Rawat former Senior Professor and Dean Wildlife Institute of India and Professor Emeritus UCOST is the principal advisor for the Project.

The preparation of the bid documents took place in the last Financial Year and the final bid was submitted in September 2023 which was accepted by the Ministry and revised in February 2024. The final approval letter was issued in August 2024. ECOSS was engaged in the preparation of the bid documents especially for the Sikkim component.

3.1 Rationale of the Project:

The Himalayan region is characterized by a wide range of agro-climatic regions and farming systems. The region also harbours a multitude of cultures and ethnic groups who have inherited tremendous knowledge on the farming systems and have conserved numerous land races and crop varieties including millets, cereals, pseudo-cereals, and vegetable crops since centuries. The local communities have continuously selected, experimented and developed different cropping pattern which are time tested and suited to local climate. Many crop varieties, especially millets and pseudo-cereals have survived and withstood climatic variation and extreme climatic events. Apart from being a source of food, they provide fodder for cattle which thereby reduces the pressure on grazing fields and forests and helps to balance the delicate ecosystem in the Himalayan region. However, information on climate resilient crop varieties and ability of traditional crops to withstand climate variability have not been investigated and documented adequately. Information on these parameters would be crucial to make mountain agriculture climate resilient, economically gainful and nutritionally secure.

Perusal of the literature reveals that traditional farming system and cultivation of local crop varieties in many areas of Himalaya have declined during recent decades due to increasing extreme climate events, inadequate economic incentives and other mountain specificities. Millets can survive under marginal conditions of soil fertility and moisture as they have short growing season and all these characters make them unique. They can develop from planted seeds to mature, ready to harvest plants in as little as 65 days. Appearance of these crops are similar as grass crops whose seeds or straws are harvested for food or animal feed, and have been long valued for their versatility and nutritional properties. Decline in production of millets, pseudo-cereals and vegetable crops could result in loss of agro-biodiversity, traditional knowledge on farming practices and nutritional security in the region. Although, the local communities in many parts of Himalaya have adopted crop diversification as a major strategy to cope up with the climate hazards but in some regions of the Himalaya, the area of millet and other less economic crop cultivation has been gradually reduced in favour of cash crops. For example, in Lahaul and Spiti area of Himachal Pradesh the farmers have gone for cash crops such as green peas and neglected iron rich black pea. Green pea and other cash crops usually require high nutrient and water inputs which cannot be ensured in many areas. Moreover, land holding in many high-altitude villages is very small and growing season is short. The Ministry of Home Affairs, Government of India has recently initiated the Vibrant Village Programme (VVP) to support the local livelihoods and culture in high altitude areas in the IHR especially located closer to international borders which are usually difficult to access. These village clusters and inner valleys require synergy in terms of economic activities which are compatible with their tradition and culture. Keeping this aspect in mind, the Integrated Mountain Initiative (IMI) proposes to undertake an in-depth study on the state of agro-ecosystems in select areas of IHR; document climate resilient farming practices and develop strategies for ups caling good practices covering the states of Himachal Pradesh, Uttarakhand and Sikkim.

3.2 Beneficiaries of the Project.

The project is targeted to benefit around 250 farmers covering around 100 hectares each in each of the states. For Sikkim the crops to be covered are Paddy (especially Red rice paddy of Pentong), Buck wheat and millets. Target villages are Gnon-Sandong in Lower Dzongu and Lingthem and Pentong in Upper Dzongu.

3.3 Project Objectives*:*

- Document impacts of climate change on agro-ecology and cropping pattern. Document traditional knowledge & practices for the various endemic land races and agro landscape.
- Evolve & implement strategies for climate resilient agriculture and conservation of unique geographical indicators, SOP's, Develop Value chain for the specific crops.
- Develop value chain for the specific crops seed banks, GI, Quality Guarantee (certification)
- Establishment of Social Institutions for Forward linkages and sustained exit.

3.4 Target Deliverables

1. Baselines on the status of agro-ecology, Indigenous Knowledge Systems on traditional crops and impacts of climate change on agro-pastoral lifestyle.

2. Strategies to strengthen cultivation of traditional crops, and climate mitigation plan interventions.

3. Identification & development of minimum 2 value chains in each valley and also value addition to existing crops

4. Coverage of the beneficiaries in fixed numbers.

5. Development of Seed Banks.

6. Organic certification of targeted farmers

7. Establishment of CBOs minimum 1 in each valley

4. PROJECT ACTIVITIES UNDERTAKEN UNDER THE CURRENT FINANCIAL YEAR

4.1 Recruitment and Training of Project staff.

Immediately on receipt of the approval letter, posts of one Research Associate and three Senior/Junior Project Fellows were advertised and subsequent interviews were held by a panel in October 2024. Dr Suren Limbu (PhD in Horticulture Sikkim University) was selected as the Research Associate in overall charge of the researchers of the project, while Dr. Vandana Mehrwar (PhD Wild Life Science) was chosen as the SRF for Uttarakhand, Dr Mastram Negi (PhD Forestry) was chosen as SRF for Uttarakhand and Ms Auni Gurung MSc Environment Science was chosen as the JPF for Sikkim.

A training and Orientation programme was held for the new recruits in Dehra Doon IMI Office from 5th to 12th November. Topics covered during the T&O programme included:

"Agroecology in the Indian Himalayan Region: Key Issues, Strategies & Study Approach"

delivered by Dr Gopal Rawat, "Agro-ecological/Organic Farming & Indigenous Climate Resilient Crops for Mitigation & Adaptation to Climate Change", delivered by Dr. Vinod K. Bhatt, Chairman, IRD Foundation & Secretary, MVDA, "Climate Resilient Agriculture Studies from the Indian Himalayan Region: Niche Crops and Traditional Crops" taken by

Dr. Ghanashyam Sharma, The Mountain Institute India, Gangtok, Sikkim, "Participatory Rural Appraisal (PRA)" delivered by Dr. Rajan Kumar Kotru, Co-PI NMHS Project & Councilor IMI, "Sikkim on the Organic Trail", delivered by Speaker: Shri Rajendra Prasad Gurung, Co-PI NMHS Project &Councilor IMI, "Organic Certification" Speaker: Ms. Binita Shah, Principal Investigator, NMHS Project.

The training also included a field trip to village Jardhargaon, a traditional village comprising of 26 hamlets, renowned for its rich agricultural diversity and agro ecological practices in Chamba Block in Tehri Garhwal District of Uttarakhand, with focus on organic and climate resistance agriculture. The purpose of the visit was to meet Mr. Vijay Jardhari, an eminent personality in the village and a dedicated activist of the Beej Bachao Andolan (Save the Seeds Movement). Known for his extensive collection and conservation of indigenous crop varieties, Mr. Jardhari has curated over 300 varieties of paddy, 220 varieties of rajma (kidney beans), 30 varieties of wheat, 12 varieties of cowpea, 4 varieties of poatato, 3 varieties of colocasia, 5 varieties of tomato and 3 varieties of pea. He also introduced us to unique crops like Naurangi Dal, with seeds that range from 9 to 25 colors, Dakuli beans, and Sword beans.
The field visit was followed by interactive discussions with Dr Kotru and Mr. Gurung and a session on planning for the project with Dr Gopal Rawat.

Some glimpses of photos from the orientation program.

4.2 Introduction of JPF to Sikkim Officials and first Field trip and Baseline Survey to Dzongu project area

On return from her training, JPF Ms Auni Gurung was introduced by CEO ECOSS to key officials and Resource persons of Sikkim including Secretary Agriculture, Mr Jigme Bhutia, Principal Director Agriculture Mr Tshering Thendup Bhutia, Dr Rama Gopal Devdas Scientist in Charge ICAR Sikkim, Ms Pema Yangden Lepcha Researcher ATREE, Mr Tshering Gyatso Lepcha- “Millet Man” of Sikkim, Dr Laxuman Sharma Registrar Sikkim University, Dept of Horticulture. She was also mentored by Dr Ghanashyam Sharma on agro ecology and on practical tips for research. Subsequently after planning and preparation, Auni undertook a weeklong field trip to Dzongu project area in mid December covering the villages of Lum, Ngon Sangdong, Bringbong, Hee Gyathang, Barfok, Lingdong, Lingthem and finally Sakyong Pentong. The trip was an initial baseline survey to meet local stakeholder farmers and officials and assess different villages for their potential of selection for the project. This included survey of crops and fields and ascertaining issues and challenges faced by farmers. On return there was a debriefing meeting with Auni along with Mr Rai member IMI and Gov Body ECOSS. Seeds collected by Auni were examined and discussed for potential inclusion in the project. SRFs in other project sites conducted similar baseline field studies and compiled their findings into a combined report.

4.3 PRA Field Work in Lingthem

Participatory Rural Appraisal (PRA) is a method used to systematically gather information on local problems, needs, and potential through the active involvement of community members, facilitating informed and inclusive decision-making for the effective planning and implementation of projects, policies, or schemes. Subsequent to the initial baseline rapid survey a more detailed questionnaire was prepared by the researchers and vetted by the Advisor and PIs and Co PIs.PRA activities were conducted at five different sites: Rewalsar (Himachal Pradesh), Birahi (Uttarakhand), and Lingthem, Hee-Gyathang, and Pentong (Sikkim). Each PRA session involved active participation from local residents, community leaders, and facilitators, utilizing tools such as social mapping, seasonal calendars, and problem-ranking to gather baseline data and insights for strategic planning and project interventions. Basic village data, including demographic profiles and land use statistics, were sourced from various government offices, such as the Block Development Officer, Panchayat Offices, Chief Development Officer, District Magistrate, and Krishi Vigyan Kendras (KVKs) of the respective states. In Sikkim a PRA was conducted in the project area by RA and JPF in mid-January 2025.

The project focuses on developing value chains for selected crops. For Sikkim the focus is on Red Paddy and buckwheat. Unlike other project sites where snow cover prevents agricultural practices being carried out in winter, in Dzongu agricultural activities are carried out throughout the year.

A farmers' meeting was successfully conducted at Linghthem Village, Dzongu, North Sikkim. This meeting brought together farmers from three villages: Lingthem, Lingdem, and Lyangbar. The aim of the meeting was to engage the local farming community in discussions related to agro-ecological practices and climate resilience. Prior to the farmers' meeting, the research team conducted a transect walk in the villages from 14-16th January 2025 to establish rapport with the farmers and familiarize them with the project. During this walk, the farmers were informed about the purpose of the village visit and efforts were made to encourage their participation in the upcoming meeting. The meeting was scheduled for 17.01.2025 based on the convenience of the farmers with special efforts made to encourage elderly farmers to attend. During the transect walk, the team observed the availability of key resources such as forest areas, water sources, government infrastructure, land use patterns, and social structures within the villages.

During the meeting, Participatory Rural Appraisal (PRA) tools were exercised to facilitate active participation and gather valuable insights from the farmers. Local representatives, including the Zilla Panchayat, Panchayat President, and a ward Panchayat member, attended the meeting along with farmers from various age groups.

The objectives of the PRA session were to:

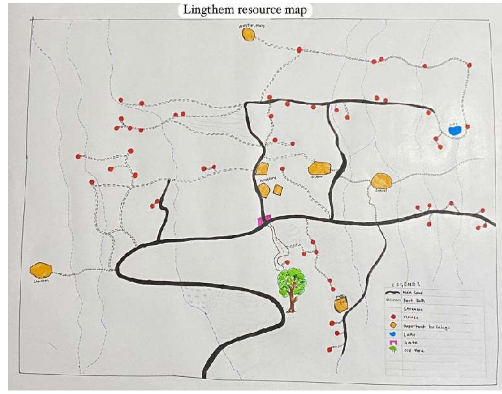
1. Understand the agricultural practices followed by farmers in the villages, with a focus on traditional and sustainable methods.

2. Assess the availability of local resources including land, water, and agricultural inputs, and how these resources are utilized in the farming process.

3. Gain a deeper understanding of the challenges faced by farmers, such as climate change impacts, pest management, and access to markets.

4. Explore the various government programs and interventions as well as support from non-governmental organizations that are currently available to assist farmers in the villages.

Some of the outputs from the PRA were i) Preparation of Village Resources Map ii) Demographic profiles of the villages iii) Observations made during the Transect walk in terms of various parameters such as soil, forest, water resources, agro forestry, crops, topography, government and religious structures, social status, problems and scope for enhancing agro ecology based livelihoods through improved practices, value addition and marketing. iv) Institutional ranking v) Wealth Ranking and vi) Problem Ranking. The interactions also resulted in a general overview of the villages covered, along with specific focus of the current situation with regard to Agriculture, Livestock, Forest, Marketing and Interventions by Central/State governments and other agencies through various schemes in the villages. The PRA showed that the three villages, whose farmers were present during the exercise, have considerable potential for the effective implementation of climate-resilient farming practices. Local farmers have demonstrated a keen interest in adopting agro-ecological practices. However, the success of these initiatives depends on addressing key factors such as marketing challenges, and conflicts with wildlife.



4.4 PRA in Hee-Gyathang

Subsequent to the farmers meeting in Lingthem a formal farmers' meeting was convened at Hee-Gyathang, Dzongu, North Sikkim, in order to conduct an in-depth assessment of prevailing agricultural practices, traditional skills, and sustainability measures. The meeting also sought to evaluate the availability of local resources and the challenges faced by farmers, including climate change, pest management, and market accessibility. Additionally, the session deliberated on government schemes, NGO interventions, and the role of the Biodiversity Management Committee (BMC) of Hee-Gyathang in enhancing agricultural productivity. A transect walk was carried out from 2nd to 4th February 2025 to analyse the landscape across various parameters such as soil quality, forest cover, water resources, agro forestry systems, crops, and topographical characteristics. This systematic field study provided a comprehensive understanding of the challenges and potential for sustainable farming in the area. On 5th February 2025, the principal meeting took place, in Gnon Sangdung under Hee Gyathang GPU, utilizing Participatory Rural Appraisal (PRA) methodologies to engage with local farmers and identify their primary concerns. The event was conducted in collaboration with the Panchayat of Hee-Gyathang and the Agriculture Department of Mangan. As part of the initiative, the department facilitated the distribution of agricultural plastics and conducted training sessions on vermin composting techniques.

The outputs from the Hee Gyathang farmers meeting were analyzed under similar topics as the previous PRA. The discussions highlighted the need for climate-resilient practices, improved market access, and the preservation of traditional knowledge alongside modern interventions. Recommendations included strengthening climate resilient farming, enhance irrigation infrastructure, improve pest and disease management, support marketing access and value addition, revive indigenous crops, engage youth in agriculture, leverage government schemes and promote sustainable livelihood alternatives such as ecotourism and homestays.

An interesting finding during the farmer's meet was the identification of a notable community leader Mr. Chewang Lepcha as a potential candidate for a seed bank. Mr Chewang is a passionate seed collector who runs a traditional seed bank in a style known as 'Batar'. In this unique system, when someone borrows 1 kg of seed, they are required to return 2 kg, effectively ensuring a 100% profit for the seed bank. Mr. Lepcha has a collection of local millet varieties, which include *Kundak, Kudo, Navu, Mong, Tumchi Mong, Mongprak, Mongkup, Kunchung-Kung*, and *Kalin* (these are local names for Finger millet, Foxtail millet, Kodo millet, and so on). He also keeps varieties of local maize, and paddy—locally named *TokmarDzo* (Red Rice), *DzoNok* (Black Rice), and several varieties of pulses such as lentils (Lens culinary) and peas (Pisum sativum). Some photos of seeds from his seed bank are given below:

These crops, with their rich biodiversity, are at the heart of the local food system and represent the unique agro-ecological heritage of the region. The community is eager to introduce modern agriculture techniques and seeds, especially influenced by modern agricultural trends and Government interventions. However it is crucial to raise awareness about the potential threats of introducing new crop varieties, as well as the risk of losing local crops and traditional agricultural knowledge

4.5 PRA at Pentong Village, Upper Dzongu

A third Participatory Rural Appraisal (PRA) was conducted in Pentong village in Upper Dzongu, on the 04th and 5th March 2025 with the same aims and objectives as the previous two PRAs. With these three PRAs held at differing altitudes and locations a fairly good cross section of information and understanding of the terrain and agro ecology of the Dzongu valley region was obtained. Aside from the JPF Ms Auni Gurung, Project Advisor Dr Gopal Singh Rawat and CoPIMr Rajendra P Gurung also participated in the exercise.

Prior to reaching Pentong village an IMI Team comprising of Dr Rawat, CEO Mr Gurung, Ms Auni and Mr P.D. Rai Member Governing Body ECOSS cum Founding Member and former President IMI, Mr Sushil Ramola Former President IMI and Mrs Ramola Member IMI entered Dzongu from Phodong on the 2nd March 2025.

The team travelled from Lower Dzongu upto Lingthem. Enroute the team stopped at the recently opened "Sungsa Lee" (House of Knowledge) Lepcha Museum in Gnon Sangdong a local effort to showcase the rich heritage of the Lepcha people by serving as a repository of traditional Lepcha culture, history and knowledge. This initiative is expected to become a vital part of the local heritage conservation and storytelling traditions.

The next stop by the team was in Hee Gyathang where the members met and interacted with Mr Ugen Palzor Lepcha President of local NGO Mutanchi Lom Aal Shezum and apprised him about the project and also discussed convergence with projects being executed by MLAS. The team also stopped at the TungkyoungDho Lake Biodiversity Heritage site at Hee Gyathang, preserving the rare fish species known as Deng-Gnu-Leek. The team halted overnight for two nights in Lingthem at a local homestay.

On the 3rd and morning of 4th March, village walks were conducted in Lingthem with interactions with farmers and other community members. Dr Rawat, Mr Gurung and Auni also visited the Gram Prashasan Kendra at 17 Lingthem-Lingdem GPU and interacted with the Panchayat representatives , apprising them about the project and also getting their assurances about support for the project. In the afternoon of the 4th March the NMHS team of Dr. Rawat, Mr R.P. Gurung and Auni Gurung travelled to remote Pentong village.






On March 4, 2025, on arrival at Pentong Village, the principal meeting was held using Participatory Rural Appraisal (PRA) methodologies to actively engage with local farmers and identify their primary concerns. The event was conducted in collaboration with Mr. Palden Lepcha, the Panchayat of Pentong, and Mr. Yandup Lepcha, a retired headmaster and a highly respected village elder cum farmer-conservationist who also operates a seed bank. Present were farmers of the village comprising of just 34 households with a population of 68 persons alongside the farmers of Pentong.

4.6Background.

Pentong, a designated Gram Panchayat Unit (GPU) in Dzongu, North Sikkim, is predominantly inhabited by the indigenous Lepcha community. Along with Sakyong, Pentong is one of the remotest villages of Sikkim. Pentong holds deep cultural and spiritual significance for its residents. The name "Pentong" originates from the words “Pun” (brother and sister) and “Tong” (same clan), reflecting the strong kinship ties among its inhabitants. The villagers belong to the Timbuchu Clan, which traces its origins to sacred natural landmarks, including mountains, lakes, and caves. These sites play a vital role in their spiritual and ancestral traditions. Clan members frequently visit these locations for prayers, rituals, and festivals, while Lepcha shamans (Bongthings and Mun) conduct ceremonies to honor the spirits and seek blessings.

According to oral history, Pentong was once a lake that eventually burst, forming the land where the Timbuchu Clan later established their settlements. The community continues to uphold a traditional way of life, deeply rooted in prayers, rituals, and a spiritual connection with nature. They believe in the presence of spirits residing in ancient trees, rocks, hills, mountains, and streams. Situated at an elevation of approximately 2,000–2,800 meters, Pentong remains a testament to the harmonious relationship between the Lepcha people and their natural environment.

The local economy primarily depends on agricultural practices, livestock rearing, and homestays. The main crops cultivated in the region include paddy (Oryza sativa), maize (Zea mays), millet (Panicum miliaceum), buckwheat (Fagopyrum esculentum), and various vegetables. This village practices a very unique dry paddy farming in their sloppy land rather than terracing for Red rice, Black rice, along with perilla (Perilla frutescens) and buckwheat(Fagopyrum esculentum). While they do three other types of paddy (Oryza sativa) on the terrace. However, the village is a perfect example of community farming without any monetary influence and the existence of a barter system. Villagers believe the seeds for these crops originated from Mayallyang "heaven," and the clan traces its roots to the north. Birds play a significant role in traditional farming, serving as natural indicators that guide agricultural activities from sowing different vegetables to harvesting them. Certain flowers serve as natural indicators for agricultural timing. For instance, Rhododendron (Rhododendron arboreum) 'Guras' and (Bergenia ligulata) 'Phakanbed' flowers signal the appropriate time for sowing buckwheat (Fagopyrum esculentum). Similarly, the blooming of Walnut (Juglans regia) flowers marks the ideal period for paddy (Oryza sativa) cultivation.

A notable community leader, Mr. Yandup Lepcha, (phot left above) a dedicated and hardworking retired headmaster, is deeply passionate about seed conservation. As an avid seed collector, he has amassed a diverse collection of traditional seeds in his home, driven by his commitment to preserving indigenous varieties and safeguarding the community's agricultural heritage. His knowledge and influence make him a key figure for any village-related support, and his home serves as an ideal location to establish a small yet efficient community seed bank. Additionally, his extensive understanding of local history, folklore, and environmental changes over the years makes him an invaluable resource for insights into the village's past and its evolving landscape.

4.7 Issues and Challenges

One of the most severe challenges in Pentong is the poor transportation system, which significantly limits access to markets. This lack of market connectivity discourages farmers from continuing agriculture, as they struggle to sell their produce. Additionally, the poor communication network has resulted in the isolation of the village from basic infrastructural development. The out-migration of youth in pursuit of better economic opportunities has further led to a declining workforce, exacerbating labour shortages in both agricultural and community activities. Moreover, the absence of a well-structured ecosystem or supportive community framework has failed to provide sufficient incentives for farmers to sustain agricultural practices.

During the PRA meeting, villagers also highlighted major challenges in marketing their agricultural produce, particularly peas (Pisum sativum), Dalley (Capsicum annum var. cirasiformae), and potatoes (Solanum tuberosum), which struggle to reach profitable markets due to poor infrastructure and limited market access. Furthermore, limited knowledge of organic pest control methods has made crops more vulnerable to pest infestations, further reducing productivity. As a result, many are compelled to leave the rugged terrain of the village in search of a more comfortable and economically viable life in urban areas.

To address these issues, it is crucial to create a sustained value chain for agricultural produce by involving local youth in agribusiness initiatives. A convergence programmes with concerned stakeholders should be developed, while simultaneously highlighting the poor state of infrastructural development through articles and advocacy. Additionally, promoting the cultivation of local crops with a natural resilience to biotic and abiotic stresses can help strengthen the agricultural system and improve the community's resilience.

4.8 Recommendations.

A brainstorming was done for collective suggestions and advice after the field visit. Some of the recommendations emerging from the PRA were as follows:

- Speedy completion of motor able road now under construction for past two years.
- Strengthen Climate-Resilient Farming: Promote soil conservation, crop diversification, and agro forestry.
- Improve Irrigation Infrastructure: Rainwater harvesting and micro-irrigation systems.
- Pest & Disease Management: Training on organic pest control and disease management.
- Market Access & Value Addition: Establish farmer cooperatives, processing units for cardamom and ginger.
- Revive Indigenous Crops: Support seed banks and promote traditional crop varieties.
- Engage Youth in Agriculture: Introduce agripreneurship programs.
- Leverage Government Schemes: Increase awareness of organic farming incentives and rural employment programs.
- Promote Sustainable Livelihoods: Develop eco-tourism and homestay facilities.
- Value Addition: Value addition by processing perishable crops like Dalley khorsani into 'Dalley flakes', spinach into 'Gundruk' etc. and packaging of red rice paddy and buck wheat flour
- Develop a Biodiversity Management Register: Document and monitor local biodiversity, including plant and animal species, to inform conservation strategies and sustainable agricultural practices.

- Utilize Fallow Land for Experimental Fields: Transform unused or fallow lands into experimental plots to test innovative farming techniques, crop varieties, or sustainable practices, thereby maximizing land use and productivity.
- Study Phonology: Observe and record the timing of biological events, such as flowering or migration, to optimize planting schedules and pest management, enhancing crop yields and ecosystem health.
- Collaborate with ICAR and Agricultural Departments: Engage with institutions like the Indian Council of Agricultural Research (ICAR) and local agricultural departments to access research, resources, and support for implementing advanced agricultural techniques.
- Produce Bio-Pesticides Using Indigenous Plants: Develop eco-friendly pesticides from local plants such as Uniu and Teteypati to manage pests sustainably, reducing reliance on chemical pesticides and preserving environmental health.
- Facilitate obtaining of organic certification for individual farmers.

Left: Clearing of bush and forest cover for burning and traditional dry land sowing of red paddy rice.

5. ZERO WASTE HIMALAYA ACTIVITIES.

ECOSS is a founding member of Zero Waste Himalaya (ZWH), a pan-Himalayan platform advocating Zero Waste Principles and practices and in particular addressing the issue of plastic pollution in the mountains of the Indian Himalayan Region. One of the flagship annual events of ZWH is The Himalayan Cleanup (THC) which is held in the months of May-June in which volunteer organisations and individuals across the Himalayan states come together to conduct waste cleanups in selected places with the theme- Reflect-Switch-Demand. The waste is subjected to audits to determine the type and quantity of waste and also subjected to a brand audit to determine the 10 top companies whose products are polluting the mountains.

The Himalayan Cleanup 2024 had the participation of over 15000 volunteers across 9 mountain states, UT sand districts who cleaned up over 350 sites. The waste and brand audit data comes from 151 sites cleaned up across 9 mountain states. Sikkim had the highest numbers of cleanup sites as THC was officially taken up by the Swachh Bharat Mission (Grameen), Rural Development Department. The Education Department also issued a notification for all schools to participate in the campaign, which brought in many more participants. Thus, the highest number of cleanups and waste collected was from Sikkim. Zero Waste Himalaya, WWF India, Green Circle and Friends of Chongey also undertook cleanups in various locations. Important sites that were cleaned up were Ridge Park, Hurhurey Dara in Gangtok, Seven Sister's Waterfall, Chongay area, etc. within the premises and neighborhood of many schools.

5.1 Chongey Sensitization Meeting.

CEO ECOSS along with Ms. Priyadarshinee Shrestha of ZWH participated in an sensitization meeting on waste in Chongey, Gangtok on the 26th of May 2024 on the invitation of the Panchayat President and the President of the local NGO Friends of Chongey of which Mrs Usha Lachungpa former Senior Researcher Forest department and an active conservationist and Zero Waste Supporter is a member. Round fifty people participated in the meeting including representatives of local people, SHGs, hoteliers, shopkeepers, taxi drivers, school students, Gompa Committee etc. The people were sensitized about the problems and issues concerning plastic waste, the dangers of micro plastic pollution and health impacts of plastic waste especially single use plastic, the burning of plastic, as well as the unhealthy foods that came along with plastic packaging. They were provided mindful solutions to tackle the problem at the local level such as behavioral change, reduction in plastic use, avoiding high sugar processed foods, use of alternative packaging and local ethnic foods, and demanding changes from the administration in waste management.

5.2 Zero Waste Himalaya Organisational Meetings Buddha Padha Kalimpong

Zero Waste Himalaya was conceived in a meeting held at the Deer Park Institute in Bir, Himachal Pradesh from 5 to 8 August 2010, where in members from 24 organizations from 7 countries participated. The organization made some headway in the years following but subsequently the momentum could not be sustained and as a result the Sikkim-Himalayan ZWH chapter took up the mantle and organized events and activities in the local region and championed the cause of Zero Waste with the help of organisations like WWF, DLR Prerna, ECOSS and KCC. There was training and sensitization of youth from local colleges, to be Zero Waste Volunteers, holding of events such as Plastic Bag Free Day. Plastic Freedom Challenge, Zero Waste Himalaya Day on the 8th August, holding of street plays and film making competitions besides advocacy for SUP and PET bottle bans with the State and local governments. With the successful launching of The Himalayan Cleanup in 2018 and its subsequent continuation even during COVID-19 days, the movement once again took up a pan Himalayan character. It was thus felt that ZWH as an organization needed to be re-organized and revitalized to have a truly pan Himalayan and inclusive character. With this in mind two organizational meetings of Zero Waste Himalaya were held.

The first meeting was held at the Buddha Pada Institute Kalimpong on the 29th and 30th of April 2024 in which Mr Prashant Varma of Deer Park Institute and Ven Ngawang Tulku Administrator of Buddha Pada Institute Kalimpong, Priya Shrestha, and eight others from WWF, KCC, Echo stream, DLR Prerna, and ECOSS participated. The meeting included reflection sessions, SWOT analysis for ZWH, deliberations about the guiding principles of ZWH and listing out key action points on the way forward. The meeting was preliminary and probing in nature and it was decided that there would be an attempt to reach out to individuals and organisations who had been part of the ZWH movement since inception and who had also participated in the Himalayan Cleanup and bring them together for a more in depth meeting and discussions for charting out a process for an appropriate and revamped organizational structure for ZWH.

The second ZWH Organizational meeting took place in Buddhapada Institute Kalimpong again on 7th to 8th October 2024. This meeting was held with the support of Global Alliance Against Incinerator Alternatives (GAIA) Asia Pacific Chapter of which ZWH is a member. GAIA's mission is to catalyze a global shift towards environmental justice by strengthening grassroots social movements that advance solutions to waste and pollution. GAIA envisions a just, zero waste world built on respect for ecological limits and community rights, where people are free from the burden of toxic pollution, and resources are sustainably conserved, not burned or dumped. The meeting had the participation of the representatives from eighteen organisations, including Sikkim, Darjeeling, Arunachal Pradesh, Himachal Pradesh, Uttarakhand, Leh Ladakh, Bhutan and the Rural development Dept Sikkim. CEO ECOSS represented for ECOSS, IMI and ZWH. GAIA was represented by Mr Froilan Grate Regional Coordinator for Asia and South Pacific and Mr Shibu Nair Regional Organics Coordinator.

At the outset CEO ECOSS traced the history of the ZWH movement since its inception in Bir in 2010 to the present moment. He had undergone Zero Waste Resource Persons training under Thanal NGO in Trivandrum from 6-10 Aug 2012 along with two current Secretaries of the Govt of Sikkim. He elaborated on the Sikkim interventions in waste management including the banning of plastic carry bags in 1998, the introduction of improved solid waste collection and disposal infrastructure under the AUSAID GWSS Project in which ECOSS participated, the Nirmal Bharat and Swacha Bharat Abhiyan and the Swacha Bharat Missions Urban and rural in which ECOSS participated for different surveys. Mr Roshan Rai of DLR Prerna spoke on the outcomes of the previous Buddha Pad meeting. There was a deep dive into the Himalayan Waste Crisis and The Himalayan Cleanups. Mr Froilan Grate spoke of the Global Waste Crisis. Deliberations dwelled on developing a shared vision and principles and an institutional framework for ZWH with shared examples from the GAIA and Break Free From Plastic structures. There were discussions also on formalizing and expanding the membership of ZWH. There was sharing about GAIAs Zero Waste Cities and Organics work and inputs from the work of Waste Warriors (HP &UK), Darjeeling Municipality and Swacha Bharat Mission Sikkim. The participants finally worked on developing a shared vision and a five year road map for ZWH with group discussions on strategic objectives, a communication plan and resource mobilization for ZWH and finally the way forward.

Workshop deliberates ways and means to strengthen Zero Waste Himalaya initiative

SUMMIT REPORT
GANGTOK, 08 OCT:

Eighteen organisations, deeply concerned about the Himalayan waste crisis, met at Buddha Pada in Kalimpong as part of the Zero Waste Himalaya platform with the objective to strengthen and build the zero waste movement in the Himalaya. The workshop was supported by GAIA Asia Pacific, an organisation working with the objective to move away from the current linear and extractive economy towards a circular system that supports people's right to a safe and healthy environment.

Deliberations over the two days saw participants discuss the challenges of managing waste in mountain states, a press release informs.

Findings of The Himalayan Cleanup campaign were shared, highlighting the discovery that 70% of the plastic collected was non-recyclable with no solutions and no market value. The food and waste intersection is stark and frightening as more than 80% of the plastic comes from single use food and beverage plastic packaging, of which over 80% is non-recyclable.

The Himalayan waste crisis was understood to be a production issue and the need for systemic changes as well as individual lifestyle changes was highlighted.

The organisations taking part in the workshop were Waste Warriors (UK/HP), Little Green World (Ladakh), AMYAA (Arunachal Pradesh) Youth NET (Nagaland), Sambhavna, Deer Park Institute (Himachal Pradesh), Green Circle, WWF India, ECOSS, KCC (Sikkim), TIEEDI, Anugyalaya, WWF India, DLR Prerna (Darjeeling), Buddha Pada, SaveTheHills (Kalimpong) Rural Development Department (Sikkim), Darjeeling Youth Magazine, Integrated Mountain Initiative and Samdrup Jongkhar Initiative (Bhutan).

The workshop had the presence of the Regional Coordinator of GAIA Asia Pacific - Froilan Grate, who provided insights into the global waste crisis and the work of GAIA to address the issue. He shed light on the crisis of narratives that blamed Asian countries for the plastic problem when the source of the plastics were in developed nations. He also highlighted the link between the waste crisis and the climate crisis, mentioning that 70% of global greenhouse gas emissions are embedded in the lifecycle of all products.

All organisations called for the mountains to be placed in the centre with policies, practices and resource allocation that are mountain sensitive and acknowledge the sacredness, fragility and socio-ecological importance of the Himalaya.

Zero waste principles and practices were discussed as real solutions that systematically solve the problem while providing livelihoods. Ensuring no biodegradables reach the landfill through composting, biomethanation and animal feed are equally climate change mitigation actions. The house was unanimous in calling for producer responsibility for the plastic waste that is strewn across the Himalaya especially with the insights of 6 years of the Himalayan Cleanup waste and brand audit data that consistently shows more than 90% waste cleaned is plastic waste.

The workshop ended with a vision and strategy for the Zero Waste Himalaya platform for the next 5 years to foreground the issue of waste in the Himalaya as a crisis and needed special dispensation for redress.

6. PARTICIPATION IN GAIA'S ORGANICS CONFERENCE

CEO ECOSS also participated in the GAIA'S First Asia Pacific Congress on Organic waste and Climate Change held in Bangalore from 25th to 28th September 2024 wherepractitioners of zero waste from governments and civil society across Asia Pacific gathered to understand the scope of organics for climate action; to shape a shared strategy; to shape a shared action plan and recommendations for local, national and international levels.Topics covered included

- Organics, Methane and Climate Change and NDCs
- Launch of Environmental Justice and Principles Framework
- Landfills, Methane and Solutions
- Food Loss and Food Waste, Agro ecology, Urban farming, Food security
- Technology
- Just Transition, Environmental Justice Principles
- Policies and Legal Frameworks
- Governance models
- Finance

In addition, there was an Expo with exhibition of successful models of organics management by civil society organizations and local governments across the region and a trade fair where technology vendors, service providers, and businesses engaged in organics management; organic products, alternate products and food products participated. A guided tour to different models of organic waste management and urban gardening in and around the city of Bengaluru and Mysore was also conducted for city officials and other delegates from outside India.