Socio-cultural and economic valuation of ecosystem services in Darjeeling-Sikkim Himalaya

Nampareng, Tashiding -- Aditya Pradhan

The local communities also listed incidents of human-wildlife conflict as the most important ecosystem disservice, as this leads to crop and livestock depredation, consequently having a severe impact on rural livelihoods.

Preliminary results from economic valuation of ecosystem services using choice experiments also suggest that the local communities expressed higher willingness to pay for regulating services which is represented by freshwater regulation in the current study. Thus both the results of socio-cultural and economic valuation of ecosystem services is showing a tendency to support the fact that provisioning and regulating freshwater were highly valued. Surveys in more sites will give us clearer insights in the near future.

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The Truth About Swidden

Swidden (also referred to as shifting cultivation) is a form of rotational forest agriculture that has been practiced in tropical highlands for centuries. While swidden has been replaced by other land-use practices in many places, it is still practised in parts of South and Central America, Asia and Africa. Swidden farmers have deep cultural linkages with this practice that elevates it from a mere livelihood option to a core activity that forms an important part of their identity.

Swidden systems have traditionally been regulated by village level customary institutions composed of elders and experienced people. Tropical highlands of Asia where swidden has traditionally been practiced are also areas of high biodiversity significance, often placing it in opposition to conservationists who argue against it effects on biodiversity.
Contrary to state policies targeting swidden, research on medium to long-fallow swidden finds it to be an environmentally friendly practice that can sustain subsistence livelihoods while also supporting biodiversity within fallows. It is also seen as an agricultural system that is important for climate change mitigation and biodiversity conservation.

Swidden has been a vital part of the lives of the people living in the eastern Himalayan highlands. I studied its role among the Adi people of Upper Siang in Arunachal Pradesh. Arik as it is called by the Adi, supplies not just food and nourishment but also a deep cultural connection central to their lives. My research also highlighted the role of dynamic landscapes such as these cannot be cleanly segregated into forests and crop fields and benefits calculated only in terms of agricultural output. This is contrary to classification of swidden fields and fallows as 'wasteland' by state agencies.

Swidden continues to be practised in the uplands even though it has declined considerably through the relentless efforts of the state. The Adi people appear to have found a balance between swidden and more recent livelihood options. A major challenge for the modern state is the system of communal land ownership that prevents privatisation and external appropriation of land. This is slowly being broken down through various efforts to promote privatisation and reliance on the market economy.

Remote upland societies such as the Adi of Upper Siang who have maintained traditional methods of land ownership and cultivation continue to remain connected to this practice, but they are increasingly being exposed to drastic changes.

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Role of Vanishing Traditional Knowledge for Livelihood

Our work is focused on quantifying the trade and use of bio-resources across Sikkim, North Bengal and Western Assam using a well designed and tested questionnaire. At the market level, we interviewed vendors selling bio-resources while at village level we randomly selected 20% of the total households. Information collected included plants, plant part used; habit; frequency of collection; market linkages and income. Around 22 markets and 80 households were surveyed across our study sites. While surveying the markets and households, we found rich diversity of bio-resources being collected and transacted. Leafy vegetables, fruits and bamboos were among the most collected wild resources by the people.

Wild plants play a significant role in subsistence livelihoods of rural communities. Bio-resources not only help in sustaining rural people's lives and livelihoods but is important for health, cultural and religious purposes. The main occupation of people residing in these areas is agriculture followed by daily wages and small business. The women are mostly involved in household chores and actively engaged in collection of wild bio-resources for self-consumption and for selling in local markets to generate additional income. Usage of these resources has generated a strong base of traditional knowledge about the plants that they have been consuming since time immemorial. The information collected reflects that collection is done mostly by the elderly and women indicating that the younger generation are dependent on other productive activities to sustain their livelihoods. Thus there is a low priority to learn and pass on the traditional knowledge. Above all, the younger generation perceive that traditional knowledge is important but it does not incentivise their income and sustenance. This has resulted in opting for other livelihood strategies which bring adequate and risk free earning to support their families.

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Left to Right: Lapsi (Choerospondias axillaris), Ningro (Matteuccia struthiopteris) & Kukurdaine (Smilax zeylanica) -- Deeke Tamang

Lack of rural livelihood options, environmental conditions and attraction towards modern ways of life are emerging as major threats to the knowledge of culturally important plants. We need to find ways through which this rare wealth of rapidly disappearing traditional knowledge can be retained for the well-being of future generations.

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Smilax zeylanica

Himalayacalamus hookerianus
New insights into mammalian communities in Darjeeling-Sikkim Himalaya

Camera trapping carried out in different farming systems across Darjeeling-Sikkim Himalaya landscape offers new insights into the mammalian communities residing within this landscape. The presence of one Critically Endangered, three Vulnerable and four Near Threatened species in two major farming systems i.e. Tea Cultivation and Agro-ecosystem speak volumes in terms of their conservation potential. Mammals outside protected areas have often been subjected to anthropogenic threats, directly - hunting, retaliatory attacks and from feral animals among others - or indirectly - through habitat fragmentation, human population growth and our ever increasing resource demand. Thus, the need to assess these farming systems and the mammalian community present is paramount to check the viability of these farming systems as refuges for biodiversity.

We recorded the Chinese Pangolin (Manis pentadactyla), a Critically Endangered species, in the Tea Estates in sites of Darjeeling and Terrace Rice Cultivation areas in Sikkim. Given that, according to previous studies, the home ranges of this species vary from 0.66 - 0.96 km² for males, 0.143 - 0.303 km² for females and 5-6 km away from the resident burrow for foraging, these sites have high potential for conservation of the Chinese Pangolin provided it should be a community initiative spearheaded and supported by the local communities themselves.

Besides the Chinese Pangolin, these farming systems also support the Common Leopard (Panthera pardus), Asiatic Black Bear (Ursus thibetanus) and the Clouded Leopard (Neofelis nebulosa) falling under Vulnerable category in the IUCN Red List. The presence of Near Threatened mammals such as the Himalayan Goral (Naemorhedus goral), Gaur (Bos gaurus), Malayan Giant Squirrel (Ratufa bicolor) and Terai Grey Langur (Semnopithecus hector) also confirms the conservation value of these farming systems as wildlife friendly farming systems given the added benefit of the landscape with complex topography with minimal agriculture machinery.

Although most species found in these farming systems are residents, some such as Gaur or Indian Bison use a part of the landscape as a corridor which is equally important. The presence of arboreal mammals such as the Malayan Giant Squirrel and the Terai Grey Langur also indicates healthy forest patches within these systems. The ecological role of some of the species as keystone species and their role in maintaining the ecosystem should be taken into consideration before any management plans for relocating them from these spaces is put forward. This is keeping in mind that most human-wildlife conflict arises out of livestock and crop depredation by some of these species present in the landscape. Compensatory mechanisms such as monetary incentives for improved livestock management, loss compensation, insurance for loss and deterrent physical mechanisms could be some ways of mitigating the conflict. Ecological measures like habitat restoration, habitat improvement and preventing habitat degradation have to also be put in place.

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Impact of changing agricultural practices on food systems in Dzongu, Sikkim

Preliminary assessments were conducted in 26 villages of Dzongu valley in North Sikkim on the current food systems and the changes that have occurred and are likely to occur in the future. This is part of a global study - Sustainable and Healthy Food System project (SHEFS) lead by the London School of Tropical Medicine and Hygiene.

In the past swidden agriculture was extensively practiced in Dzongu producing diverse traditional food crops like millets, dry paddy, buckwheat, yams, taro, fruits, and vegetables. Wild edibles formed an important part of the local diet with fruits, vegetables, mushrooms, spices, tubers, wild meat, etc. Policy shifts like the declaration of protected area in the vicinity of community land, introduction of the public distribution system (PDS), scarcity of human resources (swidden agriculture is both time and labour intensive) and access to markets through road connectivity were some of the drivers cited by local communities on the decline of swidden agriculture. Additionally, with more young people getting access to higher education the change in aspirations was an underlying driver of the decline in this form of agriculture. Currently, 70-80% of the food consumed by communities in Dzongu is bought from nearby (<20 km) and from distant markets. Staples like rice and wheat are available at cheap rates in local PDS shops. Exotic vegetables are grown in homesteads which contribute to the food as well as household incomes. Promotion of cash crops like large cardamom, mandarin oranges, and ginger etc. have brought in household incomes but have made the agriculture system more dependent on external inputs. Traditional food made from locally grown crops are now confined to religious and cultural events and do not form a major portion of people’s diets. All these have resulted in the loss of agrobiodiversity in the area and thus a loss in food crops which they consider healthy and nutritious. Monocultures of cash crops in the land that previously grew food crops also proved to be risky with the recent decline in the productivity of large cardamom and mandarin orange because of disease infestation.

According to communities, the food system is expected to further change in the future because of the decreasing trend of people being involved in agriculture. They foresee that food systems will depend increasingly on external markets. Agriculture will be further impacted by the diversion of cultivable land for non-agricultural purposes like infrastructure development, roads, hydro projects, built-up area for tourism activities that are coming up in Dzongu. The growing gap between locally produced food and consumption of processed food will widen, thus playing a greater role in driving the change in the food system. Our plan is to do in-depth data collection and analysis of issues identified by the preliminary assessments. Further, we will explore if there is a "win-win" scenario where the agrobiodiversity and therefore local food systems can be preserved while not compromising on economic incentives and food security of communities.

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Honey, I localised the market

As part of our livelihoods programme we worked with bee-keepers in eight villages in Darjeeling to help them run a viable business producing and selling honey. To complete the loop, we linked them to local shops in nearby towns. After the initial set up, these shops started selling the local community’s honey, and the programme was expected to run on autopilot.

In the following year, when we spoke to our partners in the market to evaluate the programme, they complained that they were no longer being supplied with honey from the bee-keepers. We dug a little further and found that this was indeed true.

As it turned out, the bee-keepers had found that they had enough buyers for their honey in the local village market itself—they didn't need the urban market after all. In fact, they were getting a better price in their villages, than in the shops of nearby towns. Honey had cultural value in their community — it is generally gifted to guests during weddings, as a way of saying ‘thank you’, and so on. After learning this, we have adjusted our programme, such that the bee-keepers now cater to the markets in their own villages, rather than in urban areas.

Organisations working on rural livelihoods often insist on building market linkages as part of their programmes, and rightly so. But we don't always need to look towards urban areas to find the right markets.

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Experiences of the NOREC - Exchange program to Nepal

The Norwegian Agency for Exchange Cooperation (NOREC) supports a two way exchange programme between professionals of organizations working on similar developmental themes. The objective of the exchange was to facilitate learning and sharing of knowledge, skills and experience of participants among partner organizations to strengthen private sector development in rural livelihoods. As part of the exchange program I was hosted by Namshaling Community Development Centre (NCDC), Ilam, East Nepal. NCDC works on various socio-welfare and environmental issues and I had the opportunity to explore and learn about various interventions and technologies they had implemented in different parts of the country.

NCDC has projects in eastern, central and mid-western Nepal. I was involved primarily with their income generating activity (IGA) program along with climate-smart agriculture village (CAV) and Solar water lifting projects. I was introduced to some of the best agricultural practices under the CAV program including drip-irrigation, cowshed management and introduction of nutritious crops. One of the most novel and insightful activity I observed was the solar water lifting project for drinking and irrigation purposes. This project was able to make impacts in the farming community who relied on rain-fed water. This also decreased the drudgery of women by reducing the time and labour spent on collecting water.

The NOREC exchange program provided me an opportunity to explore, learn and understand new technologies and agricultural practices as well as gain new perspectives. It provided a platform much needed to enhance my skill and knowledge. Building networks, getting insights into various social aspects and social conditioning, understanding perspectives and critical thinking was a big part of the exchange program.

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Training for Panchayat Members on Data Collection & Management using Open Data Kit

The ability for Panchayati Raj Institutions to gather, organize, analyze, and present data has become critically important for proper management and for using it as a Decision Support System.

On the request from Yuksam-Dubdi and Labing-Gerethang Gram Panchayat Units (GPUs) of West Sikkim district, a 2-day workshop was organised in collaboration with Khanchendzonga Conservation Committee at Yuksom on 27th-28th February. 19 participants from 2 GPUs participated in the training on the use of the data collection and management tool -Open Data Kit (ODK). ODK is an open source Android app that replaces paper forms used in survey-based data gathering. It supports a wide range of fields for collecting data and is designed to work well without network connectivity. The GPUs will be using ODK to collect different information on households, government and private assets and facilities, natural resources and institutions present in the various wards of each GPU. Their vision for using this is to become the first GPUs in the state to become completely digital.

Arun Subba (arun.subba@atree.org)
Exposure visit to understand the key aspects and principles of Marketing and Promotion

A n exposure visit was organised for eight committee members of Singalila Mustard Oil and Agro Industrial Cooperative Society (SMOAIIS) Rimbik to Nirmal’s Farm, Bara Mangwa, Kalimpong. The objective of the visit was to observe, interact, understand and learn the various operational and implementing steps of setting up an agri-business. This included registration procedure, value addition of products, quality control, packaging, bottling, labelling, branding, market linkages, promotion strategy with unique selling proposition (USP), customer feedback etc. This 2-day visit helped the community members to understand the functioning of sustainable social enterprises and scope of land use planning for optimum benefit. The interaction aided in understanding the 6 Ps of marketing-product, price, promotion, place, people and processes. This exposure also gave an insight on how an individual farmer can make a difference by setting an entire community on a path to employment and prosperity.

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Community Exposure visit to a Mustard enterprise

A TREE organized 3 days exposure visit from 15th January to 18th January, 2020 for “Singalila Mustard Oil and Agro industrial cooperative society” (SMOAIIS), to Fikkal, Ilam district of Nepal. SMOAIIS is the local enterprise group facilitated by ATREE to enhance the livelihoods of communities living in the fringe area of Singalila National Park. This group is expected to be organised and registered into a Farmer Producer Organisation. This exposure was organized to enable the representatives of SMOAIIS to interact with one of the oldest and successful privately owned mustard enterprise of Nepal established in 1984. Group members were trained on oil press machine operation, quality control, maintenance and aspects related to entrepreneurship.

Unknown knowns: Talut Sriram, Pasighat, Arunachal Pradesh

M r. Talut Sriram, is originally from Runne Village in East Siang district, Arunachal Pradesh. 45 years old Mr. Sriram lives in Pasighat, and works as a teacher in a Government school. He is the General Secretary of the Adi Baane Kebang (ABK) of Siang district which is the apex body of all the Kebangs in the district. Kebangs are traditional village councils of the Adi tribe which administer village affairs, formulate laws and issue ordinances for the well-being of the society. Among others they are also responsible for the customary laws regarding natural resource use and management which includes wildlife species.

"In 2009 while on a visit to D’Ering Wildlife Sanctuary I found a large deer killed by hunters. I felt that such activities should stop and I decided that I would use my position at ABK to work for this". I worked relentlessly for the next 13 years and now 4 villages in Siang have come forward to support my vision to stop rampant hunting of wildlife species” says Sriram. He has also been able to organise sensitisation and awareness raising events in more than 80 villages in Siang district. Getting support from the Adi community for his vision has been a challenge but he is happy that many of his friends and family have stopped eating wildlife meat.

ATREE Regional Office provides technical advice to Mr. Sririam whenever required.

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