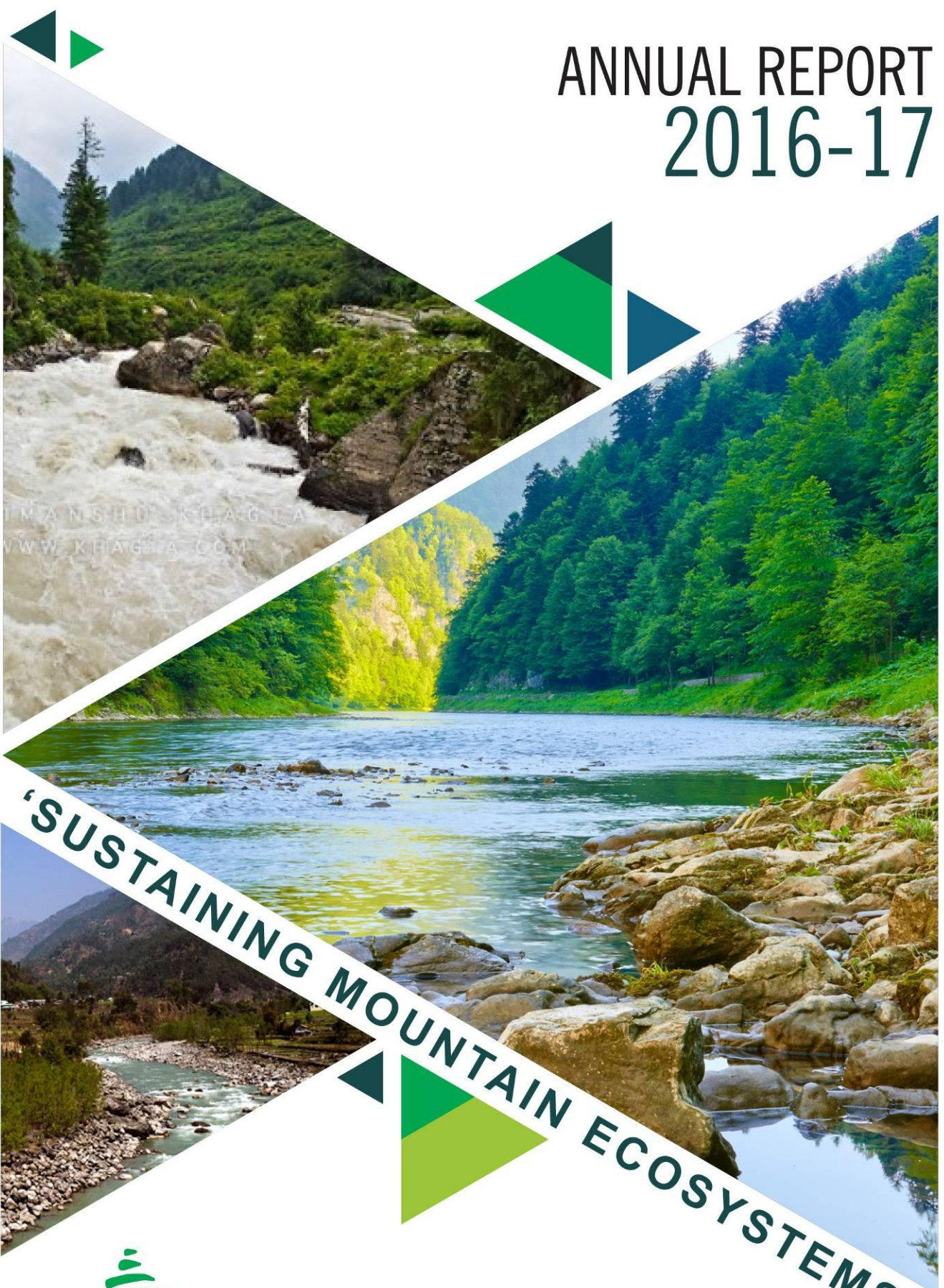


ANNUAL REPORT 2016-17



CENTRE FOR ECOLOGY DEVELOPMENT AND RESEARCH

Annual Report 2016-17

Centre for Ecology Development and Research

Centre for Ecology Development and Research (CEDAR) works on issues of ecology, environment, and development primarily in the Himalayas. CEDAR works with communities, policy makers, and development practitioners to bridge the gap between theory and practice, policy and implementation. We do so by linking applied research to ground initiatives on the one hand and the output of such collaboration to various external stakeholders on the other hand. We believe that such initiative would help establish a better understanding of the ground realities while, at the same time, help document best practices for replication, subsequent programme design, and optimal allocation of funds.

Partners:

University of Cambridge, Department of Geography, United Kingdom

Yale Himalayan Initiative (YHI), Yale School of Forestry, USA

South Asia Institute of Advanced Studies (SIAS), Kathmandu Nepal

Central Himalayan Rural Action Group (CHIRAG), Odakhan, Nainital

The Energy Research Institute (TERI), New Delhi

University of New South Wales (UNSW), Australia

Tata Institute of Social Sciences (TISS), Mumbai

The Mountain Institute (TMI), Sikkim, India

Megh Payne Abhiyan (MPA), New Delhi

[Himalayan Nature and Adventure Foundation](#), Siliguri, India

Donors:

Department of Science and Technology, (SERB), Govt. of India

Ministry of Environment and Forest, (Climate Change), Govt. of India

Ecosystem Services and Poverty Allevation Program (ESPA), United Kingdom

International Development Research Centre, Canada

International Centre for Integrated Mountain Development (ICIMOD), Kathmandu, Nepal

M.G. Shahani & Co (Delhi) Ltd.

Pevibai Motiram Shahani Trust, Delhi

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“The mystery of the beginning of all things is insoluble by us; and I for one must be content to remain an agnostic.”

—Charles Darwin

Message from the Chairman....



Historically there has been a rich tradition of doing research outside universities and institutions. In fact, research as a major academic activity in universities is a new practice. Darwin, Galileo, Mendel and many other great scientists of the earlier centuries did research outside the university systems. Even in India our two great icons Ramanujan and Raman had little or only weak university connection. At present, however, to get research support you should be either associated with a university or institute.

It is rather strange that granting agencies do not expect NGO's to do research. Some talented and well-meaning individuals established CEDAR a few years ago with a goal of integrating research and grass roots level needs of the people. Consequently, CEDAR has a fairly sound understanding of real needs and interventions required to address them. Climate change, carbon forestry, ecosystem services and urban water management and spring sheds are some of the areas that have been close to CEDAR's activities in recent years.

Now, CEDAR is recognised for what some people called action research. Vishal and his team has played a key role in sensitising young citizens and government officers of Nainital about the key ecological processes that need to be properly understood to deal with the crisis of lake deterioration. Through various workshops and meetings and by processing scientific knowledge in a form that non-scientists can understand, CEDAR certainly has been quite successful in strengthening citizens' participation in addressing the issues of environment and development. While doing so, CEDAR has made notable progress in the understanding of urban management with focus on water security issues. These activities could be sustained because of the increased capacity of CEDAR to collaborate with bigger international organisations, universities, institutes and governments. CEDAR's activities are primarily managed by talented young scholars. Perhaps it comes naturally to CEDAR to promote young people by providing a platform to them to express.

What about CEDAR's core strength, the forest ecology and forestry? I think Rajesh's efforts to develop and maintain forest plots in Mukteshwar for long term studies will go long way improving our understanding of changes that climate change can bring about, or that may result from human migration and subsequent recovery of chronically disturbed forest stands. Most of the ecology of restoration of disturbed forests is based on acutely disturbed forests. How a forest stand of trees with lopped branches and ruptured mycorrhizal association recovers is hardly known.

CEDAR is certainly far more confident organisation than it was only a couple of years ago. However, we need a lot more to do to have impact enough to affect policies and practices. The county's economic growth may be severely affected by environmental threats that have roots in mismanagement and disregards for ecological principles. Air pollution, water scarcity, dying of rivers, crowded roads, migrating populations, increasing inequity etc. are big challenges of different scales than those we are used to. Climate change in most situations can only worsen it. Society must realise that many CEDARs.



S P Singh, FNA
Chairman

From the Executive Director's Desk.....



CEDAR aims to act as a bridge between academia and policy makers. We work with and learn from civil society and grassroots organisations, and use this understanding to tailor our research to maximise impact.

Our work on Lake Sukhatal in Nainital town exemplifies this approach. We used published but forgotten research to highlight a problem – that of inadequate recharge into lake Nainital.

Our efforts to establish the importance of percolation from Sukhatal - a critical recharge zone – have born results. Today policies are being formulated to

protect Sukhatal and the importance of this ephemeral lake are much better recognised.

The issue of equitable and adequate water supply in mountain towns, with a focus on sustainable solutions, was the focus of CEDAR's interventions this year. Water forums are being established in three important towns – Mussoorie, Nainital and Haldwani –and we hope to work with these groups to strengthen civil society action.

In forestry our understanding of the impacts of human use of Himalayan forests continues to grow. Our long term plots near Mukteshwar in Nainital district are yielding valuable data. As climate patterns change, we are trying to understand local impacts and discern how Himalayan ecosystems will change. Our work on natural ecosystems was strengthened this year by the establishment of a sub-group on wildlife and people.

We look forward to increased outreach and awareness programmes, and strengthening our partnerships with schools and citizen forums. The future of environmental understanding lies in these collaborations and in the realm of citizen science. To understand the impacts of climate change in natural ecosystems, we believe the importance of crowd sourced data will grow. We need to position ourselves to benefit from the availability and technology to use this data.

At the same time we recognize the importance of contributing to science through peer reviewed publications. CEDAR researchers are also part of Government committees and groups and are influencing the development of sustainable management policies.

Our tenth year of operation has seen Cedar mature and grow as an organisation. Our team is stronger and more interdisciplinary. It is the enthusiasm and energy of this young group that propels the organisation forward.

I would like to thank our supporters and well wishers, in particular our Governing Board, our Research Advisory Board, Donor agencies and collaborators from academic and research institutions, the Government and NGO's who provided us with guidance and support.

Rajesh Thadani
Executive Director

About us

CEDAR is a not-for-profit organization registered in 2006 under the Societies Act of 1860. The registered office of CEDAR is located in Delhi while the main operations are based out of Dehradun. CEDAR was established when a group of academicians and development practitioners came together to bridge the gap between applied research and field based interventions or, to put it differently, ‘balance theory and practice’. The development sector has, for long, been caught in the divide between theoreticians and practitioners.

The research activities of CEDAR essentially focus on generating, monitoring 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 conservation, in the real sense. Therefore, in addition to building core research competence in forestry, ecology and social sciences, the organization works towards strengthening links between communities and ecosystems by networking with grass-root organizations.

Where we work



Focus

CEDAR sees itself as being a platform to carry out research of relevance to people and their environment. We aim to get together a blend 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.

Vision

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

Thematic Areas

CEDAR was established as a research based agency to facilitate better quality, more relevant and actionable research on the Himalaya with particular reference to Himalayan forests. While early interventions focused on forests and allied areas, since 2013 CEDAR has increasingly broadened its scope of work. In order to focus and give direction to the range of research activities undertaken by CEDAR, we have identified four key research thematic areas that seek to address the needs of our society. Today, our work can be broadly grouped into these thematic areas:-



1. Forest and Humans



Himalayan forests are critical for the range of ecosystem services they provide that help sustain the heavily populated floodplains downstream. Equally, they are critical in the direct products and services they provide to the populations that live in and around these ecosystems.

Mountain agriculture is heavily dependent on forests for nutrients inputs. Rural communities depend on forests for firewood, fodder for their animals, and a range of products and services. Most Himalayan forests are used quite

extensively by humans. Understanding the range of disturbances that impact these forests, and determining interventions that allow for their sustainable management is important. CEDAR aims to understand these interventions, and particularly the impact of chronic disturbance by humans. A set of forty long term monitoring plots, each 400m², constitutes the core of CEDAR's research strategy in the mid elevational Himalayan forests. On a macro scale the impacts of climate change on mountain ecosystems, and ways to value ecosystem flows from forests are areas of interest that fit into this, the first of the general themes on which CEDAR works.

Thematic lead: Rajesh Thadani, Executive Director

2. Urbanisation

Rapid change in settlement and population patterns in the Himalayas has been fuelled by unplanned and haphazard development, differential allocation of resources and urbanization. A movement away from rural areas and an economy based on agriculture-animal husbandry, and into towns and cities characterize these growing trends of economic development and migration patterns.



Himalayan towns and cities traditionally showed higher levels of self-sufficiency compared to urban agglomerations of the plains. A dependence on springs and small streams and rivers for water; on nearby fields and forests for a relatively high proportions of food and fodder, a broader and more diverse resource base and lower trade with the outside world compared to towns in the plains is characteristic of hill towns. But this is now changing. CEDAR began its understanding of urbanization through the lens of water distribution systems and how natural sustainable sources of water which were located close by were being replaced by more distant water sources which required high capital investment and energy inputs to tap. This theme has evolved and become more broad-based as CEDAR now aims to better understand and contribute to policies towards more sustainable urban mountain ecosystems.

Thematic lead: Vishal Singh, Coordinator

3) Climate Change Adaptation



People dependent on natural ecosystems are going to be most vulnerable to any adverse change in climate. In the Himalayan region, forest based agriculture is a mainstay of livelihoods. The vulnerability of mountain farmers is expected to increase on account of changing climate. The Himalayan region is more frequently affected by extreme events that cause disasters. Mountain people, particularly the disadvantaged and marginalised groups, suffer from increasing poverty, natural hazards, deprivation and

socioeconomic conflicts. Climate change is likely to exacerbate these already existing challenges making it harder for these groups to cope.. Moreover, the depletion of snow reserves and degradation of recharge zones of watersheds are reducing water availability and increasing conflicts over dwindling natural resources and supplies. These changes will be felt most immediately by poor and isolated mountain communities, who have little capacity to cope with and adapt to these changes. Under this thematic area CEDAR aims to bridge the gap between research, policy and practice, contribute towards understanding the seasonal impacts of climate change and strengthen adaptive capacities of vulnerable communities through collaborations with grass root organisations.

Thematic lead: Vishal Singh, Coordinator

4) Wildlife, People and Land-Use Change

The Himalayas harbor rich faunal diversity, both due to the spatial heterogeneity of ecosystems as well as diverse human and biogeographic influences. Zoological surveys

aimed at understanding faunal diversity patterns in the human-dominated forested landscapes of the Himalayas are necessary for initiating conservation planning in this region. CEDAR is looking to study the effect of land use change and ecosystem modification using the birds as an indicator taxa. Currently studies are being undertaken in the Western (Kumaon) and Eastern Himalayas (Meghalaya). The middle altitudes, which are densely populated zones significant for both livelihoods and biodiversity have been chosen. A long-term monitoring approach is being adopted so that trends in local extinction and adaptation of bird species can be tracked. It is hoped that such a quantitative, landscape-based methodology can provide useful input for judicious land use planning and wildlife policy in the Himalayan states.



Thematic Lead: Ghazala Shahabuddin, Senior Fellow

Ongoing Projects

1) Name of the Project: “Monitoring of Biomass Stocks and Forest Community Structures in temperate Zone of Western Himalaya.”

Name of the Funding organization: Ministry of Environment and Forestry (MoEF).

Project Lead: Dr. Rajesh Thadani

Duration of the Project: 3 years

This study aims to provide more accurate data on biomass and carbon sequestration rates in relatively undisturbed forest sites, while developing a method to rapidly access the same using leaf area index (LAI) as an indicator of productivity. The project also aims to understand the shift in altitudinal belt of important tree species due to changes in climatic regimes and future composition of the forests. The project will contribute and expand CEDARs network of permanent plots and the data will be made available to Himalayan researchers. These plots and data assume importance as a result of REDD + and related mechanisms suggested by UNFCCC. The study is being conducted in Nainital district of Kumaun Himalaya between 1600 and 2400 m. 48 permanent plots of 400m² nested with 100m² plots for intensive study are being established at an interval of 100m rise in altitude. These data include information on altitude, tree diameter (DBH), total basal area, and dominant vegetation, Slope of the plot, number of trees, seedlings, saplings and poles.

Research and project outcomes from April 2016- 2017 –

At the plot level, the majority of plots showed uneven diameter distributions. While a minority of plots (less than 33%) showed relatively homogenous diameter distributions, where most stems of banj were likely from a similar age class, in the majority of plots this was not the case. Most plots had some large stems (typically over 30-35 cm diameter) and several smaller stems (less than 15-20 cm diameter) indicating uneven age class. This is indicative of small disturbances and single tree removals, or felling of a small group of trees. Plots with more homogenous size class, indicating simultaneous recruitment were more often found in areas where agricultural abandonment may have occurred in the distant past. The data so far is showing very interesting trends with regards to recruitment of seedlings and small trees in undisturbed environments and also to the impact of anthropogenic factors in even apparently undisturbed environments.

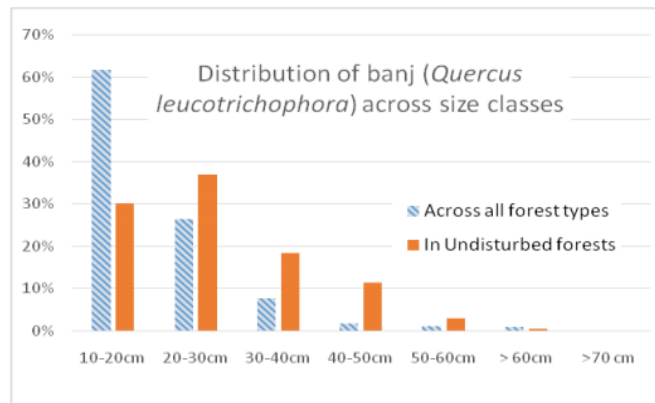


Figure 1: Banj distribution across all forest types shows a reverse J shape while in undisturbed forests this pattern is not followed.

2) Name of the project: Effects of Land Use Change and Fragmentation on Himalayan Bird Communities in Banj Oak Forests of Kumaon, Uttarakhand
Funded by: Department of Science and Technology (DST) Government of India
Duration: 3 years (August 2015-August 2018)



Project Lead: Dr. Ghazala Shahabuddin

The banj oak (*Quercus leucotrichophora*)- chir pine (*Pinus roxburghii*) forests of the Western Himalayas (1500-2500 m a.s.l.) form a biologically diverse region with unique floral and faunal communities. These forests,

internationally classified as ‘Western Himalayan Temperate Forest’, have been declared an eco-region of high conservation importance by WWF-International. These forests also form the basis of local rural livelihoods to a large extent, providing fodder, fuelwood and several commercial NTFPs. However, this forest type also is undergoing rapid degradation due to overexploitation for biomass, and conversion due to anthropogenic spread of pine, horticulture, construction of resorts and other buildings, and road-widening activities. This field-based project is quantitatively evaluating the ecological impacts of forest modification and conversion on the native forest bird communities through intensive field surveys and statistical analysis. As of July 2017, two field seasons of data have been collected on bird communities and forest vegetation characteristics in six prevalent land uses, including protected natural oak forest.

Over the last two years of surveys, 136 bird species have been identified in the forests of this altitudinal zone, 51 (38%) of which are endemic to the Indian Himalayas and 35 species (26%) are habitat-restricted to hardwood oak forests. Analysis showed that protected oak forest had the highest diversity of birds, while pine forest stands and built-up sites had the lowest. Data analysis reveals 22 (16%) species that are highly vulnerable to forest degradation and conversion and thus may be used as surrogates for large-scale conservation planning at this altitude. The results of this study have been published (partially) and have been presented in a seminar to Uttarakhand Forest Department officers, who may be able to use the data in future forest conservation planning.

3) Name of the Project: Mainstreaming the role of ecosystem services in water supply of Nainital

Name of the Funding organization: ICLEI- Local Governments for Sustainability

Project Lead: Dr. Vishal Singh

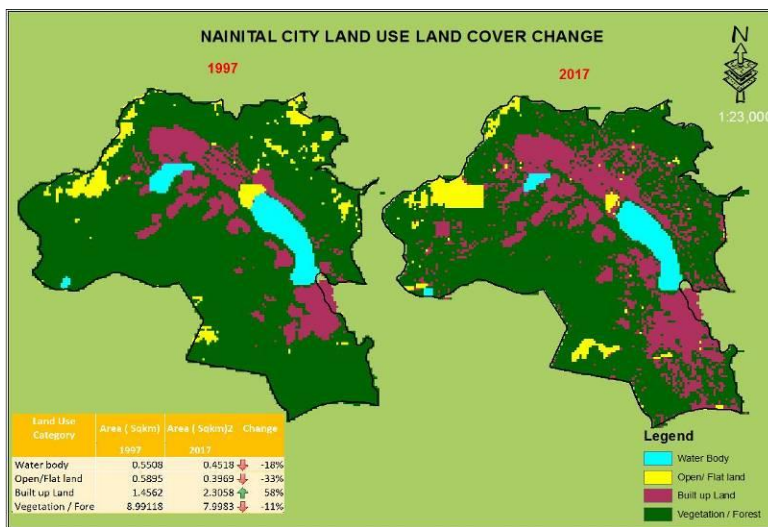
Duration of the Project: August 2016- August 2017

Nainital, popularly known as the ‘City Of Lakes’, is one of the most visited tourist destinations in the Kumaon region of Uttarakhand. The kidney shaped Naini Lake, surrounded by dense forests, receives a heavy influx of tourists. Water supplied to the population of Nainital, which is around 41000 people, comes from the 12 tube wells; 9 in Naini Lake and 3 in Sukhatal. In recent years, due to unplanned construction, encroachment and degradation of recharge zones, particularly Sukhatal, and the deficit in winter rainfall caused a rapid decline in lake water level, to the extent of about an 18feet drop in lake levels. These issues are a matter of concern among the locals, environmental agencies, government

authorities and ecologists. Concretization over significant parts of the recharge areas has reduced infiltration of rain water into the aquifers. Dumping of construction debris in Sukhatal Lake, which is a primary aquifer recharge area for Naini Lake has shrunk the area of this ephemeral lake from its original over 2 hectares.

Based on this information, CEDAR undertook a process to map and understand ecosystem services concerns related to sustainability of water supply and the lake. To achieve this field work was carried out to understand ground water and geological connections. To support this, geological maps, a potential recharge areas map, Land use land cover map and a spring map have been generated. Keeping the Lake in focus, studies been carried out with the

involvement of the local government. It is anticipated that this study will provide inputs for the improvement of the urban water system in the city of Nainital.



5) Name of the Project: Climate Adaptive and Water Management Practices for Cities in South Asia (CAMPS)

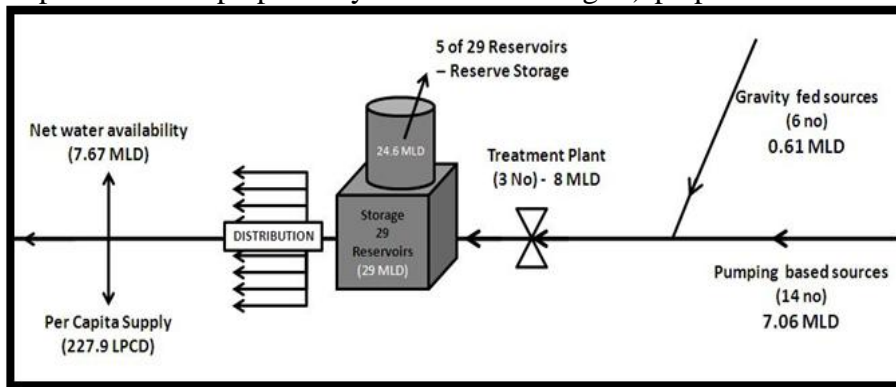
Funding Organization: International Development Research Centre (IDRC)

Duration : 3 years

Project Lead : Dr. Vishal Singh

The project is intended to address water insecurity in Mussoorie and Haldwani regions of Uttarakhand, largely aiming to develop climate adaptive and equitable water management practices and strategies (CAEWMPs) to cope with this insecurity. Main focus is given on institutional building or transformation, informed by a diagnostic analysis of social, political and biophysical dimensions of the urban water system.

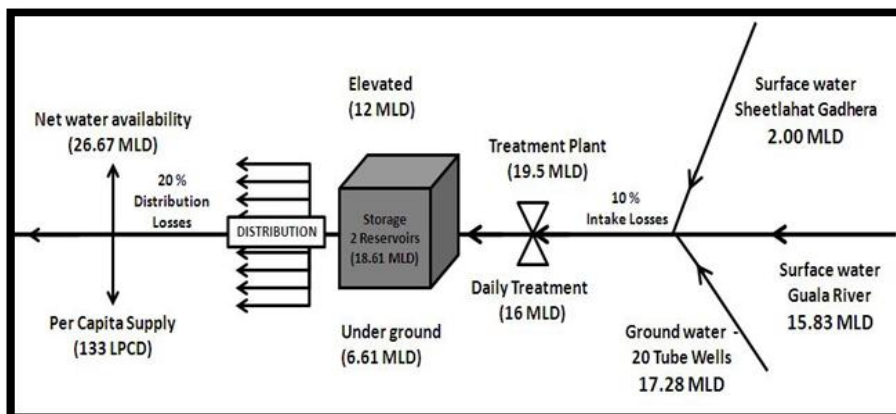
CEDAR has completed two city level inception workshops and had conducted project implementation preparatory actions including: 1) preparation of base documents for each of



Mussoorie Water Supply Schematic

issues of water

insecurity as well as gender and social



the four case study cities, 2) situation analysis of research sites, 3) identification of critical urban water zones (CUWZs) and key stakeholders engagement, 4) identification of key issues of water insecurity as well as gender and social dimensions, and, 6) preliminary explorations of potential solutions from the perspectives of site specific water stakeholders with public commitment to work together for the next three years

to implement CAMPS piloting during this reporting period.

City scale water forum has been established in all four case study sites and in India namely the Mussoorie Water Forum and the Haldwani Water Forum. CAMPS project envisions water forums to be a crucial platform for all water stakeholders of the city to discuss and negotiate water conflicts, issues and challenges that the city is facing. It also works as a knowledge hub for sharing various water related findings from researchers/scientists and the indigenous knowledge at local level.

**6) Name of the project: Himalayan Adaptation, Water and Resilience (HI-AWARE)
Research on Glacier and Snowpack Dependent River Basins for Improving Livelihoods
Funding organization: ICIMOD
Project Lead: Dr. Vishal Singh
Duration of the project: 2015-2018**

HI-AWARE is a research initiative aiming at developing climate change adaptation approaches and increasing the resilience of the poorest and most vulnerable women, men, and children in the mountains and plains of the Hindu Kush Himalayan (HKH) region. The HI-AWARE consortium is conducting integrative research across scales on the **biophysical, socioeconomic, gender, and governance drivers and conditions leading to vulnerability** in order to understand climate change impacts and to identify critical moments for adaptation.

CEDAR was taken on board for facilitating and assisting research in three altitudinal ranges, High-Hills (Rudraprayag), Mid-Hills (Tehri Garhwal) and Plains (Haridwar) of the Upper Ganga Basin in Uttarakhand in the year 2015. The team is engaged in an operational partnership in the Plains (Haridwar) and Mid-Hills (Tehri Garhwal) districts and in a strategic partnership in all three elevation levels with ICIMOD. Under the said strategic partnership, CEDAR is also conducting research on Urban Water Management and Springshed Management Research in Mussoorie and Devprayag.



In the year 2016, CEDAR conducted vulnerability assessments to determine the socio-economic, governance and gender drivers and conditions leading to vulnerability; and quantitative surveys to highlight the climatic stresses on the livelihoods of communities in Plains and Mid-Hills of the Upper Ganga Basin in partnership with TERI. With the help of HI-AWARE's ongoing research, CEDAR has been able to create awareness towards need for Climate Change Adaptation strategies at the State as well as community level through knowledge dissemination helpful in building resilience among communities. CEDAR built linkages at the State level through nomination to the State Level Expert Committee under the *Namami Gange* program, an implementation wing formulated by the Prime Minister of India and controlled by the Ministry of Water Resources, River Development and Ganga Rejuvenation for cleaning of the Ganga river as well as promoting innovative suggestions for the conservation of its biodiversity. Furthermore, we actively engage with the Climate Change Cell of Uttarakhand under the State Forest Department. CEDAR carried out operations for the Expert Committee Consultation on 'Stakeholder prioritization of Adaptation Pathways and Turning Points in Upper Ganga Basin' in Dehradun.

7) Name of the Project: Extinction Vulnerability of Bird Communities along Land Use and Management Gradients: A Comparative Approach in the Forests of Northeast and Central Himalayan Regions of India.

Funding organization: Science and Engineering Research Board (SERB), Department of Science and Technology, Government of India

Duration: 3 years

Project Lead: Dr. Rajkamal Goswami

Landuse change is one of the gravest threats to tropical biodiversity. Driven by logging, grazing, fuelwood collection, mining and shifting cultivation,



such changes accelerate species extinction rates. The intensity and extent of such activities are often determined by the conservation efficacy and priorities of different forest management systems and in turn impacts abundance and composition of faunal communities. Globally and in India, a wide variability occurs in

management systems of both state and community forest and range from protected to intensive-use. The mid-elevation forests of the Kumaon Central Himalayas, Uttarakhand (1700-2200 m asl) and Khasi-Jaintia Hills, Meghalaya (50-1938 m asl) are 'biodiversity hotspots' and 'Important Bird Areas'. Both have a long history of indigenous forest protection and management systems which are well documented from human and forest ecology perspective. However, in the recent past, both these sites have seen both insidious and rapid land use changes. How such changes affect the old native forests and their associated faunal assemblages is yet to be understood in detail, particularly within the context of tropics. Through this project, I intend to investigate the linkages between different forest-management systems and land-use change within and across the Kumaon Central Himalaya and Khasi Jaintia Hills on bird communities. This study will address a critical gap in our understanding about the impact of the different forest management approaches on animal communities and their habitats.

Results from ongoing analysis suggests that the existing management regimes and policies in Meghalaya seems to be playing a strong role in the rapid shift from the erstwhile forest-subsistence type to a more commercially oriented production land use system. The impact of such changes on the avian communities is being currently studied with preliminary results indicating clear decline in bird abundances with land-use change from forest to non-forest.

Workshops and Seminars

Climate Adaptive Water Management Practices in Cities in South Asia A workshop report on City Level Inception Workshop in Mussoorie

Venue: Hotel Pacific, Mussoorie

Date: 19th September, 2016

The aim of the meeting was to converge existing initiatives and make additional efforts to integrate climate concerns and response measures into all aspects of development process, from policy and planning to implementation. Demand driven research with underlying principle in formulation of (CAMPS) the aims to bring stakeholders and private groups in the implementation phase for long term sustainability. With rationing of water being the central coping capacity of water supply to households as well as other businesses like that of hotels, restaurants, shop owners and small business owners, peak season supply is the biggest issue faced for distribution. Arun Shannon, an active citizen working locally on these issues, led the discussion in the way of discussing the key point of water holding capacity and stopping of the same through ‘chashme’ (springs) in the town. He also stressed on how water shortage does not affect large hotel owners or businesses in terms of suffering but in terms of high cost that is incurred to procure water from private sources through tankers. This just lays the basis that availability isn't the key issue but management and distribution of the same.

After much deliberation, the session concluded with underlying premise that the concentration of efforts should lie on both recharge of springs as well as efficient water distribution and conservation. The focus of this workshop was to deliberate over the



possible action plans that the various stakeholders could come up in order to provide for increased water security in the city of Mussoorie. Recommendations were given while providing a rationale for the same, as the focus was also to see the sustainability, practicality and the applicability of the recommendations put forth.

The following were the **recommendations** that arose after a discussion with all those present:

- Increase in the number of reservoirs as storage of water is a big issue.

- Encourage and propagate Rain-water harvesting among households as well schools, hotels and other such institutions.
- Plantation of Banj-Oak trees as they would contribute to water conservation and in the long run lead to spring recharge.
- Metering of water consumption needs to be reintroduced for every water connection at household as well as business levels to keep a tap on the consumption of water and to check for wastage
- Involve the private sector to not only invest but also actively participate in better water conservation systems and encourage social entrepreneurship models by incentivising inputs.
- Capacity building of Urban Local Bodies (ULBs) for better understanding of water quality standards among other capacities.
- Stricter implementation of current policies like that of compulsory installation of Sewage treatment plants (STPs) in buildings with more than 20 room capacity for water treatment
- Formation of the Mussorie Water Board which would include all the stakeholders at various levels of water management – Distribution, Regulation as well as Usage to create a platform for continuous engagement



Expert Committee Meeting on “Mainstreaming the role of ecosystem services in Water Supply of Nainital”

Venue: Hotel Vikram Vintage Inn, Oak Park, Nainital.

Date: 7th December 2016

On December 7th, 2016 CEDAR hosted a one day workshop entitled “ Mainstreaming the role of ecosystem services in Water Supply of Nainital”, at Vikram Vintage Inn, Nainital. The workshop was a part of CEDAR’s ongoing water project funded by ICELI. The purpose of the workshop was to bring experts of hydrology, geo-hydrology & geologists to review the existing information, physically and give their expert opinions on further research processes in terms of conserving the lake and other recharge areas.

Over the past year, the importance and problems associated with recharge zones have received great attention by environmentalists and other concerned groups of the town. However, evidence that demonstrates and elaborates the hydrological and geological relationships which determine the importance recharge zones, and the impact of landuse changes surrounding these areas on the lake bed and its catchment, is limited. Several issues on lake conservation were raised and few recommendations were given at the end of the workshop.

From the discussion session following recommendations was drawn to conclude the expert meeting for day.

- People’s coordination committee or Pressure Group which will include locals and science people.
- Understanding the subsurface geology to avoid slope instability.
- Involving local population more effectively.



- Revival and conservation of recharge zones.
- Traffic and pedestrians management.
- Waste disposal resolution

Climate Adaptive Water Management Practices in Cities in South Asia A report on City Level Inception Meeting in Haldwani

Venue: Haldwani

Date: 13th December, 2016

Haldwani city, located at the foothills of the Himalayas, is one of the fastest growing business



hubs in the state of Uttarakhand. With the rapid rate of urbanization and industrialization, the last decade has witnessed a high rate of population increase. With increasing population and infrastructure expansion, Haldwani is faced with increasing pressure on resources like

water. The key question that one needs to address in this context is whether there is a water shortage or water crisis that the city which was once only a transit town. It is in this context a team of researchers from the Centre for Ecology Development and Research (CEDAR), Dehradun, South Asia Institute of Advanced Studies (SIAS), Kathmandu and The Tata Institute of Social Science, Mumbai aim to not only understand the situation but in the long run make meaningful impact in 4 urban towns across the 2 countries under the Climate Adaptive Water Management Plans for Cities in South Asia (CAMPS) project, funded by the International Development Research Council (IDRC). For the purpose of deliberating the issues, CEDAR aimed to get various stakeholders closely associated with Haldwani's water supply and distribution system and otherwise ranging from government bodies like the Jal Sansthan, Haldwani, Municipal Corporation, members of the law fraternity, civil society members, various political figures and individuals who want to engage in this dialogue. During the course of the open discussion addressing the emerging critical water issues, reflections were made on how to tackle the crisis that exists. The core of the deliberation was how to address this issue at a more local level, understanding ground realities to subsequently undertake need based action through rigorous consultation with the community.

Recommendations

This session was focussed on reaching a consensus on various possible options that came forth during the discussion in the course of the day. All the discussants shared key options that they deemed fit to address the potential water crisis in the city of Haldwani.

Following are the list of options and steps:

Storage of water:, Rainwater Harvesting system mandate, Installation of STP in the city, The need for a city level plan, Media Involvement, Awareness programmes, Underground tanks at highways and Creation of Haldwani Water Forum

Hi-AWARE - Multi Criteria Analysis Workshop

Stakeholder-Driven Prioritization, Adaptation Turning Points and Pathways for Extreme Events in Upper Ganga Basin

22nd December 2016

Hotel Madhuban, Dehradun

On 22nd December 2016, Hi-AWARE's stakeholder consultation jointly organized by The Energy and Resources Institute (TERI), Centre for Ecology, Development and Research (CEDAR) and Wageningen University & Research in Dehradun Uttarakhand brought together a diverse group of researchers, practitioners, students and scientists from different institutions. The guest of honor was Shri Jai Raj, IFS, Principal Chief Conservator of Forest (PCCF) who expressed his views on differential responsibilities of NGO's, communities and government on building new developmental pathways. The event was aimed at getting an understanding of potential adaptation options and interventions which can positively contribute to community responses in case of extreme events such as floods, droughts and heavy precipitation. It also addressed the need for developing shared understanding on prioritization of adaptation practices in Uttarakhand through relevant stakeholders and identifying adaptation turning points. The workshop helped in developing key criteria for scoring adaptation practices and sector-wise prioritization of adaptation interventions.



Governing Board



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

Never doubt that a small group of thoughtful, concerned citizens can change world. Indeed it is the only thing that ever has. —Margaret Mead

Research Advisory Board



Prof. K. Sivaramakrishnan,
Dinakar Singh Professor of India &
South Asia Studies, Anthropology;
School of Forestry & Environmental
Studies United States of America



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



Dr. Bhaskar Vira,
Director, University of Cambridge
Conservation Research Institute
United Kingdom



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



Dr. Himanshu Kulkarni,
Director, Advanced Centre for Water
Resources Development and
Management (ACWADAM)
Pune- India

Not the cry, but the flight of a wild duck, leads the flock to fly and follow. —
Chinese Proverb

Staff

Dr. Ghazala Shahabuddin, Senior Fellow, Wildlife Ecologist

Dr. D. S. Chauhan, Senior Fellow, Geologist

Dr. Vishal Singh, Coordinator, Forest Ecologist

Ms. Roshan Rathod, Senior Research Associate, Gender Specialist

Mr. Prateek Sengupta, Research Associate, R-Urban Water Specialist

Ms. Ishani Sachdeva, Research Associate, Social Scientist

Mr. Manishankar Madishetty, Research Associate, Urban Planner and GIS Specialist

Mr. Tanmay Pisolkar, Research Associate- Geologist

Ms Anushka Rege, Research Associate, Wildlife Biologist

Ms. Sana Anjum, Research Associate, Hydrologist

Mr. Narendra Singh Raikwal (Sr. Field Assistant)

Dr. Nidhi Singh, Research Associate- Soil Sciences and Nursery Management

Ms. Anvita Pandey, Voluntary Researcher, Forest Ecologist

Mr. Anil Tyagi, Finance Officer

Mr. Amit Bhakuni, Office Manager

Mr. Dharmendra Singh, Assistant Accountant

As the creeper that girdles the tree trunk, the law runneth forward and back;
For the strength of the pack is the wolf, and the strength of the wolf is the pack

Rudyard Kipling ((1865–1936)

IN REMEMBRANCE



Dr. Devendra Chauhan (1965 – 2017)

Dr. Devendra Chauhan, Senior Fellow at CEDAR, left us as a result of a tragic road accident on Friday, 11th August 2017.

Dr. Chauhan had a Ph.D from Jawaharlal Nehru University, New Delhi. He had considerable expertise in the fields of livelihoods, hydrology and science communication. He was an integral part of the CEDAR team for the past five years. He was a mentor to many of our staff and helped provide direction and guidance to the organisation.

Dr. Chauhan was a remarkable man and everyone at CEDAR is better for having known him. He was a friend, a mentor and a guide to many of us and we will remember him for his kindness, compassion, and his good sense of humour. He will be greatly missed greatly by all of us at CEDAR

Dr. Chauhan is survived by his wife, Dr. Malavika Chauhan; son Gaurang and his parents. Our thoughts and prayers are with them.

Dissertations/Internships

1. **Ms. Akanksha Joshi:** Anthropogenic impacts on the natural environment of Nainital town
Supervisor: Dr. Vishal Singh
2. **Ms. Pooja Upadhayay** Impacts of Climate Change on Apple Production in Uttarakhand: A Case study from Nainital District
Supervisor: Dr. Vishal Singh
3. **Ms. Neha Kumari:** Impacts of Urbanization and Climate Change on Water Quality: A Gender Analysis of Haldwani, Uttarakhand, India
Supervisor: Dr. D.S. Chauhan and Ms. Roshan Rathod

Memorandum of Understanding

Department of Forestry, Kumaun University, Nainital, Uttarakhand
Department of Forestry, HNB Garhwal University, Srinagar, Uttarkhand

Registrations

Cedar is registered under Societies Registration Act XXI of 1860 Registration No S-54758 of 2006

Registered Under Foreign Contribution Regulation Act (FCRA), Registration No 347900178 (Educational Social)

The society holds a status of a Scientific and Research Organisation (SIRO) registered under Department of Scientific and Industrial Research (DSIR), Ministry of Science and Technology, Government of India

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.

*10th Annual General Meeting held on September 2017, 5 pm
Venue: 201/I, Vasant Vihar, Dehradun*

Salary: Maximum salary paid was of were Rs 72,000 month.

Travel: Maximum cost of any single rail/ticket purchased was less than 1270 rupees

Maximum cost of any single air ticket purchased was less than 9848.5 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*

Audited Accounts

PAN: AAATC7677B

CENTRE FOR ECOLOGY, DEVELOPMENT AND RESEARCH

A-17(2nd floor), Mayfair Garden, New Delhi-110016

Assessment year	2017-2018
Accounting year	2016-2017
D.O.I	25-01-2006
Status	A.O.P.(Society) (Trust)
Sources of Income	Contributions for Projects and Voluntary Contribution

R.&O.R.

Computation of Assessable Income

Income

Total Receipts (as per Income and Expenditure Account)	168,44,452
Add: Amount received for Corpus	-
Total Receipts during the year	168,44,452
Less: Exemption under section 11(1)(d) of Income Tax Act, 1961	-
	168,44,452

Application of Income

As per Income and Expenditure account	141,47,160
Less: Depreciation claimed in Income and Expenditure account	2,63,867
Add: Addition to advance paid	(2,55,853)
Add: Addition to Fixed Assets (as per Fixed Assets Schedule)	4,48,733
	140,76,173
	27,68,279

Surplus

Less : Accumulation U/s. 11(1) (15% of 16,865,228) (subject to available surplus)	25,26,668
Less : Accumulation U/s.11(2) of the Income Tax Act,1961	2,41,611

Net Assessable Income

-

Tax on above	-
Less : TDS	50,000
Refund due	(50,000)

Significant Accounting Policies and Notes - Schedule 5 In terms of our
report of even date
annexed.

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

Chairman

Vice Chairman

R. Balasubramanian Partner
Membership No. 080432
Place: New Delhi
Date

Executive Director



Centre for Ecology Development and Research
201/1, Vasant Vihar
Dehradun-248006
Uttarakhand
cedarhimalaya@gmail.com
www.cedarhimalaya.org

