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PRAGYA

Development without Destruction
Empowerment for Enabling Choices

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Innovations in Green Energy for the High-Altitude Himalayas ~ A Solar-Wind Hybrid Station in 14,000ft. Lossar Village

From the Field

The cold desert of Lahaul & Spiti in the western Himalayas is a harsh expanse of ice-fields and sandy wastelands ringed by snow-clad peaks. Lahaulas & Spitians live in small villages and hamlets scattered across this terrain, stretching up to altitudes of 16,000ft. Winters are bitter stretches with -40°C temperatures. While most villages do have power supply, the bleak winters are frequently power-less as well, and the govt. supplied fuelwood is the mainstay of the people for their cooking & heating needs. Summers are mild with bright green fields of barley, wheat and the only cash crop of peas, but lack of irrigation pegs down crop productivity and processing of agriproduce is also not possible since no mechanisation is feasible.

The Pragya Appropriate Technology team had been working on development of renewable energy applications for energy-starved Lahaul & Spiti . . . and it culminated in the first-ever Solar-Wind Hybrid System (SWHS) to be installed in the area, in the village of Lossar at the immense altitude of 14,000ft. Among the potential renewable energy sources in the region, water is scarce and trapped in a frozen form in the winters, while the sun and the wind make their presence felt alternately. The SWHS adequately addresses the problem, harnessing one source of renewable energy when the other is in short supply, ensuring power supply at all times.

The energy needs of the people constitute: energy for household lighting/heating/cooking, for powering of common welfare facilities such as schools, community centres, PHCs, etc., and for rural enterprises. The SWHS, the Lossarites decided, would be applied for electrification of a rural library, a weaving centre, and also the local PHC. The ApTech team designed the system to have a capacity of 2.1kW, comprising 14 solar PV panels generating 1.0kW, and a windmill generating 1.1kW. The rated wind speed for the windmill is 12.5m/s but it starts generating power at 2.5m/s; the survival wind speed for the windmill is 55m/s, and there is an auto brake facility that gets activated in very high wind speeds. The SWHS generates a max. of 7 units/day so that it can supply power for 4 hrs/day for 2 days when there is no power generation.

The setting up of the pilot SWHS was an example of a successful, participative, community-based intervention. The enthusiasm & involvement of the Lossar community were immeasurable in their value in making such a 'never-before' project happen in spite of just every possible adversity (look up the Pragya Sharing Experiences in this Newsletter). Every Lossar family lent a shoulder to the effort - the Panchayat head set the norm of every family having to contribute a few days of effort in the project. When flash floods threatened delay of the project, a team of Lossarites transported the SWHS material across several landslides and 'pagal nallahs' (mad mountain streams). Innovative suggestions came thick & fast - when the batteries were to be installed, a Lossar youth built an insulated coffin to place it in, to protect it in the severe winters.

The SWHS rural library today serves 60 households from Lossar and the neighbouring hamlets of Kyomo, Mandangsa, and Chichong. The weaving centre is used by an SHG of 16 women to weave local carpets & shawls to sell to summer visitors, and thus earn from it. Incidentally, these crafts were dying as a result of the growing energy shortage. Less & less of the living space can be heated and hence activities like weaving, which require additional space, had been abandoned. The weaving centre also doubles up as a community centre for meetings and even festivities.

The technology fusion and larger scale being tested through this project could show us the way to ensure that every high altitude household has electricity and that every village is enabled with wellequipped schools, health centres and income generating facilities as well. Lossar village was the cynosure of several eyes on 20th Aug, '04 when the SWHS was formally inaugurated by the local MLA, Mr. R. Yadav. The entire senior administration of Spiti subdivision was present for the occasion and applauded Pragya's efforts in carrying out such pathbreaking work in such difficult conditions and tough terrain to reach benefits to the local community.

A New Lease of Life for the Lossar Thangka

A demonstration-conservation session was held in the Rural Museum in Lossar. The session involved the preservation of a thangka (Tibetan scroll painting) in the museum with the Lossar village members as audience. The thangka showed tidelines and dimensional stresses along with dust, dirt and oil residues on the surface of the painting; the mounting was also torn and missing at places. The conservation effort involved cleaning the surface of the painting with a very soft brush; the mount was also successfully repaired. Care was taken that the thangka's significance was not altered or compromised in any way. The local people showed great interest in the procedure. The activity went beyond the individual thangka in re-establishing the importance of thangkas and the need for preserving them, among the community.

Rural Technopreneurs Groups Launched

The high-altitude Himalayan region suffers an immense technology gap, a significant contributor to the region's underdeveloped status. Pragya is working on building local technical capacity in the youth of the area towards enhancing the access to technology services. Two Rural Technopreneur groups have been constituted in the district of Lahaul & Spiti - the Lahaul RT group comprises 15 youth and the Spiti RT group comprises 10 youth. A training programme was held for the RTs in Oct, '04 that provided the RTs with inputs to enable them to set up local enterprises for the sale & service of RE equipment, building in them the skills for the maintenance of various household RE appliances.

Plant Explorations in the High Himalayas ~ Mapping & Threat Assessment of Medicinal Plants

The high-altitude belt of J&K and Arunachal Pradesh saw hectic activity with Pragya survey teams carrying out Phase II of the high altitude plant exploration exercise begun in '03. The target areas belong to the western Himalayas (Ladakh, Zanskar) and the eastern Himalayas (Arunachal) at the extreme ends of the Indian Himalayas. Hence they show markedly different features in terms of climate, topography & vegetation. The exercise was aimed at documenting the medicinal & aromatic plant wealth of the high-altitude Himalayas, studying the distribution pattern of the species and assessing their threat status.

Considering the vast expanse to be surveyed, the areas were zoned into bioregions, and each bioregion stratified progressively into stretches, subdivisions and pockets and quadrats selected from these for intensive mapping. The survey was carried out over a period of 4 months (June-September). Fifteen teams participated in it, each team comprising a surveyor and a local resource person cum guide who performed the dual role of aiding in plant identification by providing local inputs and also guiding the team over the unfamiliar ranges & valleys. The magnitude of data generated has been enormous given the large area mapped in Ladakh & Zanskar and the high density of vegetation in Arunachal. Although the data is still in the process of being compiled, some preliminary information can be shared.

The Ladakh & Zanskar region is an ecologically unique land composed of different river valleys amidst high mountain ranges, with elevation of inhabited areas ranging from 8,500-13,000ft. A cold desert with very low precipitation, its harsh climate has blessed it with several rare and valuable medicinal & aromatic plants. The conspicuous character of this vegetation is the cushion like habit of the plants that protects them from the cold dry winds. The region has a predominantly arid vegetation dominanted by Angiosperms, though mosses have been sighted in Kargiak valley in Zanskar, a slightly more moist area. The Zanskar region has shown a dominant vegetation comprising primarily of Ranunculaceae, Crassulaceae and Berberidaceae and Ladakh has shown a dominance of Asteraceae, Scrophulariaceae and Labiatae. Some of the medicinal plants sighted are: *Saussurea obllavata, Delphinium cashmerianum, Waldheimia glabra, Ephedra gerardiana, Meconopasis aculeata, Arnebia euchroma.*

Arunachal is a characterized by hill ridges & valleys and receives much higher precipitation throughout the year. The high altitude belt stretches from 11,500 to 18,500ft. and shows great diversity of plants. Among the Angiosperms, both highly evolved as well as more primitive families such as Orchidaceae, Primulaceae, Ranunculaceae and Asteraceae were seen to dominate the vegetation. Gymnosperms belonging to predominantly the Cupressaceae, Pinaceae and Taxaceae were seen in large stretches. In addition, a large number of the lower phylla such as Thallophyta, Bryophyta and Pteridophyta were also encountered. Vast stretches of *Rhododendron sp.* have been sighted along with species such as *Aconitum ferox, Cassiopie fastigiata, Taxus baccata, Gentiana tubiflora,* and *Primula sp.*.

Although a purely scientific expedition, the survey has already had a great impact on the indigenous community of the bioregions. The degree of participation by traditional healers, grazers, women, children, village leaders, has helped generate a high degree of awareness within the communities on the need for conservation of their natural heritage.

The uniqueness of the study

- A comprehensive, scientific inventorying of medicinal & aromatic plants in the high altitude stretches from the easternmost Himalayan state of Arunachal Pradesh to the westernmost state of J&K, the first of its kind.
- Going beyond just taxonomical analysis to usage documentation, status assessment and threat estimation & conservation planning.
- A unique attempt to merge scientific tools of status and threat assessment of the habitat and plants with qualitative inputs from the community.
- A development initiative as well as a scientific study- using a participative methodology, involving the community in the survey & planning, generating awareness on biodiversity and stewardship for its conservation.

More Regional CAMP Workshops in Lahaul

In the summers of 2003 and 2004, Pragya carried out the first-ever mapping of the herbal wealth of the high altitude Himalayas. The exercise also included threat assessment of the species & habitats and the crystallisation of community-based conservation management plans through regional level Community Assessment & Management Planning workshops (CAMP) with community members, forest officials and the surveyors as participants.

The CAMPs organised in Lahaul, Uttaranchal, Ladakh & Arunachal received a resounding response from the local govt as well as the community. The participants completed Botanical Information Sheets on various species that validated the data collected on the species and also assessed the threat status and its causal factors. A total of 808 species were assessed by these CAMPs.

Furthering the Cause of Language Education

A 3-day training on 'Preservation & Promotion of Indigenous Languages of the Himalayas' was held for the Bhoti teachers of Lahaul & Spiti from 6th-8th Oct, '04 at Himachal Institute for Public Administration (HIPA), Shimla. The programme was organized in collaboration with Dept of Language & Culture, Himachal Pradesh. The 65 trainees comprised existing teachers of Bhoti in the Pragya-initiated and run language classes in the district as well as potential teachers from villages where these classes were to be initiated. An early snowfall had blocked all roads from the district just before the programme. Despite this, all participants, young & old, reached the venue, having travelled across several kms of dangerous roads to do so. The faculty included renowned experts in the language from the Central Institute of Higher Tibetan Studies (Sarnath), the Central Institute of Education and the Deptt. of Buddhist Studies (Delhi). Apart from the structure & grammar of the language and recommended teaching methodologies, the programme also dwelt on the history of the language and its development in modern times.

Demonstration of Medplants Cultivation in Ladakh

A demonstration training on the 'Potential of Medicinal Plants Cultivation' was conducted in collaboration with the Field Research Laboratory (FRL), Leh for existing and potential medicinal & aromatic plants growers in Ladakh. Thirty trainees attended the one-day programme, 25 of them were women. The demonstration of the propagation & cultivation techniques for select high-value species *(Inula racemosa, Saussurea costus, Aconitum heterophyllum, Rhodiola imbricata)* was carried out in the Pragya Medplants Nursery in Phey. At FRL, the trainees were shown the technological advances in the field and the potential of medicinal plants processing and value-added products. A documentary on the common medicinal plants of the region and their therapeutic and market values was also screened by FRL

The Pragya intervention for preservation of indigenous traditional knowledge of Himalayan communities

Life in the isolated, high-altitude regions of the Himalayas is woven intricately with nature. The ethnic traditions- health systems, crafts, food, livelihood structure of the communities, are reflections of this relationship. The many plants with medicinal properties - Aconitum, Dactylorrhiza, Picrorhiza, - have been the key resource for the indigenous healthcare systems, including the Ayurvedic, Sowarigpa (amchi) and Unani systems. Several wild edibles supplement the rural household meal and others are regularly used spices & condiments. Arnebia euchroma is used in colouring clothes, carpets and even foodstuff and Juniper is used as incense in places of worship and Artemisia as insecticide in houses. The rare and valuable plants that grow in the high altitude Himalayas are not just biodiversity of botanical importance, they constitute the cultural bedrock of mountain people.

Unfortunately however, the Himalayan ecosystem as well as the traditional ethnobotanical knowledge have suffered the ravages of time and unthinking development & exploitation. The flora of the high altitudes is being depleted at a very fast pace as a result of illegal collection of the plants for trade and overgrazing, their fragile habitats being degraded by construction, road building, overuse and climate change. The irreplaceable indigenous knowledge of the uses of the local plant wealth, much of it based on oral traditions, is also being eroded with the overlay of modern practices and the death of the older generation.

The Pragya intervention towards Revitalisation of Indigenous Ethnobotanic Traditions addresses the above issues by documenting the fast eroding indigenous knowledge of plants and presenting this in various forms that help generate awareness and value for it. Apart from preserving the indigenous knowledge for posterity in this manner, the intervention is also working on reviving the use of the traditional healthcare system, facilitating a dynamic network of traditional healthcare providers and even catalysing further development of the traditional science.

Preservation & Mainstreaming of Traditional Knowledge

Documentation of Ethnobotany: The ethno-medicinal traditions of the Himalayan regions were renowned for their effectiveness against a wide range of ailments. Apart from the core medicinal system, much of the practice is however transmitted through oral traditions and hence eroding with time; much of the science, the rationale behind the practices, is also not recorded and transparent which contributes to the devaluation of the science and the traditional healers. Although the region's plants are extensively used in households as well, these uses are also not documented, but passed down orally from generation to generation. Pragya has carried out an extensive study of the various ethno-medicinal traditions and household uses of plants amongst different Himalayan communities, from Ladakh to Arunachal. The study followed a systematic process that involved a rigorous grassroots survey, and compilation, processing and cross verification of scientific data. The various means used for data collection included informal interviews, participant experience sharing, village workshops and group discussions, and questionnaires. In ethnomedicine, the broad elements of the science and the uses of various plants in traditional medicine were recorded. Information on the household uses of plants, such as in food, as agricultural implements, as dyes, resins, gums, incense, in construction and architecture, for spiritual purposes, etc., was also collected. The documentation has involved written documentation, as well as sketches and photographic documentation. A comprehensive database has thus been created of the ethnobotany of all distinct high-altitude communities/pockets in the Himalayas. Apart from preserving the oral traditions and thus saving them for posterity, this documentation is a valuable source of information for all students and researchers of the subject.

Another Ethnobotanic Centre (EBC) ~ in Uttaranchal

The herbal wealth of the Himalayan region and the traditional knowledge of plants and their uses, is being preserved by Pragya through the mode of the Ethnobotanic Centre. The first such centre was set up in spring '04 in Yurnath in Lahaul. In winter '04, the second EBC was set up, this time for the Central Himalayas in Uttaranchal. The site is the famous ski resort of Auli, 14 kms from Joshimath. The centre has several sections, each showcasing one of the myriad aspects of the relationship between plants & the local community and their use in medicine, crafts, food, and aroma products. The centre also has a comprehensive information section on the various medicinal & aromatic species of the region, as well as a comprehensive herbarium of species of the region.

Ethnobotanic Centres: In each of the distinct Himalayan pockets, Pragya is establishing an Ethnobotanic Museum that showcases the area's ethnobotanic traditions. Two such museums have already been established and two more are on the anvil. Each museum comprises several thematic displays: the medicinal section, the culture section, the architecture & implements section and the household section. Given the popularity of aromatic oils in Uttaranchal, the Auli museum has an aromatics section too. Apart from a collection of local artefacts and preparations that use plants, each museum also has a knowledge section with descriptive charts on the ethnobotanic traditions of the region as well as herbaria, species files and species charts providing species-specific morphological, taxonomical & ethnomedicinal information. The museums serve the purpose of creating a sense of pride & respect for their own heritage among the local communities, generating at the same time awareness in the wider public that visits the region. In the pipeline are herbal gardens as well that would be living collections of the medicinal & aromatic plants that grow in the region. These gardens will be the field extensions of the Ethnobotanic Museums that will provide visitors, students and scholars a one-stop view of the various species and their habitats. The EBMs and herbal gardens are managed by the community and the revenues generated are used for their operation and for conservation of the herbal resources in the wild.

Formalising Traditional Healers: The project has identified community groups that are especially knowledgeable about medicinal & aromatic plants, their habitats and their uses. Key among these are the traditional healer groups. Traditional healers from various parts of the Himalayas, amchis from the Western & Eastern Himalayas and vaids from the Central Himalayas are being constituted into associations. This formalisation has had the effect of strengthening the traditional healers and motivating them to revive the practice of traditional medicine. These groups are also being provided training to enable them to meet the expectations of the modern healthcare user and thus enhance the credibility of the science itself. Inputs are being provided, for instance, in hygiene and accuracy in medicine preparation & administration.

Traditional Health Centres and Network of Healthcare Providers: An important component of the process of revitalization of traditional medicine is the creation of a vibrant network of practicing traditional healers in the Himalayas. Central to this intervention is the establishment of Traditional Medicine Centres in different Himalayan regions- one such centre has been established in Uttaranchal by Pragya and two more are planned. These centres have the local amchis or vaids providing a range of treatments to tourists and locals. The TMCs and the improved systems such as documentation of diagnosis & treatment, packaged medicines, improved hygiene conditions, etc., are helping induce greater faith in the system among the patients. The TMC also acts as a fulcrum for traditional medicine based healthcare in these regions, which, as a result of their being snowbound for a significant part of the year, are dependent to a considerable extent on the traditional systems of healthcare. It binds and provides support to the network of traditional healers as well. From time to time, the vaids of the Auli TMC conduct health camps in especially remote areas, taking traditional healers of various specialities to these areas. The amchis of the Lahaul Amchi Society are working on preventive medicine pamphlets for distribution to the local public.

Development of Traditional Medicine Systems: Relevant to the development of the traditional medicine systems is a process of quality assurance that would help remove the prejudices that are associated with indigenous medicine and re-establish the credibility of these traditional systems among users. A panel of traditional healers is being formed in each traditional healer association to work with Pragya specialists on aspects like standards development and quality certification. This group will act as a quality assurance group checking the quality of the medicinal plant material cultivated by the farmers, as well as the plant-based medicines prepared by traditional healers. Recognising the stagnation of the traditional medicine system as the main cause for its dwindling status, the TMCs are aimed to initiate a process of upgradation of the traditional system through systematic research & documentation. A related feature of the preservation of traditional knowledge lies in the putting-into place of a proper system of intellectual property rights that would ensure that the benefits of traditional knowledge reaches the community directly. The project also aims to provide intensive training on IPR to the traditional healers associations.

New Nursery in Pangrasu in Uttaranchal

A nursery has been set up in Pangrasu village (7,800ft.) in Chamoli district of Uttaranchal. There are a total of 91 beds and a polyhouse in the nursery and these have been sown with seeds of *Aconitum heterophyllum, Rheum australe, Carum carvi, Sassurea costus and Heracleum candicans.* This nursery will generate saplings that will enable more Chamoli farmers to cultivate medicinal plants; it will also reduce the gestation period of medicinal plants (typically, 3-5 yrs) in farmers' fields, by addressing the seed-to-sapling stage in the nursery.

Conservation Campaign in Joshimath

On 26th Dec, '04, the Society for Heritage Conservation of Joshimath (SHCJ), a CBO constituted by Pragya with the objective of community management of the natural heritage of the high-altitude belt in Chamoli district in Uttaranchal, organized a conservation campaign. The event had the participation of 40 members, spanning various age groups, from the area. Poster making, slogan writing, extempore speeches, drawing & quiz competitions, were the different activities undertaken, with the aim of generating community awareness on the need for conservation and creating a sense of stewardship for the environment.

The Pragya intervention has demonstrated the power of the collective management of knowledge resources in community development. It has been successful in evolving a Traditional Knowledge Management mechanism for indigenous communities in the Himalayas. Apart from preserving the ethnobotanical knowledge, the intervention has also been effective in providing income generation avenues for the communities.

ISSUES

- dwindling value for botanical resources of the region
- degradation of natural habitats and depletion of herbal wealth
- loss of respect for traditional medicine systems
- dependence on traditional healthcare providers
- erosion of traditional ethnobotanic knowledge
- stagnation of traditional medicine system

THE PRAGYA SOLUTION ~ PRESERVATION & MAINSTREAMING OF TRADITIONAL KNOWLEDGE

INPUTS

- survey & documentation of ethnobotanical knowledge
- setting up ethnobotanic museums, herbal gardens
- constituting traditional healers' associations
- training traditional healers
- establishing traditional medicine centres, traditional healer network
- periodic health camps and health education by traditional healers
- instituting process of QA and research for traditional medicine
- training on IPR

INTERVENTIONS

- documentation of ethnobotany
- display & awareness creation of traditional knowledge
- formalising & promoting traditional medicine system

IMPACTS

- documentation of ethnobotany
- preservation of ethnobotany and further research & devlt
- awareness of traditional knowledge, pride in TK heritage & effort to preserve
- revitalisation & enhanced credibility of trad. medicine
- improved healthcare thro' traditional healthcare system
- facilitation of rights of traditional healers

Innovative Techniques in Education

Pragya has been working on creating tools to aid development that is attuned to the unique & rich cultural heritage of the Himalayas. One such effort has been the creation of culturally appropriate educational material for the indigenous language (Bhoti) classes being conducted by Pragya, aimed at the dual purpose of enhancing literacy and preserving the indigenous language. An exercise book has been developed and published for facilitating learning of the language. Quality instructional material such as charts & booklets on co-curricular topics, have also been adapted and translated into Bhoti to aid learning. A local creative group worked with the Pragya Bhoti language experts in preparing the material, drawing on local practices & usage and utilising the folklore of the region.

COMMUNICATION & INFORMATION AS CATALYSTS FOR 'DEVELOPMENT FROM WITHIN'

Anindya Mishra, Brishti Bandopadhyay, Komila Aima

Development is a comprehensive economic, social, cultural and political process, which aims at the constant improvement of the well-being of the entire population and of all its inhabitants on the basis of their active, free and meaningful participation in development and in the fair distribution of the benefits resulting therefrom. (UN Declaration on the Right to Development)

Development science had its roots in but one aspect of development - economic. As a result of this unilineal genesis, development approaches were strongly based on economic principles and the belief that economic growth was sufficient to support development, and state policies & macromanagement and externally induced modernisation were critical for transforming traditional societies into developed ones. While such a development paradigm did lead to some form of progress for some parts of the world, for remote, rural areas and those which are distinctly different biogeographically, such as mountain areas, it has tended to cause enormous damage. The natural resource base of these ecologically fragile regions was eroded in the drive to exploit them for maximal production. A one-way extractive pattern was established with these regions providing water, forest & agricultural products, minerals, to downstream industries and people; there is a negligible flow back of benefits however to mountain people, and the extent of leakage of revenues from commercial activities carried out in mountain regions is very high. Instead of creating the intended prosperity, inequities have been enhanced, rendering the regions underdeveloped in comparison to others with stronger infrastructural and industrial bases.

Exogenous development has also marginalised the mountain communities by imposing homogenising socio-economic-technological models on them from distant centres of power. Mountain worlds had long evaded the disease of monoculturisation. Secluded for centuries, each valley or group of linked valleys in the mountains had developed its own unique cultural heritage, such that each mountain system is not one, but a number of altitude and agroclimatic zone based cultural cosmoses. Most of the indigenous communities have over generations developed a wealth of traditional knowledge - of ecological practices, of holistic health, and many others - that are today being eroded, trampled on by unthinking development. Not only has this threatened the cultural uniqueness and autonomy of the communities and alienated the communities of these peripheral regions that had become accustomed to self-governance in the absence of adequate attention from the centre, it has even spawned oblique movements for self-determination, often at direct conflict with the centre.

The remoteness, poor connectivity and sparsity of population of mountain regions, unfortunately, affects the effectiveness of the democratic processes that would enable region-specific policies and development strategies for these regions. There exists a marked 'vertical gradient of power' that makes mountain people among the poorest, mountain areas the most backward; an inverse relationship also exists between altitude and power in the political process, with mountain people being the most marginalised and neglected. Mountain regions are also characterised by a multiplicity of tribes, and this compounded by the physical isolation of the regions from the more populated and mainstream lowland areas, inhibits mountain communities from having access to benefits available in lowland societies and from making their voices heard in distant capitals so as to influence policies that impact their lives.

Development of these mountain regions needs to evolve according to the local character of each, appropriate to its ecology and culture. The paths to development can really be as numerous as there are peoples and places and a recognition of this would help us evolve a more holistic & pluralistic form of development for mountain areas.

Local is Beautiful: Rather than be based on primary production for common products for distant markets, economic development that makes productive use of local resources of every mountain valley for the creation of unique products for both internal and new markets, could not only give a comparative advantage to the region, but also dynamise these very resources and ensure a far greater part of the benefits being retained by the local communities. Thus for instance, mountain communities would have a comparative adavantage in the cultivation & processing of high value medicinal plants that grow only in the rarefied atmosphere of the mountain regions, and would be able to extract a higher proportion of the benefits thereof.

Participation leads to Values-based Development: Local initiatives that follow the needs & aspirations of communities and are attuned to local values would be more effective for the total well-being of mountain communities. Local self-determination and development control would reinforce community identity. Rural development that is rooted in the recognition of and respect for cultural diversity can release mountain regions from the tyranny of exogenous interventions and give these otherwise marginalised communities a voice in the mainstream politico-administrative processes of the nation.

Human Capacities are Paramount: The endogenous development approach is one that places the goal of human development beyond that of mass consumption and respects values & cultures along with economic progress. It recognizes the accumulation of human capital or knowledge as the key engine of growth for regions. Unlike other exogenous engines of growth such as technological growth or expansion of markets that are externally controlled and hence limiting as much as growth factors, local capability is cumulative and inexhaustible. It can be expanded indefinitely and applied to various alternate avenues. The key to development of remote and peripheral mountain regions that cannot piggy-back on foreign technologies and far markets, is therefore an investment in local human capacities and potential.

The Process of Endogenous Development

Facilities for Social Learning & Innovation: Endogenous development recognises local specificity, integrating at the same time with the global. Real local development is a dynamic balance of elements intrinsic to the local area with the selective internalisation of external elements which strengthen these. It is a process of perpetual interaction with the world outside and a continuous reconstruction of the local world by its inhabitants. This makes for a conscientious evolution of new forms of adaptation & growth within the area, and of interaction with markets and technologies outside it.

Such internally catalysed development calls for building capacity of mountain peoples to evaluate and adapt external opportunities and technologies to local needs, as well as avenues for stakeholder deliberations and communication. Their interactions and the processes involved in their search for solutions to local issues and development aspirations would involve them in a continuous learning process in which they are active participants as well. Such a learning process teaches people to analyse their development experience, both successes and failures, and draw out the lessons from these in order to make discerning development decisions. It also lays emphasis on a constant interaction with the 'extralocal', on raising awareness and a continuous reflection on alternate paths of development, on education and achievement of new knowledge & skills, understanding of new attitudes & new patterns of behaviour.

The learning process may occur in three ways: a) Formally, this happens through education, which changes the individual's cognitive

system. b) Informally, it occurs as group learning, when experiences, traditional knowledge and information, are utilised in a purposeful manner, and can form the basis of participatory research and kindle the spirit of local innovation or 'change from within'. c) Communication, horizontal or upstream, is another transformative tool as well, that helps rural people to express their individuality and gain/share knowledge on opportunities and ideas vis a vis technologies, markets, products.

Institutions for Development Governance & Participation: Endogenous development is based on the perspective of development as a social construction effected through a participative, people-centered process, and stresses on the significance of local values and local direction & governance. Such a development process would need to be initiated through a process of conscientisation whereby local communities are made aware of their rights and their role in their own development. Instead of being silent recipients of development assistance provided by external power centres such as the government and mutilateral bodies, they would need to become the architects of their own development.

Local identity and stakebuilding needs to be rooted in enabling structures and processes in the form of local-level institutions. Two kinds of institutions must be constituted for a balanced form of development to be effected: a) Local associations and interest groups would facilitate wide participation and ensure focus on a diversity of local issues & interests. These would help local actors vocalise their concerns and problems, and participate more fully in the mainstream democratic processes, ensuring representation of their issues at the national and global levels, while at the same time, reducing their dependence on more powerful actors and external agencies. b) Governing and responsible stakeholdership institutionalised through councils at the local level, would on the other hand, facilitate an integration of the various community subgroups and create a spirit of coopetition amongst them. These multistakeholder group bodies would ensure a cohesion of the diversity of opinions and a convergence of development actions for the local area. They would carry out a continual evaluation & selection of all that the local community holds dear and ensure the preservation of these in stakeholder driven development.

Effective building blocks for endogenous development in terms of facilities & processes for social learning and institutions & structures for local-level development and governance would call for a long-term commitment to development of the human capital in these insulated mountain regions. They would also require initiation, exchange & moderation and intensive capacity building by outside agencies based on the principle of local area-specific repertoires and paths for development.

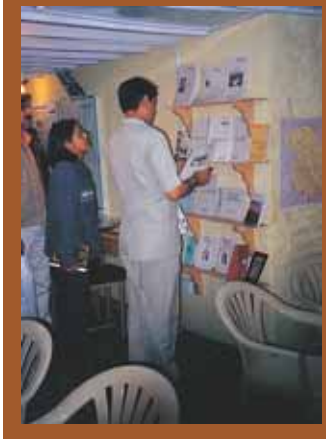
DRC Seminar on Water Management

With its aim of acting as a platform for the holistic and endogenous development of the local community, the Keylong DRC conducted a local-level seminar on 'Water Management in Cold Deserts' on 9th Aug '04. The seminar was attended by several important local officials including the Deputy Commissioner, Sub Divisional Magistrate, District Forest Officer, District Agricultural Officer, Sub Divisional Officer from the Irrigation and Public Health Department and two eminent scholars of the region. The seminar presentations and the lively discussions that ensued ranged across various issues from the Indus Water Treaty and its implications, the reducing precipitation and water starvation, to the problems of irrigation, the lack of technologies for snow harvesting, etc. The event was a resounding success with 52 community members actively participating in it.

Development Resource Centre & a Network of Rural Libraries in Lahaul & Spiti:

The remote, Himalayan district of Lahaul & Spiti lies hemmed in by two high-altitude passes, the Rohtang pass and the Kunzam pass, that have insulated it for years from the rest of the world, and continue to shut it out even today for a good 5 months in a year. Knowledge of what is happening in the world trickles in very slowly therefore. The simple mountain folk in the region, in the absence of information and education and the capacity to choose, have had development thrust on them, some of it inappropriate for the area. The Pragya designed network of a Development Resource Centre (DRC) and multiple Rural Libraries (RL) has catalysed the process of endogenous development in the area.

The DRC established in the district HQ Keylong, has been planned to act as a 'fulcrum of education, research and development activities for the region'.



Equipped with a range of reference material - books, reports, monographs, journals & periodicals, magazines, charts, maps, etc., on history & geography, society & culture, environment & philosophy, science & technology, and some fiction titles besides - it is a single point source for comprehensive information about the region for researchers, tourists and the general public. The centre also works as a platform for knowledge sharing within the community. It enables the community to learn more about its culture and environment and those of other areas as well, promotes a broader understanding of life in the region, and acts as catalyst for sustainable and value-driven development of the region. It provides a forum for the local community to come together and deliberate on different developmental issues of the region. Members of the local comunity can use its facilities to interact with members of the world outside, such as experts/specialists on relevant issues or technologies, public officials on policies and opportunities.

The DRC organises periodic seminars and workshops on locally relevant issues and exhibitions on traditional as well as modern technologies, regular interest-group based discussions and knowledge building through reading sessions. The DRC library is also much sought after. Especially in the winters, when the community is free of agricultural chores, large groups gather in the DRC and learning is transformed into a leisure activity! It has also become a hub for scholars from both within and outside the region and is thus promoting grassroots level research and innovation. The DRC is designed to have several remote location nodes in the form of Rural Libraries. One such RL has already been set up in Lossar village in Spiti and three more RLs are in the pipeline. These RLs are equipped with reading material of all kinds and enable small discussions and reading sessions for the catchment area of each, typically 3 to 5 villages that are rather distant from the DRC and get cut-off from the rest of the region during winters and would hence be unable to access the DRC. The DRC and RL set up in the district of Lahaul & Spiti have already become a nerveline for information dissemination and places where plans are made, projects are conceptualised and discussions are held regarding community based initiatives. The conscientisation and critical awareness among the local populace that these facilities are building up will play a highly significant role in ushering in 'development from within' in the region.

BRAVING THE GLOF FOR THE LIGHTS OF LOSSAR

Anurag Mishra and Bhaskar Reddy

As members of Pragya's Aptech team, it is a challenge to design 'green' technology that works in high altitudes. Last year, we designed the world's highest solar-cum-wind hybrid station (SWHS) for Lossar village in Spiti.

But attempting to tilt a windmill at 14,000 feet was no easy feat. First, we had no precedents to turn to, none ever having attempted to set up a windmill in high altitudes before. Second, we were attempting a first with the solar-wind hybrid and there was endless speculations about whether or not we would succeed. And then we had the very short summer window- from April to September, during which the high altitude passes of Rohtang (13,500 ft.) and Kunzam (15,500 ft.) allow only the most intrepid of visitors to venture into these Trans-Himalayan valleys beyond them, - to select the project implementation site, mobilise & train the community and install and launch the system.

All of us at Pragya are inured to the adventure that is a customary part of working in the high altitude Himalayas. But *Kunzam mata*, the goddess of Kunzam pass, seemed to have a sackful of it for us last summer. The Aptech team was in one of the first vehicles to cross over the then not-quite-opened-yet Rohtang and the still-snowbound Kunzam, for a technical feasibility assessment of potential sites for the pilot SWHS. Accompanying us were members of the equipment supply team that had arrived from Mumbai. Spiti's unmetalled, dirt tracks that seem to curve narrowly skyward, can rattle even the toughest of souls - "make your own roads", urges travel literature on the region. We actually had to take to a shovel to clear snow of the still closed to traffic Kunzam pass and roll many a boulder off the road, that had been deposited there by the winter glaciers. The leader of the equipment supply team just folded up into a heap on alighting from the vehicle at Lossar after crossing Kunzam.

Lossar, the first village to run into in Spiti valley on one's way from Manali through Kunzum pass, proved to be our perfect implementation site. A picturesque village, Lossar remains cut-off from the rest of the world and other villages in Spiti, for about 4 months in a year. It has the best wind speeds as well as a good orientation, facilitating both great amounts of sunshine and a free flow of winds. If harvested properly, this untamed energy could be the source of a regular power supply for rural facilities. But most important of all, the people of Lossar, were also the ideal community for the proposed community-managed rural electrification system– enthusiastic, harmonious, responsible!

An installation team of five members, comprising Bhaskar and Sourav of the Pragya Aptech Team and two engineers from the equipment suppliers, reached Lossar on 24th July with all components of the system- solar panels, batteries, inverter, wind turbine and other accessories, - all except the windmill tower. The 18m long tower was in a truck that had been delayed in its journey from Mumbai, the supplier's warehouse, but would reach Lossar in a couple of days, or so we thought. We were met by the enthusiatic Lossar community and Anurag and Rajkumar of Pragya's Spiti & Kinnaur project office.

25th July: Work begun in right earnest. Foundation pits were dug for the windmill tower and the roof of the weaving centre was cleared for the installation of the solar PV panels. Despite the peak agricultural season, every Lossar family would tear one member off their farms, for volunteering for the SWHS installation. Lossarites contributed 100 person-days in all. The solar panels were fixed on the roof and connections made from the control panel to the batteries and the solar panels. All that remained was to fix the windmill tower to the base of the foundation and finish the turbine connections with the control panel.

And then the wait began! The tower had gone a-missing and all attempts of Lossarites to keep us entertained could not stop the news of a cataclysmic flood threatening the region from filtering in to us. A GLOF! The last Glacial Lake Outburst Flood in the region had killed several people. The pronounced global warming in high altitude areas has resulted in an escalated melting of glaciers and the high altitude lakes formed with the meltwater filling very rapidly . . . until they break from their bounds and discharge large volumes of water & debris, causing flashfloods. A red-alert had been issued and people were asked to move uphill from the low lying valleys that were in danger of being submerged. Although we were safe in Lossar, none could convince the equipment suppliers that they would return to Mumbai and their families again.

The tower was finally traced in Manali, 142 kms away; at the same time, news reached us that heavy rains had played havoc with the Manali-Lossar roads. Bridges close to Manali had been wiped out and landslides had all but completely eroded the roads. We were well and truly stuck between the devil and the deep blue sea. The Lossar community, having seen many more summers and landslides, were not fazed. A group of them said we could tranship the tower manually across and we started out on our ambitious mission.

We had to slither down a total of 9 kms of roads torn asunder by landslides, between Rohtang pass and Manali. As we surveyed the ravages, our spirits plummetted - broken bridges hanging midway and damaged roads being laid anew by the Border Roads Organisation- a scene straight out of an action-adventure film.

We waited a few days in Manali, or rather at the landslide site, watching the BRO at work, repairing the road. The BRO bulldozers would clear one stretch and a sheet of water or a slew of boulders would come raining down another stretch and the road would come crumbling down yet again. Finally, on 12th August, we gathered our wilting courage and decided to attempt transshipping the tower across - and succeeded! The herculean task of taking the 500 kg. tower, in three pieces (thank heavens!), from Manali across the disaster site, a tortuous stretch of 7 kms, was accomplished with help of 15 people including the Lossarites and some road workers, at the half-lit hour of 4.00 in the morning. At this time of the day the waters freeze and the ground is a little more stable. It was icy-cold that summer morning and throughout the journey we were haunted by the thought of dreaded 'walls of water & rocks' raining on us from nowhere. We thankfully surrendered our rather heavy load to the truck on the other side of the stretch.

Our team reached Lossar with the tower . . . into the midst of a jubilant and excited people. Lossar's windmill was made operational on the evening of 15th Aug '04. The weaving centre, rural library and primary health centre were electrified. The cheer that went through the group of more than hundred Lossarites gathered there when the lights first glowed, and the joyous dinner that followed, made every fall down slithery mountain slopes, every muscle sprained and tendon pulled, worthwhile.

With the installing done, the operational aspects of the project had to be explained. We familiarised three villagers with the do's and don'ts of the SWHS. The idea was to enable them to run it well and correct technical snags whenever these occurred. We left Lossar, basking in the glow of an achievement that would lead to the partial lighting up of the village.

Pragya Research Centre shifted to Gurgaon: The Pragya High Altitude Medplants Research Lab, was shifted from Kothi to Gurgaon in Nov. '04. The lab activities had been hampered by inadequacies of infrastructure, literature support and research orientation. The Kothi field unit of the Research Station is being developed into a full-fledged hardening & demo-farm for the target high-altitude medplant species. It would augment the lab-based cultivation research and facilitate adoption of these species as high value crops.

Seminar at HAPPRC: A seminar on medicinal plants organized by the High Altitude Plant Physiology Research Centre (HAPPRC), Srinagar, in Sept '04, was attended by Shalini Sahay, Core Team Member in the Pragya NRM Team. The seminar was attended by researchers & academics, govt officials and NGO representatives. Shalini also presented a paper on "Community Cultivation of Medicinal & Aromatic Plants - A Pragya Initiative", that was highly appreciated by the entire participant group.

Seminar on water: On 24th Oct, two Pragya members attended a 1-day conference organised by WAPCOS and Global Water Parternships (GWP) on "Integrated Water Resource Management (IWRM) Tool Box". Several NGOs working on water issues participated in the workshop. The IWRM Tool Box draws together a wealth of experience & expertise in IWRM and aims to support water professionals and policy makers by offering practical information and non-prescriptive advice on how to implement IWRM in practice. Pragya members, sharing their experiences in the field of water resource management in the cold deserts of the Indian Himalayas, detailed as a case study their project on snow harvesting infrastructure in Spiti in Himachal.

NABARD training for Pragya Lahaul Team: On 21st Nov, the Pragya Keylong team members attended a 1-day training organised by National Bank for Agriculture & Rural Development (NABARD), Kullu. The training dealt with SHG establishment, including group formation processes, preparation of by-laws, book keeping and cash management, leadership development, and internal lending and bank linkages.

Pragya Director shares experiences in Cambridge: Gargi Banerji, Director of Pragya and winner of the 2000 Whitley Award, shared her experiences with the staff of and Chevening scholars at the World Conservation Monitoring Centre at Cambridge. At a gathering at the Cambridge Conservation Forum platform on the evening of 23rd Nov, 2004, she also gave a talk on the Pragya project on 'Conservation and Sustainable Utilisation of the Herbal Wealth of the Himalayas'. The audience included students & staff of Cambridge University and the WCMC.

"Thanks to Pragya's initiative of the Ethnobotanic Centre, we and our children have the opportunity to learn about the rich Himalayan herbs and ou ancient knowledge about it. The establishment of the EBC is a milestone in the conservation of Lahaul's natural heritage. It will help in spreading awareness among community people as well as outsiders." Capt. Ravinder Singh, a resident of Yoche village and an active member of the Natural Heritage Conservation Council of Lahaul, was overwhelmed after his maiden visit to the Lahaul EBC established with the support of Pragya.

Coming up...

. . . Wetlands conservation: Starting Feb 2005, Pragya enters a new field - wetland conservation. The high altitude wetlands in Arunachal Pradesh that is a part of the Eastern Himalayas biodiversity hotspot, are unprotected and the wetlands themselves and the species dependent on them, are under threat due to habitat contamination, conversion for agricultural purposes, and overuse. The Pragya project is aimed at building community capability for appropriate wetland usage, infusing conservation technologies and catalysing community action for the conservation of six high altitude wetlands in the region.

. . . Plenary CAMP workshop: The medicinal plants mapping exercise and regional CAMP workshops for threat assessment, carried out in '03 & '04, will culminate in a plenary CAMP workshop in June '05. Designed as an all-stakeholder workshop, it will have members of local communities and forest deptts from all 10 bioregions studied; it will also involve national level researchers, policymakers and other conservationists. Through this plenary, a grassroots-up conservation plan will be evolved, blending scientific knowledge and community pragmatism.

. . . Cooperative Training: To facilitate fair trade in medicinal plants, the Medicinal Plants Growers in the Indian Himalayas are being constituted into cooperatives. One such cooperative has already been formed in Lahaul and its membership numbers 105. Similar cooperatives are also being formed in Ladakh, Spiti, Kinnaur, Uttaranchal. A training programme will be organised for the office bearers of the cooperatives.

. . . EBC Arunachal & Zanskar: More Ethnobotanic Centres are to be established this year! One more will be set up in Arunachal Pradesh, displaying and showcasing the ethnobotanic traditions of the Eastern Himalayas and another will be set up in Zanskar in Ladakh. In-depth surveys on the ethnobotanic knowledge of these regions have been conducted and the data is being compiled.

. . . Expansion to Uttarkashi: The Pragya medplants project will be extended to one more cold desert pocket- the district of Uttarkashi. During the intensive mapping exercise in '03, the Pragya team had studied the herbal wealth of the Gangotri-Nandanban belt in the district, following which a CAMP workshop was also held for the region. This year, community plantations of medplants will be set up in the district.

. . . Rural Museum in Khangsar: A Rural Museum will be established in Khangsar village in Tinnan valley (Lahaul) in May '05. A network of such museums has been set up in Lahaul & Spiti that seek to preserve & promote the culture of the district while also providing economic returns to the indigenous communities. The Khangsar museum would be the 5th such museum and it would offer a glimpse into the distinct culture of the Tinnan valley.

. . . Seminars in the DRC: Beginning April, a series of seminars and training programmes on locally relevant issues will be held in the Pragya established Development Resource Centre in Keylong in Lahaul. The local community would participate in these programmes that would help them shape their own development.

For comments & feedback on this newsletter please contact: Komila Aima / Brishti Bandopadhyay / Kalyani Majumdar of the Pragya Communication Team at info@pragya.org