



Centre for Ecology Development and Research

Annual Report -2013-14



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Background

The Centre for Ecology, Development and Research (CEDAR) was established in January 2006 by a group of academics and development professionals with the aim to work on issues pertaining to environment, ecology and rural development in the mountain regions. Applied research and policy issues are of particular interest to CEDAR. In pursuance of its mandate, CEDAR aims to bridge information gap constricting field practitioners and decision makers in the field of environmental management. Towards this end, CEDAR proposes to develop as a field research and monitoring agency with an arm dedicated to supporting NGOs and building their capacity in the relevant areas.

Focus

The research activities of the Centre essentially focus on generating and interpreting socio-ecological field-data that can improve the management of natural resources. Central to CEDAR's ideology is the recognition that local communities must participate in the conservation of their habitat. Therefore, in addition to core research in forestry, ecology and social sciences, often in collaboration with Universities and research institutions, CEDAR also works towards strengthening links between communities and ecosystems by networking with grass-root organisations.

Vision

CEDAR sees itself as being a platform to carry out research work of relevance to people and their environment. We aim to get together a mix of researchers, development professionals, and visionaries to identify areas where gaps in information and knowledge exist. These gaps may then be filled by in-house resources, and by collaborating with likeminded institutions and individuals.

CEDAR does not see itself as a research agency or a grassroots intervention agency but, instead, as an agency with an ability to work closely with both. CEDAR currently focuses on the Western Himalaya and parts of Central India.

Projects Completed

1. Assessing the Impact of Integrated Fodder and Livestock Development Programme (IFLDP) on Livelihoods and Forests of Uttarakhand Himalaya

Project Area: Uttarakhand

Funding Agency: Himmotthan Society

Given the reality of acute fodder scarcity, which greatly affects the health and milk yield of



livestock in the mountainous region of Uttarakhand, Himmotthan Society, a Dehradun based organization, supported by the Sir Ratan Tata Trust (SRTT) commissioned a study to determine the impact of its fodder and livestock programme (IFLDP). The study provided information on problems associated with forest based

fodder collection and assessed the potential of IFLDP to fulfill the fodder requirement of local inhabitants. Cluster of villages were selected mainly in five districts viz., Tehri, Chamoli, Nainital, Bageshwer and Pithoragarh. After an initial survey of the selected sites, baseline information was collected and questionnaires developed to understand the impact of the interventions. 21 villages were selected for the present investigation and categorised into three altitudinal zones, viz: Region I: Villages between 600-1200 m msl; Region II: Villages between 1200-1800 m msl Region III: Villages >1800 m msl.

Results of the study indicate that Intermediate elevation range exhibited the highest annual production of planted grasses ($22.3 \text{ t ha}^{-1}\text{yr}^{-1}$) followed by sub-tropical range ($20.1 \text{ t ha}^{-1}\text{yr}^{-1}$) and temperate range ($9.1 \text{ t ha}^{-1}\text{yr}^{-1}$). (Fig 1)



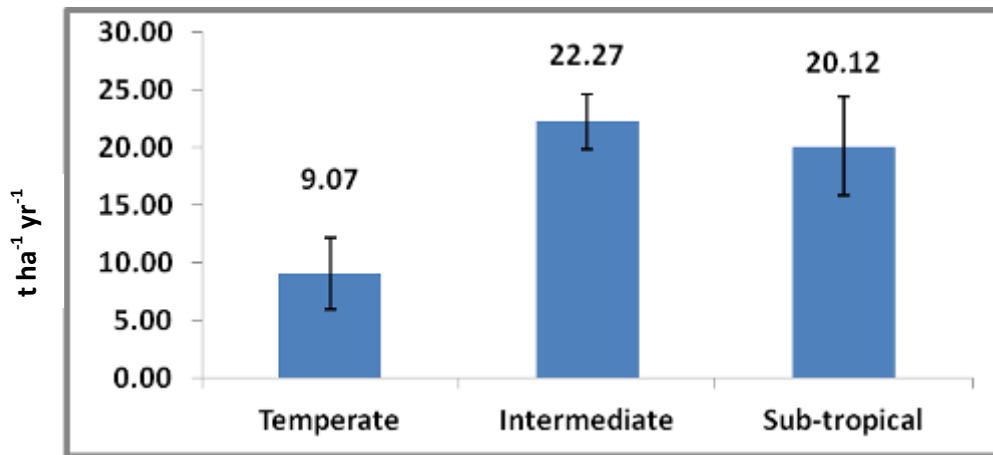


Fig: 1 Average planted fodder production at different elevation ranges (t ha⁻¹yr⁻¹)

The production of natural grasses in the plantation plots varied with altitude and lower altitudes exhibited the maximum production followed by middle and upper altitudes. In protected plots, productivity ranged from 13.9 t ha⁻¹yr⁻¹ (Temperate) to 25.1 t ha⁻¹yr⁻¹ (Sub-tropical) whereas annual production of natural grasses in adjoining area was recorded as 9.5 t ha⁻¹yr⁻¹, 12.3 t ha⁻¹yr⁻¹, 19.2 t ha⁻¹yr⁻¹ in upper, middle and lower elevation respectively. (Fig 2)

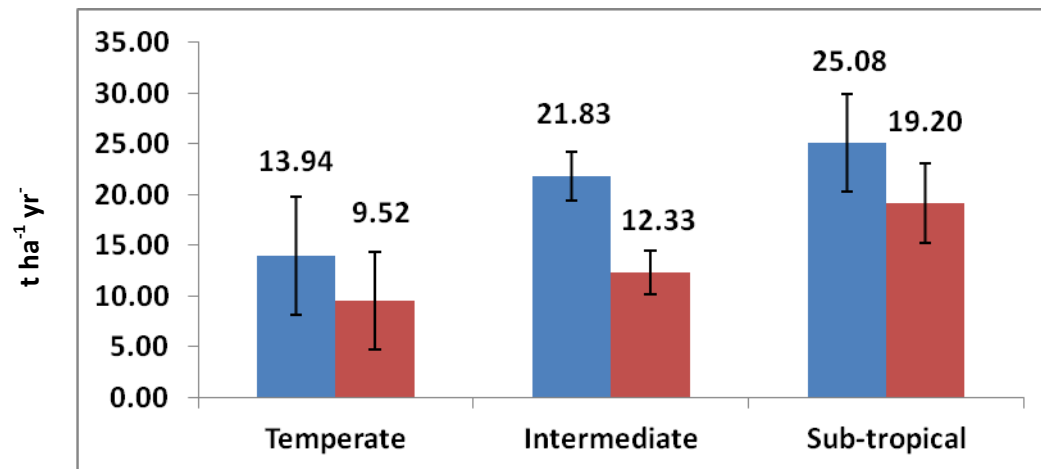


Fig 2: Average Natural Grass Production in Protected Plots and Adjoining area at different elevation ranges (t ha⁻¹yr⁻¹)

Detailed project report can be accessed from <http://cedarhimalaya.org/publication.html>

2. Developing a strategy for Forest Based livelihoods in Central India through assessment of Major NTFP's

Project Area: Jharkhand

Funding Agency: Navajbai Ratan Tata Trust (Collectives for Integrated Livelihood Initiatives (CInI))

Despite the importance of Non Timber Forest Products (NTFPs) in sustaining rural livelihoods, furthering rural poverty alleviation, biodiversity conservation, and facilitating rural economic growth, NTFPs have not received the sustained and systematic support given to conventional agriculture and forestry. Instead, they remain largely neglected by national and local government development strategies, and often overlooked by donors and the private sector. Where markets for NTFPs do exist, informal trade has in many cases led to over-harvesting and to opaque trading structures and inefficient markets. More precise research is needed on the ecological requirements and functions of NTFP species, their regeneration rates and yields in different forest types and ecological zones and on innovative silvicultural



techniques for managing multiple products. Research is needed to clarify tenurial arrangements and understand the often conflicting layers of traditional rights, use pattern settlements, concessions and privileges and gender relationships. Institutional processes and organizational arrangements need to be better understood in order to help communities manage NTFP's as part of a broader livelihood strategy, while

maintaining an equitable distribution of responsibilities and benefits. Research is also needed on marketing chain and the profits of collector/producers, processors and entrepreneurs.

CEDAR undertook a study to identify major NTFP's for enterprise development in the state of Jharkhand. On the basis of the study conducted by CEDAR in Khunti, West Singhbhum and Dumka districts and the recommendation of the Planning Commission's Working Group on Forests & Natural Resource Management, 2011, Mahua (*Madhuca indica*), Tamarind (*Tamarindus indica*) and Lac (*Kerria lacca*) were identified as the top three NTFP's for enterprise development in the state of Jharkhand. Owing also to the high demand

of Sal butter in the international market, the potential and limitations of Sal seeds from an ecological and policy point of view were highlighted through this study. Apart from this basic understanding value chain of selected NTFP's/ products, identification of constrains in marketing of NTFP's and, accessing policy constraints, institutional processes and organizational arrangements for NTFP promotion were presented.

The detailed project report can be accessed from <http://cedarhimalaya.org/publication.html>

3. Developing Organic Biostimulants to alleviate drought and cold stress and enhance plant growth in the Himalaya

Project Area: Uttarakhand

Funding Agency: Uttarakhand State Biotechnology Department (USBD), Govt. of Uttarakhand, Dehradun

Duration: 24 months

Organic Bio-stimulants are non-nutritional products that can reduce fertilizer use and increase yield, enhance resistance to water and temperature stresses, helps plants in nutrient uptake, , increase antioxidants, enhance metabolism and increase chlorophyll production and



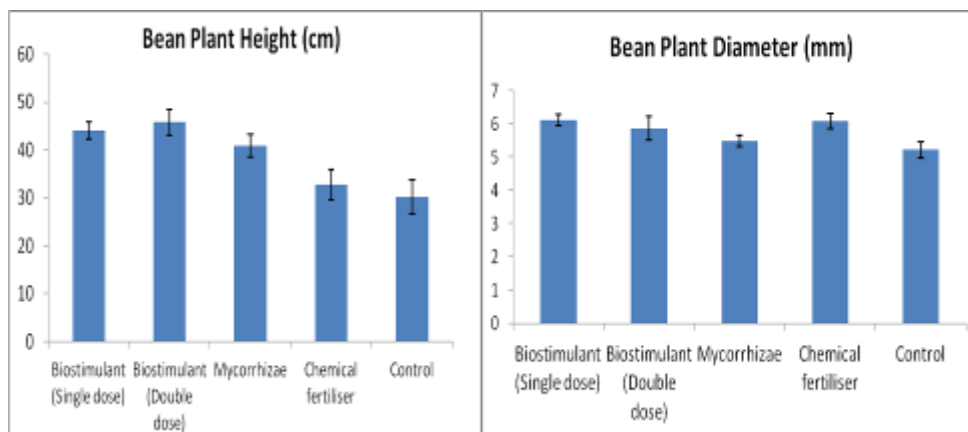
positively affect plant growth and physiology. The product was initially developed at Yale University by Prof. Graeme Berlyn around 1990. In 2011, CEDAR proposed a study to develop bio-stimulants using locally available chemicals. Collaboration with Prof Graeme P. Berlyn who provided the base formulations was undertaken.

Primarily, a prescribed and standard amount of mixture of bio-stimulant was prepared in the laboratory. Response of organic biostimulant was compared with various other treatments such as single dose of biostimulant, double dose of biostimulant, mycorrhizal inoculation, and chemical fertiliser.

The experiments were carried out on some easily available cash crops such as French bean (*Phaseolus vulgaris*), Wheat (*Triticum aestivum*) and medicinal plants such as Tulsi (*Ocimum*

spp.), *Bryophyllum* (*Bryophyllum pinnatum*) and *Acorus* (*Acorus calamus*). Performance of biostimulant was monitored and compared with the other treatments. Organic biostimulant was found to have a significant positive impact on growth and yield of these plants.

In French beans for example, the height and diameter growth was faster for plants treated with biostimulants (Fig. 3A and 3B). More importantly, yield was also higher in those plants which were treated with biostimulant (Fig 3C). Similarly medicinal plants grew better when treated with biostimulant than any other treatment. Biostimulants offer an effective green alternative to chemical fertilizers and there is a need for further exploration to find low cost alternatives to the growth stimulators currently being used.



A)

B)

Fig 3. Height (A) and Diameter (B) of French beans under different treatment

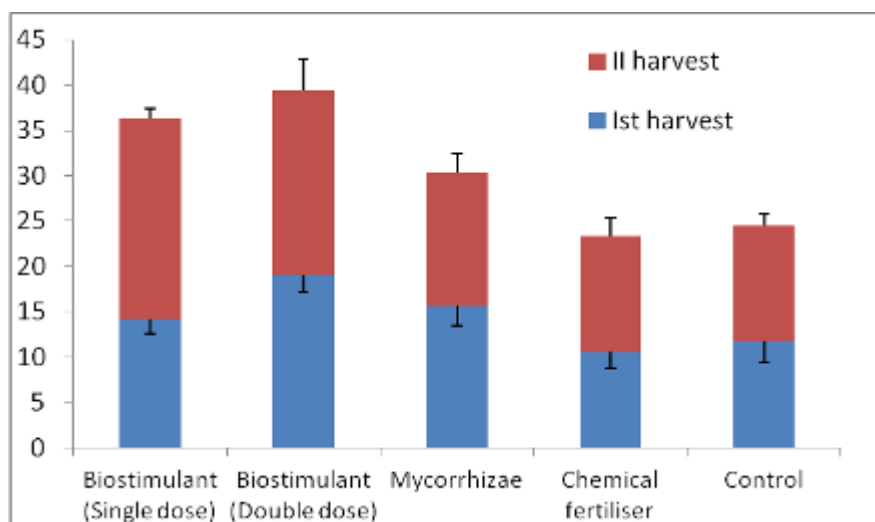


Fig 3 (C). Yield of French Beans under different treatments

4. Revisiting opportunities for Carbon Trading and Co-Benefits in Uttarakhand Himalaya

Project Area: Uttarakhand

Funding Agency: Himmotthan Society

CEDAR developed a booklet entitled “Opportunities for Carbon Trading and Co-benefits in Uttarakhand Himalaya” with the financial support from Himmotthan society which was released on Tuesday the 24th by January, 2012



in a workshop “Climate change in the Uttarakhand Himalaya: Quantification, Mitigation and exploring opportunities from international carbon trade mechanisms”. The booklet included comprehensive information on Climate change, Carbon trading procedure, International policies and opportunities and constraints in relation to Uttarakhand

The idea of revising the booklet was largely due to the continuous negotiations taking place in international carbon trade arena. Our goal was to update the booklet by adding new information on climate change, climate change negotiations and adding specific case studies from Uttarakhand which have potential to generate direct and indirect benefits from carbon trade mechanisms. Positive reviews and a demand for this booklet from various government and non-governmental agencies have greatly encouraged us to produce more such publications.

PDF format of the book can be downloaded from <http://cedarhimalaya.org/publication.html>

*“No one species shall make the life of the world its own.’ ... That's one expression of the law. Here's another: 'The world was not made for any one species.’”
– Daniel Quinn, *Ishmael: An Adventure of the Mind and Spirit**

Publications

1. **Singh, V. Rajesh Thadani et al. 2014.** Human Influence on Banj Oak (*Quercus leucotrichophora*, A. Camus) Forests of Central Himalaya. *Journal of Sustainable Forestry*, 33:373–386, 2014.
2. **Thadani R and V. Singh. 2014.** Carbon Trading and Co-Benefits: Opportunities in the Central Himalaya (Uttarakhand) Bishan Singh Mahendra Pal Singh. Dehradun, 68 pp
3. **Singh V, V Dwivedi et al. 2014.** Potential of Sal (*Shorea robusta* Gaertn. f.) Seeds for enterprise development in Central India: An overview *eJournal of Applied Forest Ecology (eJAFE)*, Vol.2 , No. 1 ISSN: 2347-2347-4009
4. **Thadani, R. and S.P. Singh. 2013.** Nature-society interactions. Pp 30-32. In Himalayas: the Challenge – The Hindu Survey of the Environment 2013.
5. **Singh, S.P. and Rajesh Thadani. 2013.** Valuing Ecosystem Services Flowing from the Indian Himalayan States for Incorporation into National Accounting pp 423-434. In Margaret Lowman, Soubadra Devy, T. Ganesh (Eds). *Treetops at Risk: Challenges of Global Canopy Ecology and Conservation*. Springer, New York
6. **Singh, S.P., Singh, V., 2013** Certain Observed and Likely Ecological Responses to Climate Change in Central Himalaya, *Climate Change and Environmental Sustainability* 1(1): 73-80 DOI: 10.5958/j.0000-0000.1.1.007
7. **Joshi, N.R., Tewari, A., Singh V., 2013.** Biomass and carbon accumulation potential towards climate change mitigation by young plantations of *Dalbergia sissoo Roxb. and Eucalyptus hybrid* in Terai Central Himalaya, India. *American Journal of Research Communication* pp. Vol 1 (4) 261-274



Workshops:

1. Development plans for Uttarakhand Himalaya; post June 2013 Tragedy.

Date: November 13th, 2013

Venue: Hotel Pacific, Dehradun

Funded by: Deutsche Gesellschaft Für Internationale Zusammenarbeit (GIZ), Dehradun

In June 2013, unseasonal and extremely heavy rains across Uttarakhand and adjoining hill states of India caused an unprecedented disaster. A death toll of over 5000, many thousands more missing, and enormous damage to property raised many questions. Uttarakhand is home



to many places of religious importance including *Chardham* in upper reaches of Himalayas. The unseasonal concentrated occurrence of rains in the peak *Yatra* season caught unprepared the pilgrims and locals alike. Questions related to the linkages of this disaster to possible factors such as climate change, lacunae in state administration and development

activities in the region remained answered in scientific and technical terms. Considering the urgency of having an insight into the issue, the Centre for Development of Ecology and Research (CEDAR), with financial assistance from German International Cooperation (GIZ) organized a consultative meeting on 13th November, 2013 to discuss the issue, its underlying causes and Development Plans for the Uttarakhand Himalaya.

The meeting included the talks and presentations from invited guests and experts. The thematic areas of discussion by various speakers were on the following topics:

- a) *Revamping Uttarakhand, Key Sectors and Challenges*
- b) *Landslide scenario in Climate Context and Risk Management*
- c) *Civil Engineering and Infrastructure Development*
- d) *Role of civil Society and local institutions*
- e) *Ongoing Interventions and Future Needs*

2. Learning from the Uttarakhand disaster (June, 2013) for the Indian Himalayan region

Date: March 26th, 2014

Venue: Forest Research Institute (FRI), Dehradun

Funded by: Deutsche Gesellschaft Für Internationale Zusammenarbeit (GIZ), Dehradun

Collaborators: Central Himalayan Environment Association (CHEA) and Forest Research Institute (FRI), Dehradun

A follow up of the above workshop was organized to deliberate linkages of the June 2013 disaster to possible factors such as climate change, lacunae in state administration and development activities in the region which remained unanswered in scientific and technical terms. Considering the urgency of having an insight into the issue, Centre for Development of Ecology and Research (CEDAR) and Central Himalayan Environment Association (CHEA) in collaboration with Forest Research Institute (F.R.I.) with financial assistance from German International Cooperation (GIZ) organized a consultative workshop on 26th March, 2014 to discuss the issue, its underlying causes and Development Plans for the Uttarakhand



Himalaya.

The meeting was attended by 54 participants from various institutes, universities and civil society organizations across the state of Uttarakhand. The meeting included the talks and presentations and policy briefs from invited guests and experts. The chief guest of the workshop was The Hon'ble Speaker Shri

Govind Singh Kunjwal. The suggested action points and discussions were in respective order:

- a) *Recap of process and presentation of learning from UK disaster*
- b) *Governance issues in response to the Uttarakhand disaster*
- c) *Role of research Institutes for collaborative efforts for disaster management*
- d) *Release of knowledge products by the Chief Guest and*

- e) *Need and scope for sharing mechanism among Government Departments NGO's, Research organisations knowledge groups etc*

Ongoing Research Activities

1. Understanding the impacts of Climate change and Forest Degradation on Carbon stocks and population dynamics in the Oak zone of the Central Himalayas.

Project Area: Uttarakhand

Sanctioned by: Department of Science and Technology, Govt. of India

Duration: 36 months

The study aims to better understand the functioning of the central Himalayan forest ecosystems and its response to climate change and chronic human disturbance. Estimating the shift in altitudinal zones of important tree species due to changes in climate is important to be able to predict the future composition of forests and their utility to local people. Mountains are a suitable habitat to study the altitudinal shifts of sedentary lifeforms such as trees as a result of climate change. Rapid changes in climatic zones due to altitude make the process of study of a shift in ecological zones less dependent on random factors. Concurrently, better estimates of carbon sequestration rates, particularly in disturbed zones, will greatly enhance our ability to provide accurate carbon data for the Himalayan forests. This assumes great importance as a result of REDD which is currently being debated in the International arena.



Finally, permanent plots have largely not been established for the central Himalaya. Early plots established by the forest department to look into growth rates do not focus adequately on regeneration and the impacts of human disturbance, and this study aims to establish plots that take into cognizance a

range of disturbance regimes that typify the Himalayan forests today.

The present study was started by laying 40 plots, each 400 sq. meter with nested 100 sq meter plots (for intensive study), under various disturbance regimes. Baseline data, including attitude, geographical position, DBH measurements and marking of all trees, total basal area, dominant vegetation, slope, and data on ground cover have been collected. Litter is collected and weighed for three consecutive peak months, established seedlings, saplings and poles, are quantified. Data is also being collected on understory vegetation, natural regeneration, and ectomycorrhizae (sporocarp).

2. Climate Change Adaptation and Mitigation in for Small Scale Farmers in Central India

Project Area: Central India (Santhal Pargana – Jharkhand and Dahod – Gujarat)

Funded by: CInI (through Navajbai Ratan Tata Trust)

Project Duration: 8 Months

Developing countries are faced with immediate concerns that relate to forest and land degradation, freshwater shortage, food security and air and water pollution. Climate change will exacerbate the impacts of deforestation and other economic pressures, leading to further water shortages, land degradation and desertification. Increasing global temperatures will result in rising sea levels. Populations that inhabit small islands and/or low-lying coastal areas are at particular risk of severe social and economic disruptions from sea-level rise and storm surges that could destroy cities and disrupt large coastal livelihoods. The widespread retreat of glaciers and icecaps in the 21st century will also lead to higher surface temperatures on land and increasing water stress. By 2025, as much as two-thirds of the world population, much of it in the developing world, may



be subjected to moderate to high water stress. Estimates of the effects of climate change on crop yields are predominantly negative for the tropics, even when adaptation and direct effects of CO₂ on plant processes are taken into consideration. Ecological productivity and

biodiversity will be altered by climate change and sea-level rise, with an increased risk of extinction of some vulnerable species.

Even though the ability to project regional differences in impact is still emerging, the consequences of climate change are projected to be more drastic in the tropical regions. This is true for all sectors that are likely to bear the brunt of climate change. The populations of the developing world are more vulnerable as their infrastructure is not strong and extensive enough to withstand a deleterious impact.

The present study aims at:

- a. Analyzing the ongoing activities of Collectives for Integrated Livelihood Initiatives (CInI) in light of climate change
- b. Suggesting adaptation measures relevant to their ongoing activities
- c. Developing a climate change report relevant for the region where CInI is operating

2. Understanding Household Energy Use in Rural India: The Case of the Central Himalayas

Project Area: Uttarakhand

Project Duration: 6 Months

Funding Agency: Sir Ratan Tata Trust

About 40% of the global population (amounting to 3 billion people) rely on solid biomass fuels including fuelwood, crop residues, charcoal, coal, and dung for cooking. India leads the world with the greatest number of people using traditional biomass for cooking; over two thirds of the national population (772 million) uses biomass as their main cooking fuel.

Inefficient combustion of solid fuels produces high concentrations of particulate matter (PM) and other harmful emissions; this household air pollution (HAP) is seriously damaging to health. The 2010 Global Burden of Disease Report found household air pollution to be the third most deadly global risk factor, accounting for about 3.5 million deaths annually (mainly cardiovascular and



respiratory), and the second greatest risk factor for death in India.

Traditional stoves also have other negative impacts on household well-being, since



women and children must spend time cooking and gathering fuel that could be spent on income producing activities. Burning biomass in traditional stoves also harms the local and global environment. First, there is increasing unsustainable harvesting of fuelwood for cooking in many developing regions. Second, residential biofuel cooking is the second greatest source of black carbon, a component of soot from biomass burned in cookstoves that is a significant greenhouse pollutant that is implicated in regional

warming and hotspots (and less water for crops) as well as melting Himalayan glaciers and snow.

A potential solution to these problems is improved cookstoves (ICS), such as more efficient wood burning stoves, or electric, LPG, biogas or kerosene stoves. Compared to traditional stoves, ICS burn less fuel, release less smoke (therefore reducing illness from cooking), and decrease cooking time. Thus the case has been made that improved cookstoves (ICS) have the potential to deliver the triple dividends of household health and time savings, local environmental improvement, and regional and global climate benefits.

Although ICS are designed to be greatly beneficial, rural India households often do not know or care about the adverse impacts of traditional cooking practices; or are simply unwilling or unable to pay for the technologies. Therefore, programs that provide information about the incremental value of the stoves and offer households a low-risk opportunity to purchase the stove are needed to achieve widespread adoption of ICS in India.



The current program is conducted in collaboration with Centre for Ecology Development and Research (CEDAR), CHIRAG and Duke University. Chirag is locally administering the program in approximately 30 villages (all of which have been visited previously during the baseline survey). All households in these villages have

received a promotional pamphlet that describes the environmental and health benefits of ICS. Individual household (and potential community level) demonstrations are conducted in selected households. During these demonstrations, the benefits of the stoves are explained (incremental value to households from time and fuel saved, health benefits, etc.), stoves were shown and lit, the payment plan were explained, and interested households are given the opportunity to purchase a stove. Households have the option to pay for the improved stove in installments. Teams of trained sales staff (each with one Chirag Karayakarta) are conducting village visits and sales activities.

Specific objectives : In collaboration with CHIRAG, Duke University and Sir Ratan Tata Trust we aim to achieve the following objectives

- a. Creating awareness among rural population on environmental and health benefits of improved cook stoves
- b. Demonstration of improved cook stoves in selected villages of Uttarakhand
- c. Developing rural market channel for distribution of improved cook stoves
- d. Documenting the impact of improved cook stoves on rural lifestyles

Foreign Funded Projects:

1. The Political Economy of Water Security, Ecosystem Services and Livelihoods in the Western Himalayas

Project Area: Uttarakhand, Himachal Pradesh

Project Duration: 30 Months

Funding Agency: Ecosystem services for Poverty Alleviation (ESPA), United Kingdom



The project started in January, 2013 in collaboration with Cambridge University, United Kingdom and CEDAR. The project aims to study the ways in which small towns in hill and mountain regions of South Asia depend on springs, small streams and other natural water bodies in their surrounding

catchments for the supply of water. Across the region, almost half the urban population in the Indian states of Himachal Pradesh and Uttarakhand, live in small towns. These towns also tend to be relatively resource poor, lacking the revenue and resources available to larger settlements, and their populations and settlement patterns usually display peri-urban and semi-rural characteristics, making infrastructure planning and provision particularly challenging.

The project operates in a selected set of small towns in the two Indian states i.e Nainital and Mussoorie in Uttarakhand and Rajgarh and Palampur in Himachal Pradesh. The study involves an assessment of the hydrological dependence of these small towns on water flows from the surrounding landscape, and identify areas that are critical to securing these water flows ('critical water zones'). The project also deal with the existing patterns of resource and land use in these critical water zones, and the range of ecosystem services that flow from these areas to meet the needs of local and non-local stakeholders.

This will allow an understanding of the synergies and trade-offs associated with managing these areas to secure water supply for the towns, in relation to their potential use for other livelihood and resource use strategies.

At the end of the project there will be a better understanding of the



ways in which urban and rural areas interact with each other in the context of flows of ecosystem services. The hydrological dependence of small towns on their surrounding ecosystems provides the potential for negotiated agreements that secure water supplies to these towns (especially the urban poor), while also ensuring secure livelihoods for upstream local communities, and protecting and enhancing a range of other ecosystem functions in the surrounding watersheds. This project will explore the conditions under which such synergies can be realized, while also exploring and highlighting the trade-offs and difficult choices that characterize decision making in such contexts.

People

Board Members

Prof. S.P. Singh, FNA

Former Vice Chancellor, HNB Garhwal University, Srinagar, Chair of Excellence, Forest Research Institute, Deemed University

Prof. B.K. Joshi

Former Vice Chancellor, Kumaun University, Nainital, Director, Doon Library, Dehradun

Dr. Ravi Chopra

Director, Peoples Science Institute Dehradun

Dr. Rajesh Thadani (Secretary)

(Ex-Officio) Executive Director, Centre for Ecology Development and Research

Dr. Ghazala Shahabuddin

Independent Consultant, New Delhi

Dr. Malavika Chauhan

Executive Director, Himmotthan Society, Dehradun

Research Advisory Board

Dr. Graeme P. Berlyn, E.H. Harriman Professor, School of Forestry and Environmental Studies, Yale University, Connecticut, USA

Dr. Margaret D. Lowman, Director of Environmental Initiatives, New College of Florida, USA

Dr. P.S. Roy, Dean Indian Institute of Remote Sensing, Dehradun

Dr. R.P. Singh, (Retd.) Professor Emeritus, Dept. of Forestry, Kumaun University, Nainital

Dr. Rajendra Dobhal, Director General, U-COST, Dehradun

Dr. Ankila Hiremath, Ashoka Trust for Research in Ecology and Environment (ATREE), New Delhi

Research Team

Prof S.P. Singh, FNA(Distinguished Fellow)/ Chairman: Among the best recognized and published forest ecologists in the country, Prof Singh has headed the ecology group at Kumaun University for over 20 years and published over 170 papers in journals of national and international repute. He was the Vice Chancellor of HNB Garhwal University between 2005 and 2008 and currently the chair of excellent at FRI.

Dr. Rajesh Thadani (Executive Director, Senior Fellow): An ecologist and physiologist with a Ph.D from Yale (School of Forestry & Environmental Studies), he has headed Chirag – the largest NGO in the Kumaun Himalaya, and been senior advisor to the Sir Ratan Tata Trust. Rajesh has been working on Himalayan forests for over twenty years.

Dr. D. S. Chauhan (Senior Fellow): Has worked on hydro-chemistry and sediment transport of Gangotri and Bhagirath Kharak glaciers. He has also worked in the ecotourism sector and was closely associated with designing of an ecotourism services package for a resort near Corbett National Park in Ramnagar.

Mr. Chetan Agarwal (Senior Fellow): Works on issues related to forest management and conservation. He has worked considerably on Forest policy issues across India. His current research pertains to the understanding of political economy of ecosystem services and poverty alleviation in small towns in Western Himalaya

Dr. Vishal Singh (Coordinator/ Fellow): Vishal's areas of research interests pertain to ecological impacts of small scale chronic disturbances in Himalayan forests. Vishal has extensively worked on development of allometric equations for carbon estimation and reduction emissions from deforestation and degradation (REDD).

Dr. Vivek Dwivedi (Research Associate): Vivek has worked on ecological restoration of derelict stone mine lands in Aravalli Hills. He has also worked on biodiversity conservation and vegetation shifts in the Uttarakhand Himalaya. His areas of interest are dynamics of soil nutrients, role of microbial biomass in nutrient mineralization and ecological restoration of the degraded forest land.

Ms. Anvita Pandey (Project Assistant): Anvita has completed her masters in Environment Management from Forest Research Institute (Deemed) University, Dehradun, with specialization in Natural Resource Conservation and Management. Her areas of interest are conservation and management of natural resources, climate change mitigation and restoration of degraded areas.

Ms. Srishti Singh: (MGS Fellow), Srishti has completed her masters in Environment Management from Forest Research Institute (Deemed) University, Dehradun, with specialization in Natural Resource Conservation and Management. Srishti's areas of interest are concerned to climate change and energy issues in the Central Himalaya.

Mr. Anil Tyagi (Accounts Officer)

Mr. Amit Bhakuni (Office Manager)

Voluntary Compliance

Voluntary Compliance with the Norms of Credibility Alliance

The Credibility Alliance has evolved minimum and desirable to promote better Governance within the Voluntary sector. While CEDAR is not a member of the alliance, we declare this information voluntarily to promote accountability and transparency.

Governance:

None of the Governing board members are related to each other or related to any of the senior salaried staff by blood or by marriage.

None of the Governing Board members (including the Chairman and Executive Director) have received any salary, consultancy or other remuneration from CEDAR. Travel costs, as per actual ticket submitted that were budgeted into projects were however reimbursed.

The Governing Board has met more than twice in the last year with the required quorum.

*7th Annual General Meeting held on September 3rd, 2013, 5 pm
Venue: 41/I, Vasant Vihar, Dehradun*

Salary: Maximum salary paid was of were Rs 47,750 /- month.

Travel: Maximum cost of any single rail ticket purchased was less than 2000 /- rupees

Maximum cost of any single air ticket purchased was less than 11000 /- rupees

Statutory Auditor:

*Mr. R.Balasubramanian
Partner, S.Ramanand Aiyar & Co.
708, Surya Kiran,
Kasturba Gandhi Marg,
New Delhi 110001*

Our Bankers:

*ICICI Bank, New Delhi
Indian Overseas Bank, Dehradun*

Audit Statement

CENTRE FOR ECOLOGY, DEVELOPMENT AND RESEARCH

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31st MARCH 2014

PARTICULARS	CURRENT YEAR	PREVIOUS YEAR
	Rs.	Rs.
INCOME		
Projects in progress brought forward		
Himmotthan - SML PSI Evaluation Project	74,601	33,996
Himmotthan - Assessing the impact of IFLDP programme on Livelihoods and Forests of Uttarakhand Himalaya	124,119	155,948
Himmotthan- Revisiting: Opportunities for Carbon Trading and Co-Benefits in the Uttarakhand Himalaya	177,700	-
USBD- Developing organic Bio-stimulants to alleviate drought and cold stress and enhance plant growth in the Himalaya	188,998	259,417
Nav Ratan Tata Trust	380,196	574,324
SRTT- Development of Programme Effectiveness and Sustainability Index	337,830	337,830
	1,283,444	1,361,515
Project Funding		
Receipts during the year		
Himmotthan - SML PSI Evaluation Project	-	200,000
Himmotthan - Assessing the impact of IFLDP programme on Livelihoods and Forests of Uttarakhand Himalaya	225,000	420,000
Himmotthan- Revisiting: Opportunities for Carbon Trading and Co-Benefits in the Uttarakhand Himalaya	-	177,700
NRTT- Developing a strategy for Forest Based Livelihoods in Central India through assessment of Major NTFPs	309,000	-
NRTT- Climate Change Adaptation and Mitigation for Small and Marginal farmers in Central India	485,000	-
GIZ- Regionale Wirtschaftsforderung Uttarakhand	408,000	60,000
SRTT- Understanding Household Energy Use in Rural India: The Case of the Central Himalayas	535,000	-
USBD- Developing organic Bio-stimulants to alleviate drought and cold stress and enhance plant growth in the Himalaya	-	225,000
SERB- Understanding the impacts of Climate change and Forest Degradation on carbon stock and population dynamics in the Oak zone	1,600,000	-
UCOST- Climate Change	-	308,000



UCOST Workshop	-	150,000
	3,562,000	1,540,700
Other Incomes		
Interest on Income Tax Refund	-	940
Donation	140,000	110,000
Fixed Asset Cost Realised	-	-
Administrative cost Realised	248,690	51,500
Interest Income	60,310	47,392
	449,000	209,832
TOTAL INCOME	5,294,444	3,112,047
EXPENSE		
Expenditure on Projects		
Himmotthan - SML PSI Evaluation Project	-	159,395
Himmotthan - Assessing the impact of IFLDP programme on Livelihoods and Forests of Uttarakhand Himalaya	365,259	451,829
Himmotthan- Revisiting: Opportunities for Carbon Trading and Co-Benefits in the Uttarakhand Himalaya	177,700	-
SRTT- Development of Programme Effectiveness and Sustainability Index	281,697	-
NRTT- Developing a strategy for Forest Based Livelihoods in Central India through assessment of Major NTFPs	325,420	31,030
NRTT- Climate Change Adaptation and Mitigation for Small and Marginal farmers in Central India	89,500	-
SRTT- Understanding Household Energy Use in Rural India: The Case of the Central Himalayas	495,000	-
USBD- Developing organic Bio-stimulants to alleviate drought and cold stress and enhance plant growth in the Himalaya	188,998	261,640
SERB- Understanding the impacts of Climate change and Forest Degradation on carbon stock and population dynamics in the Oak zone of the Central Himalayas	507,493	-
GIZ- Regionale Wirtschaftsforderung Uttarakhand	408,000	60,000
Nav Ratan Tata Trust	19,522	194,128
ESPA: The Political Economy of Water Security, Ecosystem Services and Livelihoods in the Western Himalayas	20,445	-
UCOST Climate Change	-	308,000
UCOST Workshop	-	150,000
	2,879,034	1,616,022
REPAYMENTS OF GRANTS		



SRTT- Development of Programme Effectiveness and Sustainability Index	13,513	-
Nav Ratan Tata Trust	360,674	-
Himmothan - SMI PSI Evaluation Project	74,601	-
	448,788	-
EXPENDITURE		
Communication Expenses	25,025	30,376
Consultancy and Honorarium	17,300	45,500
Depreciation (Schedule - 3)	100,713	63,958
Employee Costs	351,226	285,550
Office Expenses	50,487	50,795
Printing and Stationery	10,260	368
Rent (Net)	72,868	80,327
Repairs and Maintenance	10,385	17,216
Travel and Conveyance	28,394	11,284
Water and Electricity	28,634	45,508
Other Expenses	3,626	345
	698,918	631,227
TOTAL EXPENSES	4,026,740	2,247,249
Balance	1,267,704	864,798
Less: Transferred to Project in Progress (As per Schedule - 1)	1,320,555	1,283,443
Surplus (Deficit) transferred to Reserve Fund	(52,851)	(418,645)

Significant Accounting Policies and Notes - Schedule 4

In terms of our report of even date annexed.

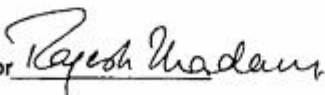
Chairman



Vice Chairman



Executive Director



For S. Ramanand Aiyar & Co.
Chartered Accountants
Firm Registration No - 000990N



R. Balasubramanian
Partner
Membership No. 080432

Place: New Delhi

Date 1 8 SEP 2014



Annual Report – 2013-2014



**Centre for Ecology Development and Research
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